Ulster County
Transportation Council

Year 2040
Long Range Transportation Plan

Rethinking Transportation: Plan 2040

FINAL DRAFT

For the Period October 1, 2015 – September 30, 2020

Prepared By:
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http://www.co.ulster.ny.us/planning/tran.html

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Year 2040 Long Range Transportation Plan

Rethinking Transportation: Plan 2040

For the Period October 1, 2015 – September 30, 2020

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Prepared with the Assistance of:

RSG

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RESOLUTION 2015-17

ULSTER COUNTY TRANSPORTATION COUNCIL

ADOPT THE ULSTER COUNTY TRANSPORTATION COUNCIL YEAR 2040 LONG RANGE TRANSPORTATION PLAN – *RETHINKING TRANSPORTATION*.

WHEREAS, the Ulster County Transportation Council (UCTC) has been designated by the Governor of the State of New York as the Metropolitan Planning Organization (MPO) responsible, together with the State, for the comprehensive, continuing, and cooperative transportation planning processes for its respective Metropolitan Planning Area (MPA); and,

WHEREAS, Federal regulations require that each MPO shall develop a long range transportation plan (LRTP) from which the transportation improvement program (TIP) shall be derived; and

WHEREAS, a portion of Ulster County is within the Federally designated Mid-Hudson Valley, New York, Transportation Management Area (TMA), and shares regional transportation planning and programming responsibilities with Dutchess and Orange Counties and a portion of New Jersey, including the coordination of a congestion management process (CMP); and

WHEREAS, Federal surface transportation programs are the responsibility of the UCTC and authorized by the Moving Ahead for Progress in the 21st Century (MAP-21) Act; and

WHEREAS, the UCTC last adopted a LRTP in 2010 with a horizon date of 2035; and

WHEREAS, for these proposed amendments, the UCTC, in cooperation with the New York State Department of Transportation (NYSDOT) and transit operators, has reviewed and documented compliance of its planning process with adopted *UCTC Operating Procedures*, UCTC public notice procedures, and all existing federal rules and regulations, including *The Moving Ahead for Progress in the 21st Century Act* (MAP-21) requirements; and.

WHEREAS, the UCTC has updated its LRTP to Year 2040 based upon new data collected and forecasted; and

WHEREAS, the UCTC's Year 2040 Long Range Transportation Plan – *Rethinking Transportation* sets the planning and programming priorities for the entire UCTC metropolitan planning area transportation system; and

WHEREAS, at the time of the LRTP's adoption, the UCTC was classified as being an air quality attainment area and, therefore, the LRTP was not required to demonstrate air quality conformity with Federal and state air quality conformity requirements.

RESOLUTION 2015-17

ULSTER COUNTY TRANSPORTATION COUNCIL

NOW, THEREFORE BE IT RESOLVED, that the Ulster County Transportation Council adopts the Year 2040 Long Range Transportation Plan – *Rethinking Transportation* for the entire UCTC metropolitan planning area; be it further

RESOLVED, that the Director of the Ulster County Transportation Council authorizes the Secretary to transmit the Year 2040 Long Range Transportation Plan – *Rethinking Transportation* to the New York State Department of Transportation (NYSDOT), Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and other appropriate Federal and state agencies to satisfy all current reporting requirements.

CERTIFICATE, the undersigned, duly qualified and acting Secretary of the Ulster County Transportation Council, certifies that the foregoing is a true and correct copy of a resolution adopted by a vote on September 29, 2015

10/30/15
Date

By
William J. Gorton, P.E., Secretary,
Ulster County Transportation Council

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I. INTRODUCTION

The Ulster County Transportation Council (UCTC) is the metropolitan planning organization (MPO) serving the Kingston, NY, urbanized area and the entirety of Ulster County. Federal law requires that all urbanized areas with a population greater than 50,000 people have an MPO, which is assigned certain planning responsibilities.

Chief among these responsibilities is the preparation and adoption of a long-range transportation plan (LRTP). The LRTP must look at least twenty years into the future, and be updated at no less than five-year intervals. The LRTP must cover the same geographic area as the MPO's Metropolitan Planning Area, which is adjusted from the U.S. Census urbanized area boundary. This long look

> *The purpose of this subpart is to implement 23 U.S.C. 134 and section 8 of the Federal Transit Act, as amended, which require that a Metropolitan Planning Organization (MPO) be designated for each urbanized area and that the metropolitan area has a continuing, cooperative, and comprehensive transportation planning process that results in plans and programs that consider all transportation modes and supports metropolitan community development and social goals. These plans and programs shall lead to the development and operation of an integrated, intermodal transportation system that facilitates the efficient, economic movement of people and goods.*
>
> **23CFR450.300**

forward is particularly valuable as transportation facilities can take a long time to move from idea to plan to design to construction. While bus routes can be changed quickly in response to changes in demand, the built environment of roads, railroads, sidewalks, trails, and airports has permanence. The LRTP gives citizens and decision makers a structured means to be thoughtful about the future, and the role transportation plays in it. The LRTP is both a statement of policy and an investment plan. In an era of limited financial resources, it states how available funds are best used to meet regional priorities. Federal law requires that the sum of LRTP investments be constrained by an agreed upon estimate of reasonably available revenue. This "fiscal constraint" prevents the plan from being a wish list of projects that cannot be paid for. Instead, it forces decision makers to be explicit about their choices of strategies, programs, and projects.

A DYNAMIC PLANNING ENVIRONMENT

This is a challenging time for all agencies involved in transportation planning and program implementation. There are a number of critical issues that have impacted the development of this LRTP.

- **Federal transportation authorization**. The current federal surface transportation law, Moving Ahead for Progress in the 21st Century (MAP-21), which authorizes funding for FHWA and FTA programs, expired on September 30, 2014. It has been extended by Congress three times, currently through October 29, 2015. Congress must act prior to that date to pass new authorizing legislation or a further extension.

- **Federal rulemaking**. Legislative language is typically codified in the Code of Federal Regulations (CFR) through a rulemaking process that clarifies Congressional intent, and provides an opportunity for agency and public input. Until a Final Rule is issued, legislative language applies. MAP-21 made significant changes to the metropolitan planning process, leading to a number of rulemakings. The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) jointly issued a Notice of Proposed Rulemaking (NPRM) for Statewide, Metropolitan, and Nonmetropolitan Planning. FHWA issued the first two NPRMs of a series of rules governing the implementation of performance based planning and programming. However, until all rules become final, MPOs and state departments of transportation (DOTs) can only anticipate what the requirements will be.

- **Federal transportation funding**. Programs of the FHWA and the FTA provide a significant proportion of capital funds in New York State's transportation program. All FHWA program funds, and a portion of FTA funds, come from the Highway Trust Fund (HTF). The primary source of revenue for the HTF is tax on gasoline and diesel fuel. These taxes have not been increased since 1993, leaving their purchasing power diminished by two decades of construction cost inflation. At the same time, receipts have been diminished by use of more fuel efficient cars and alternative fuels that are not taxed. Since 2008, Congress has transferred over $60 billion from the U.S. General Fund to the HTF so it can meet expenditure obligations, including $18 billion as part of the MAP-21 Extensions. There is general agreement among policy makers that a sustainable approach to funding FHWA and FTA must be enacted.

- **State and local transportation funding**. The New York State Dedicated Highway and Bridge Fund has its own challenges, related to substantial debt service payments resulting from past borrowing, and use for non-capital purposes. Local governments receive state funds through the Consolidated Local Street and Highway Improvement Program (CHIPS), but must rely primarily on property tax and sales tax receipts to pay for transportation projects. Other states permit local option sales and gasoline taxes, but this is not the case in New York. Public transit is supported separately by the state, with operators receiving State Transit Operating Assistance (STOA), and a portion of the non-Federal share of capital project costs.

- **Aging infrastructure**. The New York State Department of Transportation (NYSDOT) points out in its Draft Transportation Asset Management Plan that, like much of the rest of the country, our roads and bridges, transit systems, and railroads are characterized by aging infrastructure. Depending on the type of construction and materials used, each of these elements has a predictable life span. That life may be extended by preventive maintenance and rehabilitation, or decreased by neglect. Current conditions are a consequence of investment, but also of timing. From the late 1950s to the early 1970s, the nation built much of the Interstate Highway System and other facilities. Fifty years later, much of this infrastructure is worn out, creating a spike in preservation program demands.

- **Focus on freight and economic development**. The trend in federal transportation policy over recent years is to pay more attention to freight movement and how it supports regional, statewide, and the national economy. NYSDOT initiated its first comprehensive

statewide Freight Transportation Plan in early 2015. MAP-21 requires that the United States Department of Transportation (USDOT) develop a National Freight Strategic Plan and Primary Freight Network. The UCTC will take advantage of these activities in examining the role of freight movement in its own economy in the future.

- **Changing attitudes about land use**. People of all ages are making different decisions about where they choose to live, and what constitutes a positive quality of life. Whether urban or suburban, more people want a human scaled neighborhood that is walkable and bikeable, has access to schools and shopping, and has convenient public transit. Others want a rural location, but one that has access to needed services.
  New York State has in recent years passed both a Smart Growth Public Infrastructure Policy Act and a Complete Streets Act. These acts respond to public interests, and guide state and local government decisions about transportation projects away from a singular auto-centric view to one that looks at the accessibility and mobility needs of all users regardless of how they travel.

- **Public health and active transportation.** Transportation planners are bringing new partners into their conversations. The public health community has begun to turn its understanding of the value of physical activity into participation in active transportation. They have become valued stakeholders in supporting the construction of sidewalks and trails, and promoting Safe Routes to School and similar walking programs. This is closely connected to discussions of land use planning as noted above.

- **Transportation and technology**. A twenty-five year planning cycle is a very long time in the world of advanced technology. Even a five year capital program cycle may have difficulty responding to changes. The advent of fully automated cars being in general use is would seems realistic within the planning horizon of this LRTP, with many vehicles in testing and development. Already, vehicles have more on-board safety features like lane departure warning and automatic brake assist and pervasive wireless communications has enabled USDOT's Connected Vehicle program that allows cars to communicate to each other and the roadside infrastructure enhancing, safety and roadway capacity. Commercial GPS guidance systems are found in cars and trucks, and on smartphones and similar devices. Drivers receive real-time traffic and road information, enabling them to make smart choices on route, mode, and time of travel. Resulting changes in travel behavior and need for investments are likely to change some of the conclusions of this LRTP.

MEETING FEDERAL PLANNING REQUIREMENTS

The framework of the LRTP is codified in Titles 23 (FHWA) and 49 (FTA) of the Code of Federal Regulations. As a consequence, the LRTP must address the following eight planning factors:

> *(A) support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;*
>
> *(B) increase the safety of the transportation system for motorized and non-motorized users;*
>
> *(C) increase the security of the transportation system for motorized and non-motorized users;*
>
> *(D) increase the accessibility and mobility of people and for freight;*
>
> *(E) protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;*
>
> *(F) enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;*
>
> *(G) promote efficient system management and operation; and*
>
> *(H) emphasize the preservation of the existing transportation system.*
>
> **MAP-21, §1203(h)(1)**

There is a longstanding recognition by the Federal government that every metropolitan area is different. This gives the UCTC flexibility to establish the most appropriate priorities among these planning factors and to address each factor in a way that makes the most sense for the region it serves. In doing so, the UCTC fulfills its primary responsibility as a cooperative decision making forum that relies on the shared perspectives of local and state officials to best meet the needs of its citizens.

PERFORMANCE BASED PLANNING AND PROGRAMMING

The biggest change in MAP-21, a paradigm shift in transportation planning for states and MPOs, is the requirement for a performance-based, outcome-oriented approach. MPOs must measure how the regional transportation system performs across a number of dimensions. They are then expected to look over time at the outcome of their project and program investments and document how conditions have changed. They will set performance targets, and report periodically to decision makers and the public on the extent of achievement. What are the overall before-and-after conditions of pavements and bridges, safety for all users, reliability and efficiency of travel? Are trends going in the right direction? Were the expected results of certain projects not realized?

MPOs are expected to use this information continuously to shape successive LRTP updates and project investment choices. Performance metrics will also be used to inform the public, making the process of planning for and investing in the regional transportation system much more transparent.

MAP-21 establishes the following seven National Goal areas as the basis for performance management:

> ***Goals:***
>
> *(1) Safety.--To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.*
>
> *(2) Infrastructure condition.--To maintain the highway infrastructure asset system in a state of good repair.*
>
> *(3) Congestion reduction.--To achieve a significant reduction in congestion on the National Highway System.*
>
> *(4) System reliability.--To improve the efficiency of the surface transportation system.*
>
> *(5) Freight movement and economic vitality.--To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.*
>
> *(6) Environmental sustainability.--To enhance the performance of the transportation system while protecting and enhancing the natural environment.*
>
> *(7) Reduced project delivery delays.--To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.*
>
> **MAP-21, §1203**

In addition, Federal law requires other safety and infrastructure-related performance management plans. States must adopt a Strategic Highway Safety Plan that establishes priorities for improving safety and performance metrics for determining success. Transit operators will be required to adopt a Transit Agency Safety Plan with the same overall objective; and a State of Good Repair Plan governing transit system assets. States will develop a Transportation Asset Management Plan (TAMP). New York was selected by the FHWA as one of three pilot states to develop a TAMP as guidance for the rest of the country. A Draft TAMP was released in May, 2014. This plan addresses pavement and bridge assets on the National Highway System.

The specifics of implementing all of these pieces of Performance Based Planning and Programming will be contained in forthcoming federal rules. The first of these rulemakings, for National Safety Performance Measures, was initiated in March 2014. It is anticipated that many of these rules will become final in September 2015. It is important that this LRTP set the stage for implementing Performance Based Planning and Programming. This will be done through a framework of specific objectives and related performance measures. An important aspect of performance management is setting targets to measure progress toward achieving transportation-related goals. Like objectives, targets are specific and time bound. There may be a target for improvement in average pavement condition or reduction in pedestrian injury crashes, with a milestone every five years. Annual measurement tells transportation system owners, decision makers, and the public whether progress is being made. An assessment of which targets are met, and which are not, will influence the choices made in the next LRTP.

MAP-21 requires that states establish targets for each of the National Goals within one year after the promulgation of the Final Rule(s) on performance management. Once issued, MPOs have an additional 180 days to either adopt the state's targets, or set their own.

TITLE VI of the CIVIL RIGHTS ACT and ENVIRONMENTAL JUSTICE COMPLIANCE

In 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address

> *"No person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."*
>
> **Title VI of the Civil Rights Act of 1964**

Environmental Justice in Minority Populations and Low-Income Populations". The Executive Order focused attention on Title VI by providing that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." In support of Executive Order 12898, USDOT issued an Order on Environmental Justice (DOT Order 5610.2) in 1997, followed by a FHWA Order on Environmental Justice (FHWA Order 6640.23) in 1998.

There are three fundamental Environmental Justice principles:

1. To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority and low-income populations.
2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
3. To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

UCTC remains committed to supporting Federal Environmental Justice requirements and maintaining compliance with Title VI of the Civil Rights Act. Examples of UCTC commitment include: (1) evaluation measures built into the Unified Planning Work Program (UPWP) and Transportation Improvement Program (TIP) project selection process and (2) the use of Geographic Information System (GIS) resources to illustrate the relationship between transportation investments programmed and areas with concentrated low-income, minority, age 65 and older, and mobility disability populations. In addition, the needs and interests of Limited English Proficiency (LEP) populations are taken into account during the project development and consultant solicitation phases of new UPWP projects. Recent examples include Spanish translation of project outreach materials associated with the Broadway Corridor Conceptual Design Project as well as inclusion of Spanish translators at public outreach events and meetings. In addition, UCTC's transit planning activities continue to focus on the need of underserved areas and populations.

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM

As a sub-recipient of USDOT financial assistance, which is administered through the NYSDOT, UCTC is committed to the NYSDOT Disadvantaged Business Enterprise (DBE) Program as described in detail in the *New York State Department of Transportation Disadvantaged Business Enterprise*

Program Plan.[i] All sub-recipients that administer contracts with any USDOT funding assistance are required to fully conform to the Federal requirements in 49 CFR §26. Sub-recipients shall either develop their own DBE Program where required, or endorse and fully conform to the NYSDOT's DBE Program (49 CFR §26.21). NYSDOT will ensure the sub-recipients comply with all requirements. All sub-recipients shall place appropriate DBE clauses in their federally assisted contracts and assign local responsibility to ensure compliance with this policy (49 CFR §26.13). UCTC utilizes the State DBE participation targets in its contracting and has and will continue to grant bonus points as part of the consultant selection process to achieve these goals.

ABOUT UCTC

> *23 U.S.C. and Section 8 of the Federal Transit Act ... require that a Metropolitan Planning Organization (MPO) be designated for each urbanized area and that the metropolitan area has a continuing, cooperative and comprehensive transportation planning process that results in plans and programs that consider all transportation modes and supports metropolitan community development and social goals.*
>
> **23 CFR Section 450.300**

Every urban area in the United States of more than 50,000 persons, as recognized by the U.S. Census Bureau, must have a designated MPO in order to qualify for Federal highway and transit funding. The MPO is to be the forum for cooperative transportation decision-making for the metropolitan planning area.

The UCTC was designated as the MPO for the Kingston Urbanized Area by the Governor of New York on April 30, 2003. The UCTC planning area includes all of Ulster County and a small portion of Greene County along the NYS Rout 9W corridor. The UCTC planning area also includes portions of the Poughkeepsie -Newburgh Urbanized area that extends into the southern towns in the County.

The UCTC was formally organized with the adoption of Operating Procedures on June 4, 2003. The UCTC's decision-making authority rests with its Policy Committee voting members. The Policy Committee is composed of chief elected officials from urbanized and non-urbanized areas throughout Ulster County along with NYSDOT and the New York State Thruway Authority. The Ulster County Executive serves as Chair of the Policy Committee. The Policy Committee is supported by non-voting Advisory and Technical Committees comprised of municipal and transportation agency officials. In addition to permanent voting members, the UCTC voting structure includes alternating two-year voter membership. Less urbanized municipalities are paired together based upon geographic location and municipal population and alternate every two years on June 4. In addition to permanent and two-year alternating voter members, the UCTC Operating Procedures identify seven rural municipalities to collectively serve as one rural voting member (also known as the "7 as 1" rural voter arrangement). In accordance with UCTC Operating Procedures, the Ulster County Association of Town Supervisors (UCATS) appoints one Supervisor to represent the seven municipalities. Term limits for the individual serving in "7 as 1" rural voting seat is determined by UCATS. UCTC meetings are scheduled and held "as needed" and typically occur every two months.

The UCTC Policy Committee is supported by a Technical Committee comprising appointed municipal and transportation agency staff representing Ulster County municipalities and transportation agency interests. The Technical Committee serves as an advisory body to the Policy Committee. The Technical Committee monitors the operational aspects of the UCTC planning program for consistency with Federal, State, and local planning requirements, reviews technical and policy-oriented projects and programs, makes recommendations to the Policy Committee for consideration, and monitors the activities of staff. [ii]

UCTC also has a joint cooperative transportation planning agreement with the public transit operators in its jurisdiction. In addition, UCTC is supported by Non-Voting Advisory Members to assist with the planning process and help guide the Technical and Policy Committees with decision-making and policy formulation.

The day-to-day activities of UCTC are supported by two full-time and one part-time staff to ensure the overall planning program is executed in a timely and efficient manner and in accordance with Federal regulations. Ulster County is the host agency for all UCTC-related staffing and planning studies. Staff is housed within the Ulster County Planning Department located in the Ulster County Office Building in Uptown Kingston. UCTC's budget is embedded within the Ulster County Planning Department's budget and managed by the Director of the Ulster County Planning Department. Staff, equipment, supplies, rent, consulting studies, and other expenses used to support UCTC staffing operations are reimbursable to Ulster County by FHWA and FTA metropolitan planning program funds at 80% of the total amount. NYSDOT provides in-kind services for 15% of this total leaving Ulster County with a required 5% match.

UCTC Membership

Permanent Voting Members
Ulster County Executive, Chair
City of Kingston Mayor
Town of Saugerties Supervisor
Town of Ulster Supervisor
NYS Thruway Authority Executive Director
NYSDOT Commissioner, Secretary

Two-Year Voting Members
(Alternate biennially)
Village of Saugerties Mayor*
Town of Hurley Supervisor
Town of Rosendale Supervisor*
Town of Esopus Supervisor
Town of Lloyd Supervisor*
Town of Marlborough Supervisor
Town of Plattekill Supervisor*
Town of Shawangunk Supervisor
Village of Ellenville Mayor*
Village of New Paltz Mayor
Town of New Paltz Supervisor*
Town of Wawarsing Supervisor
Town of Woodstock Supervisor*
Town of Kingston Supervisor
**Current Voting Representative through June 4, 2017*

7 as 1 Rural Voting Membership
(Appointed by Ulster County Association of Town Supervisors)
Town of Denning Supervisor
Town of Gardiner Supervisor
Town of Hardenburgh Supervisor
Town of Marbletown Supervisor*
Town of Olive Supervisor
Town of Rochester Supervisor
Town of Shandaken Supervisor
**Current Voting Representative*

Non-Voting Advisory Members
Federal Highway Administration
Federal Transit Administration
Federal Railroad Administration
NYS Bridge Authority

MID-HUDSON VALLEY TRANSPORTATION MANAGEMENT AREA

Urbanized areas with an urbanized population of 200,000 or more persons are classified as Transportation Management Areas (TMA) subject to additional Federal requirements and scrutiny. The Mid-Hudson Valley TMA is unique in New York in that it is formed by three separate and independent MPOs – the Poughkeepsie-Dutchess County Transportation Council (PDCTC), the Orange County Transportation Council (OCTC), and the Ulster County Transportation Council (UCTC). Each of these MPOs is hosted by their county's planning department and each of the MPO membership structures, committee structures, and voting procedures are similar. Figure 1.1 provides a map of the TMA.

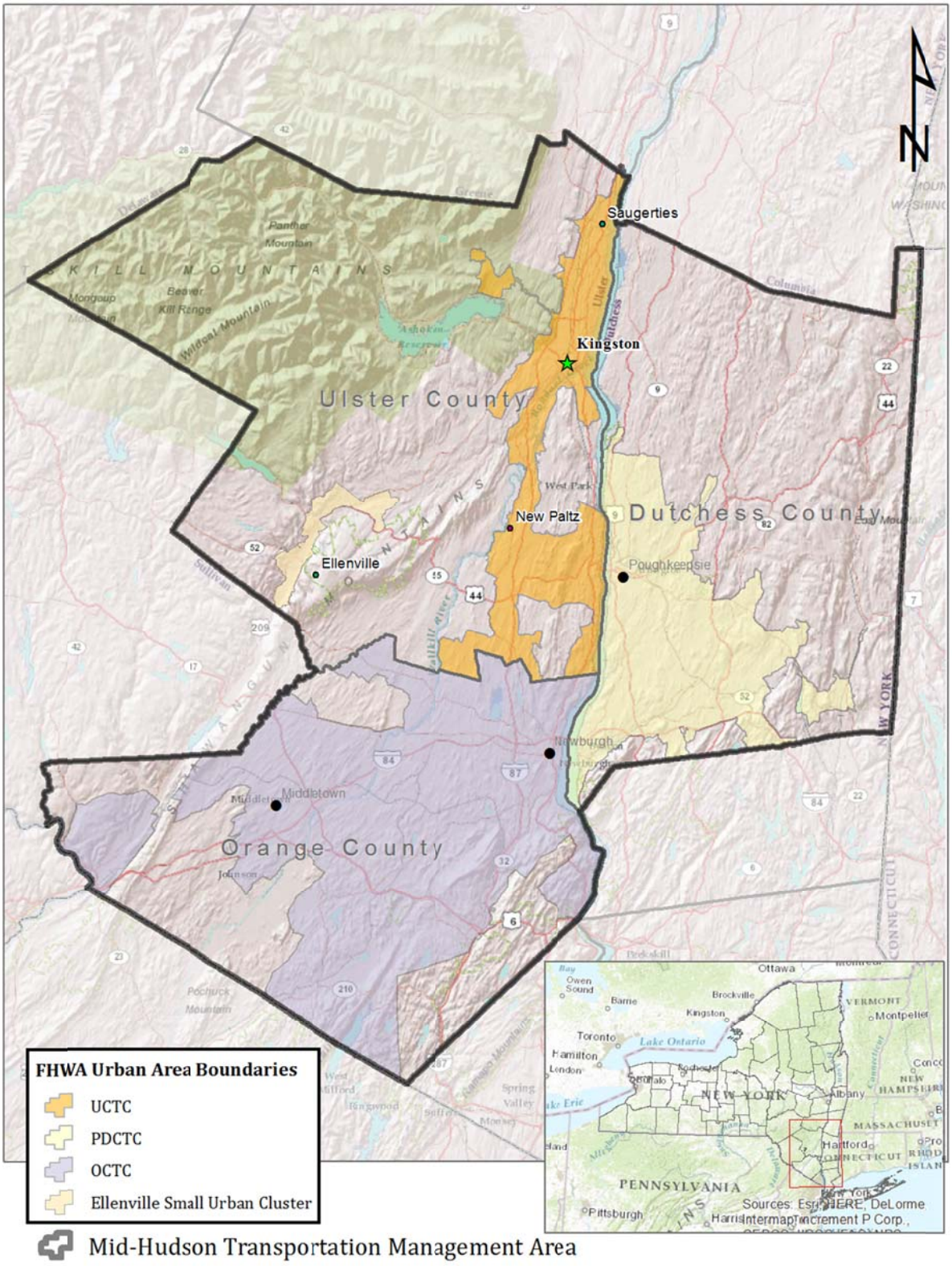
Following the 1990 Census, the Bureau of the Census identified the Poughkeepsie-Newburgh, NY urbanized area, with a population at the time that exceeded 300,000. The Poughkeepsie urbanized area grew westward across the Hudson River into Ulster County (Town of Lloyd). PDCTC subsequently expanded its planning boundary and its voting membership to include representation from Ulster County. The Poughkeepsie and Newburgh urbanized areas continued to expand, so much so that they had grown together across the lower part of Ulster County and became the Poughkeepsie-Newburgh urbanized area. The 2000 Census identified Kingston as Ulster County's first urbanized area, and once designated, UCTC together with the two previously existing MPOs became the Mid-Hudson Valley TMA.

The Mid-Hudson Valley TMA experiences a high level of cooperation among the three MPOs and their state partners. In March 2006, the three MPOs and NYSDOT Region 8 signed a Memorandum of Understanding which covers the following areas: Shared Products, such as the Congestion Management Process; the allocation of FTA 5307 funds; data and information sharing, such as traffic counts, travel time surveys, geographic information systems products and federal highway classifications; decision making; staffing; professional services; and financial support.

The staffs of the three MPOs hold meetings as necessary concerning TMA requirements, and coordinate on work activities such as planning studies and other work products. The MPOs individually develop other federal planning work products separately such as the Long Range Transportation Plan (LRTP), Unified Planning Work Program (UPWP), and Transportation Improvement Program (TIP). In each of these work products, the three MPOs provide information on the partnership that makes up their TMA, including specific collaborative work products, such as freight, transit, and congestion planning and mitigation activities.

In 2014, the three MPOs in the Mid-Hudson Valley TMA began to work with the North Jersey Transportation Planning Authority (NJTPA) – the MPO responsible for the Federal transportation planning process in Passaic County, NJ – on meeting the planning requirements for the Poughkeepsie-Newburgh NY-NJ Urbanized Area (UA). This relationship was formalized through a Memorandum of Understanding between OCTC and NJTPA in early 2015.[iii]

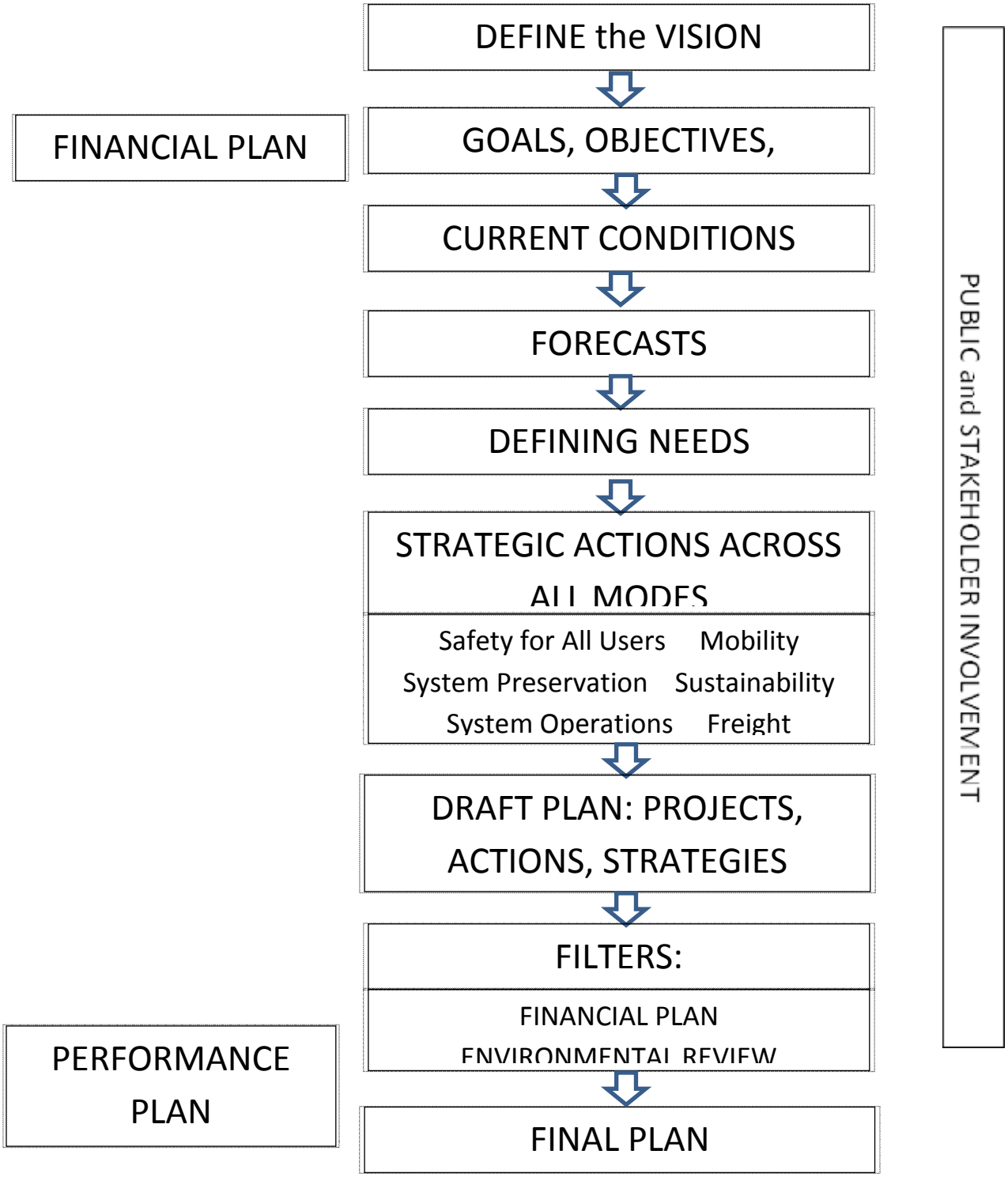
Figure 1.1: Ulster County Transportation Council Metropolitan Planning Area and the Mid-Hudson Transportation Management Area



LONG RANGE PLAN DEVELOPMENT PROCESS

There is a well-established process for developing a long-range transportation plan, a series of steps that rationalize the planning process. This is depicted in Figure 1.2:

Figure 1.2: Long Range Plan Process



Long Range Plan Development Process, continued…

- **Define the Vision.** The essence of a long-range transportation plan is establishing how transportation investment over the next twenty years can play a positive role in achieving community development goals. The first step is to understand the vision that community leaders and the public in Ulster County have for the future.

  "If you don't know where you are going, any plan will do."

- **Goals and Objectives.** The next step is establishing what UCTC wants to achieve through explicit statements of goals. These will range from preserving the investment in transportation infrastructure to improving mobility and accessibility to supporting economic development to developing a sustainable future. Goal statements are aspirational, but the objectives that underlie them are specific, measurable, and time bound. Each objective is accompanied by a performance measure so it can be tracked over time and achievements can be reported to the public.

- **Financial Plan.** As noted earlier, Federal law requires that the LRTP be fiscally constrained to agree upon forecasts of revenue for each fund source. The law further states that these forecasts are to be developed cooperatively by the MPO, the State DOT, and transit operator. NYSDOT takes the lead on the Financial Plan in order to have statewide consistency in revenue forecasting. This plan aggregates revenue forecasts for each fund source into five year blocks that conform to TIP development.

- **Current Conditions.** This is the "Where are we now?" step. The LRTP must begin with a clear picture of condition of roads, bridges, sidewalks, trails, and transit; safety performance; congestion and mobility. Because travel demand is created by people traveling from home to work, school, and other destinations, we must know population and land use.

- **Forecasts.** Once the baseline is established, the next step is a forecast of future conditions. Using an agreed upon forecast of population and employment and economic growth for the twenty-five year plan period, UCTC will use its travel demand model to forecast travel.

- **Defining Needs.** Once the forecasts are complete, regional transportation system needs can be defined by measuring current conditions against adopted goals and objectives. Needs are defined for each of the LRTP elements in terms of what must be accomplished to achieve the objective.

- **Strategic Actions Across All Modes.** The LRTP is broken down into a series of elements. This framework provides an easy way for the public to understand the plan. The Plan must also address all modes of travel, including automobile, transit, bicycle, pedestrian, and freight movement. Elements include safety and security, infrastructure preservation, system operations, mobility, and sustainability.

- **Draft Plan.** This step brings all of the preceding work together, and defines proposed projects, actions, and strategies that will be applied to achieve the adopted objectives. Major projects will be listed individually, while some capital work like pavement rehabilitation

will be referenced as a committed funding level with specific projects to be determined annually. There may be programs that do not require significant capital expenditure, like incident management to improve the safety and reliability of travel. There may also be policy recommendations to improve the functionality of the transportation system. All projects and programs are listed in five year increments to conform to the Financial Plan, and planning level cost estimates are developed and calculated in terms of "year of expenditure" dollars, using standard inflation factors provided by NYSDOT.

- **Filters.** The initial Draft LRTP is then reviewed in terms of two important filters. The first is fiscal constraint. Total planned expenditures are sorted by fund source in five-year blocks. These are compared to the Financial Plan. If costs exceed revenue, the Draft LRTP is adjusted by adding, deleting, or changing projects. The second filter is environmental review. While detailed review occurs at the project development level, this filter evaluates overall potential impact on the environment of the projects and actions in the Draft LRTP. A consultation process with state and federal environmental resource agencies was begun early in the planning process. These stakeholders are then provided the opportunity to review the Draft LRTP and raise any concerns.

- **Public and Stakeholder Involvement.** As noted in Figure 1.2, there are efforts to involve the public, local officials, and stakeholders throughout the development of the LRTP. The process also allows the public and stakeholders to review of the Draft LRTP before its final adoption. This outreach uses multiple techniques and platforms to be as effective as possible.

  "We plan best when we plan WITH the community, not FOR the community."

- **Final Plan.** Based on all of the technical review and stakeholder and public input, the Final Long-Range Plan is prepared for adoption by the UCTC Policy Committee.

- **Performance Plan.** While this LRTP will be adopted prior to the implementation of Performance Based Planning and Programming rules, UCTC is committed to put in place the framework for performance management. This includes a performance data plan that identifies the performance measures that will be used and the agencies that will be responsible for collecting, analyzing, and archiving the data. It will also include a performance reporting plan that spells out how the performance measures and target achievement will be reported.

THE REGIONAL VISION

A shared vision of the future of Ulster County is a necessary starting point for the LRTP. Input from the public and the Technical Advisory Committee helped to answer the question: "What will Ulster County look like in 2040?" This vision will create a foundation for setting goals and objectives for the Plan, which in turn will be used to select and enumerate the priority projects, actions, and strategies to carry out the plan.

The vision in that in the year 2040, Ulster County will have these attributes in terms of land use, transportation economic development, and the environment:

Land Use

- UCTC's transportation planning work is cognizant of new trends in Ulster County development, and the value of strategic investments in activity areas in and around our villages and hamlets to create a more sustainable land use pattern whjle providing for economic development and growth.
- Ulster County is characterized by vibrant business districts of both regional and local importance. These contribute to quality of life and provide retail and entrepreneurial space that creates employment opportunities.
- Ulster County is the home of, and attractive to, a population characterized by diversity of race, ethnicity, income, and skills that make it a great place to live, work, and play.
- Services oriented to the ability of seniors and disabled persons to live in their homes are widely available, as are opportunities to relocate to more convenient and accessible living facilities.
- The "second home" market in Ulster County is longstanding and likely to continue. This trend creates:
    - Increases in the property tax base without costly demand on services,
    - Competition for housing that can have a negative impact on the affordable housing market, and
    - Seasonal traffic congestion in specific locations like Woodstock.
    - Opportunities for economic growth as second homes become work centers driven by technology and quality of life.

Transportation

- Ulster County has a more sustainable and resilient transportation system in which:
    - Investments focus on maintaining the existing system of roads and bridges.
    - Key investments are made that support the creation of economic activity and desired land use patterns.
    - Key roads and bridges provide an adequate level of service to residents and businesses for evacuation, emergency response, and recovery in extreme weather events.
    - Sustainable practices in road construction techniques are becoming standard practice by road owners.
    - Areas of congestion exist at the County's southern boundary with Orange County, the Mid-Hudson Bridge Crossing, and in the New Paltz area. Other areas of congestion are strongly tied to the County's tourism base. This is recognized as a consequence of healthy economic activity.
    - Complete streets and safe routes to school allow communities to re-envision how transportation fits in their neighborhoods.
    - An active system of trails provides both transportation and recreation activies linking built places with each other and with open spaces that is heavily used.
- Ulster County has improved transit service as:
    - Transit's commuting mode share continues to increase.
    - Transit service is offered along all major corridors.

  - Adequate transit service remains a challenge in the rural areas, but mobility is facilitated by technology-based vehicle sharing services.
  - Transit service operates more frequently and uses the best available traveler information technology.
  - Transit links provide critical access to out of county passenger rail service where there are robust offerings of inter-regional and intercity travel.
  - Transit services exist for people traveling between Ulster, Orange, and Dutchess Counties.
  - Enhanced transit service exists in the urban areas of Kingston and New Paltz and is being considered for other activity centers or destinations.
- The Port of Kingston is improved, well-maintained, and recognized as a key facility in a multimodal transportation system.
- The transportation system is responsive to technological change with real time congestion avoidance, integration of autonomous vehicle technology, and providing robust information on freight movements for all modes in its transportation system.
- Safety and security continue to improve with responsive investments based a better accident data, higher levels of awareness.
- Rail safety is improved with investment in physical infrastructure and rolling stock combined with more robust inspections

Economic Development

- Ulster County has a excellent economic development climate, where diverse business opportunities create a strong local economy.
- Businesses can rely on convenient access for their workforce and their customers.
- Businesses can rely on efficient and seamless freight movement that supports their goods movement needs.

Environment

- Communities are networked into the countywide non-motorized transportation system.
- There is a continuous reduction of transportation-related energy consumption and greenhouse gas (GHG) emissions.
- Non-point source discharges to waterways from the transportation system are greatly reduced.
- Noise abatement from railroad operations is achieved through wide use of Federal Railway Administration (FRA) Quiet Zone technology.

These points can be summed up in the following statement:

2040 VISION STATEMENT

In the year 2040, Ulster County's transportation system is capable of affordably supporting its vibrant communities, which are attractive to businesses and to people of all ages and stages of life. The transportation system provides appropriate links to the region and beyond, and is viewed by all as an economic and environmental asset and a major contributor to quality of life. Communities are supported by a transportation system that provides safe access by all modes of travel. There is a robust economy, with diverse businesses whose need for efficient freight and personal transportation service is routinely met.

II. GOALS, OBJECTIVES, and PERFORMANCE MEASURES

GOALS

Goals form the foundation of the LRTP. They offer explicit guidance on the priorities of the Ulster County Transportation Council, and what it expects to achieve in its region over the next twenty-five years.

The Goals are founded on the principals that the transportation system must serve the needs of its community today; it must be responsive to change; and it has to be affordable for all users. To implement these simple principals requires an understanding of the complex interactions of preservation versus expansion, accommodation of new or expanding uses and different modes, and the use of new products or technology. The Goals are the first step in the LRTP process in setting priorities for investment, accepting trade-offs in programming projects, actions, and strategies. They are the base on which stands the choices that need to be made.

There have been numerous inputs to the development of these Goals, including:

- UCTC leadership, through the Policy and Technical Advisory Committees.
- MAP-21, which established seven National Goals that all states and MPOs must use as a basis for performance-based planning (see Introduction, p. 7).
- The New York State Department of Transportation, which has a set of principles called the Forward Four. These principles define NYSDOT's overall approach to its stewardship of the State Highway System.

Note that the following goals are not in order of priority. Priorities will be established as projects, strategies, and actions are considered.

Goal 1 – System Preservation

There has been an enormous investment in Ulster County's transportation infrastructure over many years. The UCTC is committed to continuously evaluating the condition of our roads and streets, bridges, sidewalks, transit buses and facilities, and traffic signals and other devices. Achieving this goal will rely on utilizing a risk-based asset management approach. Investments will follow to a great extent NYSDOT's "preservation first" methodology rather than a "worst first" approach. Using economic efficiency as a measure, it is often preferable to apply low to moderate cost treatments to assets that are in fair condition to extend their service life for a number of years. Allowing assets to deteriorate to poor condition may result in more extensive and costly projects like replacing bridges or reconstructing pavements. Achieving this goal requires striking a balance between projects that address infrastructure that is already in poor condition and those apply the preservation approach to fair infrastructure.

Goal Statement

Invest in transportation system infrastructure to bring all facilities and modes into a state of good repair.

Goal 2 – Economic Vitality

Each sector of the regional economy places different demands on the transportation system. Consumer-oriented sectors like health care and retail establishments require good access by all modes for both customers and workforce. Manufacturing and warehouse/distribution requires efficient freight access. Tourism destinations are often seasonal with steep travel demand peaks. While transportation is only one factor in economic success, its importance cannot be underestimated.

Goal Statement

Invest in transportation system improvements that are necessary to support the current regional economy and make strategic system investments to support future economic growth.

Goal 3 – Safety

The public must expect that they will be able to travel safely, whether they are driving, using public transit, walking, or bicycling. Safety is reflected primarily in the number and severity of crashes. Fatal and severe personal injury incidents are always of greater concern than those that cause minor injuries or only property damage. Because of the role of human behavior in crashes, safety is considered in terms of the "4 Es": engineering, education, enforcement, and emergency response. The UCTC must consider safety planning both reactively, by addressing high crash locations; and proactively, by looking at demographic and societal trends and getting ahead of problems. As the population grows older, for example, it may be appropriate to invest in proven techniques that address safety needs of elderly drivers and pedestrians.

The UCTC must also consider the content and objectives of the NYSDOT Strategic Highway Safety Plan (SHSP). The current plan focuses on intersection, pedestrian, and lane departure crashes, with proposed actions to mitigate both frequency and severity.

Goal Statement

Improve the safety of all users of the transportation system by responding to identified safety deficiencies and proactively addressing future safety needs.

Goal 4 – Security

The security of transportation system users, and of the infrastructure, is important to UCTC. While the initial perspective on this planning factor related to security concerns from terrorist events, experience with Hurricane Irene and Superstorm Sandy has made it clear how important it is for the transportation system to be able to provide for the security of residents through the evacuation, rescue, and recovery phases of extreme weather events.

Goal Statement

Ensure that transportation system users have a secure environment and that the transportation system is capable of providing adequate service during severe weather events.

Goal 5 – Mobility and Reliability

Mobility is a measure of the efficiency of travel. The traveling public has expressed an increasing interest in the reliability of their travel time. They may be willing to accept some recurring congestion, but non-recurring congestion caused by highway incidents, work zones, or weather events makes it difficult to plan time-sensitive travel. The strategies for reducing the variability of travel time are different from those that address recurring congestion, often focusing on the active management and operation of the transportation system. Reliable mobility is especially important to transit operations. People who rely on transit expect buses to arrive on time. Freight movement is also time-sensitive, with businesses often establishing narrow delivery windows.

Goal Statement

Provide for efficient and reliable travel by all modes by investing in strategies that mitigate both recurring and non-recurring congestion and keep the public informed

Goal 6 – Accessibility and Connectivity

A well designed transportation system provides convenient access to destinations both within and beyond Ulster County. Whether people travel by car, bus, bicycle, or on foot, they need to reach destinations that include employment, school, health care, shopping, and other services. Access is measured not only spatially, but also by time of day. Transit access is especially important to low-income and minority populations that have fewer travel alternatives.

Similarly, freight movement that supports local business requires convenient access from National Highway System roads and freight terminals to final destinations across Ulster County.

Goal Statement

Create and maintain a well-connected transportation system that provides access throughout Ulster County for people and goods travelling by all modes.

Goal 7 – Protect and Enhance the Environment

Transportation and the environment are inextricably linked. Impacts can be negative as a result of road construction and maintenance activities, energy consumption and air emissions associated with motor vehicle travel, and noise associated with railroad grade crossings. Impacts can also be positive by actions that facilitate the switch of single-occupant vehicle trips to shared ride modes or non-motorized travel. It is also valuable to encourage the use of alternative fuel vehicles by providing essential infrastructure.

Goal Statement

Contribute to making Ulster County a sustainable place by protecting and enhancing the natural and built environment, reducing greenhouse gas and other motor vehicle emissions, supporting sustainable construction and maintenance practices, and coordinating land use and transportation plans.

OBJECTIVES and PERFORMANCE MEASURES

Each Goal is supported by a series of objectives. Objectives add specificity, spelling out how implementation will support goal achievement. The objectives in the LRTP are "SMART", which ensures that they provide clear direction on how progress will be made. For example, "Improving pedestrian safety" is an objective that provides little guidance, while "Reducing pedestrian fatalities and severe injuries from crashes by 10% over the first 10 years of the Plan" forms the basis for selecting actions.

S pecific
M easurable
A greed on
R ealistic
T ime bound

Objectives are in turn supported by performance measures. In order to initiate performance based planning, the UCTC has selected the metrics that will be used to measure achievement or progress on each objective. In each case, there must be a means to collect or access the necessary data and to analyze it. This is presented in greater detail in the Performance Management Plan. It should be noted that there are funding challenges to meeting many of these objectives. As an example, there are insufficient federal funds to meet long term local bridge goals and local investment in bridges are hampered by recently enacted tax caps whose impact on infrastructure investment is not yet known.

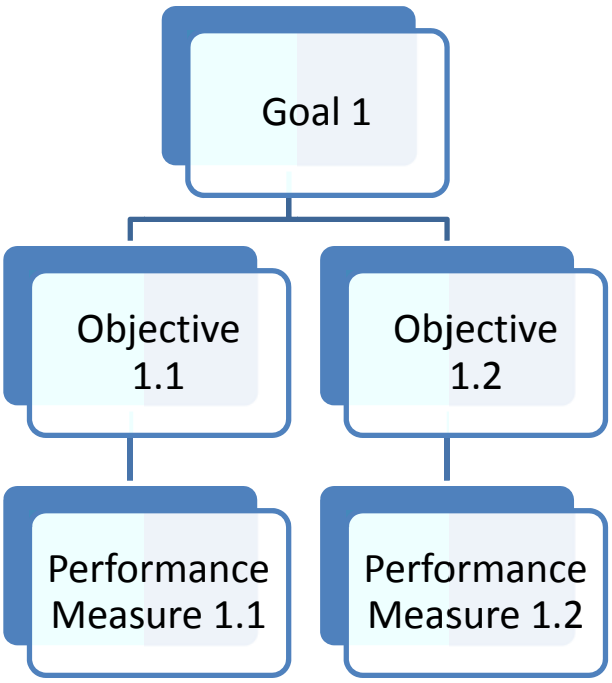


Figure 2.1 Example Goal, Objective, and Performance Measure Hierarchy

Goal 1 – System Preservation

Invest in transportation system infrastructure to bring all facilities and modes into a state of good repair.

Objective 1.1 – Bridge Infrastructure

(a) Reduce the number of structurally deficient bridges on the State highway system by 10% by 2025, and 20% by 2040

(b) Reduce the number of locally owned structurally deficient bridges by 5% by 2025, and by 10% by 2040

(c) Improve functionally obsolete bridges that are not structurally deficient only when the bridge poses a demonstrable safety hazard, or an impediment to economic development.

Performance Measure 1.1

Number of structurally deficient bridges reported by NYSDOT to the National Bridge Inventory.

Objective 1.2 – Pavement Infrastructure

(a) Reduce the number of lane-miles of pavement on critical corridors rated Poor or IRI rated Unacceptable by 20% by 2025.

(b) Reduce the number of lane-miles of pavement on other State Touring Routes rated Poor, or IRI rater Unacceptable by 15% by 2025.

(c) Achieve a State of Good Repair for all Federal-aid eligible pavements by 2040, where that is defined as "State of good repair is the condition state of the system that can be maintained in perpetuity at the lowest annual cost."[1]

Performance Measure 1.2

Pavement ratings, using NYSDOT surface scoring methodology and International Roughness Index.

Objective 1.3 – Transit Infrastructure

Maintain the UCAT and Citi-Bus fleet to meet the Federal Transit Administration guidelines for service life for each category of bus over the life of the Plan.

Performance Measure 1.3

Transit fleet profile updated annually.

Goal 2 – Economic Vitality

Invest in transportation system improvements that are necessary to support the current regional economy and make strategic system investments to support future economic growth.

Objective 2.1 Coordination with Economic Development Entities

Coordinate the transportation needs identified by economic development entities with investment in the transportation system and in Ulster County. Support large scale economic trends and investments by making corridor improvements, addressing congestion and improving transit connections.

[1] Draft Transportation Asset Management Plan, New York State Department of Transportation, May 2014. Page ES-3

Performance Measure 2.1
Economic development objectives satisfied, reviewed annually.

Goal 3 – Safety
Improve the safety of all users of the transportation system by responding to identified safety deficiencies and proactively addressing future safety needs.

Objective 3.1 – Motor Vehicle Safety
Reduce the number of fatal and serious injury motor vehicle crashes on the federal aid eligible highway system by 5% for each 5 year period of the Plan.

Performance Measure 3.1
Number of fatal and serious injury motor vehicle crashes reported through New York State crash records systems, reviewed annually.

Objective 3.2 – Pedestrian and Bicycle Safety
Reduce the number of crashes resulting in fatality and serious injury to pedestrians and bicyclists by 5% for each 5 year period of the Plan.

Performance Measure 3.2
Number of crashes resulting in fatality and serious injury to pedestrians and bicyclists reported through New York State crash records systems, reviewed annually.

Objective 3.3 – Transit Safety
Reduce the number of crashes involving transit vehicles that result in fatality or serious injury to zero over the life of the Plan.

Performance Measure 3.3
Number of crashes in Ulster County involving transit vehicles reported through the New York State crash records system, reported annually.

Objective 3.4 – Safety of Special User Groups
Improve the safety of senior citizens, young people, and other identified user groups through pro-active measures that have demonstrated crash reduction potential.

Performance Measure 3.4
Number and severity of crashes involving identified special user groups reported through the New York State crash records system, reported annually.

Goal 4 – Security
Ensure that transportation system users have a secure environment and that the transportation system is capable of providing adequate service during severe weather events.

Objective 4.1 – Resiliency Planning
Complete an Ulster County Transportation Infrastructure Resiliency Plan no later than 2020.

Performance Measure 4.1
Completed Resiliency Plan, progress measured annually through 2020.

Objective 4.2 – Resiliency Plan Implementation
Implement the high priority recommendations for critical infrastructure resiliency by 2025.

Performance Measure 4.2
Number of high priority infrastructure resiliency recommendations implemented, monitored annually from Resiliency Plan completion through 2025.

Objective 4.3 – Transit System Security
Reduce the number of security-related incidents at bus stops and on transit vehicles operated by UCAT, and Kingston Citibus by 50% over the life of the Plan

Performance Measure 4.3
Number of transit security-related incidents reported to law enforcement, measured annually.

Goal 5 – Mobility and Reliability
Provide for efficient and reliable travel by all modes by investing in strategies that mitigate both recurring and non-recurring congestion.

Objective 5.1 – Address Recurring Congestion
Reduce vehicle-hours of delay that occur as a result of recurring congestion on principal arterials and arterial streets.

Performance Measure 5.1
Total peak-period vehicle-hours of delay

Objective 5.2 – Address Travel Time Reliability
Improve the reliability of travel time on principal arterial highways to an averaged travel time index of 1.25 by 2025, and maintain that level to 2040.

Performance Measure 5.2
Travel time index for principal arterial highways averaged over peak periods, reported every 5 years.

Objective 5.3 – Freight Mobility
Identify truck bottlenecks by 2020.

Performance Measure 5.3
Freight mobility analysis completed by 2020

Objective 5.4 – Transportation Technology
(a) Facilitate deployment of the Connected Vehicle program technology as it is rolled out by USDOT and vehicle manufacturers.

(b) Monitor progress of penetration of autonomous vehicles in the general auto fleet and develop appropriate plans and policies.

Performance Measure 5.4

Monitor deployment of connected vehicle technology and ITS infrastructure – annually

Goal 6 – Accessibility and Connectivity

Create and maintain a well-connected transportation system that provides access throughout Ulster County for people and goods travelling by all modes.

Objective 6.1 – Transit Accessibility

Improve transit access in Kingston and New Paltz, and for major intra-county corridors by 2025 so that route structure provides convenient access to prescribed destinations, and hours of operation facilitates access to employment. Continue to modify transit operations as necessary to address changes in population and economy through 2040.

Performance Measure 6.1

Number of employers, healthcare facilities, and schools within ¼ mile of bus routes; number of employment opportunities not accessible within transit operating hours. Increase in ridership along key corridors.

Objective 6.2 – Pedestrian Accessibility

Improve pedestrian access through completion of sidewalks in critical locations by 2020; and throughout urban and suburban locations by 2040.

Performance Measure 6.2

Sidewalk inventory updated every 5 years

Objective 6.3 – Bicycle Accessibility

Provide safe and convenient access for cyclists through a system of on-road accommodations and completion of the Ulster County trail system.

Performance Measure 6.3

Bicycle facility inventory updated every 5 years.

Objective 6.4 – Freight Accessibility

Improve designated connections from the National Highway System to shipper/receiver destinations throughout Ulster County in priority order through the life of the Plan.

Performance Measure 6.4

Roadway inventory (geometry and operations) for “last mile” connections, updated annually.

Goal 7 – Protect and Enhance the Environment

Contribute to making Ulster County a sustainable place by protecting and enhance the natural and built environment, reducing greenhouse gas and other motor vehicle emissions, supporting sustainable construction and maintenance practices, and coordinating land use and transportation plans.

Objective 7.1
Implement transportation investments that support the goals of regional, county and local land use plans, throughout the life of the Plan.

Performance Measure 7.1
Conformity of project investments with land use plan recommendations, reviewed as plans are updated.

Objective 7.2
Reduce greenhouse gas (GHG) emissions from on-road vehicles through support of travel demand management and alternative fueled vehicles.

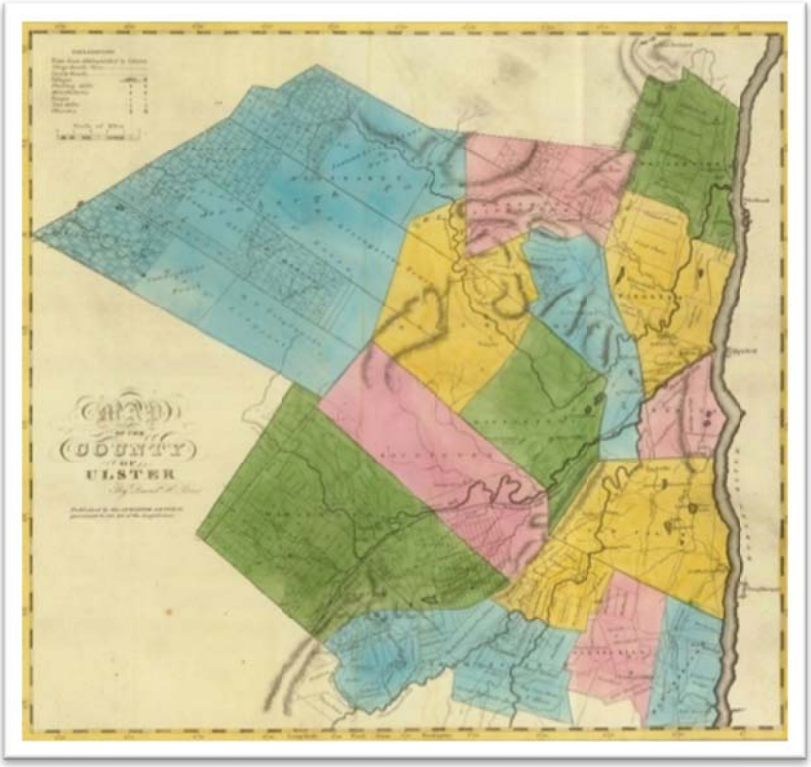
Performance Measure 7.2
GHG emissions modeled annually.

Objective 7.3
Reduce environmental impact of roadway and bridge construction and maintenance by sharing best practice on sustainable methods to county and municipal transportation agencies.

Performance Measure 7.3
Assessment of transportation agencies on use of sustainable construction and maintenance practices. Funding priority to use of sustainable techniques as part of TIP development

III. PROFILE OF THE REGION

Ulster County has a rich natural, cultural and commercial history that continues to evolve. The county has experienced a number of significant periods of growth and subsequent decline and recovery since its settlement in the early 1600's. Today, the region continues to improve its economic outlook as evidenced by increases in employment, improvements in the real estate market, and increases in sales and hotel tax receipts. However, municipal tax caps and lack of growth in personal income continue to place stains on both municipal and family budgets. Transportation is a major cost for both and this underscores the need to rethink how it can adapted in the 21st Century allowing the region to be both competitive and sustainable.



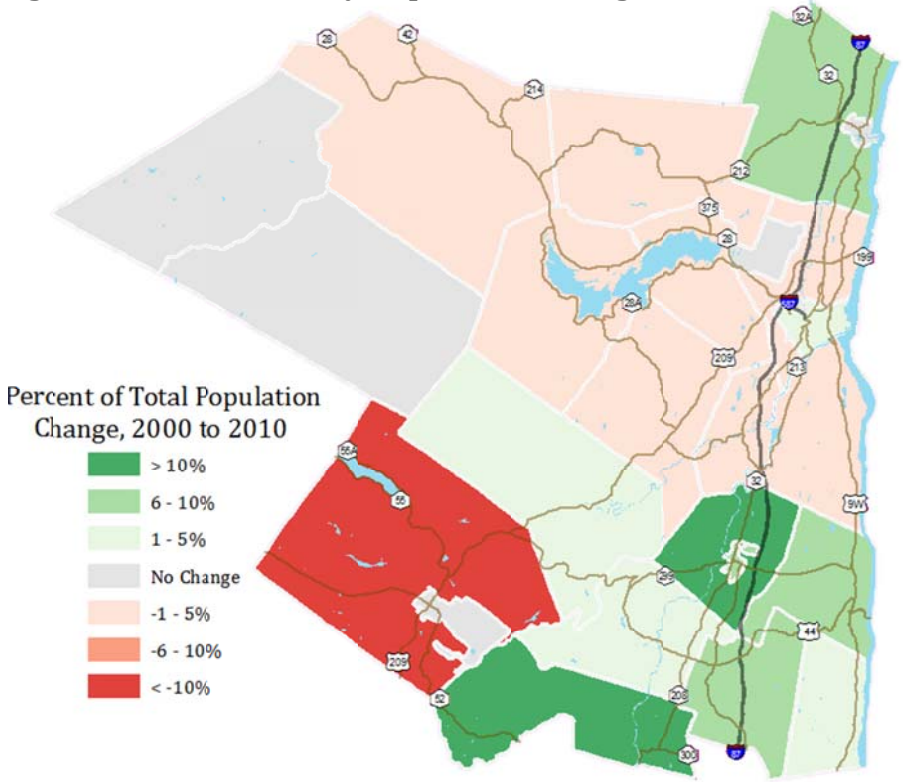
Ulster County, 1829. Source: David Rumsey Historical Map Collection. Originally published by David H. Burr.

At 1,124 square miles – an area comparable in size to the State of Rhode Island – Ulster County is a geographically diverse region. The county is characterized by a variety of mountain and valley zones interspersed between two primary features: the Hudson River Valley and the Catskill Mountains. Within these primary features are several minor zones, including the Shawangunk Mountain and Marlboro Mountain regions and the Rondout-Esopus Valley and Wallkill Valley regions. Ulster County's transportation system has been heavily influenced by these geographic features since its settlement. Early forms of freight movement included the Delaware and Hudson Canal (1828 – 1898), Ulster and Delaware Rail Road (1875 – 1932), the New York, Ontario & Western Railway (O&W, 1879 – 1957), and the Wallkill Valley Railroad (1866 - 1977). These critical corridors bisected Ulster County's valleys, ridges and mountain areas, opening up the largely rural interior of Ulster County and played significant roles establishing centers of commerce and trade throughout the county. These historic freight corridors eventually waned and gave - way to today's network of surface highways. They now form the backbone of trails system that links communities.

Social, demographic and economic trends directly influence transportation planning. A clear understanding of the region's current characteristics and expected future trends will aid in the planning of a transportation system that meets the region's specific needs. This chapter presents

current demographic, socioeconomic, and business trends in Ulster County based on the latest data available from the US Census and other established sources.

Figure 3.1: Ulster County Population Change, 2000 – 2010[iv]



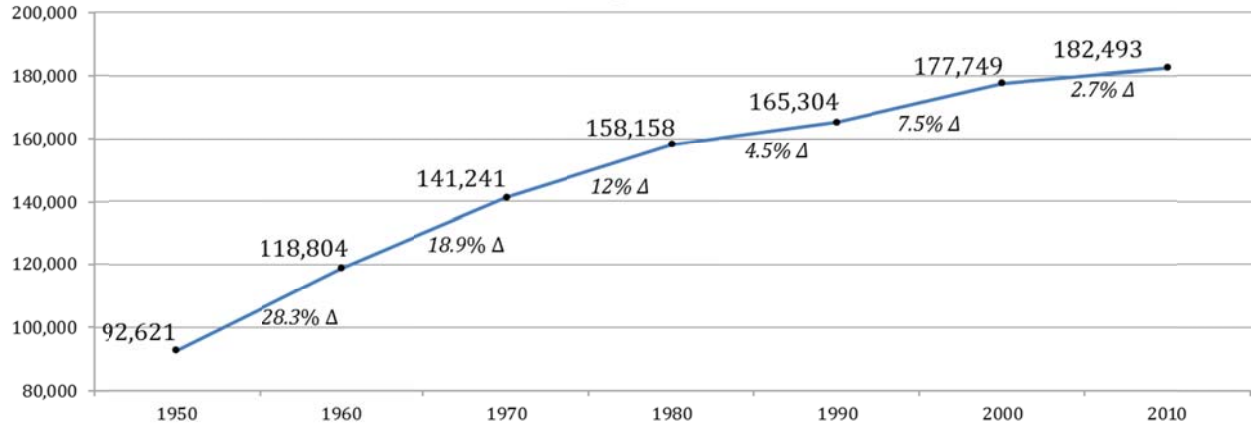
POPULATION

As of Census 2010, the population of Ulster County was 182,493 people, nearly 54% of which reside within the urbanized areas of the county. Areas of high population density include the City of Kingston and Villages of Saugerties, New Paltz and Ellenville as well as the town centers and hamlets found throughout the valley areas of the county. One notable exception to valley population density is in the Town of Woodstock, where in 2010 the Kingston Urbanized Area was revised and expanded to include portions of this Catskill Mountain community.

As shown in Figure 3.1, local population growth continues to be most prevalent in the southern portion of Ulster County, influenced by the area's high quality of life and appealing convenience for commuters traveling to employment in adjacent counties and the New York City metropolitan area.[iv] Group quarters such as prisons or college/university housing facilities are also significant contributors to population growth in these locations. Small population gains were also seen in the mountain communities of Denning and Hardenburgh, although these gains were proportionate to the towns' total population, which together account for only 789 persons and are therefore overshadowed.

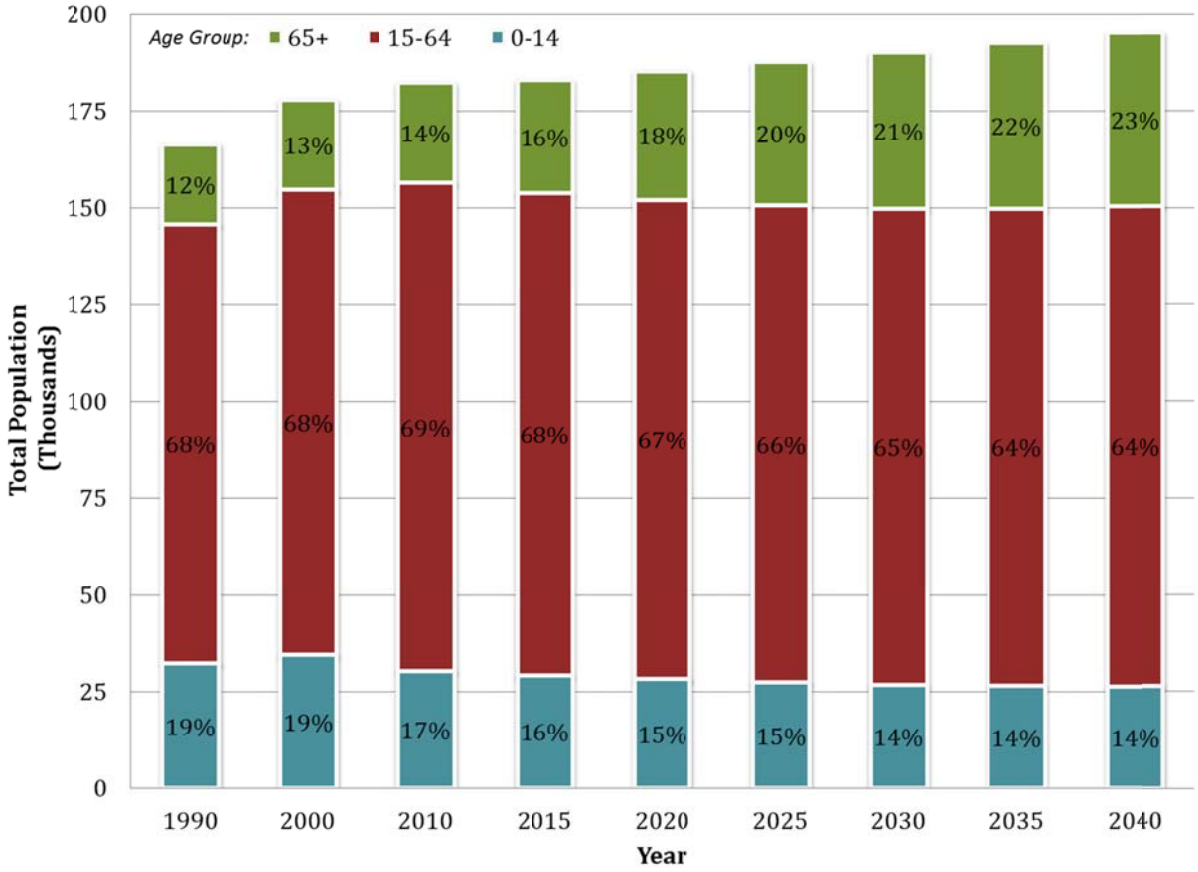
An overview of historic population trends in Ulster County reveals steady but declining growth rate from 1950 through to the 2010 decennial census. A strong 28% increase between 1950 and 1960 stands in stark contrast to the less than 3% increase between 2000 and 2010 (Figure 3.2).

Figure 3.2: Ulster County Population Change, 1950 – 2010[1]



An overall declining rate of population growth can be attributed to four primary factors: mortality, out-migration among adults, a declining birth rate, and an inability to retain young people as they enter adulthood. As shown in Figure 3.3 below, the number of young people age 0-14 as a share of the total population is in decline, down to 17% in 2010, and this trend is projected to continue.

Figure 3.3: Ulster County Population Cohort Projections, 1990 – 2040[1]



Concurrently, older cohorts show steady growth in the overall share of total population as aging seniors continue to live longer lives and members of the 'Baby Boom' generation – one of the largest in American history – steadily transition into their retirement years in large numbers. The median age in Ulster County was 42.0 in 2010, compared to a statewide median age of 38.0, further indicating that Ulster County is home to an increasingly "greying" population.

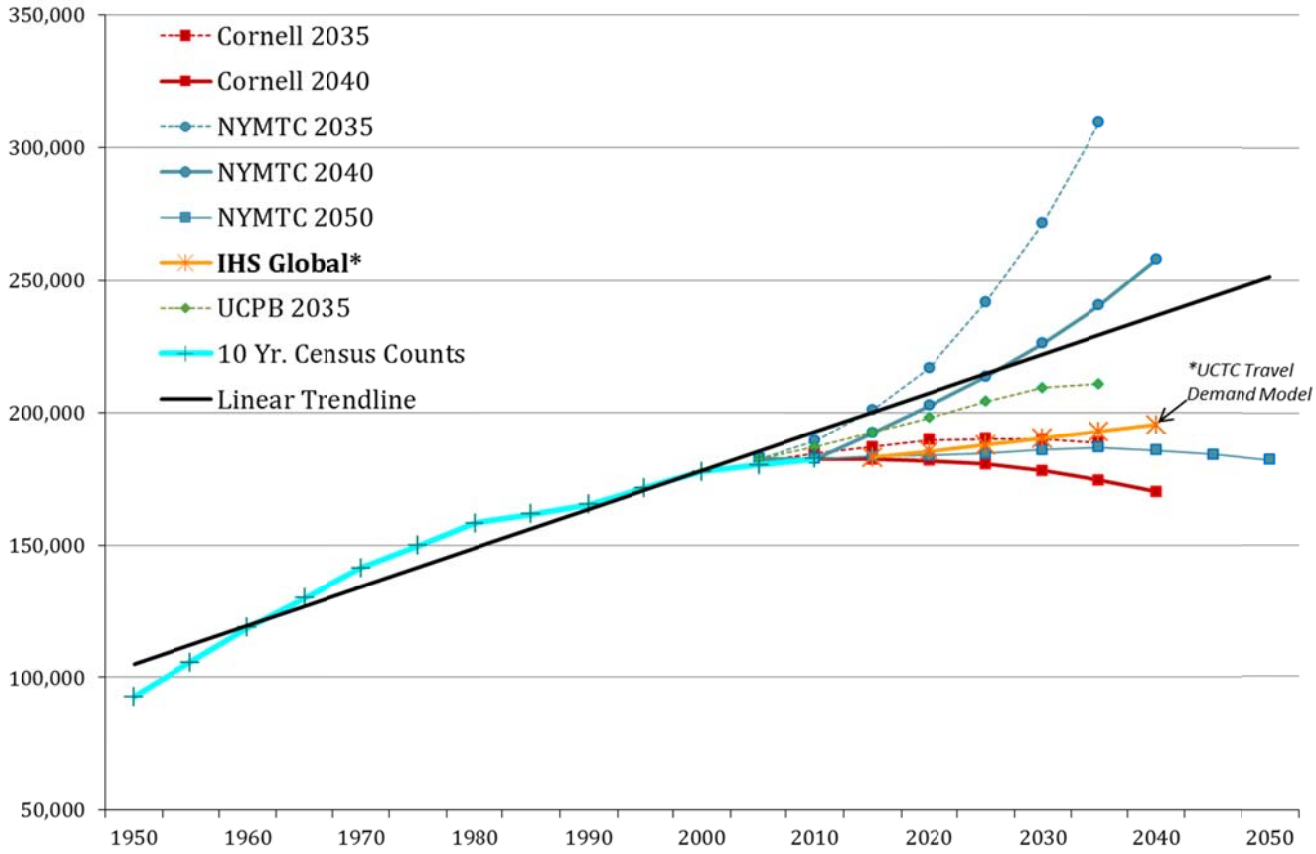
The 2.7% population increase that Ulster County experienced between 2000 and 2010 – while not aggressive – may yet provide some reassurance when analyzed more closely and in context with other evidence. Ulster County's largest municipality, the City of Kingston, also grew by a few hundred people during that time period. Yet, population estimates from the Census Bureau leading up to the 2010 Census had both populations decreasing by that year, indicating the emergence of a new trend – perhaps in-migration – that has not yet been fully-accounted for by the Census Bureau. Cornell University's Program on Applied Demographics (PAD) projections in prior years had Ulster County's population decreasing by 2010 as well. Cornell's current projections still have the population decreasing, albeit slowly over the next few decades. These projections have been driven by the premise of an aging population and not enough in-migration to replace this loss in population.

As illustrated by Figure 3.4 below, there is no clear consensus about the population increasing or decreasing among current estimates for Ulster County. In fact, population estimates have projected opposing trends for a number of years. Five out of seven estimates do not project steep changes in either direction for Ulster County over the next few decades.

It is therefore challenging to predict Ulster County's population over several decades with any level of certainty. Some areas of the County are declining in population and others are attracting new residents. Individuals from further downstate are still drawn to the County and the Hispanic population has grown as well. Ulster County also borders two of New York State's fastest growing counties – Dutchess and Orange Counties – and all three counties have close economic ties. Given Ulster County's location, many factors are in a position to affect its demographics. Looking ahead, rates of population change for Ulster County are far from certain. Planners face a major challenge in the development and selection of reasonable and accurate population estimates from which future conditions scenarios can be based upon.

Figure 3.4 provides an overview of recent population estimates that have been prepared by various independent organizations over the past ~5 years. At the extreme high end, Socioeconomic and Demographic (SED) Forecasts developed by the New York Metropolitan Transportation Council (NYMTC) in 2009 to year 2035 predicted considerable population growth in the county, with a projected population increase to over 300,000 people from the 2010 count of 182,493 persons (subsequent years' forecasts were incrementally adjusted downward by NYMTC). Alternatively, Cornell University's most recent PAD *Year 2040* projections imply that a steady long-term decline in County population is already underway. Five of the seven population estimates indicate a leveling-off of population growth by 2040. Four of those five projections predict that population will eventually begin to decline in Ulster County.

Figure 3.4: Summary of Recent Population Estimates Completed for Ulster County



Population forecasts conducted by IHS Global Insights (marked with an asterisk in Figure 3.4) have been selected for use in the UCTC Year 2040 transportation demand model due to their relative restraint and consistency when compared to other forecasts for the MPO region. The forecasts also provide concurrence with those used by the New York State Department of Transportation as well as other MPOs across the state. The forecast shows the county's population growing at a slow but steady rate ranging between 1.6% and 2.7% decennially from 2010 to 2040, with the population predicted to grow to just over 195,000 by 2040. This rate represents a 7% total estimated increase over the 25 year planning horizon which is consistent with existing known rates of growth.

RACE, DIVERSITY, and TITLE VI/ENVIRONMENTAL JUSTICE (EJ)

Title VI of the Civil Rights Act of 1964 prohibits discrimination by recipients of Federal financial assistance on the basis of race, color, and national origin, including matters related to language access for limited English proficient (LEP) persons. The principles of Title VI provide the core tenants of the 1994 Presidential directive on environmental justice (EJ). Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires the U.S. Department of Transportation to make EJ part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and/or low-income populations (collectively "EJ populations"). Environmental justice includes incorporating EJ and non-discrimination principles into transportation planning and decision-making processes as

well as project-specific environmental reviews. EJ is therefore a Federal directive, and Title VI is one of the tools used by Federal agencies to implement this directive.

The guiding principles of environmental justice are to:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.[v]

In an effort to carry out the Federal environmental justice directive in the UCTC planning area, UCTC selected six demographic categories to review. Four categories – those of race, ethnicity, income and English proficiency – are typically recommended by FTA and FHWA in the process of carrying-out an EJ analysis. In addition, UCTC examined the categories of age and physical ability in an effort to develop a comprehensive understanding of mobility-challenged populations in the Ulster County MPA. Data were derived from the 2010 U.S. Decennial Census where available and supplemented with the 2013 and the 2009-2013 American Community Survey five year survey data.

Figure 3.5 illustrates the percent share that each category comprises of the total county-wide population. This share is then used to establish an EJ "threshold" that can be used to conduct a more detailed analysis at the census block or block-group level.[vi] Any locations showing concentrations greater than the county-wide total are considered to be disproportionally high and should receive additional consideration during the transportation planning process.

As with statistics on population change, EJ indicators in Ulster County are somewhat skewed in certain locations due to group quarters such as prisons or college/university housing facilities. These include the State University of New York at New Paltz (located primarily in the Village of New Paltz), the Eastern and Ulster Correctional Facilities in the hamlet of Napanoch (Town of Wawarsing), and the Wallkill and Shawangunk Correctional Facilities in the Town of Shawangunk. This is perhaps most evident among the *Minority Populations* category (defined as Asian American, Black or African American, Hispanic or Latino, Native Hawaiian and Other Pacific Islander, American Indian and Alaska Native). The Towns of Shawangunk and Wawarsing show some of the highest concentrations of minority populations in the county, very likely due to the prison population in these areas. Outside of these locations, the City of Kingston reports some of the highest concentrations of minority populations, with nearly every Census block within the City showing concentrations near or above the county average of 18.3% minority in 2010 (Figure4.6)

Figure 3.5: Groups Traditionally Under-Represented in the Transportation Planning Process (% of the Total Ulster County Population)[vii]

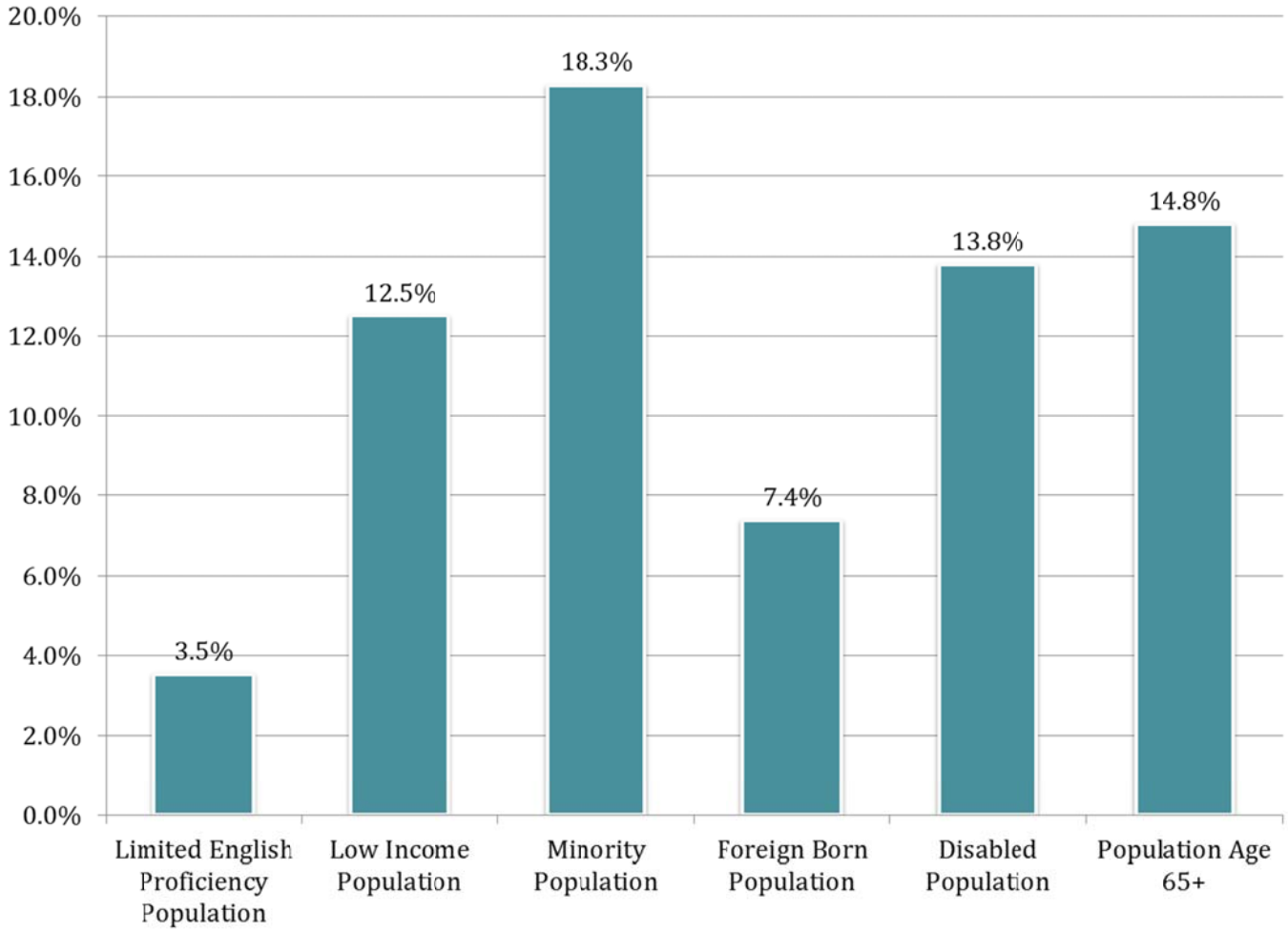
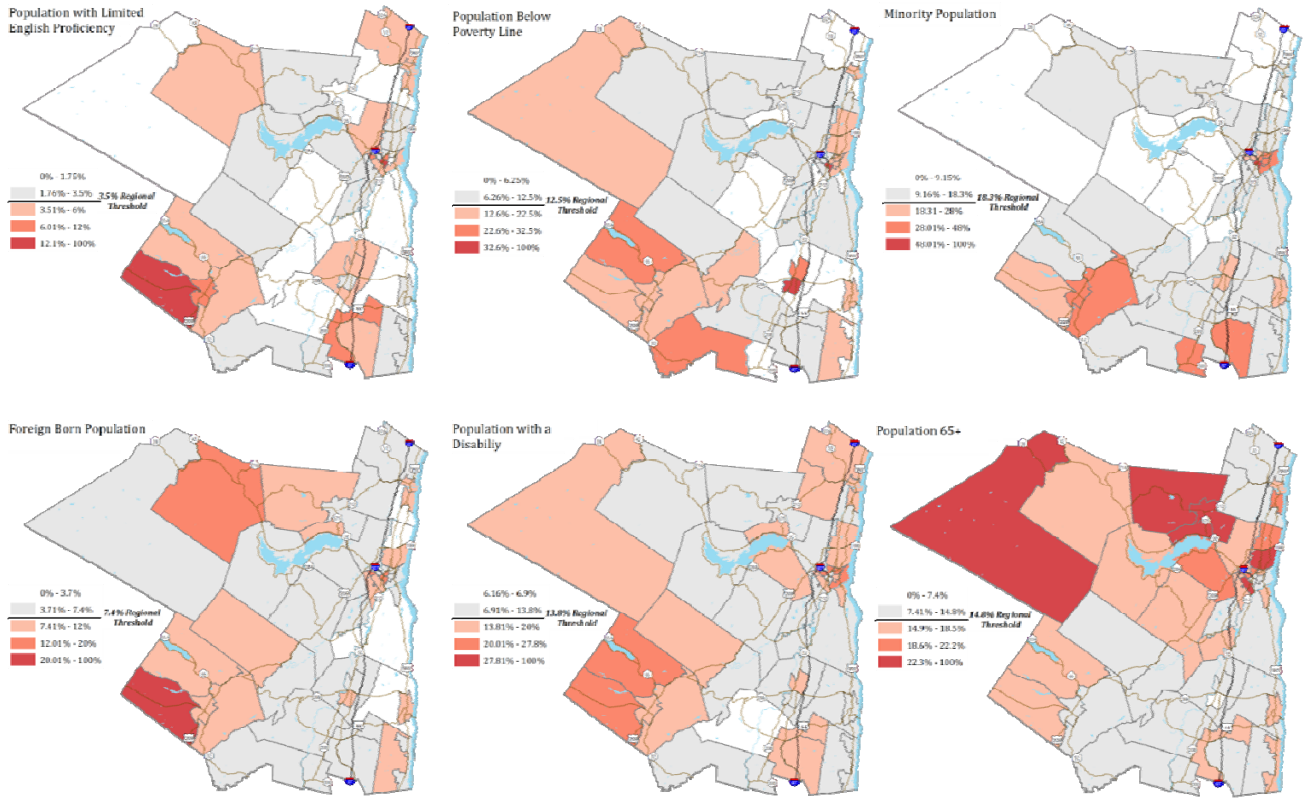


Figure 3.6: Groups Traditionally Under-Represented in the Transportation Planning Process by Location



LABOR and EMPLOYMENT

The process of monitoring, managing and predicting future travel demand requires at a minimum basic details regarding local and regional employment patterns. The labor market of the United States in the 21st Century is as diverse as it has ever been in history, and it continues to evolve. This holds true for the labor market of Ulster County, which continues to adjust to the demands of the new economy. Peak period travel demand – a primary benchmark by which we rate the transportation system – is largely dictated by the morning and evening commute of workers traveling to and from their places of employment. This trend has been lessening somewhat, however, as the labor market continues to diversify into one that features more flexible hours of employment, jobs that are no longer anchored to the traditional office space, and a willingness and ability of workers to travel farther for employment.

Table 3.1: Labor and Employment Snapshot of Ulster County[viii]

Category	Mar 2015	Feb 2015	Mar 2014	Net Month	% Month	Net Year	% Year
Resident Civilian Labor Force	86,900	86,100	88,200	800	0.9%	-1,300	-1.5%
Employed	82,400	81,100	82,500	1,300	1.6%	-100	-0.1%
Unemployed	4,500	5,000	5,700	-500	-10.0%	-1,200	-21.1%
Kingston MSA Unemployment Rate	**5.2%**	**5.8%**	**6.5%**	**-0.6**		**-1.3**	
NYS Unemployment Rate	5.8%	6.4%	7.1%	-0.6		-1.3	
US Unemployment Rate	5.6%	5.8%	6.8%	-0.2		-1.2	

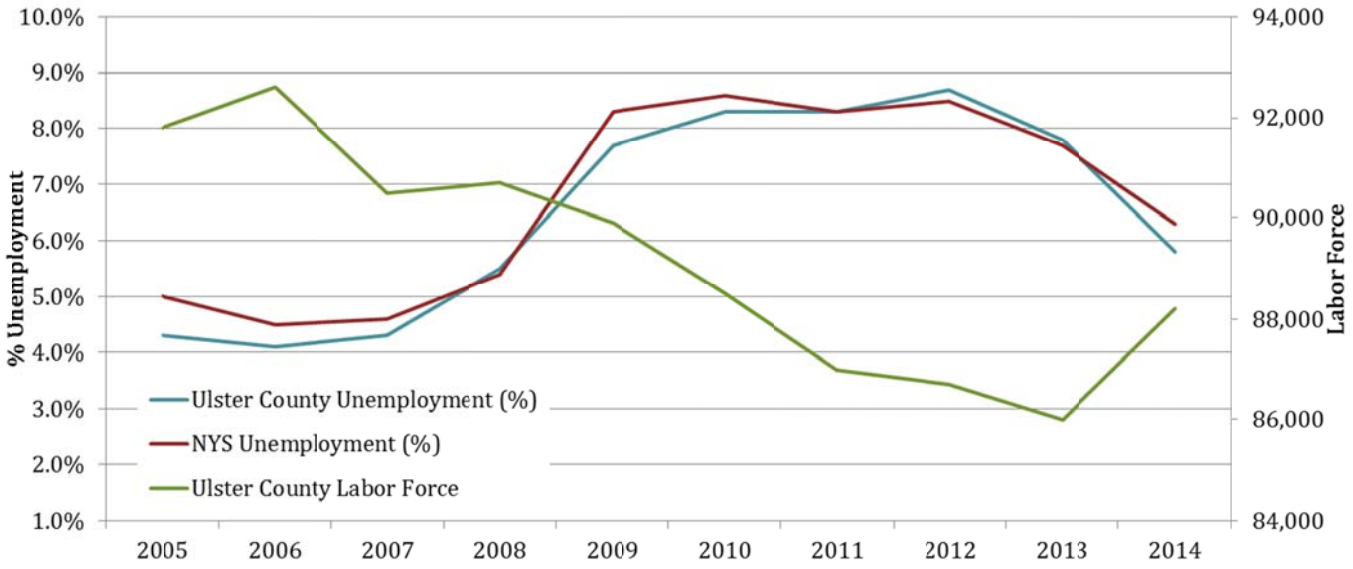
Unemployment rate in the Kingston Metropolitan Statistical Area, which includes the entirety of Ulster County, remains below the state rate and has continued to impove since the 2008 economic crisis. Concurrently, however, County's the labor force has decreased since 2006, very likely a result of out-migration as well as from retirements as people age and chronically-unemployed workers permanently dropping out of the labor force. Table 3.1 shows the most recent snapshot of labor data for the Coutnty.

As described by the New York State Department of Labor in their monthly labor profile for the Hudson Valley, for the 12-month period ending in March 2015, private sector employment in the Hudson Valley increased by 6,800 or 0.9 percent, to 747,200. DOL confirms that private sector job growth continues on a positive trend, recording regional growth in four major employment sectors – educational and health services (+5,800), professional and business services (+1,500), natural resources, mining and construction (+1,000) and other services (+1,000). The largest job losses were in manufacturing (-800), where layoff announcements in pharmaceutical manufacturing continued. Job losses were also recorded in information (-700) and financial activities (-600). The government sector shed 600 jobs over the same period.

The Kingston metro area (+2.2 percent), continues to lead the region with the fastest rate of growth in private sector employment, followed by the Orange-Rockland-Westchester metro area (+1.0 percent), Sullivan County (+0.6 percent) and the Dutchess-Putnam metro area (+0.2 percent). While the regional job market continued to expand, it is important to note that private sector job growth in the Hudson Valley continues to lag that of the state (+1.9 percent) and the nation (+2.6 percent). [ix]

Figure 3.7 provides an historical context of the labor force from 2005- 2014 and the increase in the labor force can be seen betwee 2013 and 14 additional jobs became available. The overall quality of jobs available in Ulster County continues to be a focus of Ulster County's economic development efforts. In 2011 New York State Department of Labor published its Significant Industries report for the Hudson Valley, providing a description of "priority industries" on which local workforce investment boards should concentrate their workforce development resources. Such significant industries were identified on the basis of job counts, wage levels, job growth (both net and percent) over the 2006-2009 period, and expected job growth based on industry employment projections through 2016. Priority industries that may have been designated by economic development or workforce development officials were also considered.

Figure 3.7: Ulster County Labor Force and Unemployment, 2005–2014[x]



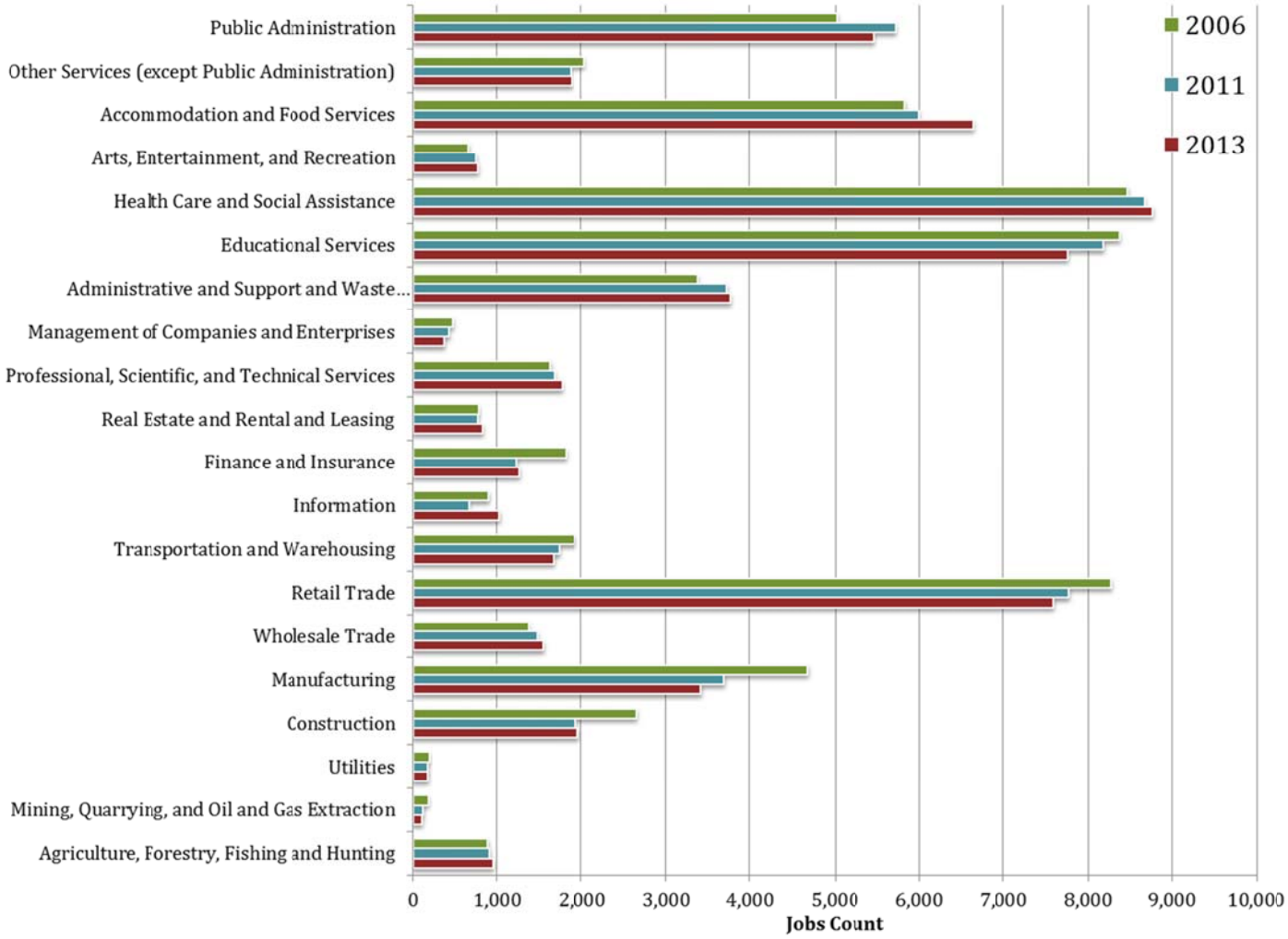
Significant industries identified for the Hudson Valley are listed below:

- **Construction**: the pending retirement of the Baby Boomers will contribute to more job opportunities.
- **Manufacturing:** job opportunities will arise from two sources: several solar energy companies are expanding or relocating to the area, most notably Prism Solar Tech, and Solar Tech Renewables, and biotech companies are ramping up in the lower Hudson Valley area.
- **Financial Activities:** Several New York City financial institutions have back-office operations in the region, most notably Morgan Stanley. Such industries have a large employment base and pay weekly wages that are well above the average all-industry weekly wage.
- **Professional and Business Services:** In recent months the sector has shown signs of a turnaround, as job losses have decelerated. As corporate profits gradually improve, so does the spending for these type of services, spurring a demand for office workers, computer specialists, engineers, accountants, lawyers and consultants.
- **Educational Services**: largest employment base of any jobs sector, although area schools are likely to face layoffs in the coming years due to declining enrollment and budget cuts
- **Health Care:** Demographic changes fueled a demand for nurses, home health aides, medical assistants and other health care specialists.[xi]

As of May 2015, the New York State Department of Labor estimates that there were approximately 61,800 non-farm jobs in the Kingston Metropolitan Area.[xii] The top employment sectors in Ulster County include Education and Health Services (16% of total non-farm share), Public Administration (excluding local government education services) (16%), Retail Trade (14%), and Leisure and Hospitality (13%). The sectors showing the most notable gains in total employement share over time include Accomodation and Food Services, Health Care, and Administrative services. Manufacturing, Educational Services and Retail Trade, while

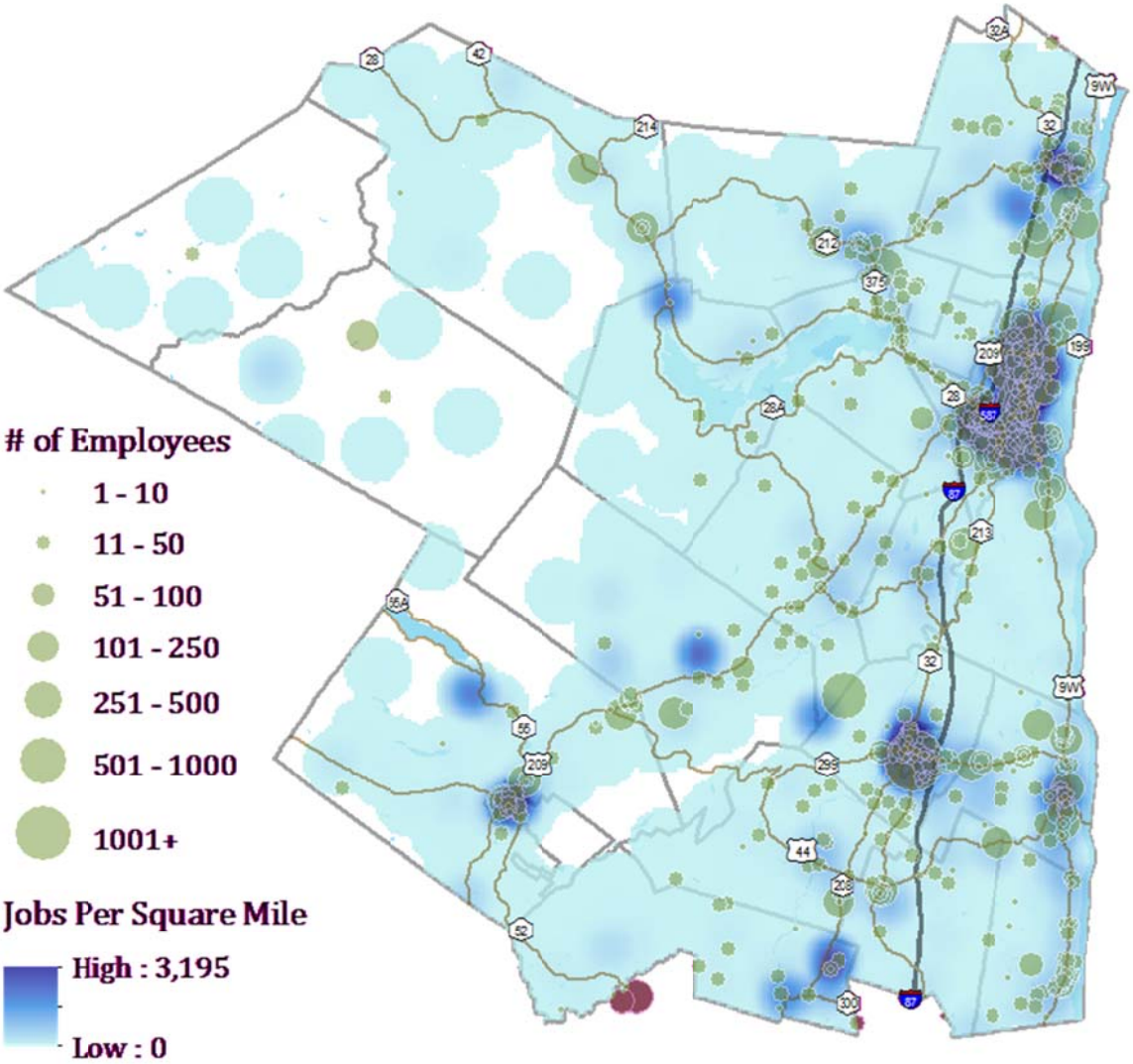
continuing to comprise large shares of total jobs in Ulster County, have shown steady decline between 2006 and 2013.

Figure 3.8: Ulster County Jobs by Industry Sector, 2006, 2011 & 2013[xiii]



Of the top 50 employers in Ulster County, the majority are concentrated in the greater Kingston area, but the county's two largest employers – SUNY New Paltz and Mohonk Mountain House – are located in the greater New Paltz area and together create approximately 3,700 jobs. By comparison, 37 large employers in the Kingston area account for nearly 10,000 total jobs, while the Ellenville area reports only three firms or organizations that employ 200 people or more. When reviewed by industry classificaiton, the areas of Health Care, Public Administration, Education, Accommodation & Food Services, and Retail account for 81% of the county's top employers, or just over 16,000 employees.

Figure 3.9: Employment and the Top 50 Major Employers within Ulster County[xiv]



A number of notable pockets of employment can be found outside of the major employment centers. These typically include town centers and hamlets along state or county routes, such as Wallkill, Napanoch, Kerhonkson, Marlborough, Boiceville, West Hurley/Woodstock, Rosendale and Saugerties. Locations of resorts can be seen in pockets of rural employment areas away from these centers.

HOUSING

The national housing market experienced a rapid expansion at the end of the 1990s that continued through to 2005, but virtually all housing market indicators began to contract sharply around 2006 across the country due in part to the national housing and mortgage crisis. While the local housing market certainly suffered during the worst of the crisis between 2006 and 2008, it remained somewhat isolated from major "boom and bust" cycles seen in other parts of the United States. Existing single family home sales in Ulster County between 2011 and 2014 indicate that a housing market recovery is underway, although these numbers are still well-below the annual sales seen

prior to the housing crisis (Figure 3.10). Another indicator of improving economic climate and is seen in Figure 3.11 with the increase in single family home construction.

Figure 3.10: Annual Existing Single Family Homes Sold in Ulster County, 2005-2014[xv]

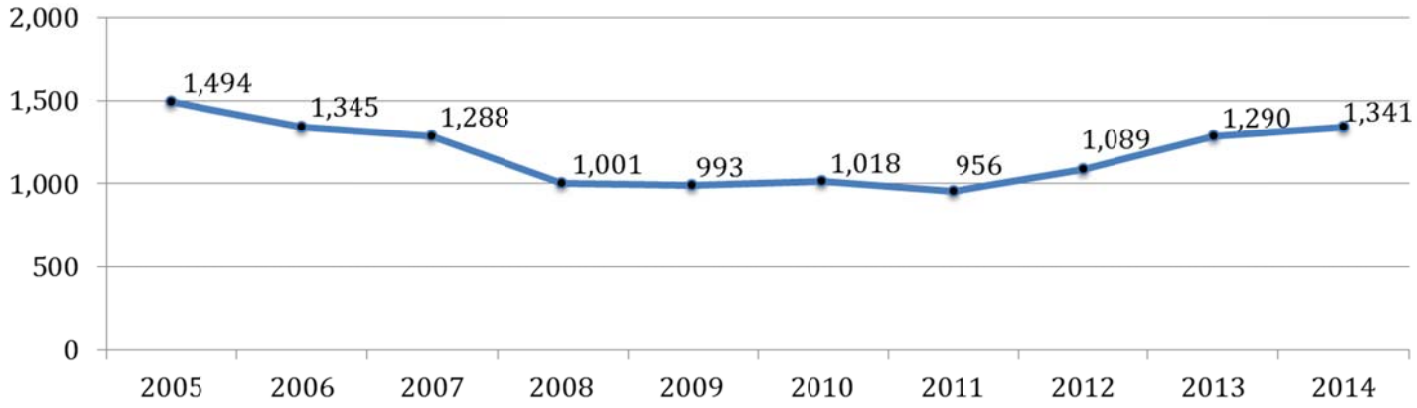
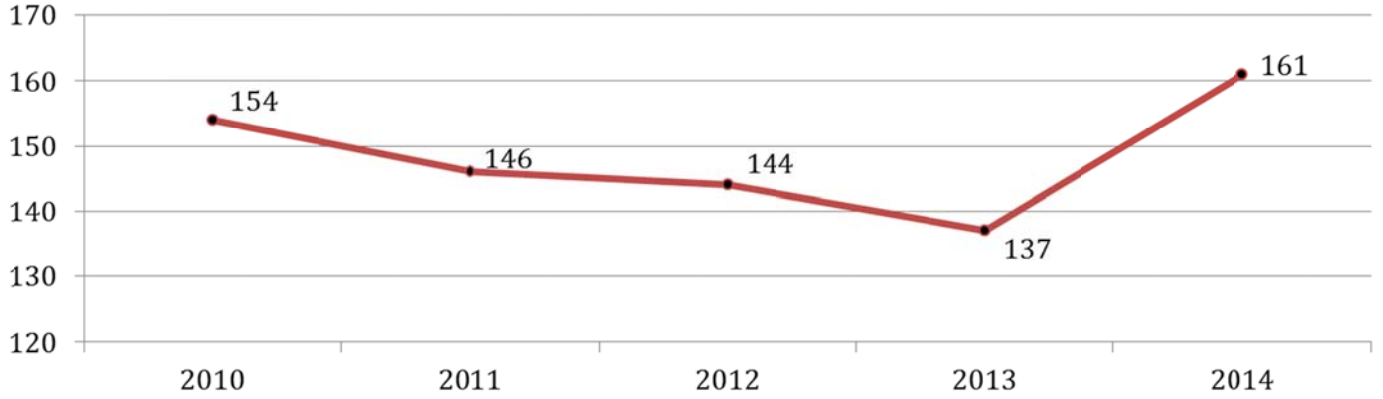


Figure 3.11: Residential Single Family Housing Permits, Ulster County 2010 – 2014



Overall, the total number of housing units in Ulster County has also been growing at a steady rate, showing a 7-8% increase between the past 2 decennial census counts. There are a number of factors at the local and regional level that can affect the vacancy rate of an area, including new construction, labor market conditions, and median household income (which affects mobility). The reduction in household size and number of second homes contributes to the rather large increase in number of units as compared to the increase in population.

Table 3.2: Ulster County Housing and Occupancy, 1980 - 2010[xvi]

1980		1990		2000		2010	
# Units	% Vacant	#Units	% Vacant	#Units	% Vacant	#Units	% Vacant
69,280	1.7%	71,716	2.4%	77,656	1.2%	83,638	1.4%

According to the Federal Reserve Bank of New York, home prices tend to be above average in Ulster County: based on the 2009 American Community Survey, the median home price was roughly $247,000 in Ulster County, versus a nationwide median of $185,000. Home prices in metropolitan

Kingston, which had fallen by 30-35 percent during the slump (2007-09), have rebounded fairly briskly and are up more than 15 percent from their lows; in contrast, home values in Dutchess and Orange counties have barely recovered and remain near their lows.[xvii]

Anticipated New Housing and Commercial Developments in Ulster County

There are several major developments in Ulster County that are at various phases in the approval process. Although the ultimate demand for the housing units associated with these projects remains questionable, the LRTP assumes that housing and commercial projects will be completed within their build-out forecasts and are within the LRTP's planning horizon. Local traffic impacts resulting from major development projects are required to be addressed through the New York State Environmental Quality Review process; as such, no significant impacts to the transportation system in the immediate vicinity of the projects are anticipated. That said, regional traffic and transportation demand will very likely grow if full build-out of the projects listed in Figure 3.16 is realized, and it is important to keep cumulative impacts and induced growth in mind when considering the need for improvements on critical corridors associated with these projects. In addition to the projects listed below, a major casino is now under construction in Sullivan County just outside of UCTC's planning area on the County's southwestern boundary with the Town of Wawarsing. This casino will increase travel demand in the NYS Route 209 corridor and may drive workforce transit needs into the Ellenville area.

Table 3.3: Anticipated Major Developments Pending or Underway in Ulster County[xviii]

Project Name	Location	Type	Status	# of Units
Belleayre Resort	Town of Shandaken	Commercial	Approved	2 Hotels, condos, ski resort
Church Communities	Town of Esopus	Mixed-Use	Approved	Industrial, residential, religious use
Country Meadows	Town of Saugerties	Residential	Approved	40-units
Esopus Farms	Town of Esopus	Commercial	Approved	63-room hotel on 153 acres
Highland Square	Town of Lloyd	Mixed Use	Approved	Nursing & Retail Center
Hudson R.V. Resorts	City of Kingston	Commercial	Construction	290 Units+ Resort
Hudson Valley Wine	Town of Lloyd	Mixed Use	Approved	Mixed use residential, hotel, industrial
Landing at Ulster	Town of Ulster	Mixed Use	Approved	1,700 units
MML Homes	Towns of Lloyd and Plattekill	Residential	Approved	27 single family homes
Mountainside Woods	Town of Lloyd	Subdivision	Approved	162 single family
Ohioville Acres	Town of Gardiner	Residential	Approved	135 Units
Titus Subdivision	Town of Shawangunk	Residential	Approved	31 single-family homes
Holliday Inn Express	Town of Ulster	Commercial	Approved	103 rooms
Marriot Residence Inn	Town of Ulster	Commercial	Construction	92rooms
Lace Factory	City of Kingston	Residential	Construction	49 apartments - subsidized
The Greenline Center Mixed Use	City of Kingston	Pending	Pending	Mixed use commercial/60 apartments
Wildberry Lodge Resort	Town of New Paltz	Commercial	Pending	250-room resort/Water Park
Begnal Motors	Town of Ulster	Commercial	Approved	30k sq. ft. showroom and new car sales

IV. THE TRANSPORTATION SYSTEM

The regional profile in Chapter 3 describes Ulster County as a place, its people, and its businesses. The transportation system exists to serve the travel needs of these people and businesses. This chapter provides a summary of the modes that collectively comprise the Ulster County transportation system including highways and streets, transit operations, and facilities for non-motorized travel. This chapter describes the division of travel among these modes, existing safety related issues system wide, and freight movement across highways, railroads, waterways, and pipelines.

HIGHWAY SYSTEM

Roadway Classification and Jurisdiction

Functional classification is a well-established system utilized by the Federal Highway Administration (FHWA) for grouping streets and highways into classes based on roadway characteristics and intended services. Basic to this process is the recognition that individual roads and streets cannot serve travel independently; rather, most travel involves movement through a network of roads. Thus, it is necessary to determine how to channelize travel within the network in a logical and efficient manner. Functional classification defines the extent to which roadways provide for through travel versus the extent to which they provide access to land parcels. An interstate highway provides service exclusively for through travel, while a local street is used exclusively for land access. Figure 4.3 illustrates the functional classification system.

Figure 4.3: Functional Classification of Roadways *Source: FHWA*

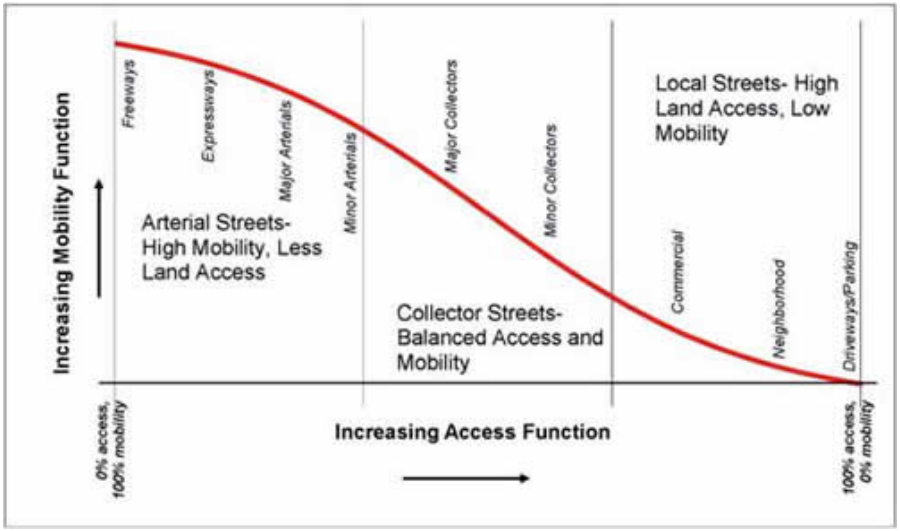


Figure 4.4: Ulster County Roadway Functional Classifications

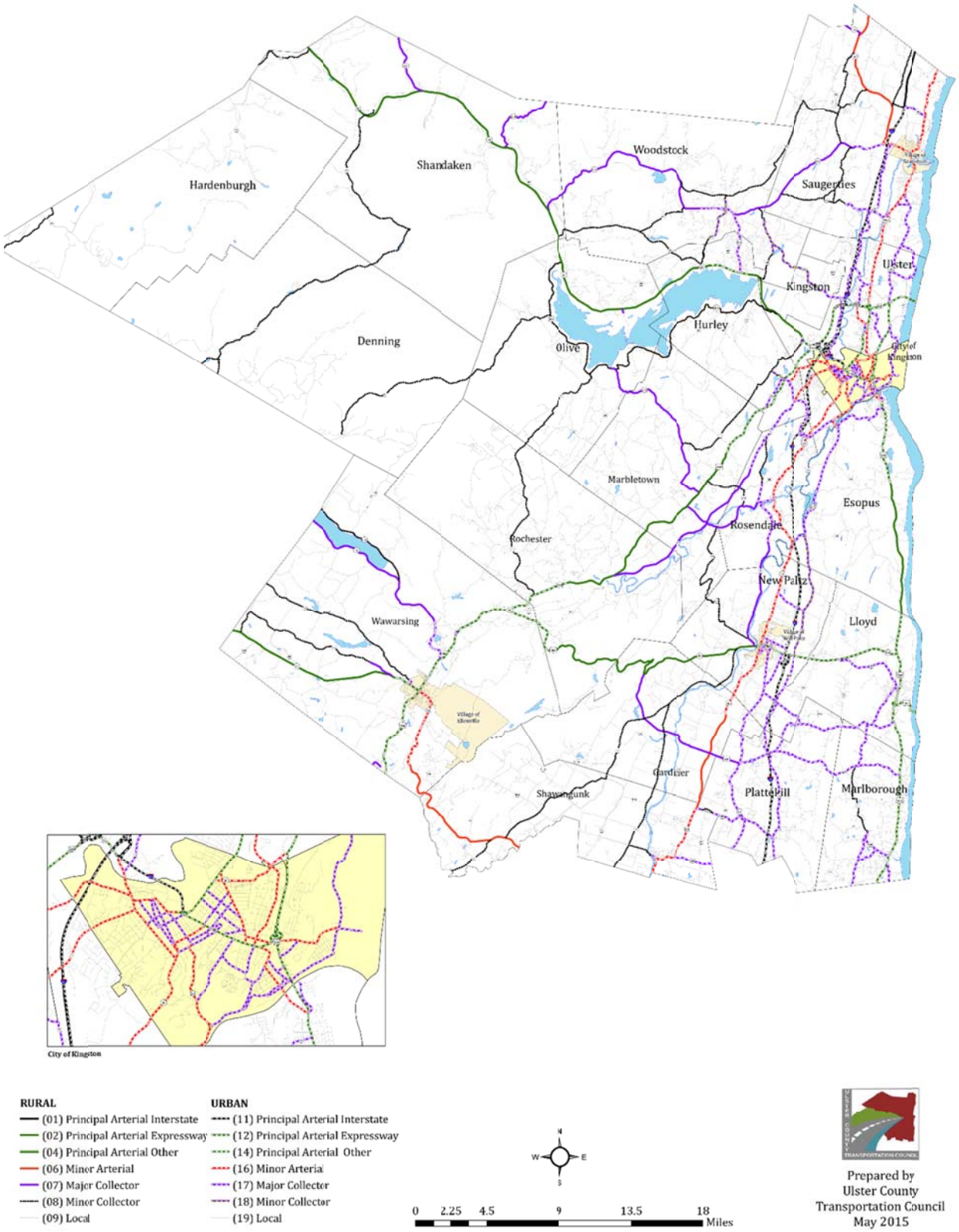


Figure 4.2 on page 44 illustrates the Ulster County highway system by functional classification. Each roadway has a classification number based on its location, access, and capacity characteristics. The functional classification system uses these codes:

(01) Rural Principal Arterial Interstate
(02) Rural Principal Arterial Expressway
(04) Rural Principal Arterial Other
(06) Rural Minor Arterial
(07) Rural Major Collector
(08) Rural Minor Collector
(09) Rural Local
(11) Urban Principal Arterial Interstate
(12) Urban Principal Arterial Expressway
(14) Urban Principal Arterial Other
(16) Urban Minor Arterial
(17) Urban Major Collector
(18) Urban Minor Collector
(19) Urban Local

As illustrated in the map above, the majority (70%) of Ulster County's roads are local roads, with 46% designated as rural local and 24% designated as urban local. Interstates comprise about 2% of the county's centerline miles, while other principal arterials comprise 6% of centerline miles. There are more rural centerline miles (61%) than urban centerline miles (39%) in the county system, which is a reflection of the rural land mass compared to urban developed land. Table 4.1 provides a breakdown of Ulster County's centerline mileage by functional classification. It is important to note that Rural Local streets which are not eligible for federal funds make up 46% of the UCTC's road mileage.

Table 4.1: Centerline Mileage by Functional Classification[xix]

FC	Description	Centerline Miles	Percentage
01	Rural Principal Arterial Interstate	2.62	0%
04	Rural Principal Arterial Other	69.38	3%
06	Rural Minor Arterial	19.41	1%
07	Rural Major Collector	69.53	3%
08	Rural Minor Collector	190.24	8%
09	Rural Local	1,086.25	46%
11	Urban Principal Arterial Interstate	50.14	2%
12	Urban Principal Arterial Expressway	8.31	0%
14	Urban Principal Arterial Other	67.67	3%
16	Urban Minor Arterial	59.61	3%
17	Urban Major Collector	144.48	6%
18	Urban Minor Collector	14.42	1%
19	Urban Local	559.88	24%
Total		**2,341.94**	**100%**

NYSDOT, the New York State Thruway Authority (NYSTA), Ulster County, the City of Kingston, towns, and villages are responsible for maintaining and operating roadway facilities in Ulster County. The functional classifications described above assists in allocating resources and investment for roadways across these agencies.

Table 4.2 summarizes the mileage and percentage of roadways by their respective jurisdiction. Over half (60%) of the roadway centerline miles in Ulster County fall under the jurisdiction of towns. About 18% are county owned roads, while 13% are within NYSDOT's responsibility.

Table 4.2: Centerline Mileage by Maintenance Jurisdiction[xx]

Maintenance Jurisdiction	Centerline Miles	Percentage
NYSDOT	293.33	13%
County	422.64	18%
Town	1,414.68	60%
City or Village	125.82	5%
Other State Agencies	9.3	0%
Other Local Agencies	27.8	1%
NYS Thruway	46.6	2%
Other Toll Authority	1.62	0%
Bureau of Fish and Wildlife	0.03	0%
Army	0.12	0%
Total	**2,341.94**	**100%**

Functional class and jurisdiction are important not only in relation to operational and maintenance responsibility, but also in how roadway improvement projects can be funded. Funding eligibility limitations include:

- FHWA National Highway Performance Program (NHPP) can be used only on the National Highway System, which comprises the Interstates, all other Principal Arterials, and all designated NHS Connectors.
- FHWA Surface Transportation Program (STP) can be used on any facility except Local Roads and Rural Minor Collectors, thereby excluding 78% of Ulster County roads
- FHWA Highway Safety Improvement Program can be used to address safety problems on any public road
- New York State Dedicated Fund can be used only on State owned facilities
- The Thruway Authority uses toll revenue to maintain its facilities

Roadway Asset Condition

Keeping pavements in a state of good repair is a central function of agencies with jurisdiction over roadways. Pavement condition is measured in two ways in New York. The first is surface condition, as measured through a visual scoring methodology. This method has been in place for many years, and provides valuable information on underlying pavement problems. The second measure is ride-ability, as measured by the International Roughness Index (IRI). This is a more user-based metric. NYSDOT uses both methods to evaluate State highway system pavements. Some local governments and MPOs use the visual scoring method for locally owned roads, but this has not been done in Ulster County. As such, data is available only for the State Touring Route system.

Using the visual scoring method, pavement is rated on a scale between 1 and 10 where "1" is the worst pavement condition and "10" is the best. According to the pavement conditions inventory,

approximately 3.9% of the Touring Route system has "Poor" pavement condition ratings (ratings less than or equal to "5" indicating frequent and severe stress), and 23.9% has "Fair" pavement conditions (rating equal to "6" indicating clearly visible surface distress). A majority of 72.2% of Ulster County's pavement centerline miles on the federal aid system have a rating of "Good" to "Excellent" (greater than or equal to "7" meaning distress symptoms are absent or beginning to show).

The IRI is determined by measuring the collective deviation from a smooth level surface in inches per mile. According to FHWA, an IRI of less than 95 inches/mile is considered "good ride quality" while an IRI between 96 and 170 inches/mile is considered "acceptable ride quality".

Table 4.3 summarizes pavement condition surface score by functional classification for State Touring Routes in Ulster County. A total of 346.59 centerline miles of roadways in Ulster County qualify as State Touring Routes. While the percent Poor is very small except for rural collector roads, of greater concern is the percent Fair. NYSDOT's "Preservation First" approach to asset management is focused on these pavements, where less expensive pavement treatments can move the rating to Good, and more importantly extend the service life of the roadway for a number of years. With 19% of rural principal arterials and 32% of urban principal arterials rated Fair, NYSDOT has a significant challenge.

Table 4.4 provides the IRI by functional classification, showing that the majority of both urban and rural roadways in Ulster County fall within "Good" or "Acceptable" ranges. However, as with the surface score ratings, the high percentage of urban principal and minor arterial roadways is of great concern. Figure 4.3 provides a summary of overall pavement condition ratings and IRI on State Touring Routes in Ulster County.

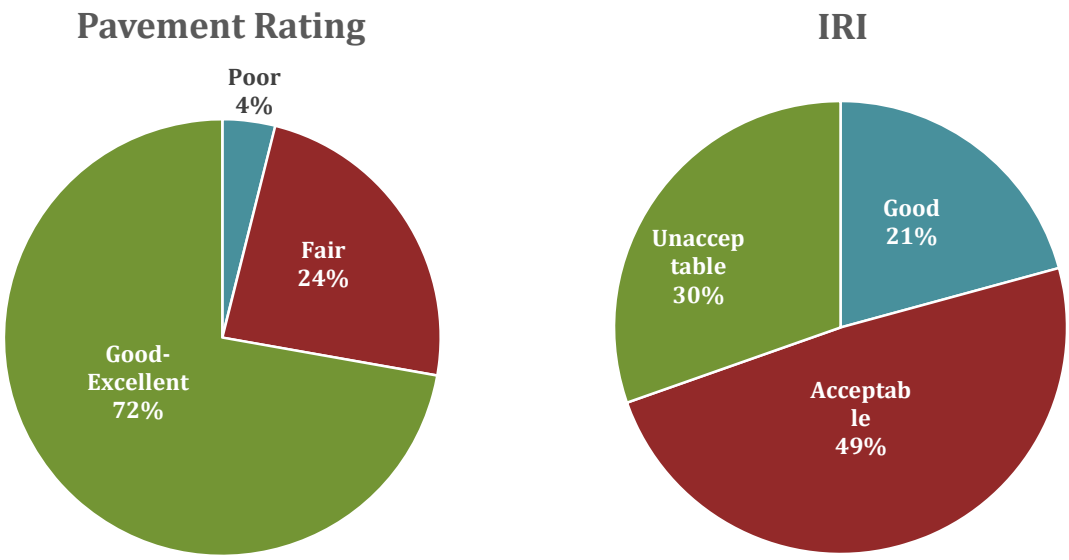
Table 4.3: 2014 Pavement Conditions on State Touring Routes

Functional Classification	Centerline Miles		% Poor (≤5)		% Fair (=6)		% Good (≥7)		Average Rating
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	
Interstate	2.62	29.34	0%	0%	0%	0%	100%	100%	7.8
Expressway	0	4.24	0%	0%	0%	0%	0%	100%	7.1
Principal Arterials	67.87	62.57	1%	2%	19%	32%	80%	67%	7.0
Minor Arterials	19.41	47.19	0%	6%	26%	11%	74%	83%	7.1
Collectors	69.53	43.82	15%	1%	45%	27%	40%	72%	6.5
Total	**159.43**	**187.16**	**8%**	**2%**	**32%**	**20%**	**60%**	**78%**	**7.0**

Table 4.4: International Roughness Index (IRI) by Functional Classification on State Touring Routes

Functional Classification	Good (<95)		Acceptable (=96-170)		Unacceptable (170+)	
	Rural	Urban	Rural	Urban	Rural	Urban
Interstate	100%	64%	0%	25%	0%	11%
Expressway/Freeway	N/A	7%	N/A	83%	N/A	10%
Principal Arterials	48%	11%	43%	49%	9%	40%
Minor Arterials	26%	8%	68%	47%	6%	45%
Collectors	6%	9%	53%	72%	53%	20%
Total	**27%**	**18%**	**44%**	**51%**	**29%**	**31%**

Figure 4.3: Pavement Condition & IRI Summaries on State Touring Routes, 2014



Traffic Signals

Traffic signals are a key element of traffic control. Their location and timing affects the mobility of vehicles and pedestrians. National studies demonstrate that poorly timed traffic signals are responsible for a significant proportion of urban traffic congestion. Signal timing that does not allow sufficient time for pedestrians to cross a street can contribute to safety problems and act as a barrier to walking. The Manual on Uniform Traffic Control Devices (MUTCD) establishes minimum warrants that are to be met for installation of a signal, and for designation of exclusive turn lanes and movements.

Signal ownership is an important element, as each jurisdiction may have its own protocols for maintaining and retiming signals. Table 4.5 summarizes signals owned by entity.

Table 4.5: Ulster County Signal Ownership

Maintaining Entity	Signals Owned	Signals Maintained
NYSDOT	126	132
City of Kingston	58	58
Private	7	1
Town of Ulster	3	6
Ulster County	4	1
Total	**198**	**198**

Bridge Ownership

Table 4.6: Ulster County Bridges by Owner

Municipality	City	Ulster County	NYC Water Supply	NYS Bridge	NYS Thruway	NYS DOT	State - Other	Town	Village	Total
Crawford (Town)						1				1
Denning (Town)		19						2		21
Ellenville (Village)		1				5			3	9
Esopus (Town)		2			1	5		3		11
Gardiner (Town)		6				3		3		12
Hardenburgh (Town)		14						8		22
Hurley (Town)		1				1				2
Kingston (City)	1				4	5				10
Kingston (Town)		2								2
Lloyd (Town)		3		2		3		2		10
Marbletown (Town)		6	2			2		1		11
Marlborough (Town)						1				1
New Paltz (Town)		1			5	1		1		8
New Paltz (Village)									1	1
Olive (Town)		6	7					1		14
Plattekill (Town)					2	1				3
Rochester (Town)		21				3		9		33
Rosendale (Town)		3			5	4				12
Saugerties (Town)		12			6	4		4		26
Saugerties (Village)						2				2
Shandaken (Town)		25				18	1	20		64
Shawangunk (Town)		13				2		6		21
Ulster (Town)		3		1	7	18				29
Wawarsing (Town)		10	1			15		6		32
Woodstock (Town)		6				15		7		28
Total	**1**	**154**	**10**	**3**	**30**	**109**	**1**	**73**	**4**	**385**

Bridges provide necessary linkages across geographic or manmade barriers in the roadway network. A bridge that is not structurally sound and must be closed or load-posted creates a situation where all traffic, or just trucks, must detour. A bridge that is functionally obsolete in terms

of narrow lanes can create a bottleneck, while one that has insufficient vertical clearance again results in truck detours.

The Ulster County transportation system includes 385 functional bridges; 40% are county-owned structures, 28% are NYSDOT-owned structures, and 19% are town-owned. The majority of bridges are classified as local rural facilities in townships, meaning these are generally smaller bridge structures carrying low volumes of traffic.

Bridges – Bridge Condition

Federal law requires that all bridges be inspected biennially; those that have specific structural problems may require more frequent inspections. Inspections include evaluation and rating of numerous elements of the substructure, superstructure, and deck, with special attention paid to fracture-critical members. Underwater inspections occur no less than every 5 years to check for scour around bridge piers.

Bridges are rated on a numerical scale of "1" to "7" that translates into a range of Poor, Fair, Good, and Excellent. Bridges are also described as "Structurally Deficient" and "Functionally Obsolete." The former may have any of a number of structural problems noted in the inspection; while some may be closed or load-posted, many remain safe for traffic. The latter are bridges that do not meet current design standards. They may have narrow lanes, or inadequate clearances, but they may also be structurally sound.

Table 4.7 summarizes Ulster County bridges by owner and condition. Current data suggests that the majority of bridges in the Ulster system are in a reliable state of repair. On the other hand about one out of five bridges in the county is either functionally obsolete or structurally deficient, indicating that there are many structures for which improvement will be necessary to ensure continued access and safety on the transportation system.

Table 4.7: Ulster County Bridges by Owner, Condition, and Sufficiency Rating

Owner	#of Bridges	% Functionally Obsolete	% Structurally Deficient
City of Kingston	1	0%	100%
Ulster County	154	12%	23%
NYC Department of Water Supply, Gas	10	20%	10%
NYS Bridge Authority	3	67%	0%
NYS Thruway Authority	30	47%	23%
NYSDOT	109	22%	12%
State - Other	1	0%	0%
Towns	73	26%	14%
Villages	4	0%	25%
Total	**385**	**21%**	**18%**

As shown in Figure 4.4, Ulster County owns more than half of the structurally deficient bridges in the county, contributing to the fact that 70% of structurally deficient bridges are owned by local governments. This is not unusual and is a consequence of the cost of major bridge projects combined with the limited options local governments have to pay for them. Figure 4.5 illustrates the locations and ratings of bridges.

It should be noted that in 2015 Ulster County launched a major transportation initiative called "Building a Better Ulster County". That initiative will invest a total of nearly 10 million dollars in county funds and over 5 million dollars in state and local funds in a single year to improve county road and bridge infrastructure. Included in this is over 50 miles of new road surfaces, a minimum of 5 new bridge replacements and major repairs, shoulder installation at key pedestrian activity areas including schools, and several bank stabilization projects. This one time investment will allow the county to catch up to its major maintenance needs of its transportation infrastructure.

Figure 4.4: Structurally Deficient Bridges by Owner

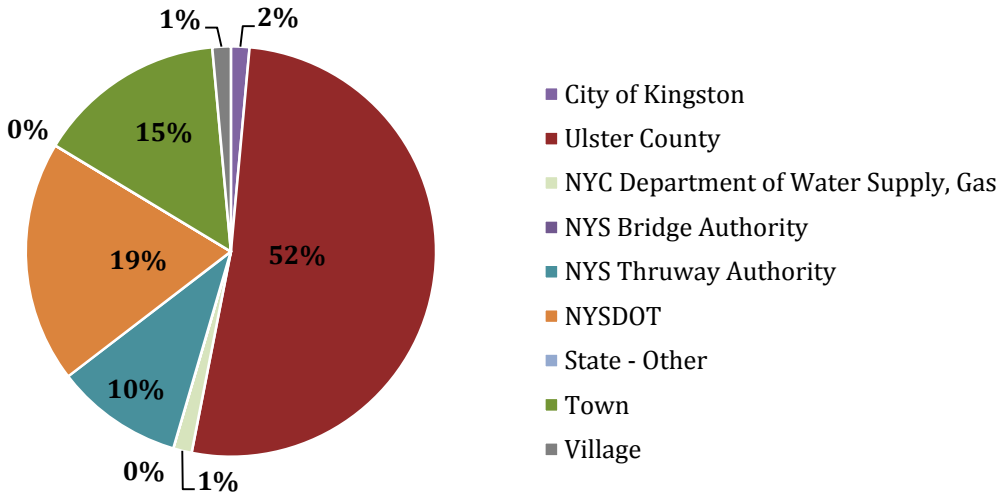
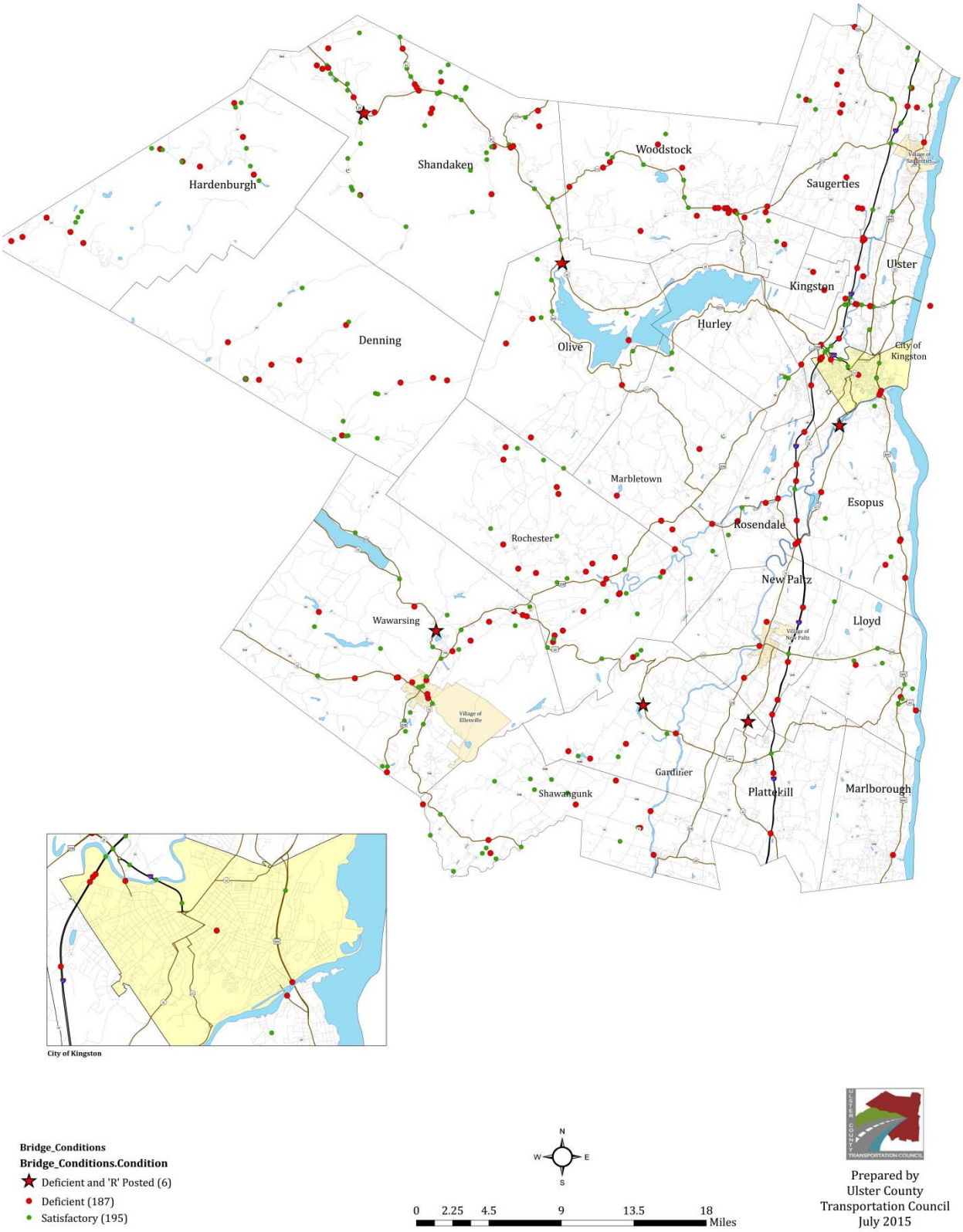


Figure 4.5: Ulster County Bridge Conditions (2014)



TRAVEL ON THE ROADWAY SYSTEM

System Use

Another way to view the roadway system is in terms of corridors. Critical corridors are those that serve major population centers including future growth areas; carry higher volumes of through traffic; carry higher volumes of freight movement; and serve primary economic generators, including recreational venues as well as traditional businesses. Ulster County's critical corridors include I-87 (NYS Thruway), I-587, US 9, US 209, NY 28, and NY 299 as illustrated in Figure 4.. Figure illustrates the variation in volume on critical corridors over time. Most volumes fluctuate similarly throughout the 1998 to 2012 timeframe, while US 209 observed a slight increase in traffic and SR 32 saw a decline, proportionally.

Figure 4.6: Critical Transportation Corridors

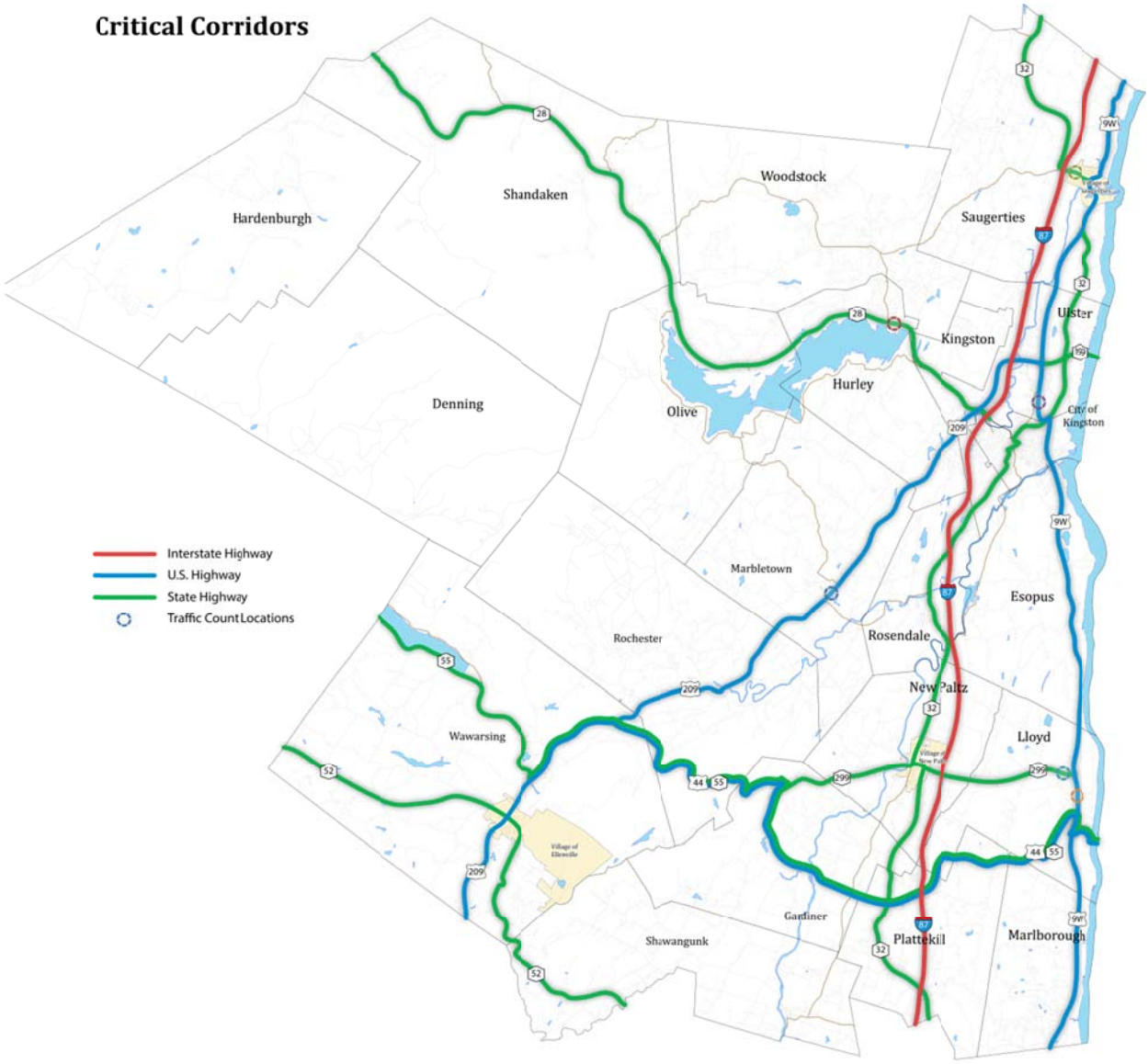
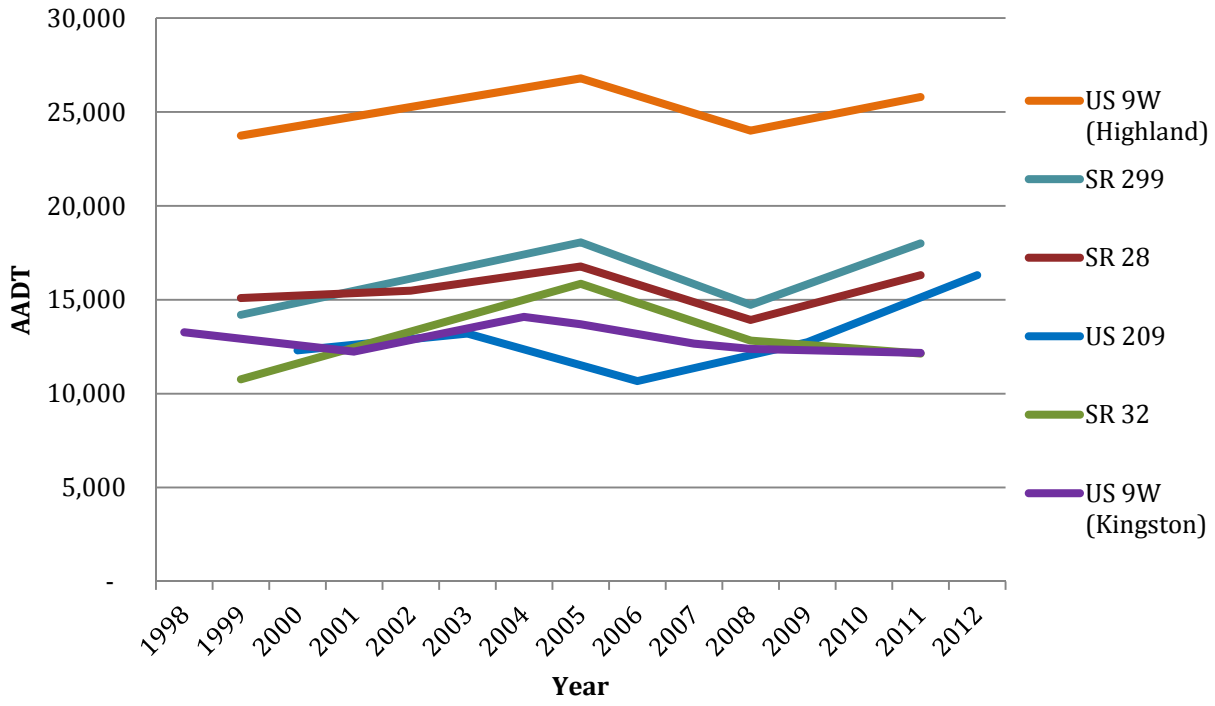


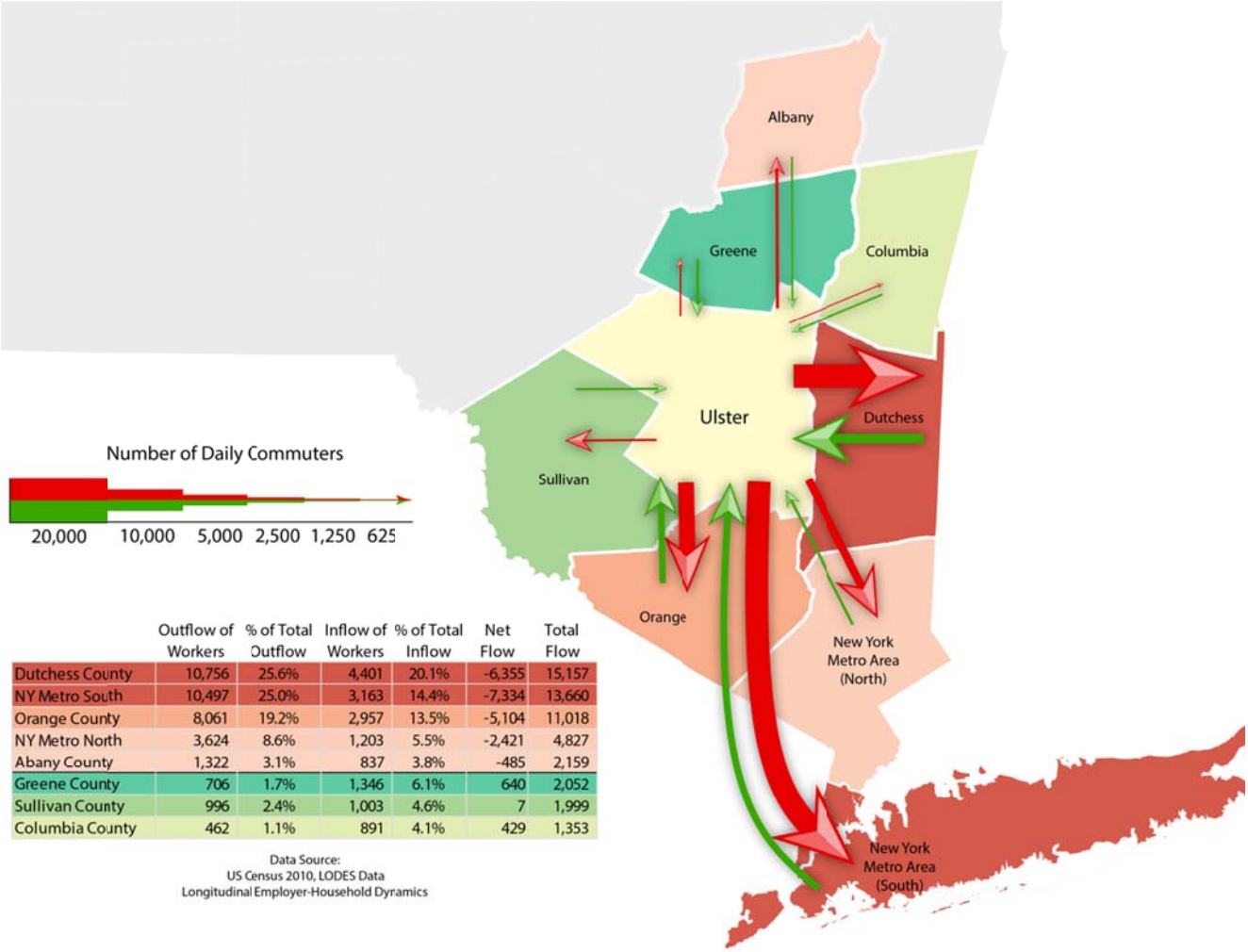
Figure 4.7: Average Annual Daily Traffic on Ulster County's Critical Corridors, 1998-2012



The UCTC's highway system exhibits a PM peaking traffic pattern in most corridor driven by commuter travel. Some retail corridors, such as the town of Ulster peak on Saturday afternoons. The I 587 corridor and its exits also exhibit weekend peaking with backups on Sunday night that often slow traffic to a crawl in the corridor from Kingston south.

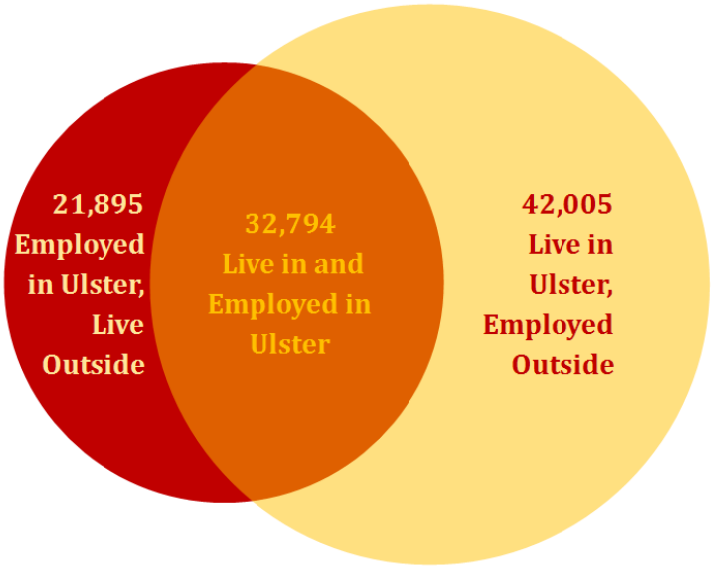
Commuter travel, Figure 4. depicts the variation in commuting patterns by counties adjacent to or surrounding Ulster County. The TMA region's workforce as a whole is on the move While a large percentage of the workforce leave Ulster County every day (56%), both Dutchess (51%) and Orange (54%) experience similar commutation patterns. The top five counties for Ulster resident commuters were Dutchess, Orange, New York (Manhattan), Westchester, and Suffolk counties. Dutchess, Orange, Greene, Sullivan, and Suffolk counties are the top five counties contributing to inbound Ulster commuting patterns. These flows have considerable impact on congestion and drive investments in transit, park- and-ride facilities, and corridor improvements.

Figure 4.8: Commutation To and From Ulster County



	Outflow of Workers	% of Total Outflow	Inflow of Workers	% of Total Inflow	Net Flow	Total Flow
Dutchess County	10,756	25.6%	4,401	20.1%	-6,355	15,157
NY Metro South	10,497	25.0%	3,163	14.4%	-7,334	13,660
Orange County	8,061	19.2%	2,957	13.5%	-5,104	11,018
NY Metro North	3,624	8.6%	1,203	5.5%	-2,421	4,827
Abany County	1,322	3.1%	837	3.8%	-485	2,159
Greene County	706	1.7%	1,346	6.1%	640	2,052
Sullivan County	996	2.4%	1,003	4.6%	7	1,999
Columbia County	462	1.1%	891	4.1%	429	1,353

Data Source:
US Census 2010, LODES Data
Longitudinal Employer-Household Dynamics



TRANSIT SYSTEM

Public transportation is an important transportation mode. It provides mobility to those unable to drive –"captive riders", including young people, senior citizens, those with disabilities, and drivers who cannot afford to own a car. An efficient transit system also captures "choice riders" – those that choose to travel by bus. Taken together, these transit trips offer an environmental benefit compared to automobile trips through reduced fuel use and emissions and reduced congestion in heavily traveled corridors. There are two public transit providers in the county, Ulster County Area Transit (UCAT) and Kingston Citibus. There are also two private intercity bus services (Trailways and Coach USA). Finally, commuter parking facilities along the I-87 Corridor compliment these transit services and allow for ride sharing.

Ulster County Area Transit (UCAT)

UCAT operates throughout Ulster County on 12 routes covering major destinations, as outlined in Table 4.8.

Table 4.8: UCAT System Routes

Route	Description	Service Schedule	Connections
CL	College LINK SUNY NP/Ulster	Mon-Fri: 7:45AM – 5:10PM	EU
EU/UE	Ellenville to SUNY Ulster to Kingston/Kingston to SUNY Ulster to Ellenville	Mon-Fri: 6:15AM – 10:30PM Saturday: 10:30AM – 6:40PM	CL, K, R, Z
G	Kingston to Marlboro connect Metro North	Mon-Fri: 5:35AM – 10:45AM, 4:40PM – 7:50PM	
K	Kingston / Saugerties connect 9W Mall	Mon-Fri: 5:20AM – 9:30PM Saturday: 7:50AM – 6:10PM	M, EU, Z
M	Mall LOOP connect to Kingston/Saugerties	Mon-Fri: 7:00AM – 10:20PM	S, K
NPL	New Paltz LOOP	Mon-Fri: 8:00AM – 10:00PM Weekend: 11:00AM – 7:25PM	UPL,X, CL, R, W
R	Kingston / New Paltz	Mon-Fri: 5:20AM – 10:15PM	UPL, NPL, X, CL, K, U , Z, W
S	Saugerties / Kingston connect 9W Mall	Mon-Fri: 6:30AM – 10:45PM Saturday: 8:30AM – 3:50PM	M
UPL	Rosendale to Metro North Poughkeepsie	Mon-Fri: 5:20AM – 12:10AM Weekend: 7:30AM – 7:50PM	
W	New Paltz, Wallkill & Plattekill	Mon-Fri: 6:00AM – 7:00AM; 6:00PM – 6:50PM	R, UPL, CL, NPL
X	New Paltz to Newburgh	Mon-Fri: 6:30AM – 8:30PM	R, CL, UPL, NPL
Z	Kingston, Woodstock, Phoenecia, Belleayre, East to Kingston	Mon-Fri: 5:10AM – 8:10PM Saturday: 7:50AM – 10:15AM; 2:00PM – 4:15PM	K, S, U, R, EU

UCAT also offers rural route services by request to passengers in the rural areas of the county not served by the routes listed above. Passengers using this service must make appointments one day

prior or at least a week in advance and confirm them the morning of the scheduled ride. Riders under 60 pay the normal fare, while passengers over 60 and registered with the Office for Aging can take one trip per week at a voluntary contribution level.

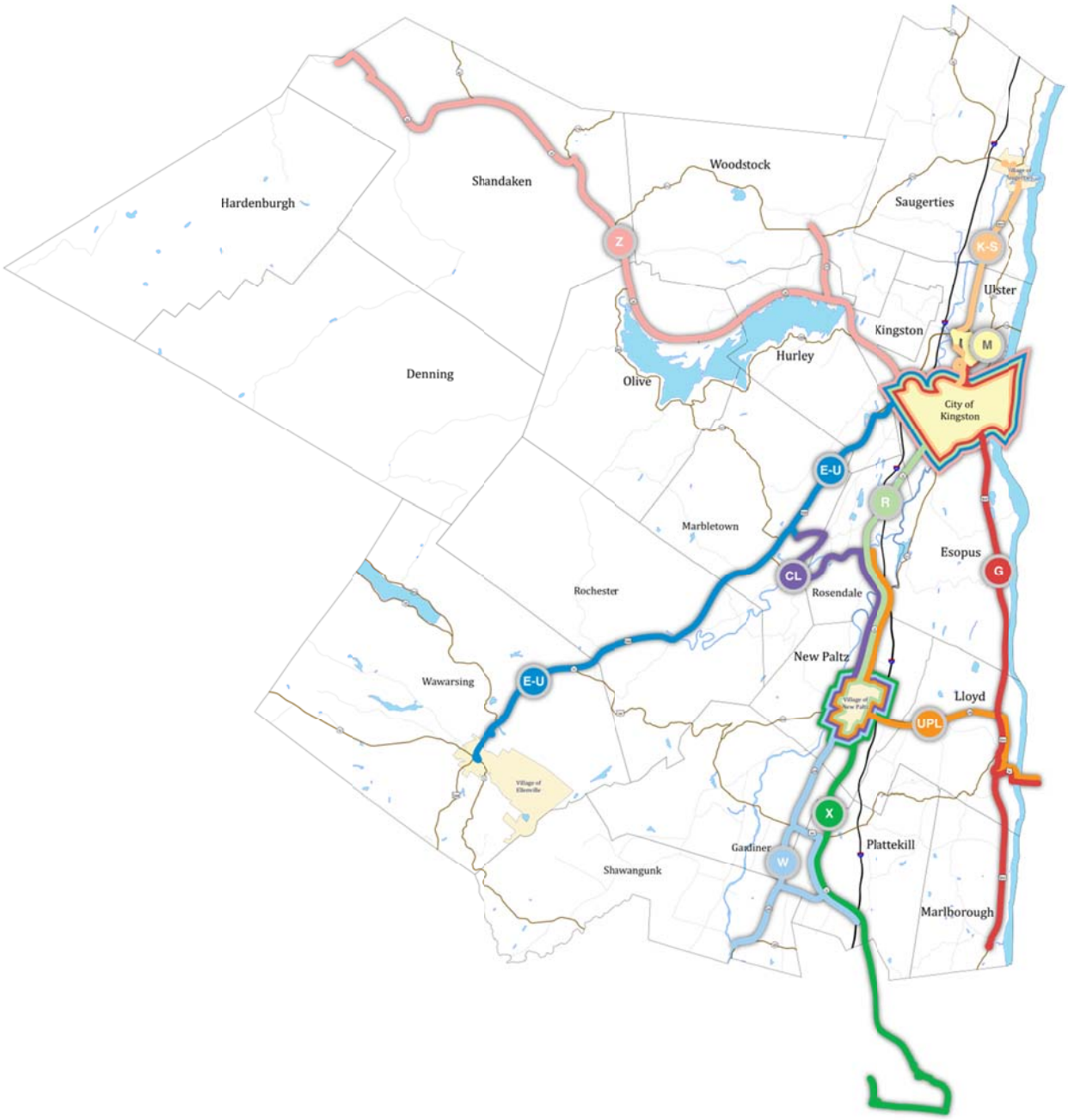
UCAT owns a variety of buses to operate their service. These include heavy duty transit coaches, the newest of which are low-floor design to most easily accommodate those with mobility impairment; and lighter duty buses on a truck frame, known as cutaways. Table 4.9 shows the UCAT fleet profile. Six of these buses are hybrid. UCAT also uses biodiesel throughout the fleet.

Table 4.9: UCAT Transit Fleet Characteristics

Bus Type	Size	Year of Purchase	Number	FTA Category
Coach	30'	2004	2	Heavy Duty small bus
Coach	40'	2005	2	Heavy Duty large bus
Cutaway	24'	2008	2	Light Duty midsize bus
Cutaway	24'	2009	7	Light Duty midsize bus
Coach	35'	2010	5	Heavy Duty large bus
Coach	29'	2012	2	Heavy Duty small bus
Cutaway	24'	2013	2	Light Duty midsize bus
Coach	30'	2014	2	Heavy Duty small bus
Cutaway	24'	2014	1	Light Duty midsize bus
Coach	30'	2015	1	Heavy Duty small bus
Total			**26**	

Figure 4.9 provides a spatial reference for the location of UCAT routes throughout the county.

Figure 4.9: UCAT System Map



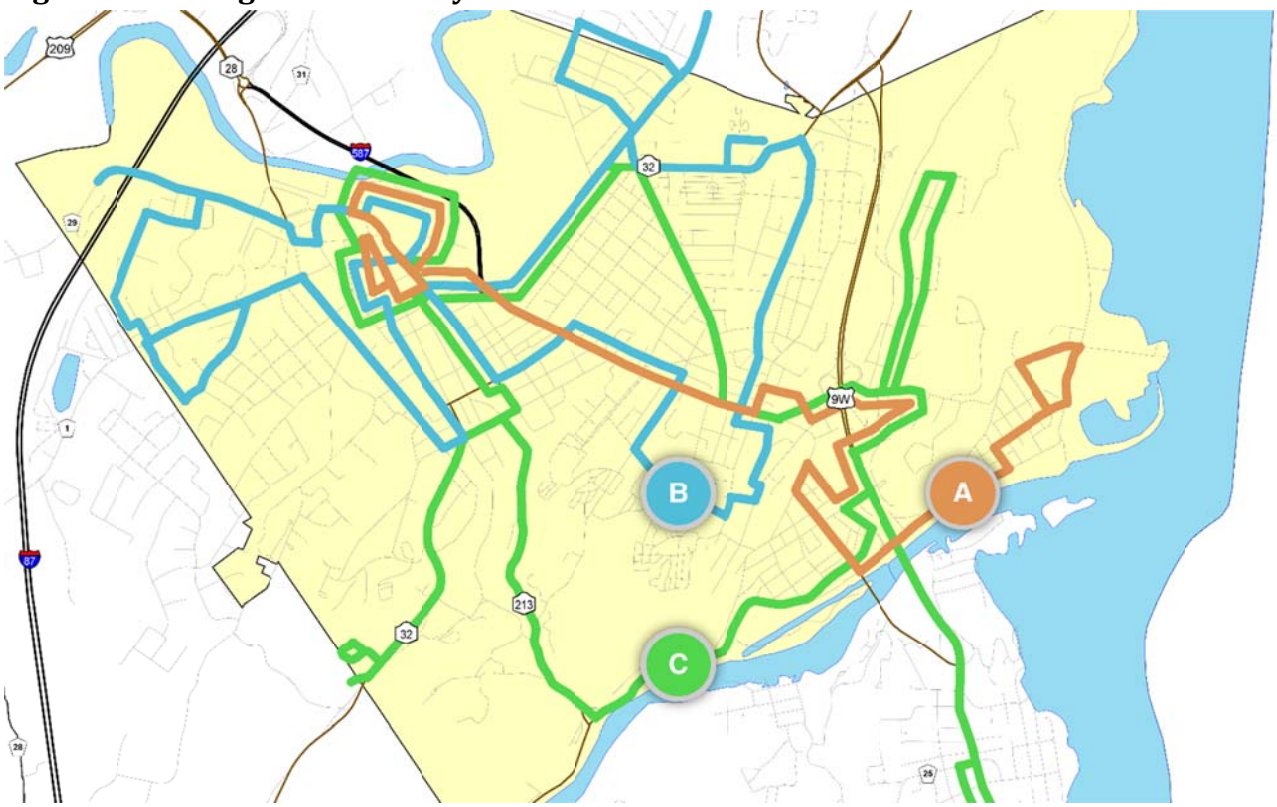
Kingston Citibus

Kingston Citibus operates three transit routes in the City of Kingston. Figure 4.10 provides details on the three Citibus routes. Kingston Citibus also provides customized paratransit services to senior citizens or those with disabilities based on an application process. Citibus offers this service Monday through Friday from 6:30AM to 7:30PM and Saturday from 9:30AM to 5:30PM.

Table 4.10: Kingston Citibus Routes

Route	Description	Service Schedule	Connect
A	Broadway Corridor	Mon-Fri, Saturday 7:00AM–7:10PM; 9:30AM–5:00PM (Sat.)	B, C
B	Hurley Ave, BRC, Clifton Ave, Benedictine Hospital	Mon-Fri, Saturday 6:30AM–7:10PM; 9:30AM–4:30PM (Sat.)	A, C
C	Port Ewen, Gateway, Clinton Ave, Kingston Hospital	Mon-Fri, Saturday 6:25AM–7:15PM; 8:45AM–5:20PM (Sat.)	A, B

Figure 4.10: Kingston Citibus System



The Citibus fleet consists of 4 35' coaches, 2 paratransit vans, and 2 replica trolleys. The latter are currently used primarily as spare vehicles in the event one of the coaches is pulled from service for either scheduled maintenance or as a result of a breakdown.

Inter-City Bus

Ulster County is also served by intercity bus carriers Trailways and Coach USA. A majority of their operations provide access to a number of destinations outside the county and are used by a significant number of commuters travelling to the New York City metropolitan area. Trailways serves Saugerties, the transit terminal in Kingston, and three locations in New Paltz, including a terminal and location near the Thruway as well as Woodstock and the NYS Rt. 28 corridor. . As a result of the service provided, these private operators are eligible to receive FTA funds.

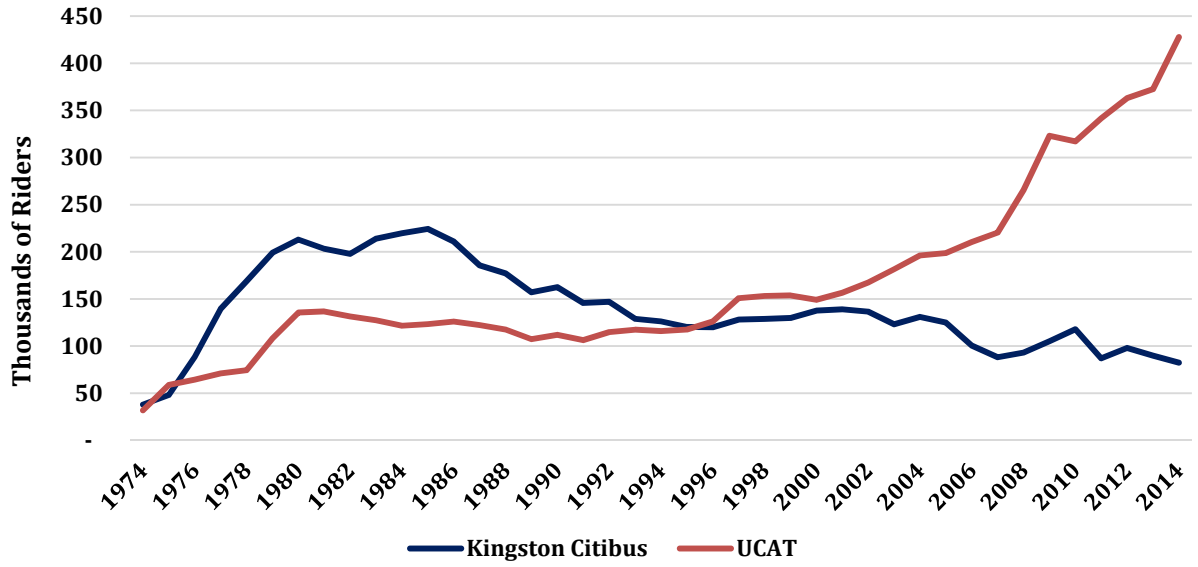
System Use

Table 4.11 summarizes UCAT and Citibus percent changes in ridership over time, while Figure illustrates this fluctuation in number of passengers from 1974 to 2014. Ridership data illustrates extensive growth on the UCAT system, with a 118% upswing in passengers in the past decade. The Kingston Citibus data, on the other hand, illustrates a steady decline in ridership, with an overall loss of 37% of riders since 2004.

Table 4.11: Kingston Citibus & UCAT Ridership Trends, 1974 - 2014[xxi]

Year	Kingston Citibus	% Growth Over Decade	UCAT	% Growth Over Decade	Total Transit	% Growth Over Decade
1974	37,940	N/A	31,766	N/A	69,706	N/A
1984	219,784	479%	121,515	283%	341,304	390%
1994	126,260	-43%	115,807	-5%	242,067	-29%
2004	130,913	4%	196,031	69%	326,944	35%
2014	82,436	-37%	427,761	118%	510,197	56%

Figure 4.11: Kingston Citibus & UCAT Passengers by System, 1974 - 2014[xxii]



Fares paid by riders finance only a portion of public transit systems and operations. Funding from FTA, the New York State Transit Operating Assistance program, and local match funds provide means to subsidize operations. One measure of financial efficiency is the farebox ratio, which is the percentage of operating expenses covered by fares. The UCAT farebox recovery has remained steady at about 8-9% over the past decade. This low, recovery rate is typical for a small transit system.

Commuter Parking

Ulster County has nine commuter parking lots based along the I-87 corridors. Some of these have transit service, while others provide a venue for carpooling or ridesharing. These lots include:

- P1 State Route 32 at New York State Thruway Exit 20 Southbound, Town of Saugerties
  - Served by Pine Hill Trailways
- P2 State Routes 32 and 199, Town of Ulster
- P3 State Route 28, I587 at New York State Thruway Exit 19, Town of Ulster
- P4 State Route 32 Northbound, Town of Rosendale
  - Served by the following UCAT Routes: NPL, UPL, CL, X, and R
  - Served by Pine Hill Trailways
- P5 State Route 299 at New York State Thruway Exit 18, Town of New Paltz
  - Served by Pine Hill Trailways
- P6 US 9W at State Route 299, Town of Lloyd
- P7A Adirondack/Pine Hill Trailways Bus Terminal, City of Kingston
- P7B Dietz Stadium, Joys Lane & Grandma Brown Lane, City of Kingston
- P8 State Route 32 Southbound, Village of New Paltz
  - Served by the following UCAT Routes: NPL, UPL, CL, X, and R.

In 2013, UCTC conducted a Commuter Parking Facilities Capacity Analysis and Needs Assessment as part of the Congestion Management Process (CMP). In the study, UCTC surveyed and identified the usage and conditions at its nine commuter parking facilities. Table 4.12 summarizes the resulting usage statistics for these facilities. The P7B, P1, and P7A lots are each at or over capacity, while other lots, like P8, P6, and P2, are operating under capacity. .

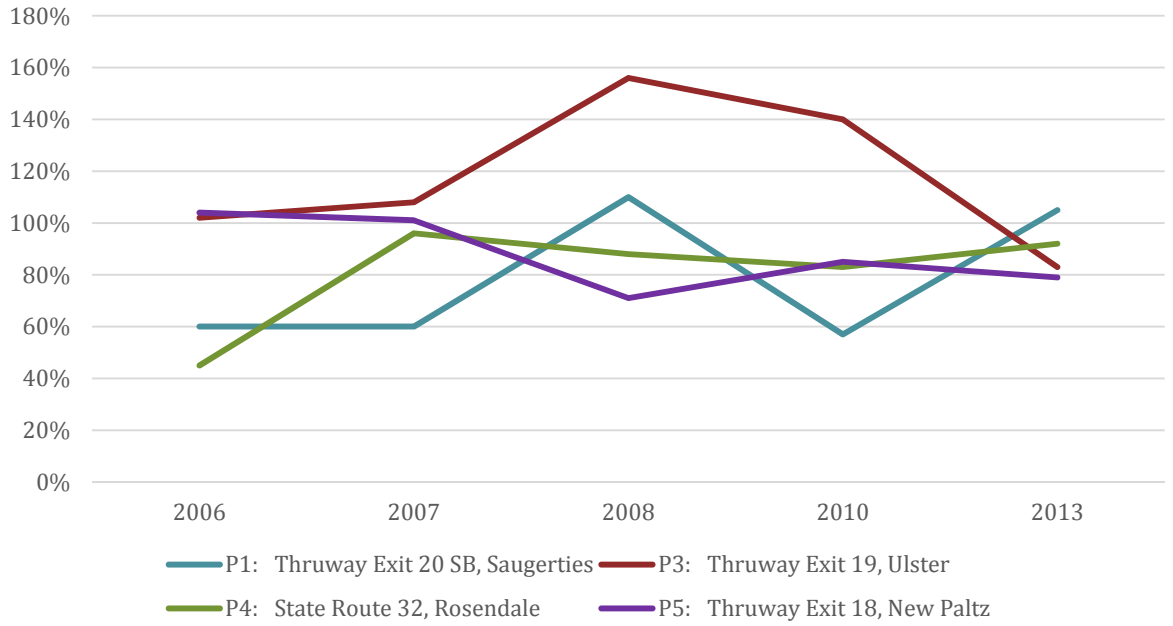
Table 4.12: Daily Parking Occupancy at Commuter Parking Facilities, 2013

Commuter Parking Facility	Mon	Tues	Wed	Thu	Fri	Average	Lot Capacity
P1: Thruway Exit 20 SB, Saugerties	125%	108%	125%	75%	92%	105%	12
P2: State Route 32 and 199, Ulster	50%	41%	36%	36%	27%	38%	22
P3: Thruway Exit 19, Ulster	75%	80%	83%	88%	91%	83%	76
P4: State Route 32, Rosendale	103%	97%	100%	97%	62%	92%	58
P5: Thruway Exit 18, New Paltz	75%	93%	80%	82%	66%	79%	151
P6: US 9W/SR 299, Lloyd	24%	24%	26%	24%	17%	23%	90
P7A: Trailways Bus Terminal, Kingston	100%	102%	102%	100%	98%	100%	41
P7B: Dietz Stadium, Kingston	96%	140%	162%	160%	112%	134%	50
P8: State Route 32, New Paltz	16%	14%	10%	16%	13%	14%	63

Figure 4.12 illustrates the changes in lot occupancy over the past five commuter parking lot capacity needs assessments. Lots P7B and P1 show significant growth over the past three years, while other routes, such as P3 and P8, exhibited moderate decreases in utilization. In light of the capacity issues at Kingston P1 and P3 UCTC with NYSDOT initiated funding for expansion of each

lot that is now underway. The UCTC also aware of the need to expand the P4 lot in Rosendale and is working with the town to enlarge the facility.

Figure 4.12: Average Occupancy Observed in Selected Commuter Parking Facilities



NON-MOTORIZED SYSTEM

System Characteristics

Many people travel by bicycle and on foot, primarily for shorter trips. While many also use these modes for recreation, the focus here is on travel to meet specific needs. In some cases, people without access to an automobile or transit walk or bike out of necessity. Others do so as a travel choice. For the latter group, safety and convenience are significant factors. When a route is perceived to be unsafe, or there is a barrier to reaching the desired destination, people may choose to drive instead. The Journey to Work data (Figure 4.14) shows that 5% of all work related trips are made by walking or bicycling.

Walking

Pedestrian travel requires a network of sidewalks without gaps and with accommodations for people with disabilities as defined by the Americans with Disabilities Act (ADA). There are instances, particularly in rural areas, where a wide shoulder is an acceptable substitute for a sidewalk. Safe pedestrian travel also requires protected crossings of busy streets with marked crosswalks and pedestrian signals and appropriate pedestrian phases at signalized intersections.

Bicycling

Bicycles are most often ridden on streets, and can be accommodated with designated bike lanes, wide curb lanes, or “Share the Road” signs and pavement marking.

Multi-use Trails

Multiuse trails can accommodate both bicycle and pedestrian travel. Because they are separate facilities, they are inherently safer. While trail use is often predominantly recreational, trails are also used for commuting and other travel needs. Ulster County currently has a robust trail network, consisting of trails on former railroad rights of way:

- The Hudson Valley Rail Trail (HVRT) is a 12-foot wide, asphalt rail trail open for non-motorized uses, including walking, running, bicycling, horseback riding, inline skating, cross-country skiing and snowshoeing. The HVRT is flat or gently-sloped making it accessible to individuals with limited mobility. The HVRT currently extends 3.6-miles from the Walkway Over the Hudson State Historic Park (http://www.walkway.org/) in Highland (Town of Lloyd) eastward to Tony Williams Park located on South Riverside Road. The HVRT directly connects to the 1.25-mile Walkway— the longest elevated walkway in the world-- and the 13-mile Dutchess County Rail Trail, providing an 18-mile bicycle/pedestrian route running from Highland in Ulster County to Hopewell Junction in Dutchess County.

- The Wallkill Valley Rail Trail (WVRT) is a primarily cinder/ stone dust rail trail open for non-motorized uses, including walking, running, bicycling, horseback riding, cross-country skiing and snowshoeing. The trail passes through Gardiner, New Paltz and Rosendale, where it crosses the restored Rosendale Trestle over the Rondout Creek. The WVRT now extends approximately 24-miles from the Town of Shawangunk/ Town of Gardiner Town line to Rockwell Lane at the southern border of the City of Kingston.

- The Wallkill to Walden Rail Trail is located a few miles south of the current end of the Wallkill Valley Rail Trail in the Town of Shawangunk. The 3.2-mile paved trail runs from the hamlet of Wallkill to the Town of Montgomery and Village of Walden in Orange County. The Trail is open for non-motorized uses, including walking, running, bicycling, inline skating, cross-country skiing and snowshoeing.

- The O&W Rail Trail/ D&H Heritage Corridor is a partially completed rail trail/ canal trail running nearly 35-miles through the Rondout Valley from Kingston to Ellenville and including various local rail trail segments, many of which have planned extensions to fill current gaps. The longest existing segment current runs more than 12-miles along the Hurley and Marbletown Rail Trail segments. Descriptions of major segments are as follows:

    - The Hurley Rail Trail is a shared- use rail trail open for non-motorized uses, including walking, running, bicycling, horseback riding, inline skating (on the northern section), cross-country skiing and snowshoeing. The Hurley Rail Trail connects to the Marbletown Rail Trail and currently runs 3-miles (2.2-miles of 10-feet wide paved trail) along NYS Route 209 in Hurley. Trail connections into the City of Kingston are now in planning stages.

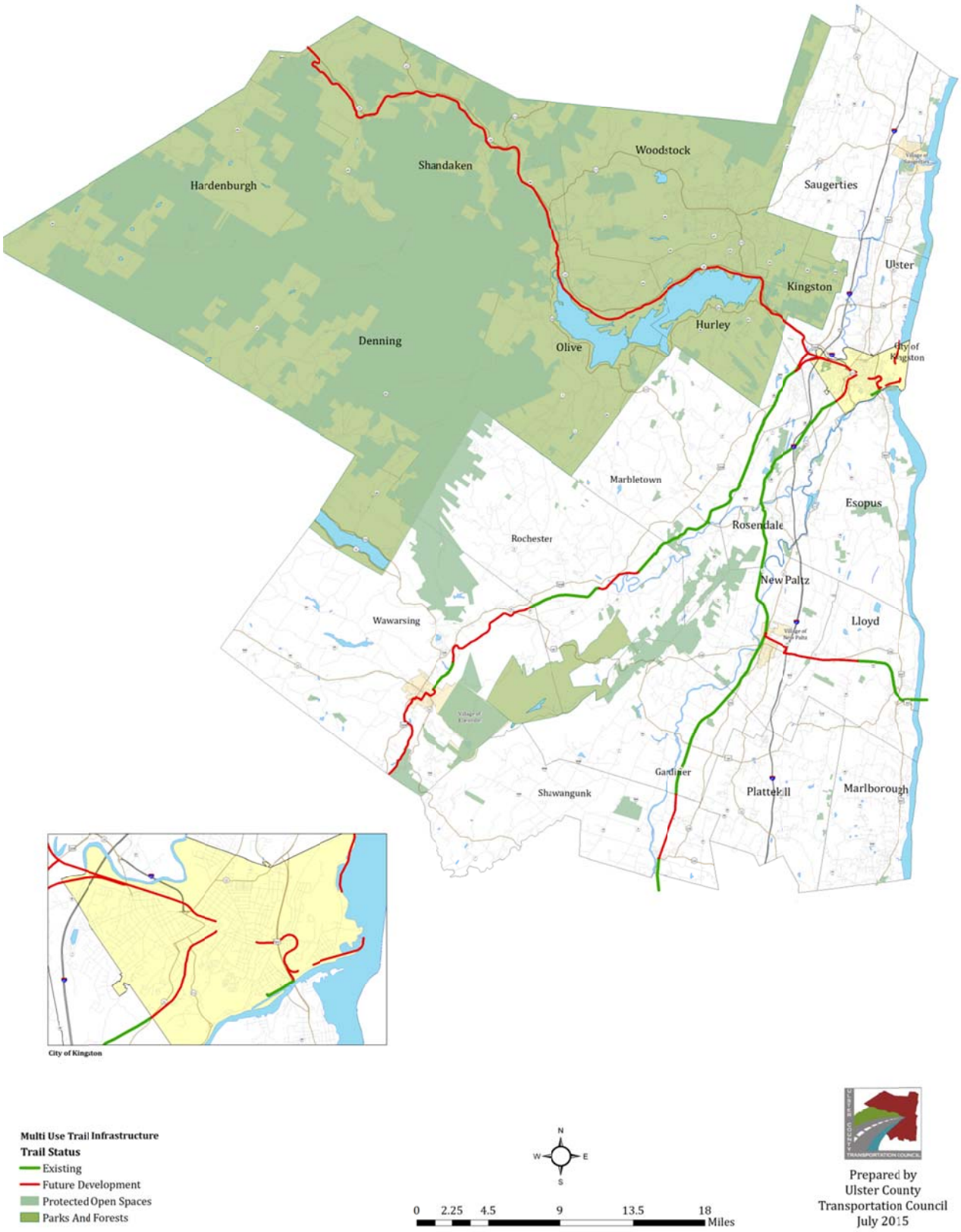
- The Marbletown Rail Trail continues the Hurley Rail Trail southward for approximately 9-miles to the Town of Rochester. The cinder/ stone dust trail is open for walking, running, bicycling, horseback riding, cross-country skiing and snowshoeing.

Figure provides a geospatial reference of these trails.

System Use

Data is not available for non-motorized system use. It is not typical to conduct pedestrian or bicycle counts on a regular basis, although UCTC is considering a program of counts on the trail system to be able to document usage. A recent sample of use on the Hurley portion of the O&W Trail suggests that approximately 80,000 people per year visit the facility.

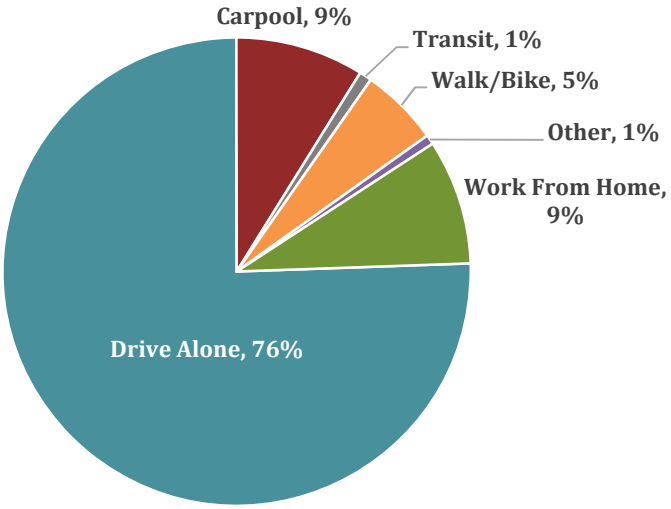
Figure 4.13: Multi-Use Trails in Ulster County



MODAL SPLIT: HOW PEOPLE TRAVEL

The American Community Survey (ACS) is a product of the U.S. Census Bureau. It uses annual sampling to discover many facts about Americans, including travel patterns. According to the 2010 ACS for Ulster County, 76% of work trips are made by a single-occupant automobile. Carpooling and working from home each comprise 9% of the modal distribution, while bicycling/walking follows at 5%. Only 1% of the population uses transit to reach work destinations, and another 1% represents "other" methods of community. Figure illustrates Ulster County's modal breakdown.

Figure 4.14: Journey to Work Modal Distribution, 2010[xxiii]



Auto Ownership

According to the 2013 ACS, about 7% of households in Ulster County do not have a vehicle available to make daily trips. The majority (76%) of households have either one or two vehicles available to make daily trips; however, over 11,000 households have access to three or more cars. Figure 4.12 summarizes auto ownership by household. The high accessibility of vehicles contributes to the high volume of drive-alone commuting by Ulster residents.

Table 4.13: Auto Ownership by Household in Ulster County

Auto Ownership	Vehicle Availability	Percent of Vehicle Ownership
No Vehicle Available	4,625	7%
1 Vehicle Available	23,434	34%
2 Vehicles Available	29,000	42%
3 Vehicles Available	8,642	13%
4+ Vehicles Available	2,949	4%
Total	**68,650**	**100%**

Figure 4.15 illustrates the variation in historic gas prices over the past century. Prices have remained relatively stable with the exception of dramatic peaks and slopes occurred in the 1980s and the 2000s.

Gas price affects modal split in that when gas prices increase dramatically, there is often a shift favoring transit. However,
Figure shows the lack of a distinct correlation between transit ridership from the mid-2000s forward, though transit ridership did increased significantly with the major increases in gas price in 2008. In 2009, gas prices sunk by 30%, but ridership continued to increase by almost 20%. As gas prices rose again in 2010 and 2011 by 18% and 24% respectively, there were negligible shifts in ridership. This suggests that factors such as improved service, longer commutes, or income are more important than the price of gas.

Figure 4.15: Changes in Gas Price, 1929 - 2013

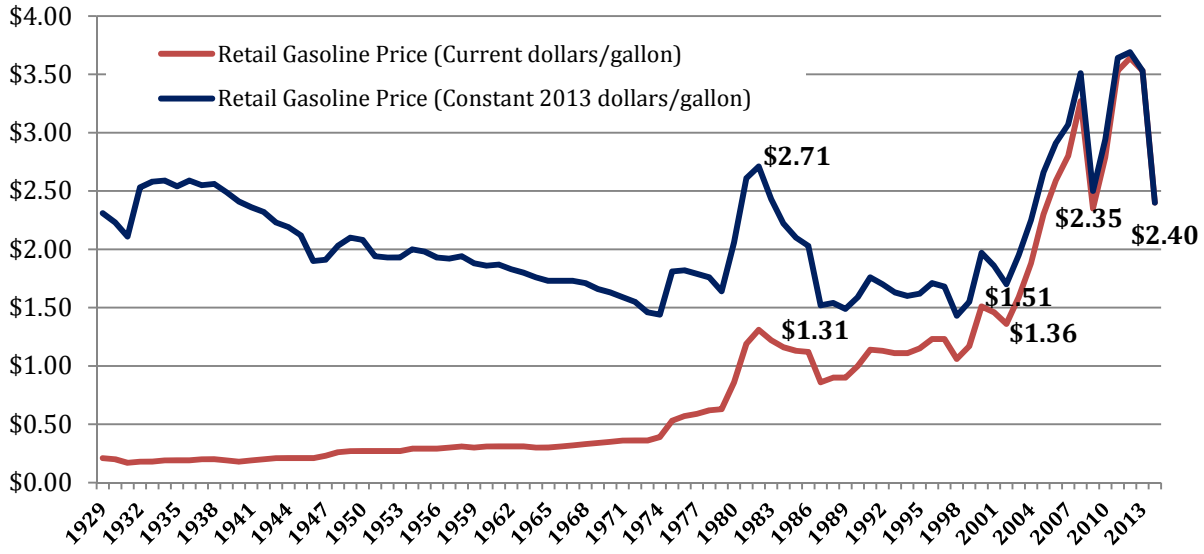
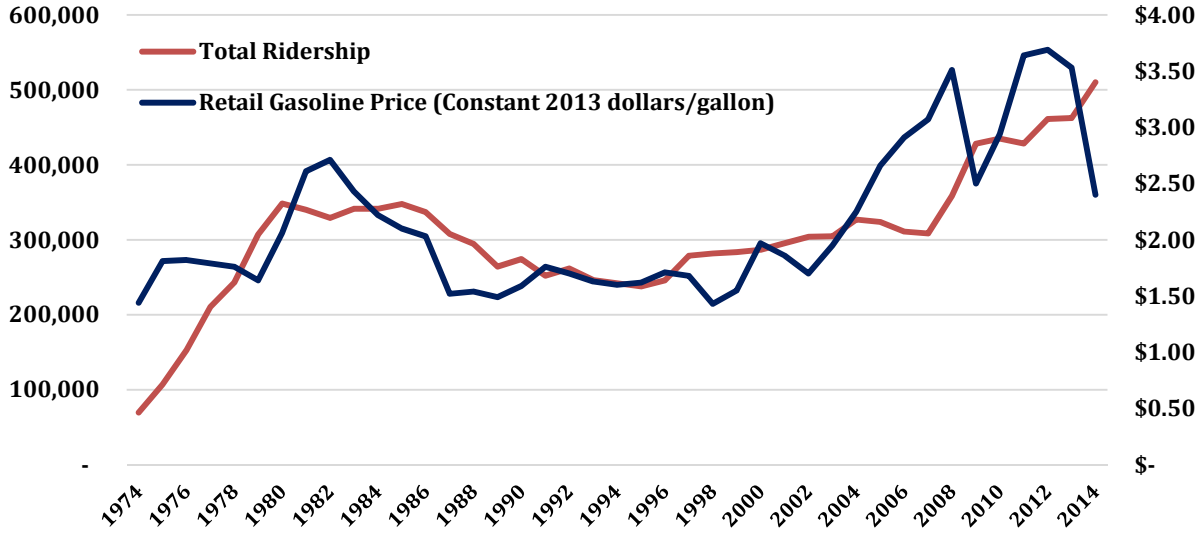


Figure 4.16: Historic Gas Prices & Transit Ridership, 1974 - 2014



SYSTEM-WIDE SAFETY

Safety is of principle concern to all transportation agencies. People expect to be able to travel safely regardless of which mode they choose, or which route they use. Safety is a shared responsibility of the owners and operators of transportation facilities and services; the traveler; law enforcement; and emergency responders. Roads must be constructed using safety standards, and properly maintained. This includes appurtenances like signals, signs, pavement markings, and guiderail. Transit buses must be driven safely. Pedestrian and bicycle facilities must also be developed that follow current safety standards. Because driver behavior is documented to be at least a contributing cause in the large majority of fatal and serious injury crashes, education and enforcement are important actions. Prompt emergency response can affect the outcome for crash victims.

Crash data is always examined over at least a three year period to make sure that statistical anomalies do not lead to improper conclusions. In New York, police agencies submit a standard report after all crashes to the Department of Motor Vehicles (DMV). DMW in turn makes the coded data available to NYSDOT, which uses a GIS-based application called the Accident Location Information System (ALIS) as its database. MPOs and other agencies may query ALIS for crash information by location, type, and other factors.

Table 4.14 provides information based on automobile crash police report data in terms of types of collisions, accident types, fatal accident collision types, and injury accident collision types. Crash rates are generally consistent across the four full years of data. Automobile crashes most commonly involve another vehicle, while less than 2% of crashes in the past four and a half years involved either a bicyclist or pedestrian. The remainder of auto crashes (41%) fall into the “other” category, which includes collisions with fixed objects and lane departure crashes. Pedestrian collisions decreased substantially in 2013 and remained low in 2014.

Variation in accident type is also stable across the years of available data. Fatalities almost doubled in 2012, but returned to a lower rate in 2014. Most fatalities between 2011 and 2015 resulted from "other" type crashes. Most injuries over the same period of time, however, resulted from auto-to-auto crashes.

Table 4.14: Crash Report Data for Ulster County

Crash Characteristic	2011	2012	2013	2014	2015 (Jan-Jun)	Total
Total Crashes by Collision Type	**7,164**	**6,957**	**7,189**	**7,205**	**3,039**	**31,554**
Auto	4,087	4,003	3,991	4,087	1,847	**18,015**
Bike	41	53	53	50	10	**207**
Pedestrian	88	80	67	68	26	**329**
Other	2,948	2,821	3,078	3,000	1,156	**13,003**
Total Crashes by Accident Type	**7,164**	**6,957**	**7,189**	**7,205**	**3,039**	**31,554**
Fatal	14	14	24	12	8	**72**
Injury	1,831	1,805	1,820	1,740	666	**7,862**
Other Accident	5,765	5,598	5,840	5,934	2,540	**25,677**
Total Fatality Crashes	**14**	**14**	**24**	**12**	**8**	**72**
Auto	4	5	11	5	6	**31**
Bike	0	1	1	1	0	**3**
Pedestrian	0	2	1	1	0	**4**
Other	10	6	11	5	2	**34**
Total Injury Crashes	**1,831**	**1,805**	**1,820**	**1,740**	**666**	**7,862**
Auto	1,129	1,144	1,118	1,124	421	**4,936**
Bike	28	47	45	41	8	**169**
Pedestrian	85	70	63	60	26	**304**
Other	589	544	594	515	211	**2,453**

Table 4.15 summarizes crashes and accidents by location. The two largest municipalities in the county have the highest instances of accidents: the City of Kingston and Town of Ulster. No single location in the county stands out as a particular hot spot for crashes, but Lloyd, Plattekill, and Rochester show higher fatality instances than other municipalities.

Table 4.15: Crash Types by Municipality

Municipality	Accidents					Fatalities					Injuries				
Year	**2011**	**2012**	**2013**	**2014**	**2015**	**2011**	**2012**	**2013**	**2014**	**2015**	**2011**	**2012**	**2013**	**2014**	**2015**
Kingston (C)	1057	1081	1110	1111	485	0	1	1	0	0	192	230	251	223	91
New Paltz (V)	201	196	209	188	79	0	0	0	0	0	41	30	39	31	10
Saugerties (V)	158	133	117	132	57	0	0	0	1	0	36	28	31	25	9
Ellenville (V)	102	108	120	119	42	0	0	0	0	0	27	24	21	30	5
Denning	7	5	7	8	1	0	0	0	0	0	2	1	1	6	1
Esopus	279	273	301	293	116	0	1	1	1	0	99	72	84	62	28
Gardiner	194	170	222	183	92	0	0	1	0	0	43	42	30	35	11
Hardenburgh	2	1	6	7	3	0	0	0	0	0	0	1	1	3	4
Hurley	161	162	163	148	63	1	0	3	1	0	48	48	45	34	20
Kingston	47	35	41	53	9	0	0	1	0	0	11	18	16	11	3
Lloyd	510	484	501	503	213	0	1	4	4	1	166	154	136	147	43
Marbletown	238	231	237	253	98	0	0	1	0	0	71	47	50	48	18
Marborough	258	231	234	225	105	1	3	2	0	1	74	72	82	58	25
New Paltz	477	500	559	523	238	1	0	1	0	0	118	123	151	114	58
Olive	103	111	114	111	41	2	1	0	0	0	21	38	36	25	8
Plattekill	301	322	324	297	118	0	4	2	1	2	106	94	86	117	29
Rochester	225	213	193	230	85	2	2	1	1	0	64	60	47	66	20
Rosendale	219	198	241	200	98	0	0	0	1	0	40	59	51	66	16
Saugerties	471	440	424	471	231	1	0	2	1	0	154	113	132	103	52
Shandaken	110	83	98	120	43	0	0	0	0	0	33	26	29	30	17
Shawangunk	266	262	248	238	107	0	1	1	1	0	91	101	71	57	47
Ulster	1208	1156	1171	1181	503	4	0	2	0	1	264	290	279	301	109
Wawarsing	297	284	328	365	134	2	0	1	0	3	73	72	107	96	29
Woodstock	171	196	172	203	78	0	0	0	0	0	48	50	29	50	13
Unknown	102	82	49	43		0	0	0	0		9	12	15	2	
Total	7164	6957	7189	7205	3039	14	14	24	12	8	1831	1805	1820	1740	666

THE FREIGHT SYSTEM

System Characteristics

As previously noted, the safe and efficient movement of freight is important to economic prosperity. As is true across the country, the largest share of goods movement is by truck. Trucking offers direct origin to destination movement for both long haul and local delivery.

In response to MAP-21 requirements, FHWA issued for public comment a Draft Primary Freight Network (Highway). A final PFN has not been released. While Ulster County does not include any roads identified in the Draft PFN, New York State recognizes that the mileage limitations on the national network precluded a number of critical statewide and regional highway freight corridors from designation in these networks. Interstate 87 provides a significant north-south connection through the state. Other major truck corridors in Ulster County include:

- US 9W paralleling the Hudson traversing the eastern portion of the county,
- US 44 providing an east-west connection through the southern portion of the county,
- US 209 running from the southwest portion of the county north to Kingston,
- NY 28 connecting Kingston to the northwest portion of the county,
- NY 32 paralleling I-87 as a north-south connector and accessing downtown New Paltz,
- NY 212 providing an east-west connection from Saugerties to the Catskill Mountains,
- NY 213 providing a connection from I-87 in Rifton north to Kingston,
- NY 299 running east-west in the southern portion of the county through New Paltz, and
- CR 1220 (Wallkill Avenue) providing an east-west connection in the southern portion of the county.

Table 4.16 on the following page summarizes truck counts where available in the Ulster County freight network.

Table 4.16: Truck Counts on Significant Freight Facilities[xxiv]

Road Name	Count Location	From	To	Count Year	Traffic Count	Truck Count (Daily)	Percent Trucks (Daily)
US 9W	TOWN OF ESOPUS	CR 24 NORTH JCT	OLD RT 9W(984D)	2006	13,929	3,144	22.57%
US 9W	TOWN OF MARLBOROUGH	ULSTER CO LINE	MILTON TURNPIKE	2007	19,294	5,491	28.46%
US 9W	TOWN OF NEW WINDSOR	RT 218 CORNWALL	UNION AVE	2013	13,263	2,582	19.47%
US 44	LLOYD	CR108 CHAPAL HILL RD	START RT9W OLAP HIGHLAND	2010	3,570	1,204	33.73%
US 44	PLATTEKILL	CR 10 MILTON TPK	CR 22 MAPLE AVE	2006	4,580	1,235	26.97%
US 209	HURLEY	CR 8 WYNCOOP AVE	RT 28	2013	14,001	2,576	18.40%
NY 28	TOWN OF KINGSTON	TOWN OF ULSTER AND TOWN OF K	CR 52 ZENA RD	2010	17,982	4,506	25.06%
NY 28	SHANDAKEN	RT 212 MT TREMPER	RT 214 PHOENICIA	2009	5,746	1,802	31.36%
NY 32	NEW PALTZ	CR 154 HORSENDEN RD	START 32/213 OLAP	2013	10,438	1,774	17.00%
NY 32	NEW PALTZ	START 32/299 OLAP	START RT 32 OLAP @CHESTNUT	2013	16,328	2,106	12.90%
NY 32	TOWN OF PLATTEKILL	ULSTER CO LN	RTS 44 55 MODENA	2006	8,251	2,312	28.02%
NY 212	WOODSTOCK	CR 47A ROCK CITY RD	RT 375	2010	11,999	2,393	19.94%
NY 213	ROSENDALE	CR 26A	START 32/213 OLAP	2013	6,582	1,562	23.73%
NY 299	TOWN OF NEW PALTZ	CR 61 LIBERTYVILLE RD	SPRINGTOWN RD	2009	7,448	2,016	27.07%
CR 1220 (Wallkill Ave)	SHAWANGUNK	BRUYN TPK	NY RT208	2009	7,955	2,843	35.74%

As identified in Chapter 4, the major industries in Ulster County are construction, manufacturing, financial, professional/business services, education, and healthcare. Of these industries, construction and manufacturing will generate the highest amount of freight traffic to and from Ulster County. The NYS Thruway runs through the county, Ulster is the major source of the high level of through traffic coming from New York City and the Mid-Atlantic to areas further upstate and west to Buffalo. The retail sector generates continuous urban delivery truck movements.

In terms of waterborne cargo, the Hudson River is also designated as "Marine Highway 87". The harbors at Kingston and Saugerties utilize this highway as do docking facilities for oil transfer along the Hudson within Ulster County. The most significant volume of freight is associated with the connection between Albany to New York City.

CSX owns the only freight rail line in Ulster County, formerly known as the West Shore line which runs north-south along the Hudson River, connecting New York City to Albany. This Class 1 line carries high volume goods to, from, and through Ulster County. A secondary switching yard exists in Kingston. Most of this line is single track with a recently installed double track location in the Town of Esopus.

System Use

The majority of Ulster County's top trade partners on the state/international level are within the northeast. Pennsylvania, New Jersey, Massachusetts, and Connecticut are all major export and import trade partners. Trade partners measured in terms of the value of commodities range further in geography from Ulster County, because these are often lighter/more expensive goods carried via air or truck. Both exports to Florida and Mexico fall under Ulster's top ten partnerships, showing the depth of the county's export market. Figure through Figure illustrate the top ten trade partners. Note: Labels for New York State indicate internal state trade, but these counts are not included as part of the top ten.

Figure 4.17: Imports - 2012 Top Ten Trade Partners[xxv]

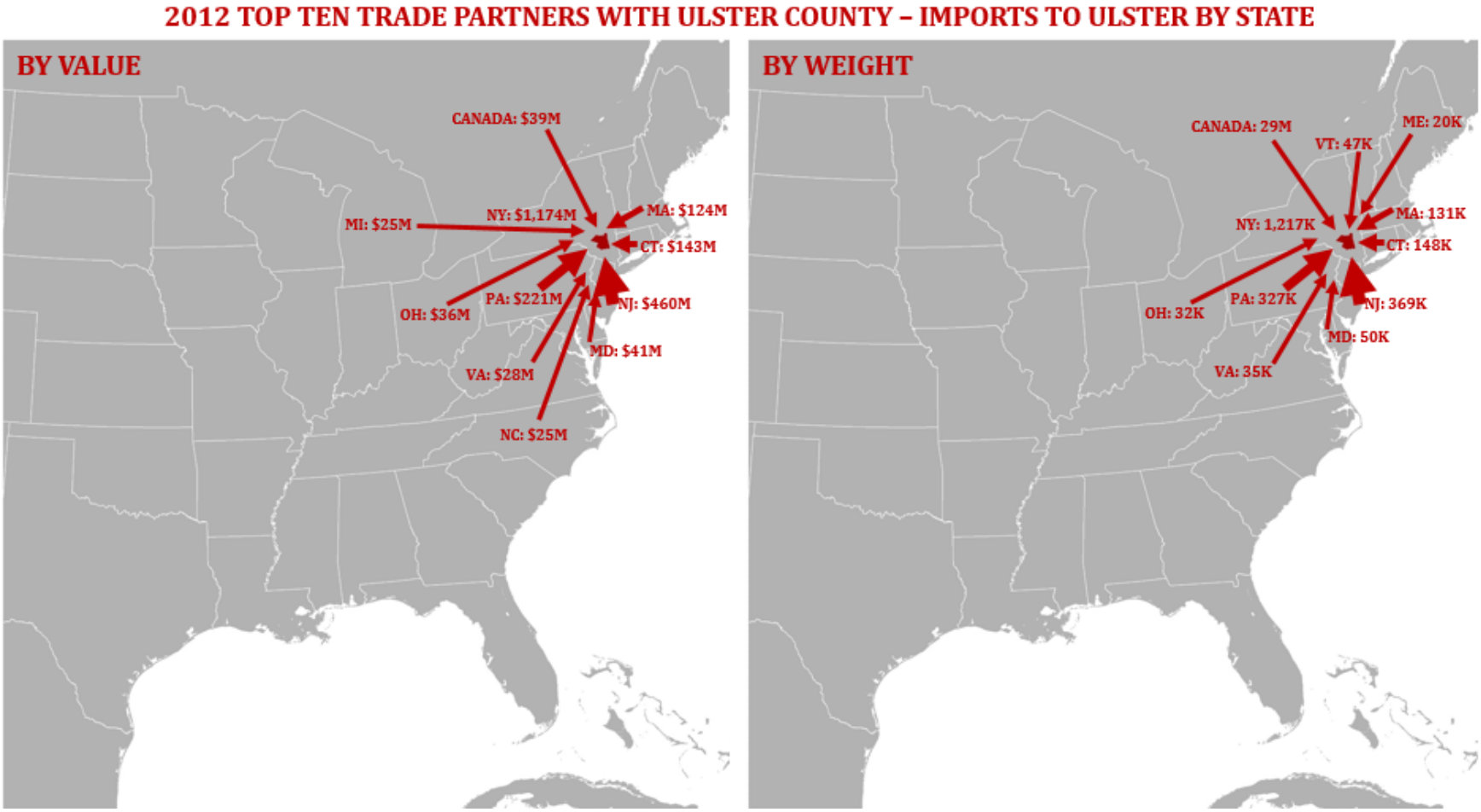


Figure 4.18: Imports - 2040 Top Ten Trade Partners[xxvi]

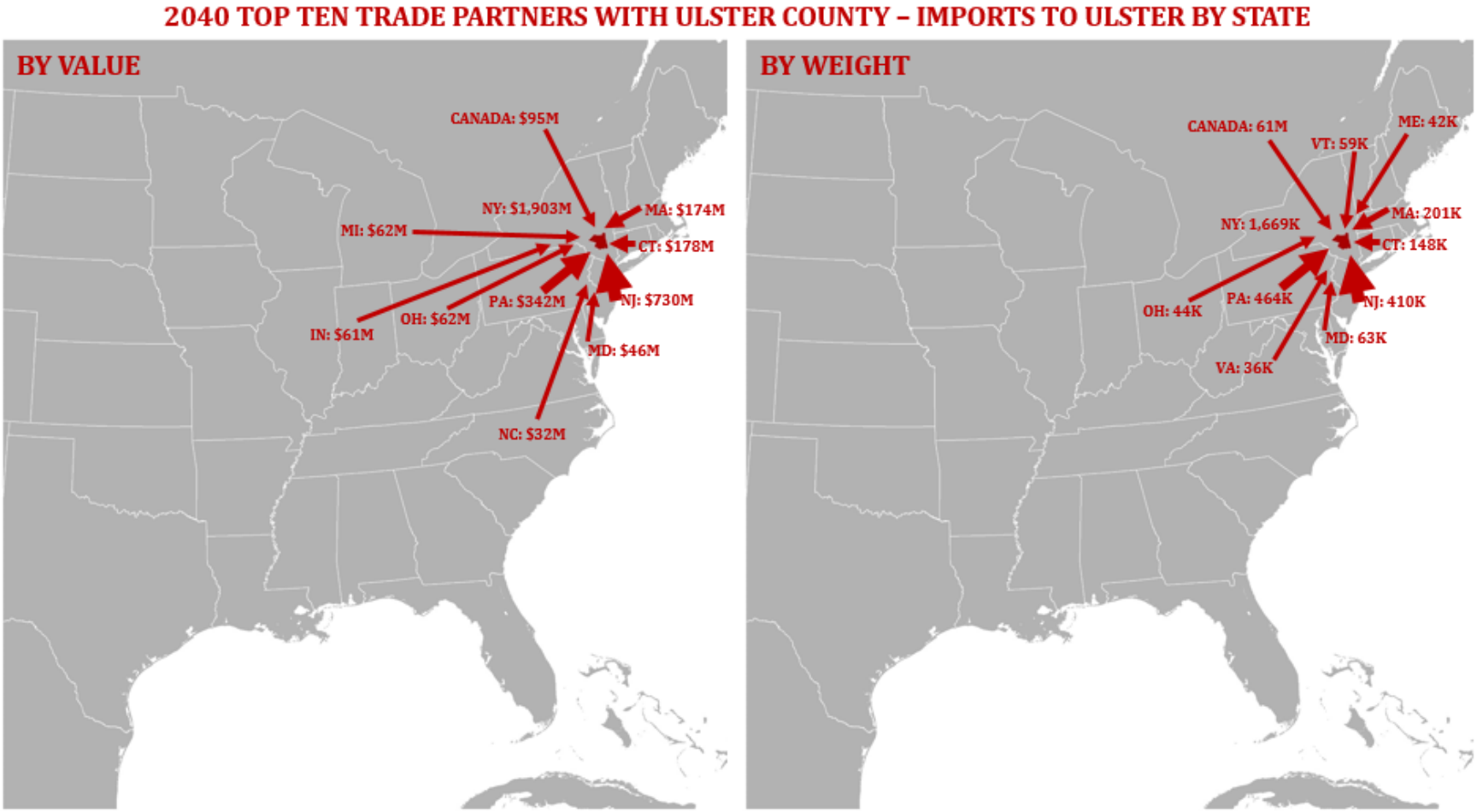


Figure 4.19: Exports - 2012 Top Ten Trade Partners[xxvii]

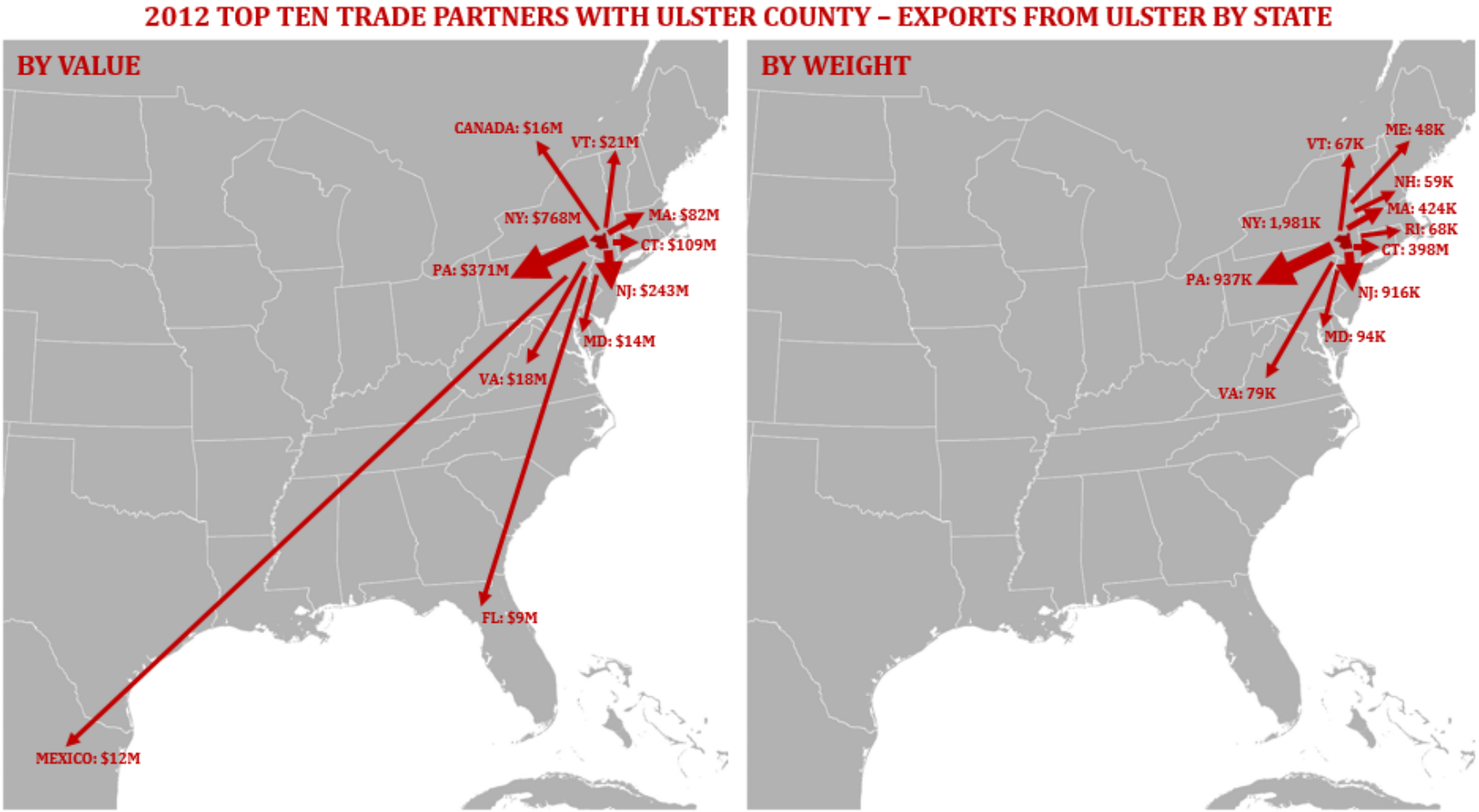
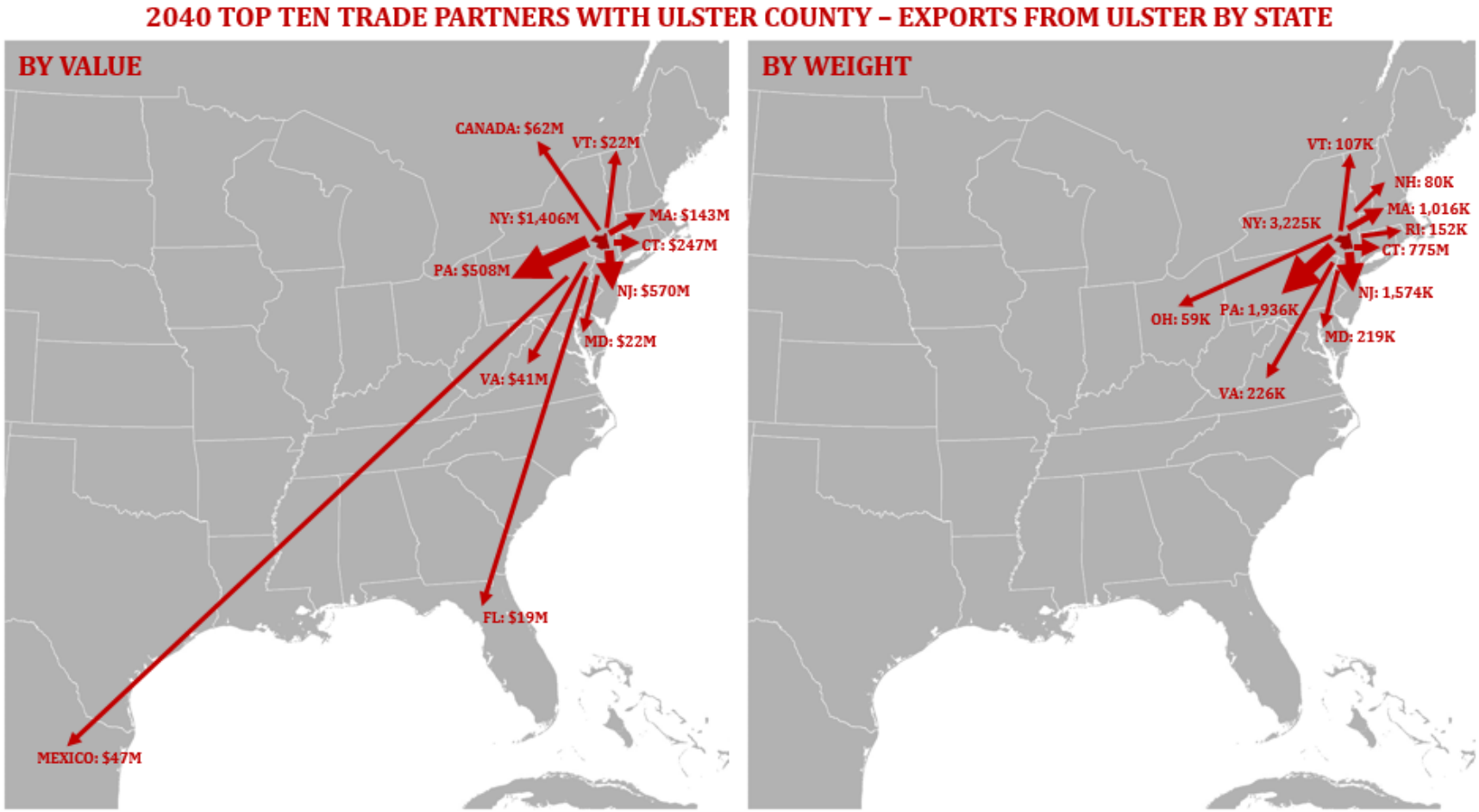


Figure 4.20: Exports - 2040 Top Ten Trade Partners[xxviii]



Breaking down the trade partners by county, counties adjacent to Ulster generally have the highest values and tonnage moving between counties. Suffolk and Albany, and Union counties in New York show forecasted import growth rates over 100% between 2012 and 2040. Table 4.16 summarizes top counties importing to Ulster County.

Table 4.17: Major Trade Partners by County - Imports[xxix]

2012 Rank	Origin County	Millions of Dollars	2040 Rank	Origin County	Million Dollars	2012 - 2040 % Change
1	Suffolk County, NY	143.9	1	Suffolk County, NY	331.6	130%
2	Queens County, NY	123.3	2	Union County, NJ	246.1	108%
3	New York County, NY	122.3	3	Hudson County, NJ	178.9	100%
4	Union County, NJ	118.1	4	New York County, NY	166.5	36%
5	Nassau County, NY	103.6	5	Kings County, NY	159.8	62%
6	Kings County, NY	98.5	6	Albany County, NY	154.9	127%
7	Hudson County, NJ	89.3	7	Putnam County, NY	138.6	1,431%
8	Richmond County, NY	76.8	8	Richmond County, NY	125.2	63%
9	Albany County, NY	68.2	9	Queens County, NY	117.1	-5%
10	Fairfield County, CT	60.2	10	Nassau County, NY	110.8	7%
2012 Rank	**Origin County**	**Thousand Tons**	**2040 Rank**	**Origin County**	**Thousand Tons**	**2012 - 2040 % Change**
1	Suffolk County, NY	133.4	1	Suffolk County, NY	261.0	96%
2	Queens County, NY	111.1	2	New York County, NY	138.9	40%
3	New York County, NY	99.4	3	Kings County, NY	125.6	57%
4	Nassau County, NY	89.2	4	Putnam County, NY	114.9	1,214%
5	Kings County, NY	79.8	5	Richmond County, NY	99.8	63%
6	Union County, NJ	63.0	6	Queens County, NY	95.6	-14%
7	Richmond County, NY	61.4	7	Union County, NJ	90.3	43%
8	Fairfield County, CT	54.4	8	Nassau County, NY	90.1	1%
9	Orange County, NY	50.8	9	Orange County, NY	84.9	67%
10	Rockland County, NY	48.3	10	Hudson County, NJ	73.2	53%

In terms of exports, Richmond County, NY, and Middlesex County, NJ, show the highest 2012 to 2040 growth rates for exports by value. Worcester County, MA, and Suffolk County, NY, show the highest rates for exports by tonnage. Table 4.18 summarizes top counties to which exports ship from Ulster County.

Table 4.18: Major Trade Partners by County - Exports[xxx]

2012 Rank	Destination County	Millions of Dollars	2040 Rank	Destination County	Millions of Dollars	2012 - 2040 % Change
1	New York County, NY	136.6	1	New York County, NY	196.9	44%
2	Westchester County, NY	128.3	2	Suffolk County, NY	187.3	166%
3	Suffolk County, NY	70.4	3	Kings County, NY	154.5	155%
4	Kings County, NY	60.7	4	Queens County, NY	111.1	139%
5	Nassau County, NY	53.7	5	Nassau County, NY	109.0	103%
6	Luzerne County, PA	48.5	6	Middlesex County, NJ	104.2	214%
7	Queens County, NY	46.5	7	Westchester County, NY	93.6	-27%
8	Hartford County, CT	35.5	8	Richmond County, NY	86.5	235%
9	Lehigh County, PA	35.2	9	Bergen County, NJ	77.0	122%
10	Bergen County, NJ	34.7	10	Union County, NJ	74.1	164%
2012 Rank	**Destination County**	**Thousands of Tons**	**2040 Rank**	**Destination County**	**Thousands of Tons**	**2012 - 2040 % Change**
1	Suffolk County, NY	266.1	1	Suffolk County, NY	713.4	168%
2	Queens County, NY	259.4	2	Queens County, NY	353.9	36%
3	Westchester County, NY	251.3	3	Montgomery County, PA	329.2	132%
4	New York County, NY	184.4	4	Worcester County, MA	268.9	177%
5	Nassau County, NY	144.5	5	Nassau County, NY	242.9	68%
6	Montgomery County, PA	142.1	6	Hartford County, CT	230.6	67%
7	Hartford County, CT	138.0	7	Middlesex County, NJ	221.1	145%
8	Kings County, NY	116.4	8	Westchester County, NY	221.1	-12%
9	Bergen County, NJ	112.4	9	New York County, NY	217.8	18%
10	Monmouth County, NJ	110.0	10	Kings County, NY	209.1	80%

Through the review of local and national trade partners, it is clear that much of the traffic entering and exiting Ulster County utilizes major interstates, like the NY Thruway. The CSX rail line carries high volume freight cargo to, from, and through the Ulster County, while various low-volume, high-value commodities may arrive via Albany International Airport, north of Ulster County in Albany, or Stewart International Airport, south of Ulster County in Newburgh, and travel to Ulster County via truck.

Rail Freight

The West Shore Railroad is the only active rail freight line in Ulster County. The line runs from Weehawken, New Jersey, across the Hudson River from New York City, north along the west shore of the river to Albany, New York and then west to Buffalo. Passenger service on the line ended completely by 1960. The line now serves as CSX Transportation's principal freight route from Western points to New Jersey, via the former NYC Selkirk Yard. West of the Hudson Palisades, beginning at North Bergen Yard in Bergen, NJ, the line is now referred to as the River Subdivision of CSX Transportation and passes directly through Ulster County as shown in Figure .

Local trains delivering freight to businesses and industries located along the River Subdivision operate out of yards located at North Bergen, NJ; Kingston, NY and Selkirk, NY. Other than local freight, commodities include grain, oil, ethanol, trash, and other mixed intermodal and commodity freight. Bakken crude oil shipments are also travelling more frequently on the corridor as well, with full shipments generally heading south for refinement in New Jersey and empty tank cars returning north.

Rail Traffic

The most recent count data available for the West Shore Rail Line in Ulster County was compiled in 2012 as part as the Boices Lane Rail Road Crossing Safety Assessment. Daily regularly scheduled trains that cross the at-grade railroad crossing on Boices Lane were provided by CSX for the month of August 2012 as part of that study. Weekday and weekend data is shown below.

Table 4.19(a): West Shore Line Train Movements (as provided by CSX September 2012)

Day of week	Total / Day	South/ Day	North/ Day
Monday	**23**	12	11
Tuesday	**27**	12	15
Wednesday	**30**	14	16
Thursday	**31**	15	16
Friday	**29**	14	15
Saturday	**27**	14	13
Sunday	**24**	13	11
Week Totals	**191**	94	97

Source: CSX. Includes regularly run trains only; additional such as ethanol loads (south) and empties (north) not included.

An acoustic train counter was also installed adjacent to the rail crossing from October 26 to November 7, 2012; however, only a few days of reliable data was obtained before Hurricane Sandy hit on October 29, which affected the train service in the area. The two days of data showed reasonable correlations with the data provided by CSX where 26 trains were counted on Saturday October 27, 2012 and 20 trains were counted on Sunday October 28, 2012. Train speeds range from slow moving trains associated with track changing nearby, to 50 mph high speed trains. CSX staff noted in 2015 that traffic has likely increased by 10-20% since the time when these data were compiled, although volumes fluctuate significantly.

Table 4.19(b): West Shore Line Train Movements (NYSDOT Acoustic Count, August 2012)

Day of week	Total / Day	Av. Length (ft.)
Monday (8/6)	21	5,565
Tuesday (8/7)	21	4,888
Wednesday (8/8)	32	5,418
Thursday (8/9)	33	5,271
Friday (8/9)	29	5,187
Average	**27**	**5,266**

Table 4.19(c): West Shore Line Train Movements (NYSDOT Acoustic Count, August 2012)

Day of week	Total / Day	Av. Length (ft.)
Monday (8/13)	22	5,239
Tuesday (8/14)	34	4,550
Wednesday (8/15)	31	5,456
Thursday (8/16)	31	5,266
Friday (8/17)	29	5,609
Average	**29**	**5,224**

Table 4.19(d): West Shore Line Train Movements (NYSDOT Acoustic Count, August 2012)

Day of week	Total / Day	Av. Length (ft.)
Monday (8/27)	25	4,883
Tuesday (8/28)	29	5,311
Wednesday (8/29)	35	5,079
Thursday (8/30)	32	5,459
Friday (8/31)	32	4,644
Average	**31**	**5,075**

Table 4.19 (e): West Shore Weekend Train Movements (NYSDOT Acoustic Count, August 2012)

Day of week	Total / Day	Av. Length (ft.)
Saturday (8/4)	29	6,070
Sunday (8/5)	25	6,273
Saturday (8/11)	22	6,785
Sunday (8/12)	25	5,715
Saturday (8/18)	28	5,996
Sunday (8/19)	24	5,965
Saturday (8/25)	31	6,085
Sunday (8/26)	23	5,684
Average	**26**	**6,072**

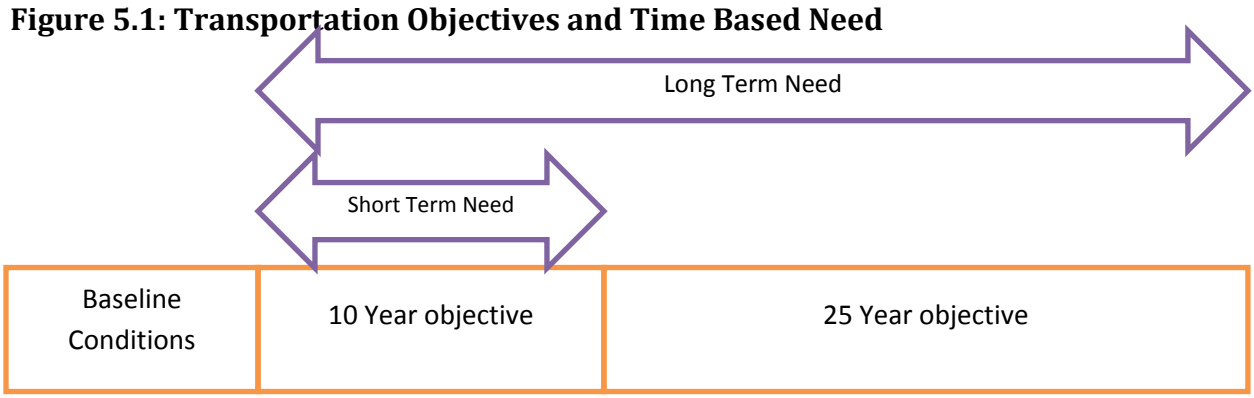
V. DEFINING TRANSPORTATION NEEDS

The purpose of the long-range transportation plan is to direct investment of available resources toward meeting the region's highest priority needs. The needs are determined by comparing the plan's objectives, "What do we want to accomplish over the life of the plan?" with current conditions and forecasts, "Where are we starting, and how are demographics and economics expected to change?" The needs address the same topic areas that form the content of the Goals and Objectives in Chapter 2, and reflect the transportation profile in Chapter 4.

- System Preservation and Asset Management
- Economic Vitality
- Safety
- Security
- Mobility and Reliability
- Accessibility and Connectivity
- Environmental Protection and Enhancement

The needs do not define the ultimate plan. The projects, strategies, and actions that comprise the plan arise from the needs, but reflect fiscal constraint. The needs also span the twenty-five year reach of the plan. Some may be addressed in the near term, while others will be of greater concern ten or twenty in the future. Sometime satisfying needs is sequentially dependent, when a preliminary step facilitates the next one.

Figure 5.1: Transportation Objectives and Time Based Need



The illustration above depicts the concept of time based need, and may apply to any of the transportation system elements. Using bridge condition as an example, the baseline may be 28% Good, the 10 year objective is to increase that to 45% Good, and the 25 year objective to 60% Good.

An Affordable Transportation System: A key concept that underlies the discussion of needs is affordability. With limited fiscal resources, every jurisdiction that owns and operates part of Ulster County's transportation system must consider what they can afford to operate and maintain into the future. There have been times when elements of the transportation system are overbuilt, most

often because forecasts of population growth or economic activity turned out to be overly optimistic. There may also be pressure to accommodate high traffic volume even when it occurs infrequently, for example peak recreational travel that may happen a few weekends each year. When the size of the transportation system exceeds the financial ability of its owners to maintain it, the entire system may suffer, and users are not well served.

Affordability must also be considered in the context of infrastructure age and condition. For example, when a bridge is nearing the end of its predicted useful life, the owner may want to replace it, but may only be able to afford a rehabilitation that will add ten years to the life cycle.

The needs in this Plan have been constrained by forecasts of affordability.

Land Use Focus: A guiding principle for this plan is the need to focus investments on critical facilities. Fiscal constraint drives the importance of establishing priorities; since UCTC cannot meet all identified needs over the course of the plan, they must choose the wisest and most efficient investments. As a means of most closely coordinating transportation investment with land use initiatives, UCTC has chosen to focus on Primary Corridors and the places they link. In order to support the efficient land use that results from compact development, multimodal needs of urban centers will be a priority; these include Kingston, New Paltz, Saugerties, Woodstock, and Ellenville. Smaller hamlets along these corridors that are or support compact growth will also be a focus. These include the hamlets of Rosendale, Marlboro, Gardiner, Wallkill, Stone Ridge and Phoenicia to name a few. The corridors themselves will receive priority in project selection for system preservation and multimodal mobility actions.

User Expectations: Another balance that must be struck is between the expectations of transportation system users and the feasibility of meeting those expectations. Input from stakeholder and public meetings, rTown®, and other contacts (see Appendix _) was utilized to understand these expectations. With the advent of performance-based, outcome-oriented planning, the user perspective must be more explicitly considered in the development of the Plan. As UCTC moves ahead in measuring and reporting performance across a number of metrics (see System Performance report, Chapter 9), the public and decision makers will be given more explicit information on how planned investments are impacting their travel. While the perspective of the travelers may help UCTC set priorities, fiscal constraint and engineering feasibility will impose limits on meeting expectations.

Game Changers: One certainty of transportation planning is that we cannot know the future. While forecasts of future conditions may be credible, based on examination of trends and agreed upon assumptions, there is also the recognition that unanticipated changes may happen that can have profound impacts on community and transport. This is one reason behind the requirement that the LRTP be updated at least every five years.

UCTC has recognized a number of potential game changers. While these do not explicitly affect the quantification of need, they are worthy of discussion.

- Transportation technology. There seems to be some certainty that connected and autonomous vehicles will begin entering the fleet within the time horizon of this plan.

Connected vehicles communication continuously with other vehicles and with roadside infrastructure like traffic signals. The primary focus is a positive impact on safety resulting from a variety of crash-prevention and crash-avoidance applications. Autonomous vehicles perform across a continuum of self-driving features. Simple applications like self-parking cars are available now. Fully autonomous cars are currently in testing and development, with the Google Car being the most well-known. When these vehicles reach full acceptance, they have the potential to influence everything from car ownership to travel demand. People currently unable to drive, including children, seniors, and those with disabilities, may be able to rely on autonomous cars for transport.

Early examples of automated trucks are also in development. These may increase efficiency of long haul trips by obviating the need for driver hours-of-service rules; and assist in the implementation of off-hours urban delivery schemes.

- Communications technology. There is no question that the Internet and related communication technology will continue to evolve. This will have unknown impacts across many industries, and on individual lifestyle choices. This may include the growth of remote education, where students can choose to take on-line courses from SUNY New Paltz or SUNY Ulster, without having to travel to campus; or from far distant educational institutions. Communications combined with 3-D printing technology could lead to neighborhood micro-fabrication centers that would receive fabrication requests and create finished products for pick-up, having an impact on urban goods delivery. Pervasive high-speed communications may also enable more people to work from home instead of commuting.
- Construction technology. Research is presently underway on a number of construction techniques with transportation system applications, including self-healing concrete and asphalt pavements, 3-D printed bridges using new materials, and solar roads.
- Sustainable communities. There is a growing focus on how to become more sustainable in terms of energy generation and consumption, locally sourced food, and urban form and structure. There may be unexpected improvements in any of these areas that can affect travel demand and mode choice.

With those caveats, needs are defined as stated above: by reviewing goals and performance measures introduced in Chapter 2 against the baseline conditions to arrive at need.

Goal 1 – System Preservation

Invest in transportation system infrastructure to bring all facilities and modes into a state of good repair.

Baseline – Bridge Conditions

Based on 2014 data, as reported in Chapter 4, 48 of 110 State owned bridges are deficient, and 100 of 223 local bridges are deficient. Since bridge condition is a dynamic state, more bridges will become deficient over time while others are being repaired, rehabilitated, or replaced. Deterioration rates can be affected by use of preventive maintenance strategies like bridge painting to slow damage to steel elements and bridge washing to remove road salt. Decks may benefit from some of the same methods as pavements, including patching and crack sealing. NYSDOT has

developed a Bridge Needs Assessment Model (BNAM) that predicts future bridge condition based on investment assumptions.

Need – Bridges

In order to meet the short term objective for bridge conditions, there will be 5 fewer State bridges and 10 fewer local bridges classified as structurally deficient by 2025.

In order to meet the long term objective for bridge conditions, there will be 10 fewer State bridges and 20 fewer local bridges classified as structurally deficient by 2040.

In all cases, bridges on critical corridors and within urban areas will receive priority.

Baseline – Pavement Conditions

As with bridges, pavements have a predictable deterioration curve. It is affected by a number of factors including the initial pavement construction, traffic load including percentage of heavy vehicles, quality of drainage, winter maintenance, and use of preventive maintenance techniques. The latter includes techniques that extend pavement life, such as patching and crack sealing.

There is also a range of pavement treatments that can be applied to deteriorated pavements that vary in both cost and result. Work may involve overlays of existing pavement from micro-surfacing to heavier overlays; milling and resurfacing, often involving recycling pavement materials; and full depth reconstruction for pavements that are in poor condition and have underlying problems.

As noted in Chapter 4, baseline conditions are measured in two ways, Surface Score based on NYSDOT visual scoring method, and International Roughness Index, based on instrument measurement. Both are valuable, in that they measure different aspects of pavement.

Needs – Pavements

Given the significant mileage of arterial pavements on the State Touring Route System that are rated Fair, or have IRI scores rated unacceptable, NYSDOT is facing significant challenges to meet the pavement goals. The TAMP includes a well thought out approach to a "Preservation First" approach that will make the most economically efficient use of available fiscal resources for pavement work. UCTC will work with NYSDOT Region 8 to ensure that they support and implement the focus on Primary Corridors first.

A significant need is data collection on locally owned streets and roads. Without a system of routine pavement scoring, owners of these roads do not have a basis for making the best pavement management decisions; and UCTC lacks knowledge of the extent of the need.

Baseline – Bus Fleet

UCAT owns 26 buses of various sizes and ages; and 2 vans that are used to provide service to mobility impaired individuals in compliance with the Americans with Disabilities Act. Kingston Citibus owns 4 coaches, 2 paratransit vans, and 2 replica trolleys. When federal funds are used to purchases buses, the FTA specifies a minimum service life, and will not fund a replacement bus until that minimum has been reached. As noted in Table 5.1, the expected life of a bus varies with the type of construction and size of the vehicle. A heavy duty transit coach is expected to stay in

service longer than a light duty cutaway vehicle where the body is fabricated and mounted on a truck frame. Contributing to the service life calculation is the expectation by FTA that the transit operator will perform regular preventive maintenance on its buses. In fact, preventive maintenance is an eligible expense for FTA §5307 urban formula funds.

Need – Transit Fleet

The column labeled Replacement 1 is the year each group of buses in the fleet is next due for replacement. This is accompanied by an important caveat, which is that UCAT service may well change over time. This may result in changes in bus needs in terms of both numbers and types of buses. As such, the fleet profile and life cycle may change over time.

One positive is that Ulster County has purchased a small number of buses over a number of years, so financing replacement purchase will not be onerous.

The Citibus transit fleet is relatively new. However, nearly all of the fleet was replaced in 2010 using funding from the American Reinvestment and Recovery Act so their capital needs, while small, will occur in a block. Citibus currently uses a substantial portion of their funding for operations and preventive maintenance making funding capital needs difficult.

Table 5.1: Ulster County Area Transit Fleet – Life Cycle

Bus Type	Size	Year of Purchase	Number	FTA category	FTA Minimum Service Life (years)	Replacement 1
Coach	30'	2004	2	Heavy Duty small bus	10	2014
Cutaway	24'	2008	2	Light Duty midsize bus	7	2015
Cutaway	24'	2009	7	Light Duty midsize bus	7	2016
Coach	40'	2005	2	Heavy Duty large bus	12	2017
Cutaway	24'	2013	2	Light Duty midsize bus	7	2020
Cutaway	24'	2014	1	Light Duty midsize bus	7	2021
Coach	35'	2010	5	Heavy Duty large bus	12	2022
Coach	29'	2012	2	Heavy Duty small bus	10	2022
Coach	30'	2014	2	Heavy Duty small bus	10	2024
Coach	30'	2015	1	Heavy Duty small bus	10	2025

Baseline ~ Needs - Other Transportation Infrastructure

There are numerous other infrastructure elements that contribute to safe and efficient travel. These include traffic signals, traffic signs, pavement markings, and guide rail. Each of these has specific maintenance issues. Traffic signals have mostly been converted to LED indications, which lose brightness over time. Signs lose their reflectivity over time, and FHWA has issued new retroreflectivity standards. Pavement markings wear. Guiderail has a long life cycle unless struck and damaged. In general, each jurisdiction maintains an inventory of the items it owns.

Of primary importance is that owners have a maintenance policy that:

- Establishes life cycle periods for each category for replacement
- Establishes a protocol for emergency response in case of damage

Goal 3 – Safety

Improve the safety of all users of the transportation system by responding to identified safety deficiencies and proactively addressing future safety needs.

Baseline – Motor Vehicle Safety

Motor vehicle crashes are of great concern on both the personal and societal level. Studies by the AAA Foundation for Traffic Safety have found that the cost of crashes far exceeds the cost of congestion in the nation's urbanized areas.

Crash data is readily accessible. Police reports are filed with the NYS Department of Motor Vehicles. NYSDOT then takes the database and converts it into a map-based application called the Accident Location Information System (ALIS). ALIS can be queried across a number of dimensions including location, crash type, and contributing factors.

FHWA initiated a rulemaking in 2014 to implement the MAP-21 performance based planning requirement as it applies to safety. The performance measures in the proposed rule are number and rate of fatal crashes and number and rate of serious injury crashes.

As shown in Chapter 4, Table 4.13, Ulster County experienced a total of 64 fatal crashes during the four year period 2011-2014, for an average of 16 per year. Over the same period there were 7,196 crashes that resulted in personal injury, or an average of 1,799 per year.

Need– Motor Vehicle Safety

Based on the record, UCTC will need to reduce average fatal crashes by 1 and injury crashes by 90 in each five year period of the plan.

Baseline– Pedestrian and Bicycle Safety

Pedestrians and cyclists are uniquely vulnerable users of the transportation system. Being struck by a car is always more likely to result in injury. It is positive that there have been only 3 bicycle and 4 pedestrian fatalities over the four year study period. There have been 161 bicycle injury crashes, an average of 40 per year; and 278 pedestrian injury crashes, an average of 70 per year. It is also recognized that a number of such crashes that result in minor injury likely go unreported.

Need

Based on the objective, which combines bicycle and pedestrian crashes, UCTC need reduce annual fatalities by one and injuries by 11 during each five year period.

Baseline ~ Need– Safety of Special User Groups

This is a proactive objective that will require matching demographic trends to current and evolving practice for systemic safety improvements and countermeasures. The NYSDOT Intersection and

Pedestrian Safety Action Plans that are currently in development will provide a great deal of information on appropriate investments.

Goal 4 – Security

Ensure that transportation system users have a secure environment and that the transportation system provides residents of Ulster County with adequate service in the context of severe weather events.

Baseline– Resiliency Planning

Ulster County needs a resilient transportation system. Hurricane Irene and Superstorm Sandy demonstrated what severe storms can do to the transportation infrastructure. Security for the County's residents and businesses demands that they can expect an acceptable level of service for evacuation, emergency response, and recovery. Performing a system-wide vulnerability analysis will identify those roads and bridges that are priority candidates for adaptation, making them less vulnerable to damage. Because this approach is based on networks, not facilities, it is not limited to critical corridors.

Need– Resiliency Planning

UCTC is responding to this need by including a Resiliency Plan/Vulnerability Study in its current Unified Planning Work Program. Once that study is completed, there must be a commitment to implementing high priority recommendations.

Goal 5 – Mobility and Reliability

Provide for efficient and reliable travel by all modes by investing in strategies that mitigate both recurring and non-recurring congestion.

Baseline - Address Recurring Congestion &Travel Time Reliability

The UCTC's current quantitative data on recurring congestion (defined as a travel time index greater than 1.30) on the arterial highway and street system in Ulster County is available from a travel time survey completed in 2011. The survey shows recurring congestion in the following corridors:

- Route 9W – in Saugerties, Town of Ulster retail area Port Ewen, and Highland
- Route 299 most of it length in Lloyd and east of the Village of New Paltz
- West ends of the Broadway and Washington Avenue Corridors in Kingston,
- Route 209 in Stone Ridge

Need – Address Recurring Congestion &Travel Time Reliability

The UCTC will need to conduct a repeat of the travel time survey in the congested corridors within the next 5 years. Improve the reliability of travel time on principal arterial highways to an averaged travel time index of 1.25 by 2025, and maintain that level to 2040.

Baseline– Improve Freight Mobility

Truck travel can be impeded as a result of two issues: high levels of congestion, and geometric bottlenecks that create barriers to truck movement. The latter include inadequate turning radii, substandard vertical clearances, and load-posted bridges.

Need– Improve Freight Mobility

UCTC will need to identify truck bottlenecks within the next 5 years and develop a program of projects to eliminate bottlenecks by 2025.

Baseline – Support Deployment of Transportation Technology

Currently Transportation Technology in UCTC's area is handled by the Hudson Valley Transportations Management Center (HVTMC). UCAT's current transit fleet is equipped with a vehicle locator system (AVL) and currently a mobile application is available that provides time to next bus arrival along all UCAT routes. UCAT routes are not available in New York 511 system, Other system programs include NYSDOT's wireless Information for Sustainable Commerce and Surface Transportation Wireless Program (WISEST) and USDOT's Connected Vehicle Program.

Need – Support Deployment of Transportation Technology

UCTC will work to include a public transit carriers in the TMA region within the 511 system by 2020 and, Citibus will be equipped with AVL and appropriate mobile application by 2020.

UCTC will facilitate deployment of the Connected Vehicle program technology as it is rolled out by USDOT and vehicle manufacturers. Monitor progress of penetration of autonomous vehicles in the general auto fleet and develop appropriate plans and policies.

Goal 6 – Accessibility and Connectivity

Create and maintain a well- connected transportation system that provides access throughout Ulster County for people and goods travelling by all modes.

Need - Transit Accessibility

Improve transit access in Kingston and New Paltz, and for major intra-county corridors by 2025 so that route structure provides convenient access to prescribed destinations, and hours of operation facilitates access to employment. Continue to modify transit operations as necessary to address changes in population and economy through 2040.

Need– Pedestrian Accessibility

Improve pedestrian access through completion of sidewalks in critical locations by 2020; and throughout urban and suburban locations by 2040.

Need – Bicycle Accessibility

Provide safe and convenient access for cyclists through a system of on-road accommodations and completion of the Ulster County trail system.

Need – Freight Accessibility

Improve designated connections from the National Highway System to shipper/receiver destinations throughout Ulster County in priority order through the life of the Plan.

Goal 7 – Protect and Enhance the Environment

Contribute to making Ulster County a sustainable place by protecting and enhance the natural and built environment, reducing greenhouse gas and other motor vehicle emissions,

supporting sustainable construction and maintenance practices, and coordinating land use and transportation plans.

Baseline ~ Need – Coordinate with Land Use Plans

Land use planning in New York is done by local governments through comprehensive plans and zoning ordinances. UCTC supports land use concepts that result in more compact development in and around existing activity centers and the preservation of transportation capacity along primary corridors through access management. UCTC will focus of transportation investments, consistent with these broad policies and will work closely with local governments so that they understand how their land use plans and decisions can be best supported by transportation plans and investments.

Baseline ~ Need – Reduce Greenhouse Gas Emissions

The 2015 New York State Energy Plan includes a goal of 40% reduction in GHG emissions from 1990 levels by 2030. While this goal is not specific to the transportation sector, emissions from vehicles constitute about one-third of the state's GHG emissions. UCTC can contribute to accomplishing the statewide goal by actions and programs that reduce fossil fuel consumption. These include reducing VMT by shifting trips from single-occupant vehicle mode to both shared-ride modes that include transit and carpooling, and to non-motorized modes. Concurrently, UCTC can encourage vehicle owners to switch to more efficient and alternative-fueled vehicles. These include hybrids, plug-in hybrids, and electric vehicles (EV).

Ulster County has already begun installing EV charging stations in county owned parking facilities. Working with NYSERDA, they can expand that program not only in response to demand, but as a means to facilitate EV purchase decisions.

UCTC will conduct a study of the best locations for the installation of EV Charging Stations throughout its planning area.

UCTC will also continue to monitor the use of existing park-and-ride facilities and the need for additional capacity or new facilities particularly in southern Ulster County.

Objective

Reduce environmental impact of roadway and bridge construction and maintenance by sharing best practice on sustainable methods to county and municipal transportation agencies.

Baseline ~ Need – Reduce Impact of Construction

There are a number of ways that construction of roads, bridges, and even trails can create negative environmental impacts. These range from emissions from construction machinery to materials that are used, to stormwater runoff from construction sites. There are well documented ways to reduce and mitigate many of these impacts, but research is also underway on "green construction" techniques. UCTC will research these techniques and share them with County and Town highway superintendents and will provide additional points for TIP projects that utilized these techniques.

VI. SYSTEM OPERATIONS PLAN

MAP-21 shifts the focus of the metropolitan transportation planning process to a performance-based, outcome-oriented perspective. As discussed in the Introduction, this means that UCTC must select projects, actions, and strategies in the long-range plan that will result in a regional transportation system that best meets the needs of the travelling public across a variety of dimensions. These include not only asset management and safety, but also mobility and the reliability of travel.

> *"F) Operational and management strategies.*
>
> *Operational and management strategies to improve the performance of existing transportation facilities to relieve vehicular congestion and maximize the safety and mobility of people and goods."*
>
> **MAP-21, §1201 (h)(i)(2)(F)**

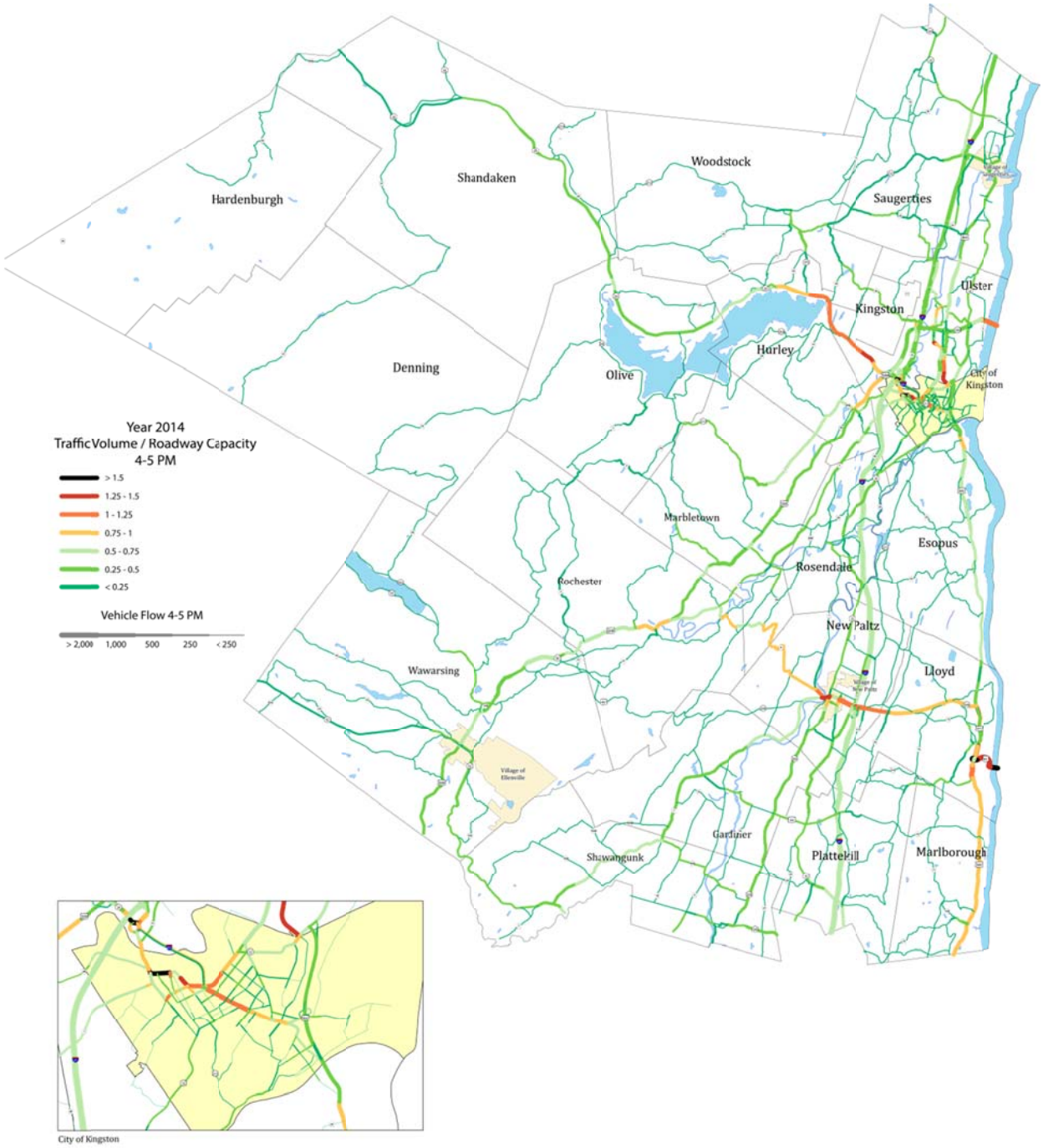
TRAFFIC NETWORK OVERVIEW

Ulster County is served by a network of roadways ranging from interstate expressways to local town and village streets. Recent traffic volume counts and network analyses show that, for the most part, there is little traffic congestion in Ulster County and travel within the region occurs without excessive delay. However, there are isolated areas where intersections or roadway segments experience moderate to severe recurring delays. One such area is the Route 28 Corridor in the Town of Ulster at the roundabout area. Traffic congestion in this area is caused by the confluence of State Routes 28, 209, Interstate 587, and the NYS Thruway. Other areas experiencing recurring traffic delays in Ulster County include the Kingston Broadway Corridor, Kingston Uptown Stockade District, Route 9W in the Towns of Ulster and Marlborough, Route 299 in New Paltz and Lloyd, and the Mid Hudson Bridge.

In addition to recurring traffic congestion, several areas in Ulster County experience moderate to severe nonrecurring traffic congestion. Nonrecurring congestion is congestion caused by nonrecurring events such as crashes, disabled vehicles, blocked railroad crossings, work zones, adverse weather events, and planned special events. Areas in Ulster County experiencing significant nonrecurring congestion include the NYS Thruway and the West Shore Railroad Corridor area in Kingston. Nonrecurring congestion can occur anywhere at anytime and is difficult to measure or predict.

Figure 6.1 shows existing traffic congestion in 2014. This data was obtained from the UCTC's travel demand forecast model, which computes current and future roadway volume-to-capacity (V/C) ratios using various data inputs such as household, employment, posted speeds, roadway functional classification and the physical characteristics of the roadways.

Figure 6.1: Year 2014 Volume/Capacity and Total Traffic Flow

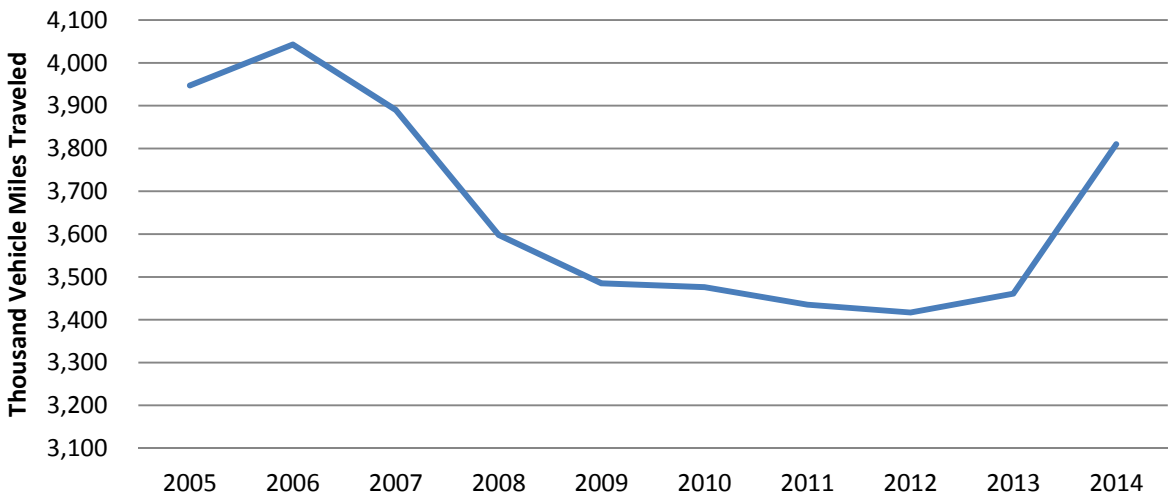


Future growth with no system improvements is expected to exacerbate existing areas of congestion with few new areas of congestion appearing. Instead, congestion will expand to adjacent segments along existing areas of congestion.

Since 2006 there has been a steady downward trend in Vehicle Miles Traveled (VMT) at the local level as evidenced in Figure 6.2. Statewide VMT follows a similar trend, with current levels

declining to numbers last seen in 1999. Keeping these trends in mind, VMT and congestion are expected to increase at a slower rate than previous models have shown but are still expected to grow.

Figure 6.2: Yearly VMT in the Kingston Urbanized Area



Our transportation system has evolved from something that is static and provides a defined level of service to something that can be actively managed to optimize the level of service in real time. Technology, generally under the terminology of Intelligent Transportation Systems (ITS), has done a great deal to enable regional transportation system management and operations. This can typically be accomplished at a significantly lower cost than a capital project that constructs new roadway capacity. This approach does result in ongoing annual costs for staffing traffic management centers, software licenses, and the like. Application of management and operations strategies can be grouped in these areas:

- **Traffic management.** Actively managing traffic flow results in more efficient mobility. This can be accomplished in a number of ways. Computer controlled traffic signal systems do a much better job of optimizing signal timing, avoiding unnecessary delay. The most advanced of these systems is known as traffic adaptive signal control that optimizes signal timing continuously in response to the volume of traffic, pedestrians, and other users.
  An arterial signal system can be equipped with transit signal priority, which enables buses to trigger a green light to stay on schedule.
  In situations where there is high peak volume and very directional flow in opposite directions in the AM and PM periods, reversible lanes can be used. In this case, a center lane is reversed to provide added capacity for the predominant direction.
  Variably priced toll lanes, often known as High Occupancy Toll (HOT) lanes because they usually are available to other than single-occupant vehicles, can be created on expressway facilities. The price is adjusted dynamically in response to traffic volume to maintain free flow conditions.

The ability to display variable speed limits is another tool that can be used to improve safety and traffic flow on congested freeways.

- **Incident management.** This is a subset of traffic management whose objective is to improve response to highway incidents to restore traffic flow more quickly. This requires promptly detecting the incident, both through 911 calls and use of closed-circuit television cameras and other devices, and accurately dispatching the appropriate emergency services resources. It also means response agencies, including police, fire, EMS, transportation or public works departments, and towing companies sharing standard operating procedures and training. The Strategic Highway Research Program (SHRP2) developed a multidisciplinary training course for these responder groups. The course is now available through New York State DOT. The National Unified Goal for Traffic Incident Management addresses safe, quick clearance; responder safety; and interoperable communications.

- **Traveler information**. Informed travelers make better decisions regarding their mode, route, and time of travel. When information about transportation system conditions is transmitted in real time, the entire system can operate more efficiently. For example, when an incident occurs that closes lanes on a roadway, upstream drivers can be informed to find alternate routes or use preplanned detours, reducing the traffic queue. Similarly, people can be informed ahead of time of severe weather and road conditions, and be provided with routing information for large special events. This can also benefit tourists who are not as familiar with the roadway system as local residents. Systems can also be put in place to assist those who want to use public transit, with applications to plan their trip, see the schedule, and be informed at stops when the next bus or train will arrive.

  There are a number of techniques and devices that are used to facilitate traveler information. In 2000, the Federal Communications Commission designated 511 as a national traveler information number. In the intervening years, state and local governments developed 511 systems. 511NY can be accessed both by phone and through the Internet at www.511ny.org . It provides both real time information and trip planning services for a variety of modes across the state.

  Dynamic or variable message signs (DMS/VMS) have become commonplace on our highways, as has Highway Advisory Radio (HAR) to inform motorists of road conditions. In recent years, there has been a shift from public agency to private sector provision of traveler information. There are a number of Internet applications that perform these functions, including Google™ maps that show current traffic and assist with route selection; and Waze©, which collects data from smart phones of users who are logged on to determine traffic conditions.

- **Electronic toll collection (ETC)**. Systems like E-Z Pass® New York create multiple benefits. By automating toll collection on the New York State Thruway and various bridges, ETC speeds traffic flow through toll barriers, thereby reducing congestion. Toll tags are required for the HOT lane pricing technique discussed above. Finally,

tags can be used as traffic probes to monitor traffic flow and speed through a series of roadside readers. In that instance, identifying information is stripped from the data to ensure privacy of account holders.

- **Commercial vehicle operations.** This is a subset of ITS that is dedicated to making truck transport safer and more efficient. It involves such techniques as electronic verification of a truck's credentials, and weigh-in-motion where appropriately equipped trucks do not have to stop at weigh stations. One of the newer techniques involves electronic logbooks that are transmitted to the trucking company's dispatcher to verify the truck's location and the driver's compliance with federal hours-of-service rules. This is not yet a publicly accessed function, but may become so.

- **Other management systems.** Parking management systems are typically deployed in central business districts. They can be used to notify drivers via the Internet of the availability of parking spaces in garages and lots. This can save both time and cost associated with people circulating around a downtown looking for parking.
  Port and terminal management systems can control the flow of trucks in and out of a facility to maximize mobility and efficiency.

The U.S. DOT connected vehicle research program is a multimodal initiative that aims to enable safe, interoperable networked wireless communications among vehicles, infrastructure, and personal communications devices. Connected vehicle research is sponsored by the DOT and others to leverage the potentially transformative capabilities of wireless technology to make surface transportation safer, smarter, and greener. Research has resulted in a considerable body of work supporting pilot deployments, including concepts of operations and prototyping for more than two dozen applications.

http://www.its.dot.gov/pilots/

The use of technology has great potential to expand beyond these applications in order to improve safety and efficiency of travel. The U.S. Department of Transportation has been sponsoring the Connected Vehicle research program (see box). This has a dual focus on vehicle-to-infrastructure communication (V2I) and vehicle-to-vehicle communication (V2V). One example of using this technology to improve safety is the Cooperative Intersection Collision Avoidance System (CICAS). When connected vehicles talk to each other and the traffic signal, crashes caused by red light running may be eliminated. Drivers may receive active warnings of pedestrians waiting to cross the street, or cyclists in a bike lane.

The ultimate success of the Connected Vehicle program will require commitments from public agencies to instrument the infrastructure, and from automobile and truck manufacturers to instrument their vehicles according to communications standards promulgated by U.S. DOT.

VII. SUSTAINABLE TRANSPORTATION

WHAT IS SUSTAINABLE TRANSPORTATION?

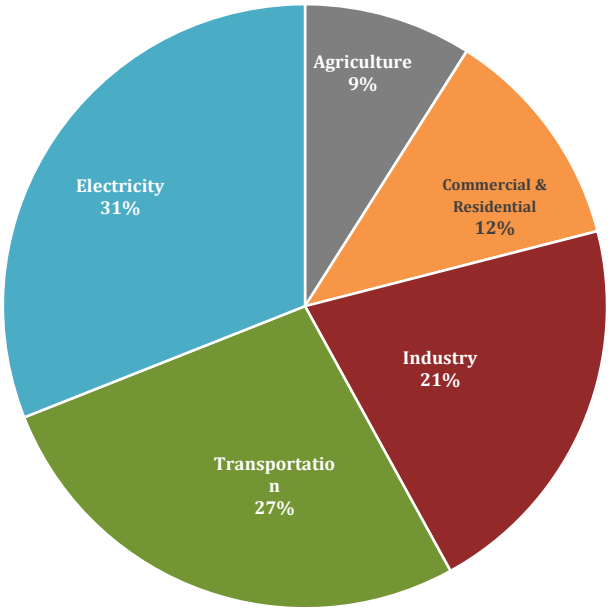
Before we can define sustainable transportation, we must consider the meaning of *sustainability* itself. One of the most commonly cited definitions was developed by the 1987 United Nations (UN) World Commission on Environment and Development, known as the Brundtland Commission. Sustainability was defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[2] Out of this work emerged the concept known as the "triple bottom line" which continues to function as the predominant theory addressing sustainability in practice. Triple bottom line (TBL) accounting expands the traditional reporting framework to take into account not only financial performance, but also environmental and social performance. The theory and practice of sustainable transportation has evolved from these basic concepts. Today it is regarded by federal and state agencies as an important component of transportation planning process and it is one that Ulster County Transportation Council strives to integrate into its daily operations.

Triple Bottom Line of Sustainability

At its core, sustainable transportation refers to the planning, design, construction, and operation of transportation facilities in a manner that will have minimal or zero net negative impact on the natural environment. This is achieved through a variety of mechanisms at programmatic and project levels. On a programmatic level, it includes adherence to federal aid procedures for projects – in particular, federal and state permitting and environmental review processes. It also includes serious evaluation of the need for new facilities in the first place, seeking to avoid unnecessary investments and their possible negative long-term impacts. Active operation of transportation facilities that takes advantage of new technology may often alleviate traffic congestion, or improve transit service. On a project level, it involves the integration of innovative approaches that mitigate or diminish negative impacts on the environment into the design and construction process. Techniques are being developed that extend the life of transportation infrastructure, and make maintenance activities more environmentally friendly. Of increasing importance in our understanding of transportation's impacts on the environment is the recognition of the transportation-land use connection, which identifies cumulative impacts that transportation systems can have on communities and the environment over time, primarily through induced growth brought on by the presence of new or expanded transportation facilities.

[2] World Commission on Environment and Development (1987). Our Common Future. Oxford: Oxford University Press. p. 27.

Figure 7.1: Total US Greenhouse Gas Emissions by Economic Sector, 2013[xxxi]



The concept of sustainable transportation addresses climate change in two different ways: mitigation and adaptation. As noted in Figure 7.1, transportation is the second largest contributor to U.S. greenhouse gas (GHG) emissions. Mitigation actions are those that reduce GHG emissions. They focus on reducing single-occupant vehicle (SOV) travel by encouraging people to shift their trips to shared ride modes like transit and carpooling, or to non-motorized modes like bicycling and walking. Another strategy is promoting the use of alternate-fuel vehicles including hybrids, plug-in hybrids, and electric vehicles.

Adaptation seeks to address anticipated potential future changes resulting from a changing climate, such as higher sea level, more frequent and intense weather events, and increased temperatures. Each of these has an impact on transportation infrastructure and operations, and is of particular concern in the Ulster County Metropolitan Planning Area. There is over 40 miles of tidal coastal area in the Hudson River Valley that is subject to impacts from rising seas. There are also numerous rivers and streams that are prone to flooding. Severe flooding and storm surge damage from Hurricane Irene in August of 2011 and Tropical Storm Sandy in October 2012 illustrate the seriousness of extreme weather events. Given the long life span of transportation assets, planning for system preservation and safe operation under current and future conditions constitutes responsible risk management, a concept addressed through transportation resiliency planning. Resiliency, discussed in more detail in Chapter 5, requires a system-wide approach to providing transportation services before, during, and after an event. It is critical to ensure that evacuation, emergency response, and short and long-term recovery are not impeded by loss of facilities. This is done through assessing vulnerability and applying adaptation strategies to selected infrastructure.

Sustainable transportation is an element of creating sustainable communities, addressing issues associated with quality of life, livability, and social equity. A key component of creating livable communities is having transportation choices available to everyone. A multimodal system that integrates walking, bicycling, transit, and automobile access is one that provides residents with more choices of where to live, work, and play. Integrating land use planning with transportation improves livability by fostering a balance of more compact mixed-use neighborhoods that recognizes the importance of proximity, layout, and design to help keep people close to home, work,

services, and recreation. Recognition of the importance of neighborhood character, community, and social justice in the planning and execution of transportation investments has therefore been integrated into the process itself when it is done well.

After consideration of the various environmental and social aspects of sustainable transportation, we return back to the traditional, basic mechanism for accounting of the bottom line – financial analysis. Sustainable transportation in practice can also be a mechanism by which federal, state and local agencies can conserve limited fiscal resources. By focusing on the right investments, in the right place at the right time, these agencies can accomplish the goal of establishing a sustainable transportation system that reduces unnecessary growth and new facilities, lowers the costs associated with maintenance, and avoids repeated risks to investments.

NYSDOT's "Forward Four" Guiding Principles of Sustainable Transportation

This notion forms the basis of the NYS Department of Transportation's "Forward Four" Principles, developed in 2012 in an effort to guide transportation investment decisions in an era of limited financial resources.[xxxii] The Principles place a priority on transportation investment decisions that preserve the existing system through a focus on preventive, corrective and demand work. Its system perspective elevates the discussion from the project level to a consideration of the most effective methods for managing financial and operational risk. It emphasizes return on investment and investing in a transportation system that "considers the relative and cumulative value of transportation assets as they benefit the public, economy and environment."

SUSTAINABILITY AT THE MPO LEVEL

UCTC has sought to integrate sustainability into its programs and projects since its inception in 2003 and continues to explore ways in which sustainability can be enhanced in its day to day operations and long range planning. To date, nearly all planning efforts undertaken by the MPO have addressed elements of sustainability in some fashion by promulgating key elements such as system preservation, public safety, multi-modal transportation, quality of life, and sound land use decision making processes. Specific projects that support these elements include:

- Ulster County Non-Motorized Transportation Plan (2008)
- Marlboro Hamlet Area Transportation Plan (2008),
- Saugerties Area Mobility Analysis (2007),
- City of Kingston/Town of Ulster - Quiet Zone and the City of Kingston Pedestrian Safety and Mobility Analysis (2006)

Each of these captures various elements of sustainability in their analysis and recommendations. Four integral transit planning efforts have each identified methods and policies by which to improve transit service in Ulster County, thereby reducing the public's reliance on automobiles for transportation.

- Ulster County Fixed Route and Public Transportation Coordination and Intermodal Opportunities Analysis (2005);
- Public Transportation Integration Analysis (2006);
- Intermodal Facility Site Location and Conceptual Design Analysis (2008);
- Ulster County Transit Development Plan (2012),

UCTC Non-Motorized Transportation Plan – Selection of Projects Completed or Currently Underway

- *Ulster County Rail Trail at the Ashokan Reservoir*
- *Wallkill Valley Rail Trail*
- *Hudson Valley Rail Trail*
- *D&H/O&W Trail*
- *Kingston Point Rail Trail*
- *Kingston Broadway Complete Streets Improvements*
- *County Highway Shoulder Expansion Projects, including Lucas Turnpike and South Putt Corner Road*

The Ulster County Non-Motorized Transportation Plan (2008) stands out as a prime example of a successful effort to integrate sustainability into short and long range planning that has enjoyed continued, successful implementation. The document continues to function as a guide to the County for selecting appropriate areas for non-motorized transportation projects, a number of which have been built or are currently under design or construction. These projects will ultimately play an important role in offering Ulster County residents and visitors with transportation options that reduce energy consumption, carbon emissions and traffic congestion and improve quality of life.

Currently, the Building a Better Broadway project (presently underway, anticipated 2015 date of completion) addresses sustainable design through a number of measures, including the integration of complete streets concepts into the final plan for one of Kingston's most critical corridors. The Plan will be consistent with community goals and expectations and will be followed up with rapid implementation by the City through the use of approximately $4 million in various state and federal grants, including a $3 million FHWA Transportation Enhancement Program (TEP) awarded in 2013. Complete Streets are a natural complement to sustainability efforts, helping to improve local mobility, quality of life and the environment.

UCTC continues to work closely with the Ulster County Office of the Environment in developing projects to reduce carbon emissions, increase use of alternative fuel vehicles, and planning for transportation facilities that have minimal impact on the natural environment. In 2015, Ulster

County – through the effort and support of the Office of the Environment – installed electric vehicle (EV) charging stations at virtually every public county facility. The stations are available to all non-commercial members of the public free of charge. UCTC will work closely with the Office of the Environment to monitor and utilize data generated by the stations' use in an effort to better understand EV vehicle use and demand.

> *"A long-range transportation plan shall include a discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the plan."*
>
> **23USC134(i)(2)(D)**

Looking ahead, the UCTC SFY 2015/16 UPWP includes three specific projects that will directly address sustainability:

- Transportation Infrastructure Resiliency and Vulnerability Assessment Planning
- Bridge Preservation Repair and Replacement Analysis Priorities for Capital Expenditures
- Ulster County Electric Vehicle Infrastructure Planning Project

Each project is planned for commencement in the 2015/16 SFY, as staff resources allow.

MITIGATION OF TRANSPORTATION IMPACTS ON THE ENVIRONMENT

It is incumbent on UCTC to broadly consider the potential environmental impacts of the actions proposed in the long-range transportation plan, and programmatic means to mitigate those impacts. In doing so, it is important to differentiate this discussion from the detailed project-level environmental analysis that is required under the National Environmental Protection Act (NEPA). An example of a programmatic mitigation is addressing air quality impacts from emissions from construction equipment involved in pavement and bridge projects.

There are many different types of environmentally sensitive areas and potential impacts to the natural and human environment that may be affected by various actions associated with the 2040 LRTP. These include (but are not necessarily limited to):

- Threatened and Endangered Species
- Wetlands
- Floodplains
- Surface and Ground Waters
- Stormwater Management and Erosion and Sediment Control
- Hazardous Materials
- Air Quality
- Historical/Cultural Resources
- Right-of-Way/Property Impacts, Including Impacts to Parks, Farmland and Neighborhoods
- Scenic Viewsheds
- Traffic and Train Noise

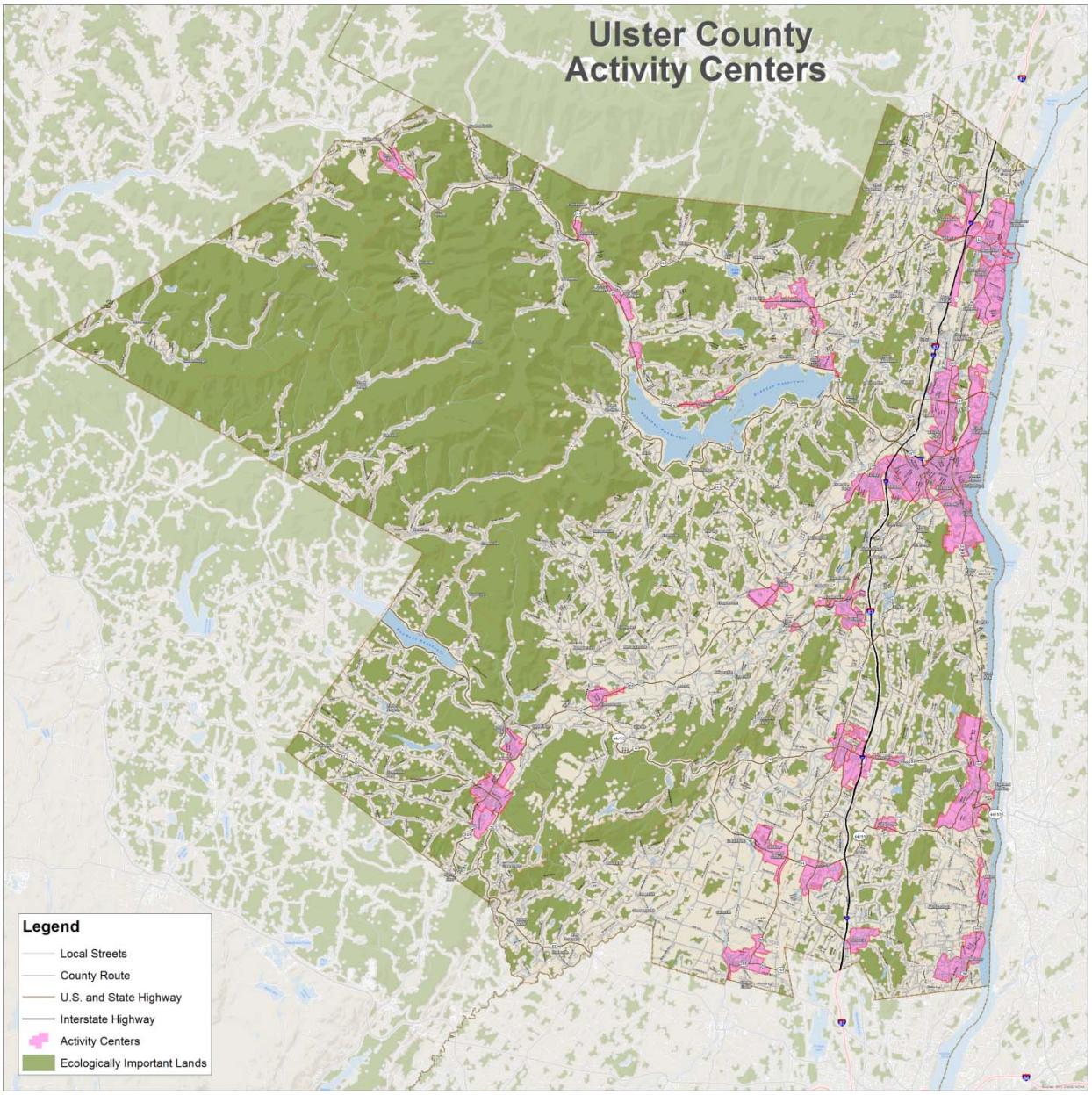
Procedure and technical guidance on environmental matters relating to the planning, design, construction, operation, and maintenance of transportation facilities is detailed in the NYSDOT Environmental Procedures Manual.[xxxiii] In addition, Chapter 7 ("Overview of Environmental Process") of the NYSDOT Procedures for Locally Administered Federal Aid Projects (PLAFAP) manual discusses the project advancement and environmental procedures that must be followed to satisfy applicable environmental laws.[xxxiv] NEPA and SEQR, and many other State and federal environmental regulations, require that environmental considerations be addressed in transportation decision making, plans and programs. Most transportation capital and maintenance projects have the potential to affect natural and human-made resources in both positive and negative ways. Lead agencies and project sponsors in charge of transportation projects and MPOs must strive to ensure full and objective consideration of all reasonable alternatives that avoid adverse impacts to the environment and communities. Where adverse impacts are unavoidable, lead agencies and project sponsors must identify the impacts and incorporate measures to mitigate impacts to the maximum extent practicable.

Certain environmentally-sensitive areas are easily identified and mapped through well-established state and federal programs and their associated digital resources. These include state and federally-protected wetlands and floodplains. In addition, the locations of historical/cultural resources and threatened or endangered species can be accessed and evaluated on a location-specific basis through available mapping and databases as well as through consultation with state and federal agencies such as the NYS Department of Environmental Conservation, the State Office of Parks, Recreation and Historic Preservation, the US Army Corps of Engineers, and the Federal Fish and Wildlife Service, as well as other similar or supporting local, state and federal offices.

The Ulster County Planning Department and the Ulster County Department of the Environment have developed several geographic resources to help communities in Ulster County plan for the protection of sensitive areas and focus development in areas capable of supporting growth and having access to needed infrastructure. These "Activity Areas" are shown on Figure 7.2 on the following page. The UCTC, through *Rethinking Transportation: 2040*, will utilize this geographic resource as a tool to assist in the development of plans and projects that will enable the transportation system in these areas to meet the challenges that come with growth.

All of these resources together provide the foundation for programmatic environmental mitigation. UCTC is committed to examining the potential for negative impacts from the overall program of projects, actions, and strategies that comprise *Rethinking Transportation 2040*, and to institute programmatic responses.

Figure 7.2: Activity Centers



CONSULTATION WITH RESOURCE AGENCIES

In an effort to coordinate the discussion of potential environmental mitigation activities, the UCTC contacted appropriate Federal, State, and tribal, wildlife, land management, regulatory and resource agencies regarding the Year 2040 Long Range Transportation Plan. Responses received can be found in the Appendices.

VIII. THE FINANCIAL PLAN

The Financial Plan is a critical element of the UCTC Long Range Transportation Plan. Federal law has required since 1991 that an LRTP must include a Financial Plan whose purpose is to ensure that there are adequate resources for implementation. This ensures that the projects included LRTP have a reasonable chance of being funded and prevents the LRTP from becoming a wish list of projects beyond likely available funding. Federal law requires that the Financial Plan meet the following criteria:

- Be developed cooperatively by the MPO, the State, and the transit operator(s);
- Demonstrates how the adopted LRTP can be implemented;
- Enumerates the resources that are reasonably expected to be made available over the life of the LRTP, including both public and private sources;
- May recommend additional financing strategies to fill identified funding gaps;
- May include "illustrative projects" that would be included in the LRTP if additional resources became available; and
- Demonstrates the financial capacity to maintain and operate the transportation facilities included in the LRTP.

Further, all project and program cost estimates must be adjusted to year of expenditure dollars, using agreed upon cost inflation factors. This adjustment further contributes to the LRTP being realistic.

All of these steps lead to the creation of a fiscally constrained Plan that does not count on resources that are not reasonably expected to be available.

The UCTC LRTP has met all of these conditions through the following actions:

Revenue Forecasts (Table 8.1)

Forecasts are provided by fund source for all current programs of the FHWA and FTA; New York State highway, bridge, and transit programs; and major local capital improvement programs. The initial forecasts for FHWA programs and for New York State Dedicated Highway and Bridge Fund are based on the adopted 2014-2018 UCTC Transportation Improvement Program and confirmed by NYSDOT. NYSDOT provided the forecasts for the Consolidated Local Street and Highway Improvement Program (CHIPS). Ulster County, in the role of transit operator, provided the forecasts for federal, state, and local transit programs. The agreement that was reached among these parties on the revenue forecasts includes the following:

- Revenue forecasts are generated for five year blocks (note that the first block, 2015-2020, is six years). This was determined to be an acceptable level of detail for the LRTP.
- The baseline for calculating revenue forecasts for all FHWA and State fund sources is the current adopted UCTC Transportation Improvement Program. The baseline for calculating revenue forecasts for FTA programs is the last five years of FTA apportionments.

- Funding for FHWA programs is held flat for the first six years (2015-2020). It is then increased by 2% for each of the subsequent blocks.
    - *Caveat*: While the forecasts are made for current FHWA fund sources, it is understood that these may change over time. MAP-21 made significant changes in FHWA programs, with some programs eliminated and others consolidated. If FHWA programs are changed in the next Federal transportation authorization, prior to the update of the LRTP, the Financial Plan may be amended. Similarly, it is assumed that the Federal share will remain at 80% for most programs.
- Funding for FTA programs is held flat for the first six years (2015-2020). It is then increased by 2% for each of the subsequent blocks.
    - *Caveat*: While the forecasts are made for current FTA fund sources, it is understood that these may change over time. MAP-21 made significant changes in FTA programs through program consolidation. If FTA programs are changed in the next Federal transportation authorization, prior to the update of the LRTP, the Financial Plan may be amended.
- Funding for New York State programs for highway and bridge construction is held flat for the first six years (2015-2020). It is then increased by 2% for each of the subsequent blocks.
    - The amount of NYS Dedicated Fund is based on 2014 funding.
    - *Caveat*: The Consolidated Local Street and Highway Improvement Program (CHIPS) provides state funding to local governments for eligible capital projects. It is distributed on a formula basis, and also subject to the annual New York State budget/appropriations process. The forecast assumes it will be funded at current levels and escalated as indicated. The Financial Plan may be amended if the CHIPS budget in subsequent years is significantly different from the forecast.
- New York State Region 8 funds some system preservation activities on a region-region wide basis (known as "multi-county" funding). These funding blocks provide for pavement rehabilitation, bridge rehabilitation and replacement, sign and guiderail replacement, traffic signal upgrades, and pavement marking activity. The expenditure represent a significant use of federal funds. Use of this funding within the UCTC's planning area is not documented accordingly, not estimate of the availability of these funds in included. The UCTC anticipates that these funds will however, be made available to maintain the performance standards set in the LRTP.
- Funding for New York State transit programs is held flat for the first six years (2015-2020), then increased by 2% for each of the subsequent blocks.
    - *Caveat*: The New York State Transit Operating Assistance (NYSTOA) program is a formula based program that provides funding to transit operators to subsidize their operations. Passengers and revenue-miles of service are the key metrics; they multiplied by formula rates. The numbers of annual passengers and miles are assumed constant for the purposes of projecting revenue. The program is subject to annual appropriation as well as periodic program and funding sources reauthorization by the State Legislature. The Financial Plan may be amended if the NYSTOA budget in subsequent years is significantly different from the forecast.

  - The New York State Transit Capital Assistance program funds one-half of the non-Federal share of approved FTA capital projects. Funding is contingent on the annual budget/ appropriations process.
- Local Funding for highways and bridges. This represents locally funded capital projects by Ulster County to preserve and maintain assets that may or may not be on the Federal Aid Highway System. It is understood that this does not include all local expenditures, but does include the majority of those not funded with CHIPS. Because such expenditures are subject to budgetary decisions of local government, there are no assumptions of available funding from these sources. In addition, it should be noted that tax caps are likely to affect the investment in infrastructure at the local level. It also includes the local match for FHWA program expenditures.
  - *Caveat*: FHWA provides 80% of the funding for approved projects. There is a program in New York State called the Marchiselli program that provides three-quarters of the non-federal share, or 15%, for locally sponsored FHWA projects. This comes from the Dedicated Highway and Bridge Fund. The local sponsor provides the remaining 5%. The amount available for Marchiselli funding is subject to the annual State budget process, and may be inadequate to meet all finding needs in future years.
- Local Funding for the County transit system is held flat for the first six years (2015-2020). It is then increased by 2% for each of the subsequent blocks. This represents the local match to NYSTOA as well as additional local investments.

Table 8.1: Revenue Summary

UCTC Long-Range Transportation Plan Revenue Forecast, 2015-2040

Funding Resource	Estimate Source	Baseline	2015-2020 Funding	2021-2025 Funding	2026-2030 Funding	2031-2035 Funding	2036-2040 Funding	LRTP Total
			Forecast Assumption: 2015-2020: no increase from baseline. 2021-2040: 2% increase for each 5 year block. 2021-2025 adjusted for initial block being 6 years					
FEDERAL (Unmatched)								
FHWA Programs (2)								
NHPP	NYSDOT/TIP	$0.473	$2.840	$2.414	$2.463	$2.512	$2.562	$12.791
STP Flex	NYSDOT/TIP	$2.634	$15.804	$13.433	$13.702	$13.976	$14.256	$71.171
STP Off System Bridge	NYSDOT/TIP	$1.491	$8.946	$7.604	$7.756	$7.911	$8.070	$40.287
STP Urban	NYSDOT/TIP	$1.201	$7.206	$6.125	$6.248	$6.373	$6.500	$32.451
HSIP (Highway & RR)	NYSDOT/TIP	$1.232	$7.392	$6.283	$6.409	$6.537	$6.668	$33.289
TAP	NYSDOT/TIP	$0.144	$2.247	$0.000	$0.000	$0.000	$0.000	$2.247
FHWA sub-total		**$7.176**	**$44.435**	**$35.860**	**$36.577**	**$37.309**	**$38.055**	**$192.237**
FTA Programs (3)								
Sec 5307/5340 Small Urban (4)	FTA	$0.873	$5.235	$4.450	$4.539	$4.630	$4.722	$23.575
Sec 5307 Urban/Mid-Hudson TMA (5)	FTA	$0.639	$3.832	$3.257	$3.322	$3.389	$3.457	$17.257
Sec 5310	FTA	$0.131	$0.786	$0.668	$0.681	$0.695	$0.709	$3.540
Sec 5339 Kingston UA (6)	FTA	$0.090	$0.540	$0.459	$0.468	$0.478	$0.487	$2.432
Sec 5339 Mid-Hudson TMA (6)	FTA	$0.324	$1.945	$1.653	$1.686	$1.720	$1.754	$8.757
Inter-County Commuter Bus, Mid-Hudson TMA (7)	FTA	$1.550	$9.300	$7.905	$8.063	$8.224	$8.389	$41.881
FTA sub-total		**$3.606**	**$21.638**	**$18.392**	**$18.760**	**$19.135**	**$19.518**	**$97.442**
Federal Subtotal		**$10.782**	**$66.073**	**$54.252**	**$55.337**	**$56.444**	**$57.573**	**$289.679**
NEW YORK STATE								
Highways/Bridges								
NYS Dedicated Fund	NYSDOT	$1.842	$11.052	$9.394	$9.582	$9.774	$9.969	$49.771
CHIPS (Capital) (8)	NYSDOT	$7.055	$42.330	$35.981	$36.700	$37.434	$38.183	$190.628
NYS Highway/Bridge subtotal		**$8.897**	**$53.382**	**$45.375**	**$46.282**	**$47.208**	**$48.152**	**$240.399**
Transit								
NYS Transit Operating Assistance	NYSDOT	$1.250	$7.500	$6.375	$6.503	$6.633	$6.765	$33.775
Match to FTA capital projects (10)	NYSDOT	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000
NYS Transit subtotal		**$1.250**	**$7.500**	**$6.375**	**$6.503**	**$6.633**	**$6.765**	**$33.775**
New York State Subtotal		**$10.147**	**$60.882**	**$51.750**	**$52.785**	**$53.840**	**$54.917**	**$274.174**
LOCAL								
Local Match to Federal Aid								
Match to FHWA projects (9)		$0.850	$5.100	$4.335	$4.422	$4.510	$4.600	$22.967
Match to FTA capital projects (10)		$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000
Local Subtotal		**$0.850**	**$5.100**	**$4.335**	**$4.422**	**$4.510**	**$4.600**	**$22.967**
TOTAL		**$21.779**	**$132.055**	**$110.337**	**$112.544**	**$114.794**		
				GRAND TOTAL 2015-2040				**$586.820**

Notes:

1. All revenue shown in 2014 dollars
2. FHWA funding baseline reflect UCTC TIP programmed expenditures
3. FTA funding baseline reflects average actual apportionments for FFY 2010-2014
4. These funds are alocated in equal shares to UCAT and Kingston Citibus
5. These funds are allocated to UCAT
6. Section 5339 baseline based on FFY 2013 and 2014
7. Inter-County Commuter Bus service funding currently supports Trailways service
8. CHIPS funding are based on the SFY 2014/15 funding level
9. Marchiselli funds may pay 75% of the local match, but require state legislative approval every year. The table shows total match
10. FTA capital projects are funded 80% Federal, 10% State, 10% local shares

Year of Expenditure Inflation Factors

As noted previously, achieving fiscal constraint requires that project cost estimates be adjusted from current dollars to year of expenditure (YOE) dollars. The New York State Department of Transportation provided inflation factors that are based on their experience with construction costs and transit capital purchase costs. UCTC and Ulster County in their role as transit operator have concurred with these factors, as displayed in Tables 3-2 band 3-3.

The following simple rates of inflation by State Fiscal Year (SFY) are the best available estimates of overall price trends for the transport public works sector in New York State for the programming period:

Table 8.2: Simple Rates of Inflation

Annual Period	Simple Year Over Year Inflation
SFY 14-15	0.00%
SFY 15-16	2.00%
SFY 16-17	4.00%
SFY 17-18	6.00%
SFY 18-19	8.00%
SFY 19-20	10.00%
SFY 20-21	12.00%
SFY 21-22 thru 34-35	14.00% Because of the uncertainty of forecasting cost inflation costs are held constant beginning with SFY 2021-22

To convert SFY 2014 un-inflated cost estimates (in the Program Support System, Bridge Model, or Pavement Model) to be Year of Expenditure (YOE) inflated cost estimates the factors are as follows:

Table 8.3: Year of Expenditure Conversion Factors

Year of Expenditure	2014 $ to YOE $	YOE $ to 2014$
SFY 14-15	1.0000	1.0000
SFY 15-16	1.0200	0.9804
SFY 16-17	1.0400	0.9615
SFY 17-18	1.0600	0.9434
SFY 18-19	1.0800	0.9259
SFY 19-20	1.1000	0.9091
SFY 20-21	1.1200	0.8929
SFY 21-22+	1.1400	0.8772

Cost Forecasts

With the revenue projections completed, the Financial Plan can now estimate the dollar amount of projects and programs that can be programmed within the context of fiscal constraint. Project costs are matched to revenue forecasts by fund source and five-year time blocks. Since the first six years includes projects already programmed in the Transportation Improvement Program, cost estimates have a reasonably high level of accuracy. Projects further out in the LRTP are defined by a planning level design concept and scope. With each successive update of the LRTP, projects will move into the first time block with more refined estimates.

The LRTP expenditure portion of the Financial Plan is detailed in Chapter 8.

IX. RECOMMENDED PLAN of PROJECTS

The Recommended Plan of Projects identified in the following pages is directly linked to the UCTC's FFY 2014-2018 Transportation Improvement Program (TIP), scheduled for update during the 2015/16 SFY. The TIP includes a priority list of proposed federal and state supported projects and strategies to be implemented after the initial adoption of the TIP.

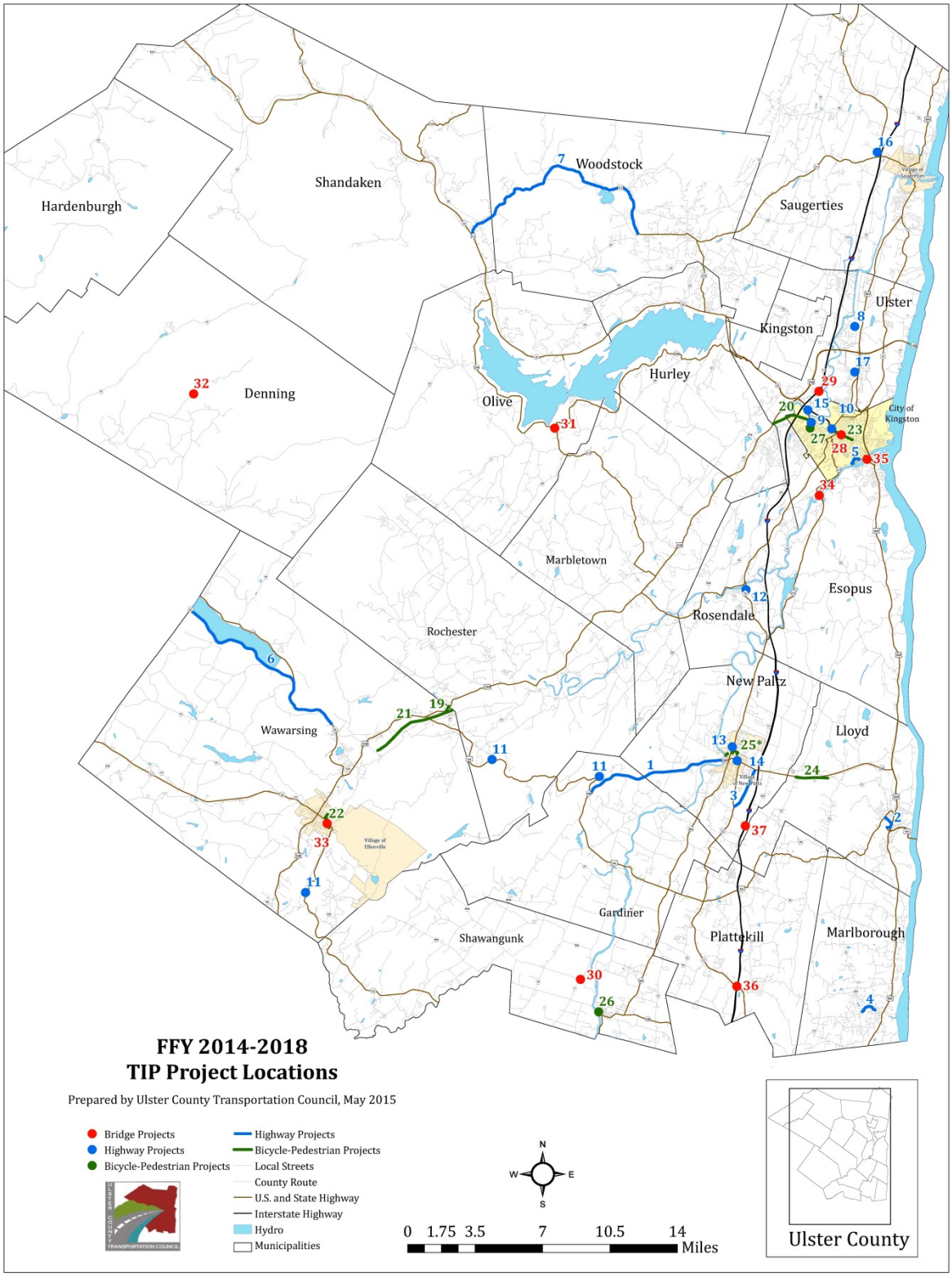
The UCTC 2014 – 2018 TIP/STIP was developed by MPOs statewide in 2013.[xxxv] At that time, NYSDOT provided MPOs with anticipated allocations for federal aid-eligible projects. Based on projects programmed during previous TIP years and the amount of federal aid made available to the UCTC planning area for the 2014 – 2018 period, the UCTC was required to reduce its local program by over $25 million. At that time approximately $13.5 million in various federal aid sources was estimated to be available for local bridge and highway projects. Concurrently, staff analysis of existing projects on the UCTC 2011 – 2015 TIP identified over $40 million in local highway, trail and bridge projects programmed or underway, with approximately $15 million of those projects in bridges alone. This gap underscores the challenges that MPOs are faced with as they work to achieve fiscal constraint through the Long Range Transportation Plan and TIP development processes.

A general description of recommended system improvement projects is provided in this chapter. The recommended improvement plan follows the organization of the UCTC Transportation Improvement Program and is divided into the following categories:[xxxvi]

- Local Bridge, Highway and Trail Projects
- New York State Department of Transportation Bridge, Highway and Trail Projects
- Ulster County Area Transit Projects
- City of Kingston Citibus Projects

As explained in Chapter 7, federal aid revenues are not necessarily guaranteed; as such, the Recommended Plan of Projects has been prioritized based on need and the level of funding reasonably expected to be available into the future. Projects currently programmed on the TIP with phases underway/obligated are included as "Short Range" projects. Short Range projects can be expected to be initiated or completed during the 2014 – 2018 TIP or next iterative cycle. Projects that are currently programmed on the TIP but have not yet commenced are included in the "Mid Range" project listing. Mid Range projects can reasonably be expected to be implemented during the next several TIP cycles (2016 – 2024). Long Range projects – those that have not yet been included on an approved TIP, but may be eligible for federal aid as resources allow – are those which would be included in outlying years of the TIP (2025 – 2040). Long Range projects are organized to conform to the goals and objectives of the UCTC Year 2040 Long Range Transportation Plan but have no specific funding source or sponsor identified at this point in time. These are sometimes referred to as "conceptual projects." Each goal of the Year 2040 LRTP that the project progresses is identified under the 'LRTP Goals' column.

Figure 9.1: 2014 – 2018 Transportation Improvement Program, State and Local Highway, Bridge and Trail Projects (refer to table on following page for project list)



Map Reference	PIN	Project Name
1	805111	County Route 7&8-Route299 Roadway Repaving
2	875781	Tillson Ave: From Route 92 to Route 44/55
3	875990	South Putts Corners Repaving
4	875992	Western Ave/Plattekill Road Repaving
5	875710	Abeel Street: Stage 2
6	839141	55 Harsh Winter Repaving
7	881269	Route 212: Preventative Maintenance
8	875993	Leggs Mill Road/Seremma Court Signal
9	876029	Washington Ave Signals @ Schwenk Dr & N Front St
10	881126	Washington Ave: I587@ Albany Avenue and Broadway
11	881215	Shawangunk Mtns Scenic Byway Overlook Rehab
11	881215	Shawangunk Mtns Scenic Byway Overlook Rehab
11	881215	Shawangunk Mtns Scenic Byway Overlook Rehab
12	846059	Lease of T/Rosendale Park & Ride Lot on Route 32
13	882325	Lease of V/New Paltz Park & Ride Lot on Route 32
14	8T0444	Rt.299 New Paltz Transp. & Land Use Study
15	882342	Ulster County Park & Ride Exp: Thruway Exit 19
16	882343	Ulster County Park & Ride Exp: T/Saugerties
17	893271	RR Crossing Improvements Boices Lane T/Ulster
18	876008	Village of Saugerties Pedestrian Improvements
19	817747	Route 209 Sidewalk Improvement
20	875804	Kingston Rail Trail (City of Kingston and Towns of Ulster and Hurley): Preserve, Improve O & W RR
21	875925	D&H Canal/O&W RR Trail
22	876114	Elenville Central School District Ped Improvements
23	878049	Bike/Ped Improvements along Broadway. TEP award
24	876121	Walkill Valley Rail Trail phase 4. TAP award
25	876122	Village of New Paltz Sidewalk Improvements
26	875995	Walkill Hamlet Sidewalks
27	876109	C/Kingston School District Pedestrian Improvements
28	875618	Greenkill Avenue/Broadway Bridge Replacement
29	875620	Sawkill Road/Sawkill Bridge Replacement Bin#334763
30	875666	Mud Tavern Rd (CR9)/Dwaarkill Bridge Replace
31	875713	Route 213 Extension (CR4)Tongore Bridge Rep Bin#30
32	875879	Denning Road/East Branch of Neversink River Bridge
33	875927	Clinton Ave/North Gully Bridge Rehab. Bin#2262980
34	846317	Route 213/Rondout Creek (Eddyville) Bridge MBC
35	880862	Wurts Street/Dock Street Bin#1007350
36	B21651	Route 32 Bridge over I87 Rehab
37	B22361	Brooksdie Rd Bridge over I87 Rehab

SHORT RANGE RECOMMENDED PLAN OF PROJECTS

Table 9.1: Short Range Local Projects Recommended for Inclusion
2016 – 2020 TIP

Project PIN	Agency	Project Type	Description	Fund Source	Est. Project Cost (millions of dollars)	LRTP Goals
875618	Local	Bridge	Greenkill Avenue / Broadway Bridge Replacement, City Of Kingston. Bin 2019580	STP-OFF	3.729	1, 2, 6
875620	County	Bridge	Sawkill Road / Sawkill Bridge Replacement, Town Of Ulster. Bin 3347630	STP-OFF	4.426	1, 2, 6
875666	County	Bridge	Mud Tavern Road (Cr 9)/ Dwaarkill: Bridge Replacement. Town of Shawangunk.	HBRR	1.278	1, 2, 6
875713	County	Bridge	Route 213 Extension (Cr 4)/Tongore Creek: Bridge Replacement (Was Pin 8T9747), Town Of Olive. Bin 3041140	STP FLEX	2.115	1, 2, 6
875781	Local	Mobil	Tillson Ave: From Route 92 To Route 44/55: Safety Alignment Work. Hamlet Of Highland. Town Of Lloyd	STP SM URBAN	3.785	3, 5
875804	County	Mobil	Kingston Rail Trail connecting the City Of Kingston to the Town Of Hurley. County of Ulster	STP FLEX	1.375	5, 6, 7
875879	County	Bridge	Denning Road/East Branch Of Neversink River: Bridge Replacement, Town Of Denning. Bin 3347090	STP FLEX	3.005	1, 2, 6
875925	Local	Mobil	D&H Canal/O&W RR Trail: Town Of Rochester Line To Eastern State Correctional Facility. Town of Warwarsing.	STP FLEX	0.702	5, 6, 7
875990	County	R&P	South Putt Corners Repaving: Sr 299 To Sr 32: Town of New Paltz	STP LG URBAN	2.059	1, 3, 5, 6
875995	Local	Safety	Wallkill Hamlet Sidewalks: Town Of Shawangunk	STP FLEX	2.065	1, 5, 6
876029	Local	Inter	Washington Avenue Signals At Schwenk Drive And North Front Street. City Of Kingston.	STP LG URBAN	0.389	1, 5
876109	Local	RECON	City of Kingston Safe Routes to School	SRTS	0.489	3, 5, 6
876114	Local	RECON	Village of Ellenville Safe Routes to School	SRTS	0.233	3, 5, 6
876121	County	CONST	Hudson Valley Rail Trail West	TAP SM URBAN	1.995	5, 6, 7
876122	Local	CONST	Construct new sidewalks and curbing New Paltz	TAP SM URBAN	0.252	5, 6
878022	Local	MOBIL	Hudson Valley Rail Trail: Tony Williams Park to Town Line Road	STP TEP	1.800	5, 6, 7
878049	Local	CONST	City of Kingston. Construction of Pedestrian and bicycle facilities on the Broadway Corridor	STP TEP	3.250	2, 5, 6, 7
					32.947	

R&P- Rehabilitation & Preservation

Table 9.2: Short Range NYSDOT Projects Recommended for Inclusion
2016 – 2020 TIP

Project PIN	Agency	Project Type	Description	Fund Source	Est. Project Cost (millions of dollars)	LRTP Goals
817747	NYSDOT	Mobil	Route 209 Sidewalk Improvements, Hamlet of Kerhonkson, Town of Wawarsing	SDF	0.701	5, 6
846059	NYSDOT	Mobil	Park and Ride Lot: Route 32, Town of Rosendale	STP FLEX	0.200	5, 6
846317	NYSDOT	BRIDGE	Route 213 Over Rondout Creek (Eddyville)	STP FLEX	6.167	1, 2, 6
881126	NYSDOT	Recon	I-587 @ Albany Avenue & Broadway	HSIP/NHPP	5.264	1, 2, 3, 5, 6, 7
882342	NYSDOT	MOBIL	Kingston Park and Ride Lot Expansion	OTHER FA	0.824	1, 5, 6
882343	NYSDOT	MOBIL	Saugerties Park and Ride Lot Expansion	OTHER FA	0.759	1, 5, 6
893271	NYSDOT	SAFETY	Boices Lane RR Crossing Improvements (Town of Ulster)	HSIP RAIL	1.100	3
8T0566	NYSDOT	Safety	Rustic Rail Replacement on Routes 44, 52, 55	HSIP	6.337	3
					21.352	

Table 9.3: Short Range Ulster County Public Transit Providers Projects Recommended for Inclusion
Ulster County Area Transit (UCAT) and Kingston Citibus (Citibus), 2016 – 2020 TIP

Project PIN	Agency	Project Type	Description	Fund Source	Est. Project Cost (millions of dollars)	LRTP Goals
8TRU14	UCAT	Transit	Project Administration	FTA 5307	0.890	5,6
8TRU64	UCAT	Transit	Normal Fleet Replacement 4 low floor medium duty buses	FTA 5307	1.530	5,6
8TRU66	UCAT	Transit	Normal Fleet Bus Replacement 1 transit bus	FTA 5307	0.400	5,6
8TRU67	UCAT	Transit	Operating Assistance	FTA 5307	1.800	5,6
8TRU76	UCAT	Transit	Preventive Maintenance	FTA 5307	1.380	1, 5,6
8TRU78	UCAT	Transit	Fleet Replacement/Electronic Fair Collection System	FTA 5307	0.630	5,6
8TRU82	UCAT	Transit	Capital funding to replace rehabilitate and purchase buses and related equipment (UZA 424)	FTA 5339	0.480	1, 5,6
8TRU84	UCAT	Transit	Capital funding to replace rehabilitate and purchase buses and related equipment (UZA 89)	FTA 5339	0.810	1, 5,6
8TRU80	Ulster	Transit	Section 5310 Program – Vehicles to Provide Transportation for Elderly and Persons with Disabilities by Private Not-For-Profit Agencies	FTA 5310	0.820	5,6
8TRU67	Citibus	Transit	Operating Assistance	FTA 5307	1.800	5,6
8TRU68	Citibus	Transit	Preventative Maintenance	FTA 5307	0.264	1, 5,6
8TRU69	Citibus	Transit	Project Administration	FTA 5307	0.576	5,6
8TRU83	Citibus	Transit	Capital funding to replace rehabilitate and purchase buses and related equipment (UZA 424)	FTA 5339	0.120	1, 5,6
8TRU75	Trailways	Transit	UC Capital Cost of Contracting Ulster County Commuter Services – Adirondack Trailways	FTA 5307	6.786	5,6
					18.268	

MID RANGE RECOMMENDED PLAN OF PROJECTS

Table 9.4: Mid Range Local Projects Recommended for Inclusion
Projects not yet commenced; phases anticipated to be obligated between 2016 and 2024

Project PIN	Agency	Project Type	Description	Fund Source	Est. Project Cost (millions of dollars)	LRTP Goals
805111	County	R&P	County Route 7 & 8 - Route 299 Roadway Repaving. Towns of New Paltz and Gardiner.	STP FLEX	4.062	1, 5, 6
850518	Local	Bridge	Frank Sottile Boulevard/Route 199: Alternative Number 4, Construct East Bound Ramps Only. Town of Ulster	SDF	10.537	2
875710	Local	R&P	Abeel Street: Broadway To City Line: Pavement, Drainage, Sidewalks And Safety Improvements (Was Pin 8T9741), City Of Kingston.	STP FLEX	6.350	2
875927	Local	Bridge	Clinton Avenue/North Gully Bridge Rehabilitation, Village Of Ellenville. Bin 2262980	STP FLEX	1.378	1, 2, 6
875992	County	Safety	Western Ave (Cr14)/Plattekill Road Repaving: Town Of Marlborough	STP LG URBAN	0.851	1, 3, 5, 6
875993	Local	Safety	Leggs Mill Road/Seremma Court Signal: Town of Ulster	STP LG URBAN	0.612	1, 5
					23.790	

Table 9.5 Mid Range NYSDOT Projects Recommended for Inclusion
Projects not yet commenced; phases anticipated to be obligated between 2016 and 2024

Project PIN	Agency	Project Type	Description	Fund Source	Est. Project Cost (millions of dollars)	LRTP Goals
880862	NYSDOT	Bridge	Wurts Street/Dock Street Bridge Painting	STP FLEX	11.600	1
8T0343	NYSDOT	Mobil	ADA Sidewalk and Ramps - ULSTER COUNTY	SDF	4.240	3
8T0439	NYSDOT	Safety	Rt 9W Intersection Reconstruction, Marlborough	HSIP	6.906	3, 5
8T0444	NYSDOT	Inter	Route 299: New Paltz	STP FLEX	8.714	1
8T0451	NYSDOT	SAFETY	River Line Crosing Safety Kings Highway/Saugerties	HSIP RAIL	6.407	3
8T0452	NYSDOT	Recon	Route 213: Lucas Turnpike - Gravel Road	STP FLEX	2.490	1
8T0567	NYSDOT	SAFETY	Rustic rai replacement; rustic self-oxidizing guiderail will be replaced with galvanized rail in Ulster and Columbia Counties	HSIP	3.653	3
					44.010	

Table 9.6: Mid Range Ulster County Public Transit Providers Projects Recommended for Inclusion
Ulster County Area Transit (UCAT) and Kingston Citibus (Citibus), Beyond 2020 TIP

Project PIN	Agency	Project Type	Description	Fund Source	Est. Project Cost (millions of dollars)	LRTP Goals
--	UCAT	Transit	Normal Fleet Bus Replacement 1 transit bus, 1 paratransit bus	FTA	--	5,6
--	UCAT	Transit	New Service – 1 transit bus	FTA		5,6
--	UCAT	Transit	Capital Improvements to Bus Facilities	FTA	--	5,6
--	UCAT	Transit	Additional Operating Assistance for Improved Service Frequency	FTA	--	5,6
--	Citibus	Transit	Normal Fleet Bus Replacement 3 transit buses, 1 paratransit bus	FTA	--	5,6
	ADK Trailways	Transit	Capital Cost of Contracting	FTA	--	5,6

LONG RANGE RECOMMENDED PLAN OF PROJECTS

Long Range projects – those that have not yet been included on an approved TIP, but may be eligible for federal aid as resources allow – are those which would be included in outlying years of the TIP (2025 – 2040). Long Range projects are organized to conform to the Goals and Objectives of the UCTC Year 2040 Long Range Transportation Plan (Chapter 2) but have no specific funding source or sponsor identified at this point in time. In some cases Long Range projects are generalized. More specific projects are identified where supporting plans and projects exist. (A comprehensive listing of all UCTC plans is included in Appendix A of the document with a detailed analysis of goal conformity and overlap. The supporting planning projects listed below are exemplary and should not be considered exhaustive). In the event that UCTC should issue a call for new projects in advance of 2025, those new projects should also conform to the following goals.

Goal 1 – System Preservation: **Invest in transportation system infrastructure to bring all facilities and modes into a state of good repair.**

Recommended Long-Term System Preservation Projects

- Extending the useful life of existing highway, bridge, and transit facilities through asset management and improved design principles, seeking to maximize longevity of existing facilities.
- Reconstruction and rehabilitation of existing highway, bridge, and transit facilities in a manner that supports extension of their useful life. New facilities will be designed to be resilient to climate change and multi-modal.
- Extend the useful life of public transportation facilities – capital rolling stock, terminals, and shelters –to ensure service reliability. New capital rolling stock will be fuel efficient and support multi-modal

Supporting Plans and Projects

- NYSDOT Preservation First/Forward Four Principles
- 2009 NYS Rail Plan
- Ulster County Transit System Coordination and Development Plan (2012)
- Ulster County Pavement Management Program (ongoing)
- Ulster County Bridge Preservation Repair and Replacement Analysis Priorities for Capital Expenditures (programmed 2015/16)
- Ulster County Transportation Infrastructure Resiliency and Vulnerability Assessment Planning (programmed 2015/16)

Goal 2 – Economic Vitality: Invest in transportation system improvements that are necessary to support the current regional economy and future proposals for economic development.

Recommended Long-Term Economic Vitality Projects

- Identify critical transportation investment opportunities in regional activity centers that will result in significant, lasting, and positive economic impacts for the region.
- Identify innovative strategies to secure adequate financial support for such projects, such as leveraging of discretionary federal aid, including the Transportation Investment Generating Economic Recovery (TIGER) program, Transportation Alternatives Program, FTA unallocated 5307 funds available to Ulster County, and innovative public-private partnerships.

Supporting Plans and Projects

- Rehabilitation of existing and/or construction of new intermodal facilities in Kingston and New Paltz.
- Conversion of I-587 from an Interstate highway to a state road, allowing access.
- Washington Avenue Corridor Study (2005)
- Saugerties Area Mobility Analysis (2007)
- Marlboro Hamlet Area Transportation Plan (2008)
- City of Kingston Uptown Stockade Area Transportation Plan (2009)
- 2009 NYS Rail Plan

Goal 3 – Safety: Improve the safety of all users of the transportation system by responding to identified safety deficiencies and proactively addressing future safety needs.

Recommended Safety Projects

- Improve the function of intersections through improved design that increases safety, reduces delay, and improves mobility.
- Implement engineering recommendations identified in complete Safe Routes to School Action Plans and similar studies.
- Implement complete streets policies and programs that improve and modernize central corridors to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.

- Implement public safety awareness programs that improve driver, bicyclist and pedestrian safety.

Supporting Plans and Projects

- Marlboro Hamlet Area Transportation Plan (2008)
- Washington Avenue Corridor Study (2005)
- City of Kingston Route 32 at Fair Street Intersection Study (2006)
- City of Kingston/Town of Ulster - Quiet Zone and City of Kingston Pedestrian Safety and Mobility Analysis (2006)
- Saugerties Area Mobility Analysis (2007)
- Ulster County Integrated Advance Train Detection and Arrival Prediction Implementation Plan (2008)
- City of Kingston Uptown Stockade Area Transportation Plan (2009)
- Town of Ulster – Boices Lane Rail Crossing Study (2013)
- 2009 NYS Rail Plan
- NYS Strategic Highway Safety Plan (2010)
- Ulster County Safe Routes to School Program (2015)
- Ulster County Analysis of Priority Investigation Location (PIL) Data among Congested Roadway Segments in Ulster County (programmed 2015/16)

Goal 4 – Security: Ensure that transportation system users have a secure environment and that the transportation system provides residents of Ulster County with adequate service in the context of severe weather events.

Recommended Long-Term Security Projects

- Ensuring a safe, secure and accident-free freight system.
- All at-grade rail crossings are designed in a manner that will protect motorists, pedestrians, bicyclists, and area residents and prevent collisions.

Supporting Plans and Projects

- City of Kingston/Town of Ulster - Quiet Zone and City of Kingston Pedestrian Safety and Mobility Analysis (2006)
- Ulster County Integrated Advance Train Detection and Arrival Prediction Implementation Plan (2008)
- NYS Strategic Highway Safety Plan (2010)
- 2009 NYS Rail Plan

Goal 5 – Mobility and Reliability: Provide for efficient and reliable travel by all modes by investing in strategies that mitigate both recurring and non-recurring congestion.

Recommended Long-Term Mobility and Reliability Projects

- Improve transit and service frequency and reliability along critical corridors, including NYS RT32, 9W, Broadway Kingston, US 209,
- Improve transit service between critical nodes, such as schools, hospitals, essential services, regional transit centers and regional activity centers.

- Ensure appropriate transit support facilities are available to handle increase transit ridership and service needed capital investments
- Integrate technology that will improve transit service efficiency and increase ridership, including Computer Aided Dispatch (CAD), Automatic Vehicle Location (AVL) and other driver, dispatch and passenger information and on-board systems.
- Invest in facilities that encourage alternative modes of transportation, such as transit, pedestrian and bicycle facilities, including sidewalks, trails and bike facilities integrated into transit capital improvements.
- Implement or upgrade regional Intelligent Transportation Systems (ITS) technology along regional corridors of significance, including integrated signal technology, emergency signal preemption, advanced signal detection along rail lines, automatic toll collection, and traffic monitoring.
- Identify additional methods and technologies that will improve real-time travel information for drivers and daily commuters during traffic- or weather-related emergencies.
- Establish a mobility management program to coordinate existing and future services of public, not-for-profit and private transportation throughout the Mid-Hudson region
- Explore the need and identify the location for expanded bike share and ride share facilities that increase mobility without requiring vehicle ownership.

Supporting Plans and Projects

- Rehabilitation of existing and/or construction of new intermodal facilities in Kingston and New Paltz.
- City of Kingston/Town of Ulster - Quiet Zone and City of Kingston Pedestrian Safety and Mobility Analysis (2006)
- Saugerties Area Mobility Analysis (2007)
- Marlboro Hamlet Area Transportation Plan (2008)
- Ulster County Integrated Advance Train Detection and Arrival Prediction Implementation Plan (2008)
- Ulster County Non-Motorized Transportation Plan (2008)
- Kingston Intermodal Facility Site Location and Conceptual Design Analysis (2009)
- Finding Rosendale Circulation and Access Plan (2015)
- City of Kingston - Building a Better Broadway Corridor Design Plan (2015)
- New Paltz Intermodal Facility Plan (2015)
- City of Kingston Traffic Control Signal Warrant Evaluation (programmed 2015/16)

Goal 6 – Accessibility and Connectivity: **Create and maintain a well-connected transportation system that provides access throughout Ulster County for people and goods travelling by all modes.**

Recommended Long-Term Accessibility and Connectivity Projects

- Continue to fill gaps in the existing non-motorized transportation system in an effort to create a seamless regional non-motorized system of transportation

- Invest in filling gaps in the existing sidewalk network throughout Ulster County's activity centers through sidewalk and shoulder construction, reconstruction and rehabilitation projects.
- Invest in complete streets projects within all activity centers with a specific focus on key corridors. Focus on facilities such as improved crosswalks, bike lanes and other amenities that facilitate alternative forms of transportation among a population of varying physical abilities and means of transportation.
- Evaluate the need for facilities that meet Americans with Disabilities Act standards and program the necessary measures to ensure compliance within applicable federal-aid eligible facilities.
- Establish or improve wayfinding facilities to foster a coordinated approach to mobility and access of business, cultural and other critical facilities throughout the county and region.

Supporting Plans and Projects

- City of Kingston - Route 32/Fair Street Intersection Alternatives Analysis (2006)
- Ulster County Non-Motorized Transportation Plan (2008)
- Saugerties Area Mobility Analysis (2007)
- Marlboro Hamlet Area Transportation Plan (2008)
- City of Kingston - Intermodal Facility Site Location and Conceptual Design Analysis (2009)
- City of Kingston - Uptown Stockade Area Transportation Plan (2009)
- City of Kingston - I-587 at Albany Avenue/Broadway Intersection Study (2011)
- Finding Rosendale Circulation and Access Plan (2015)
- City of Kingston - Building a Better Broadway Corridor Design Plan (2015)

Goal 7 – Protect and Enhance the Environment: **Contribute to making Ulster County a sustainable place by protecting and enhancing the natural and built environment, reducing greenhouse gas and other motor vehicle emissions, supporting sustainable construction and maintenance practices, and coordinating land use and transportation plans.**

Recommended Long-Term Projects that Protect and Enhance the Environment

- Design and construct transportation facilities that reduce if not avoid altogether impacts to the natural environment.
- Incorporate the use of sustainably-manufactured and reused materials in the design and construction process.
- Invest in infrastructure necessary to expand the use of alternative fuel vehicles among citizens and public and private sector organizations.

Supporting Plans and Projects

- Ulster County Non-Motorized Transportation Plan (2008)
- Ulster County Transportation Infrastructure Resiliency and Vulnerability Assessment Planning (programmed 2015/16)

Documentation of Fiscal Constraint

As explained in Chapter 7, this plan is required to demonstrate that recommended expenditures, adjusted by agreed upon inflation rates, do not exceed reasonably expected revenues that were developed through a cooperative process involving UCTC, NYSDOT, and Ulster County as the primary transit operator. It is also incumbent upon UCTC to demonstrate the fiscal capability to maintain and operate the regional transportation facilities included in the LRTP.

The revenue forecast shown in Table 20 is broken into multi-year blocks to assist in the matching of revenue and expenditure. The recommended plan of projects is treated in a similar manner for the initial phases of the LRTP, with Short Term recommendations matching the first revenue period (2015 – 2020) and Mid Term recommendations the second revenue period (2021 - 2025). As seen above, UCTC made the decision to address Long Term recommendations in a more goal-driven conceptual manner, based on the recognition that each five year update of the LRTP will recognize additional project actions in what are the out-years of this plan. While it is very useful to compare estimated expenditures with forecasted revenue on a time period basis, UCTC understands that it is the entire LRTP that must demonstrate fiscal constraint.

As shown in Table 9.7, while there may need to be minor adjustments to the short term program when the current Transportation Improvement Program is updated, the LRTP is well within the requirements of fiscal constraint. Additional definition of the FTA program will also be required, but proposed bus replacement and capital needs outlined among the Mid- term recommendations can be accommodated within available revenue.

Table 9.7 Fiscal Analysis

UCTC Long Range Transportation Plan Fiscal Analysis						
	2015 -2020			**2021 - 2040**		
	Revenue Forecast	Project Costs	Revenue - Cost	Revenue Forecast	Project Costs	Revenue - Cost
FHWA Programs						
NHPP	2.840	2.362	0.478	9.951	2.362	7.589
STP Flex	15.804	15.629	0.175	55.367	50.223	5.144
STP Off System Bridge	8.946	8.255	0.691	31.341	8.255	23.086
STP Urban	7.206	6.233	0.973	25.245	7.696	17.549
HSIP (Highway & RR)	7.392	9.799	(2.407)	25.897	25.785	0.112
FHWA Total	**42.188**	**42.278**	**(0.090)**	**147.801**	**94.321**	**53.480**
FTA Programs						
Sec 5307	9.067	9.252	(0.185)	LRTP does not include specific cost estimates for mid-term and long-term transit actions		
Sec 5310	0.786	0.820	(0.034)			
Sec 5339	2.485	1.410	1.075			
FTA Total	**12.338**	**11.482**	**0.856**			
Federal Program Total	**54.526**	**53.760**	**0.766**			

The goal-driven approach to recommended projects, actions, and programs when combined with the fiscal analysis demonstrates UCTC's commitment and capability to maintain and operate the regional multimodal transportation system. As noted in the determination of needs, UCTC is committed to an affordable transportation system. As a result, the recommended plan does not

include construction of new facilities that will add to the maintenance burden of local governments or NYSDOT. The multicounty asset management preservation program that NYSDOT Region 8 uses to direct funding to pavement, bridge, and ancillary asset needs provides a methodology for meeting the infrastructure needs of the State highway system.

UCTC does acknowledge the concern about the fiscal capability of local governments to address transportation system needs of facilities under their jurisdiction. As noted previously, federal aid for local projects is severely limited as a result of lack of growth if the FHWA programs and direction of a greater share of the overall program to the National Highway System. The CHIPS program provides the only direct source of state resources for local road and bridge construction. Funding major asset needs from local general budgets remains a challenge. UCTC is committed to directing its resources to the most critical local system needs when they are available.

X. SYSTEM PERFORMANCE REPORT

MAP-21, in support of the new requirements for performance based planning and programming, requires that the metropolitan transportation plan include a report on the operation of the regional transportation system.

> (C) System performance report.--A system performance report and subsequent updates evaluating the condition and performance of the transportation system with respect to the performance targets described in subsection (h)(2), including—
> (i) progress achieved by the metropolitan planning organization in meeting the performance targets in comparison with system performance recorded in previous reports;
>
> *MAP-21, §1201(h)(i)(2)(C)*

It is important to recognize that UCTC's *Rethinking Transportation: Plan 2040* will be adopted prior to a number of federal actions that are necessary for the implementation of performance based planning. These include:

- Promulgation of the Final Rule on Statewide and Nonmetropolitan and Metropolitan Transportation Planning. The Notice of Proposed Rulemaking (NPRM) was published on June 2, 2014; the opportunity to submit comments to the docket closed on October 2, 2014. This rule will codify all of the requirements imposed on MPOs related to performance based planning, including the timing of setting performance targets, reporting requirements, and the timing of the phase-in of compliance of the LRTP with the legislative requirements of MAP-21.
- Promulgation of the Final Rule(s) on Performance Management. There is a complex set of rulemakings designed to codify the requirements related to implementation of the seven National Goals on performance. The NPRM on Safety Performance was published in March 11, 2014; the comment period closed on June 30, 2014. The NPRM for Pavement and Bridge Condition Performance Management for the NHPP was published on January 5, 2015; the comment period closed April 6, 2015. A companion NPRM on Asset Management Plans for highways was published on May 30, 2015. Notices of Proposed Rulemaking have not yet been issued for the remaining National Goals, and no Final Rules have been promulgated.
- The Federal Transit Administration issued Advanced Notices of Proposed Rulemaking on Transit Safety and State of Good Repair. FTA has not issued NPRMs as the next step in either of these rulemakings.

MAP-21 specifies that once Final Rules are promulgated, States will have one year to develop performance targets for each of the performance areas. MPOs will then have 180 days to either enact their own targets or state that they will program projects that will contribute to the achievement of the State's targets.

UCTC is fully committed to both the concept and implementation of performance based planning and programming. As noted in Chapter 5, this plan reflects data that has been collected and used to document the existing conditions of the transportation system. This includes areas that are addressed in the National Goals, including safety and pavement and bridge condition. UCTC expects

to work cooperatively with the other MPOs comprising the Mid-Hudson TMA and NYSDOT to develop targets for each of the specified performance measures.

Finally, UCTC will comply with whatever timetable is included in the forthcoming planning regulations for the issuance of the initial System Performance Report and subsequent updates.

Data Sources and Notes

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[i] For more information, visit the NYSDOT DBE Certification Program webpage, online at https://www.dot.ny.gov/main/business-center/civil-rights/general-info/dbe-certification
[ii] See Ulster County Transportation Council Operating Procedures as approved May 26, 2015. Online at http://www.co.ulster.ny.us/planning/uctc/documents/mpo_op.pdf
[iii] Memorandum of Understanding on MPO Boundaries and Coordination of Transportation Planning and Programming between OCTC and NJTPA (February 17, 2015).
[iv] US Decennial Census of Population, Ulster County 100% counts, Census years 2000 & 2010. Figure 4.1 represents each municipality's percentage of the total absolute (both growth and decline) population change for all Ulster County municipalities, not simple decennial-year-to-decennial-year population change.
[v] US Dept. of Transportation. FTA C 4703.1: Environmental Justice Policy Guidance for Federal Transit Administration Recipients. 8/2012. Last viewed online 2/15 at http://www.fta.dot.gov/documents/FTA_EJ_Circular_7.14-12_FINAL.pdf
[vi] The term "Limited English Proficiency" is defined by the US Census Bureau as any person age 5 and older who reported speaking English "less than very well." Racial and ethnic minority populations are defined as: Asian American, Black or African American, Hispanic or Latino, Native Hawaiian and Other Pacific Islander, American Indian and Alaska Native.
[vii] Minority and age data derived from Census 2010; all other data derived from 2013ACS 5 Year Estimates.
[viii] New York State Dept of Labor Labor Market Profile for the Kingston MSA, issued 4/21/15.
[ix] Press Release: *Current Employment Statistical Summary, March 2015*. Johny Nelson, Labor Market Analyst, NYS Dept. of Labor – Hudson Valley Region. 4/16/15.
[x] NYSDOL. Unemployment rates and labor force for Kingston MSA; all values are annual averages
[xi] *Significant Industries*. NYSDOT 2010. https://labor.ny.gov/stats/PDFs/Significant_Industries_Report_0610.pdf
[xii] NYSDOL Division of Research and Statistics. State and Area Job Statistics, May 2015. http://www.labor.ny.gov/stats/pressreleases/prtbjd.pdf
[xiii] Quarterly Workforce Indicators (QWI) Data. U.S. Census Bureau. 2014. Quarterly Workforce Indicators Data. Longitudinal-Employer Household Dynamics Programhttp://lehd.ces.census.gov/data/#qwi. Data represent annual quarterly averages.
[xiv] NYSDOT System Performance & Asset Management Bureau; infogroup.com business point data for establishments with 10 or more employees. 2013. Infogroup data are used under license agreement with NYSDOT. Longitudinal-Employer Household Dynamics Program. U.S. Census Bureau. 2013. OnTheMap Application. http://onthemap.ces.census.gov/
[xv] New York State Association of Realtors Annual Existing Single-Family Homes Sold.
[xvi] US Decennial Census, 1980 – 2010, General Housing Characteristics.
[xvii] Federal Reserve Bank of New York, Regional Data Center, Mid-Hudson Valley. http://www.newyorkfed.org/data-and-statistics/regional-data-center/profiles/midhudsonvalley.html
[xviii] Source: Ulster County Planning Department
[xix] New York State Department of Transportation Road Inventory System (RIS)
[xx] New York State Department of Transportation Road Inventory System (RIS)
[xxi] Statewide Mass Transportation Operating Assistance Program (STOA)
[xxii] Statewide Mass Transportation Operating Assistance Program (STOA)
[xxiii] American Community Survey, 2010
[xxiv] New York State Department of Transportation Traffic Data Viewer, https://www.dot.ny.gov/tdv
[xxv] 2012, 2040 Transearch Data, IHS Global Insight
[xxvi] 2012, 2040 Transearch Data, IHS Global Insight
[xxvii] 2012, 2040 Transearch Data, IHS Global Insight
[xxviii] 2012, 2040 Transearch Data, IHS Global Insight
[xxix] 2012, 2040 Transearch Data, IHS Global Insight
[xxx] 2012, 2040 Transearch Data, IHS Global Insight
[xxxi] US EPA. All emission estimates from the *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2013.*
[xxxii] NYSDOT. http://www.cdtcmpo.org/policy/jun12/forward.pdf

[xxxiii] NYSDOT Environmental Procedures Manual. Available online at https://www.dot.ny.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/epm
[xxxiv] NYSDOT PFLAP Application. Available online at https://www.dot.ny.gov/divisions/operating/opdm/local-programs-bureau/locally-administered-federal-aid-projects
[xxxv] The STIP and UCTC TIP will be updated again beginning in the 2015/16 SFY.
[xxxvi] Multi-county, Bridge Authority and Thruway Authority programs are developed independently of the MPO and are therefore excluded from these recommendations.