

Memorandum

TO: Ulster County Transportation Council

FROM: Whitney Faron and Brian Stewart, Cambridge Systematics

DATE: March 3, 2020

RE: Ulster County Transportation Safety Plan Task 2: Literature Review - Final

This memo presents the deliverable for Task 2 of the Ulster County Transportation Council (UCTC) Transportation Safety Plan project. It reviews and summarizes transportation and safety related documents in New York state, the UCTC planning area, and local jurisdictions. The goal of this effort is to understand the types of safety policies, programs, and projects already in place that could inform and enhance this Safety Plan. Table 1 succinctly summarizes each document and its applicability to the Safety Plan, with a more detailed review of key documents provided in the section below. Based on feedback from the Plan Technical Advisory Committee (TAC), the following documents were reviewed:

- New York State Strategic Highway Safety Plan
- New York State Highway Safety Improvement Program
- New York State Pedestrian Safety Action Plan
- New York State Complete Streets Report
- UCTC Long Range Transportation Plan
- UCTC Transportation Improvement Program
- UCTC Road Safety Assessment
- City of Kingston Comprehensive Plan
- Town of New Paltz Comprehensive Plan
- As of February 2020, New York State is developing a new Long-Range Transportation Plan (LRTP). The prior version was adopted in 2006 and was not included for review in this document.

Table 1: Document Summary

Name of Plan (Year Published)	Description	Key Safety Components	Relevance to Ulster County Road Safety Plan
NY Strategic Highway Safety Plan (2017)	Five-year plan to frame statewide priority safety areas (emphasis areas) and proven strategies and actions to be taken to reduce fatality and serious injury crashes, by emphasis area, on NY public roads. Programs and projects identified that address a SHSP emphasis area are eligible for Highway Safety Improvement Program (HSIP) funding.	<ul style="list-style-type: none"> • Set 5-year objectives for reductions of fatal, injury, and non-motorized crashes • Establishes six emphasis areas and three cross-cutting and emerging needs • Provides an example of a data-driven approach to identify emphasis areas • Outlines proven strategies and actions to address emphasis areas • Identifies safety partners 	<ul style="list-style-type: none"> • Statewide objectives and approach for setting those can be considered • Understand statewide emerging needs that apply to UCTC • Relevant emphasis areas and supporting strategies and actions can be adopted or customized • Understand state safety partners and engage in planning process (or implementation process) as needed
NY Highway Safety Improvement Program (2018)	Shows safety infrastructure-related projects, and reports performance and program funding for HSIP funding.	<ul style="list-style-type: none"> • Establishes annual targets that support SHSP objectives • Describes project identification and scoring criteria used to program funds • Shows infrastructure projects programmed throughout the state • NYSDOT PIES provides crash modification factors (CMF) for NYS-specific projects 	<ul style="list-style-type: none"> • Statewide targets and approach for setting those can be considered • Scoring criteria will be considered during project identification process • Understand eligible CMFs

Name of Plan (Year Published)	Description	Key Safety Components	Relevance to Ulster County Road Safety Plan
New York Pedestrian Safety Action Plan (2016)	Identifies current safety conditions and recommends a distinct set of engineering, education, and enforcement countermeasures that can be accomplished over the next five years to improve pedestrian safety.	<ul style="list-style-type: none"> • Focus on strategies and projects that improve pedestrian safety outside of New York City (NYC has a separate safety initiative) • Includes recommended engineering countermeasures and performance measures for pedestrian safety solutions 	<ul style="list-style-type: none"> • Ulster County is a focus county for pedestrian crashes (15th highest pedestrian crashes 2009-2013, outside NYC) so could be identified as an emphasis area • Strategies could be applicable to identified pedestrian challenges • Findings and systemic countermeasure packages should be reviewed for possible recommendations at identified UCTC locations during data analysis
New York Complete Streets Report (2014)	Highlights NYSDOT's Complete Streets policies and programs, best practices, and next steps for furthering Complete Streets in New York.	<ul style="list-style-type: none"> • Requires NYSDOT to incorporate its design features in planning, project scoping, design, and implementation 	<ul style="list-style-type: none"> • Best practices can be reviewed for applicability in Ulster County • Ulster County Complete Streets policy passed in 2009 and it would be beneficial to understand how policies have been implemented or known challenges • Kingston and New Paltz have individual Complete Streets policies and it would be beneficial to understand how policies have been implemented or known challenges
Ulster County Transportation Council Long Range Transportation Plan (2015)	Twenty-year long-range plan and investment program for transportation programs and projects in the UCTC area.	<ul style="list-style-type: none"> • Safety for all users of the transportation system is an explicit goal of the LRTP (Goal 3) • Safety objectives and targets are identified and align with statewide safety goals and meet federal requirements. Additional objectives are also identified for transit safety and special user groups. 	<ul style="list-style-type: none"> • Safety goal can be aligned with Safety Plan goal • Safety objectives and targets can be incorporated, and projects selected based on how well they meet these • Based on the results of the network screening, short and mid-term projects in the LRTP will be reviewed to ensure project recommendations aren't duplicated and/or certain projects receive more attention • Consider how the longer-range recommendations could be incorporated into Safety Plan as strategies

Name of Plan (Year Published)	Description	Key Safety Components	Relevance to Ulster County Road Safety Plan
		<ul style="list-style-type: none"> • Includes crash data from 2011-2015 for the region and for each municipality. • List short and mid-range recommended safety projects for the planning area by local priorities and NYSDOT priorities • Lists long range recommendations for safety projects. 	
Ulster County Transportation Council Transportation Improvement Program (TIP)	Five-year capital funding program for federal funded transportation projects. Must be aligned with goals and strategies identified in the Long-Range Transportation Plan	<ul style="list-style-type: none"> • Lists safety as a major goal for the plan • Recognizes support for and alignment with state safety targets, meaning programs and projects in the TIP should work to achieve these safety reductions • Criteria to evaluate all transportation projects includes safety considerations • Lists programmed safety projects 	<ul style="list-style-type: none"> • Consider projects in Safety Plan that will achieve progress toward safety targets • Based on the results of the network screening, safety projects in the TIP will be reviewed to ensure project recommendations are not duplicated
Ulster County Transportation Council Road Safety Assessment (2018)	Detailed examination of conditions and potential solutions on segments of roadway with elevated congestion and crash frequency in Ulster County.	<ul style="list-style-type: none"> • Identifies existing conditions (safety, traffic, and crash) at three study areas (NYS Route 212, NYS Route 32/NYS Route 212, NYS Route 299) • Identifies issues and suggests improvements for each study area • Recommendations cover roadway pavement/markings, signage, user behavior, and traffic/roadway/roadside characteristics 	<ul style="list-style-type: none"> • Details a process for field investigations that can be utilized at the ten priority locations identified through the crash analysis for this Safety Plan • Provides potential solutions to safety issues at three locations, which could inform solutions at other, similar locations, in the region • Identified concerns such as poor lane markings and sign reflectivity, which may be systemic issues in the UCTC planning area

Name of Plan (Year Published)	Description	Key Safety Components	Relevance to Ulster County Road Safety Plan
City of Kingston Comprehensive Plan (2015)	Land use and transportation plan for the City of Kingston	<ul style="list-style-type: none"> • Improving safety for all road users is one of 11 goals identified in the document • Indicates safety-related projects and potential design approaches that are desired in the City of Kingston 	<ul style="list-style-type: none"> • Safety goal could be aligned with Safety Plan goal • Kingston projects will be reviewed so recommendations are not duplicated • Emphasis on and desire for “complete streets” design
Town of New Paltz Comprehensive Plan (2015)	Land use and transportation plan for Town of New Paltz	<ul style="list-style-type: none"> • Objective Five of the Transportation Network Goals is to increase safety throughout the transportation system • Identifies safety-related action steps • Identifies bicycle and pedestrian infrastructure is a key concern 	<ul style="list-style-type: none"> • Safety goal could be aligned with Safety Plan goal • Action steps can be reviewed and included in Safety Plan, as relevant • Bicycle and pedestrian safety needs can be considered during the data analysis

Key Document Review

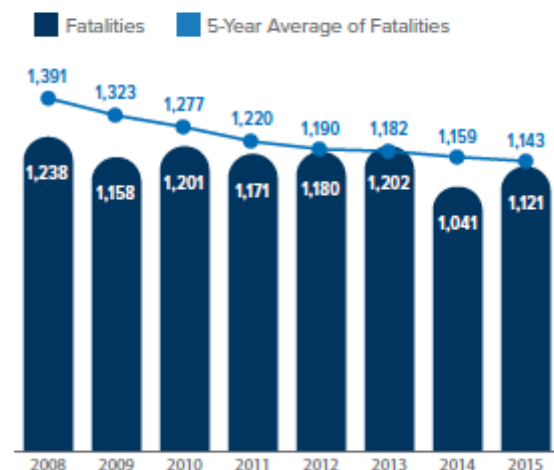
New York State Strategic Highway Safety Plan (2017)

The New York Strategic Highway Safety Plan (SHSP) is a comprehensive, five-year transportation safety plan that uses a data-driven analysis to identify the State's safety needs, set goals for reducing fatalities and injuries, and allocate funding for projects and programs to support the State Highway Safety Improvement Program (HSIP). The primary goal of the SHSP is to reduce fatality and serious-injury crashes by two percent annually during the 2017-2022 timeframe.

The SHSP identifies five goals:

- Reduce roadway fatalities from the 5-year moving average of 1,143 in 2015 to 992 by 2022.
- Reduce the rate of roadway fatalities per 100 million VMT from the 5-year moving average of 0.89 in 2015 to 0.78 by 2022.
- Reduce serious injuries from the 5-year moving average of 11,547 in 2015 to 10,024 in 2022.
- Reduce the rate of serious injuries from the 5-year moving average of 8.99 in 2015 to 7.81 in 2022.
- Reduce non-motorized fatalities and serious injuries from the 5-year moving average of 2,872 in 2015 to 2,493 in 2022.

Total New York State Roadway Fatalities (2008-2015)



Source: FARS

While the total number of fatal and serious injuries are declining, some areas including intersection-related and drug-related injuries are increasing. To achieve the above goals, the plan identifies six emphasis areas:

- Intersections.
- Lane departure.
- Vulnerable users (bicyclists, pedestrians, motorcyclists, workers and travelers through work zones).
- Age-related (older and young drivers).
- Road user behavior (impaired driving, occupant protection, distracted/drowsy driving).

- Speed.

In addition, the plan notes three topics as cross-cutting or emerging issues to monitor (emergency response, data, and connected/autonomous vehicles). For each goal, several strategies across the “4E’s” of safety: Engineering, Education, Enforcement, and Emergency Medical Services are identified.

These emphasis areas have changed since the 2010 SHSP which identified driver behavior, pedestrians, large trucks, motorcycles, highways, emergency medical services, and traffic safety information systems as key areas.

Two special rules included in the Fixing America’s Surface Transportation (FAST) Act direct funding towards development of strategies to mitigate specific safety needs that apply to High Risk Rural Roads and older driver and pedestrian fatal and serious injuries. New York State does not meet threshold for either rule, but Ulster County should monitor these measures for crashes within the County.

New York Highway Safety Improvement Program (2018)

The New York Highway Safety Improvement Program (HSIP) 2018 report satisfies FAST Act reporting requirements for projects and programs designed to reduce traffic fatalities and serious injuries on all public roads.

New York State Department of Transportation (NYSDOT) is using a hybrid approach to manage the HSIP funds. Approximately half of the funds are provided to the NYSDOT regions according to a formula that includes crashes, population and center line miles. The remaining half of the funds are administered centrally by the NYSDOT Main Office and the Safety and System Optimization (SSO) team. These funds are primarily used to fund a statewide call for projects program as well as the statewide Pedestrian Safety Action Plan (PSAP).

Programs administered under HSIP include:

- Intersection.
- Safe Corridor.
- Horizontal Curve.
- Bicycle Safety.
- Rural State Highways.
- Skid Hazard.
- Roadway Departure.
- Low-Cost Spot Improvements.
- Sign Replacement and Improvement.
- Local Safety.
- Pedestrian Safety.
- Right Angle Crash.

The document also includes project identification methodology and scoring methodology for each of the program areas. However, local road projects are typically identified via local municipalities and the MPO planning process versus the identification methodology used by the state. NYSDOT also has a Post Implementation Evaluation System (PIES) that provides crash modification factors and before/after crash statistics on safety projects. Reports can be run at the project level or for specific countermeasures.

New York Pedestrian Safety Action Plan (2016)

Pedestrian safety is an emphasis area in the 2017 New York SHSP. To proactively address pedestrian safety issues, the Pedestrian Safety Action Plan (PSAP) recommends a distinct set of engineering, education, and enforcement countermeasures that can be accomplished over the next five years to improve pedestrian safety. The PSAP focuses on locations outside of New York City, which has a separate safety initiative.

The PSAP used a systemic approach based on FHWA's Systemic Safety Project Selection Tool to proactively address widespread safety issues and minimize crash potential by implementing low cost countermeasures throughout the roadway network. A systemic improvement is one that is widely implemented based on high-risk roadway features that are correlated with crash types rather than crash frequency. Ulster County is identified as a focus county, ranking 15th in pedestrian crashes between 2009 and 2013 (278 crashes). Table 2 below includes the major recommendations and the analysis findings that support the approach.

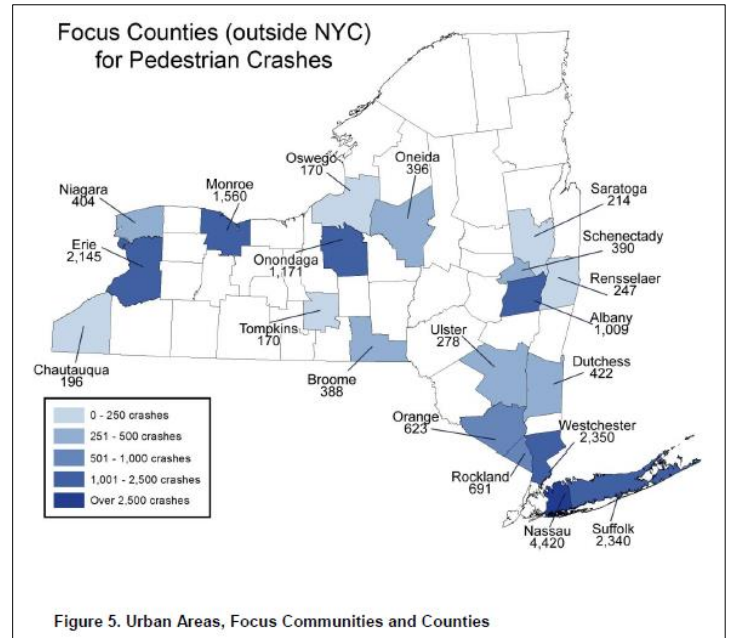


Figure 5. Urban Areas, Focus Communities and Counties

Table 2: PSAP Recommendations

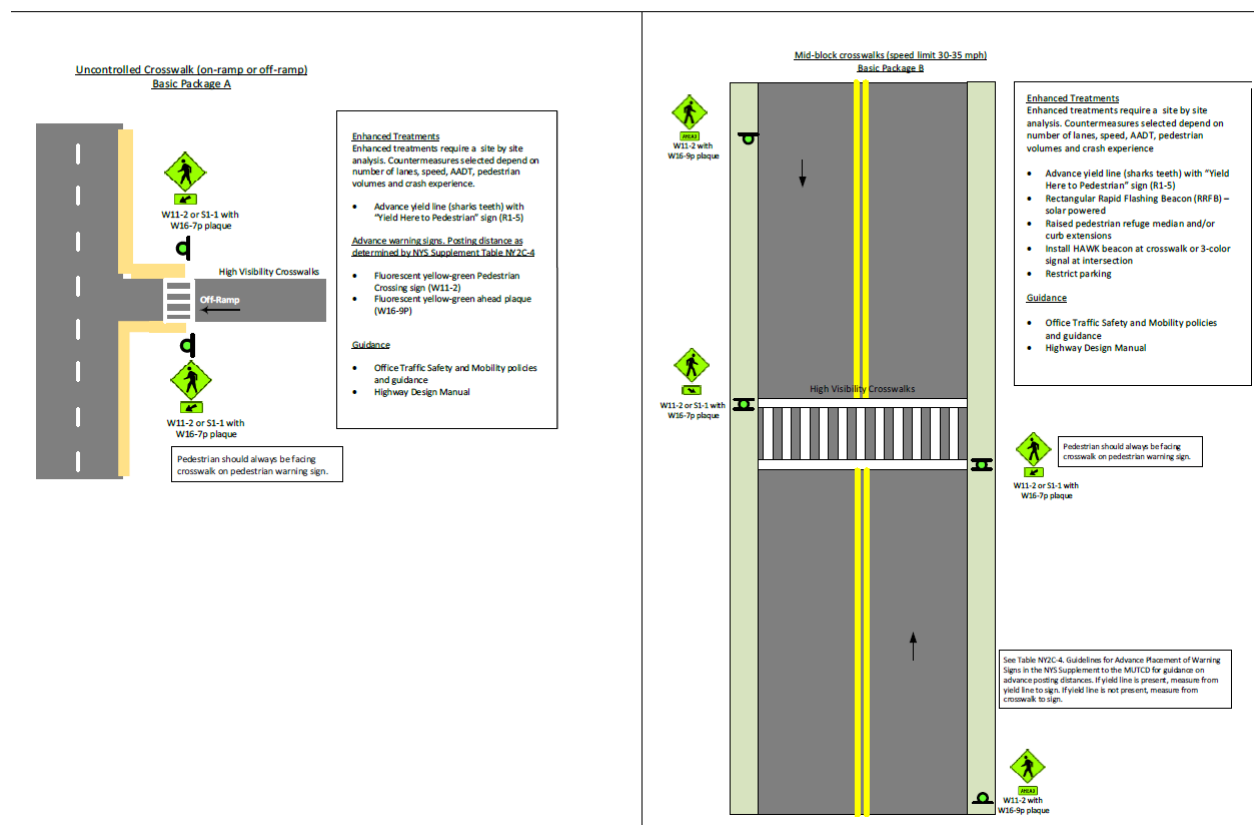
Finding	Recommendation
Pedestrian crashes are widely dispersed but predominantly urban.	Focus program in urban areas.
Most pedestrian crashes occur on local roads; however, the state system is over-represented in crashes to centerline miles.	Begin implementation on the state system. Include a local project solicitation in subsequent years.
There is a nearly even split between pedestrian crashes at intersection and non-intersection locations outside NYC. Most pedestrian crashes occur when pedestrians are crossing the road.	The systemic component of the plan includes engineering improvements to signalized intersections, intersections with an uncontrolled marked pedestrian crosswalk and midblock crosswalks.
Pedestrian crashes occur at random locations. More than 50% of the crashes occur at locations	Education and Enforcement elements that address decisions and behaviors of both

Finding	Recommendation
where there is no marked crosswalk and no signal.	pedestrians and drivers can help address some of the randomness of pedestrian crashes.
More than 50% of the urban crashes occur in 20 municipalities.	Prioritize Engineering, Education and Enforcement implementations accordingly.
The most frequent behavioral factors include inattention, failure to yield, alcohol and pedestrian error.	Include Education and Enforcement elements that address decisions and behaviors of both pedestrians and drivers.

Figure 1 below illustrates potential systemic improvements to enhance pedestrian safety for roads in urban areas.

Figure 1: Possible Systemic Improvements for Pedestrian Safety

Systemic Improvements on Roads in Urban Areas



New York State Complete Streets Final Report (2014)

New York State's Complete Streets Act went into effect in February 2012. The Act requires NYSDOT to develop a report showing the agency's implementation efforts and identification of best practices. It also requires NYSDOT to incorporate Complete Streets design features in planning, project scoping, design and implementation of transportation projects.

As of the report, NYSDOT highlighted three policy documents which provide guidance related to Complete Streets principles:

- Bicycle/Pedestrian Policy.
- Shared Lane Markings Policy.
- Traffic Calming Policy in the Highway Design Manual.

The document also notes several internal resources that include section pertaining to Complete Streets principles, including:

- Project Development Manual.
- Highway Design Manual.
- Regional Bicycle/Pedestrian Coordinators, and MPO Bicycle/Pedestrian Working Groups.
- Pedestrian Generator Checklist.
- Standard Specifications, Special Specifications, and Standard Sheets.
- Preservation First Principle.



In this section of Route 347, a bicycle/pedestrian path has been added to allow pedestrians and bicyclists to travel safely and easily down the road.

The report also highlights Complete Streets projects undertaken by NYSDOT, including efforts on NY 11 in Canton (Region 7), numerous projects in Binghamton (Region 9), and on NY 347 on Long Island.

Ulster County Transportation Council Long Range Transportation Plan (2015)

The Ulster County Transportation Council's Long-Range Transportation Plan (LRTP), "Rethinking Transportation" was adopted in 2015. Part of the vision statement for the region states that, "Communities are supported by a transportation system that provides safe access by all modes of travel." More explicitly, *Goal 3 – Safety*, focuses on the need to "improve the safety of all users of the transportation system by responding to identified safety deficiencies and proactively addressing future safety needs." Four objectives and related performance measures are specified:

- Objective 1: Reduce fatal and serious motor vehicle crashes on the federal aid eligible system by 5% each 5-year period.
 - Performance Measure: Number of fatal and serious injury motor vehicle crashes reported through NYS crash records system, reviewed annually.
- Objective 2: Reduce crashes resulting in pedestrian/bicyclist fatalities and serious crashes on the federal aid eligible system by 5% each 5-year period.
 - Performance Measure: Number of crashes resulting in fatality and serious injury to pedestrians and bicyclists reported through NYS crash record system, reviewed annually.
- Objective 3: Reduce crashes involving transit vehicles that result in fatalities or serious injuries to 0 over the life of the plan.
 - Performance Measure: Number of crashes in Ulster County involving transit vehicles reported through NYS crash record system, reported annually.
- Objective 4: Improve safety of senior citizens, young people, and other identified user groups through pro-active safety measures with demonstrated crash reduction potential.¹
 - Performance Measure: Number and severity of crashes involving identified special user groups reported through NYS crash record system, reported annually.

Overall crash statistics for 2011-2014 are reported and crash rates are 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. Most fatalities have occurred in “other” type crashes, but most injuries have been from auto-to-auto crashes. The two largest municipalities in the county have the highest number of crashes: The City of Kingston and the Town of Ulster.

Several specific safety projects are listed in the LRTP, which include short and medium solution, broken down by local jurisdiction priorities and NYSDOT priorities. These projects are also reflected in the UCTC Transportation Improvement Program.

In addition to these specific projects, the LRTP also identifies some programmatic and policy changes to improve safety:

- Improve the function of intersections through improved design that increases safety, reduces delay, and improves mobility.

¹ Note that this is identified as a proactive objective that will need to match demographic trends to current and evolving practice for systemic safety improvements and countermeasures.

- 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.

Ulster County Transportation Council Transportation Improvement Program 2020-2024 (2017)

The Ulster County Transportation Council Transportation Improvement Program (TIP) serves as the five-year capital program for federally funded transportation projects and projects identified must be consistent with the LRTP.

Three projects in the TIP are State highway projects that are NYSDOT-sponsored and have some connection with roadway safety (in these cases, the projects provide enhancements for pedestrians):

- PIN 817747 – Route 209 Sidewalk Improvements, Hamlet of Kerhonkson.
- Pin 881354 – Route 213 Sidewalk and Road Resettlement Repair, Town of Rosendale.
- Pin 881517 – ADA sidewalks and ramps, Multiple locations.

A full list of safety-related projects are shown in Table 3 and Figure 2 shows where they can be found on a map. Most projects are in Kingston or New Paltz.

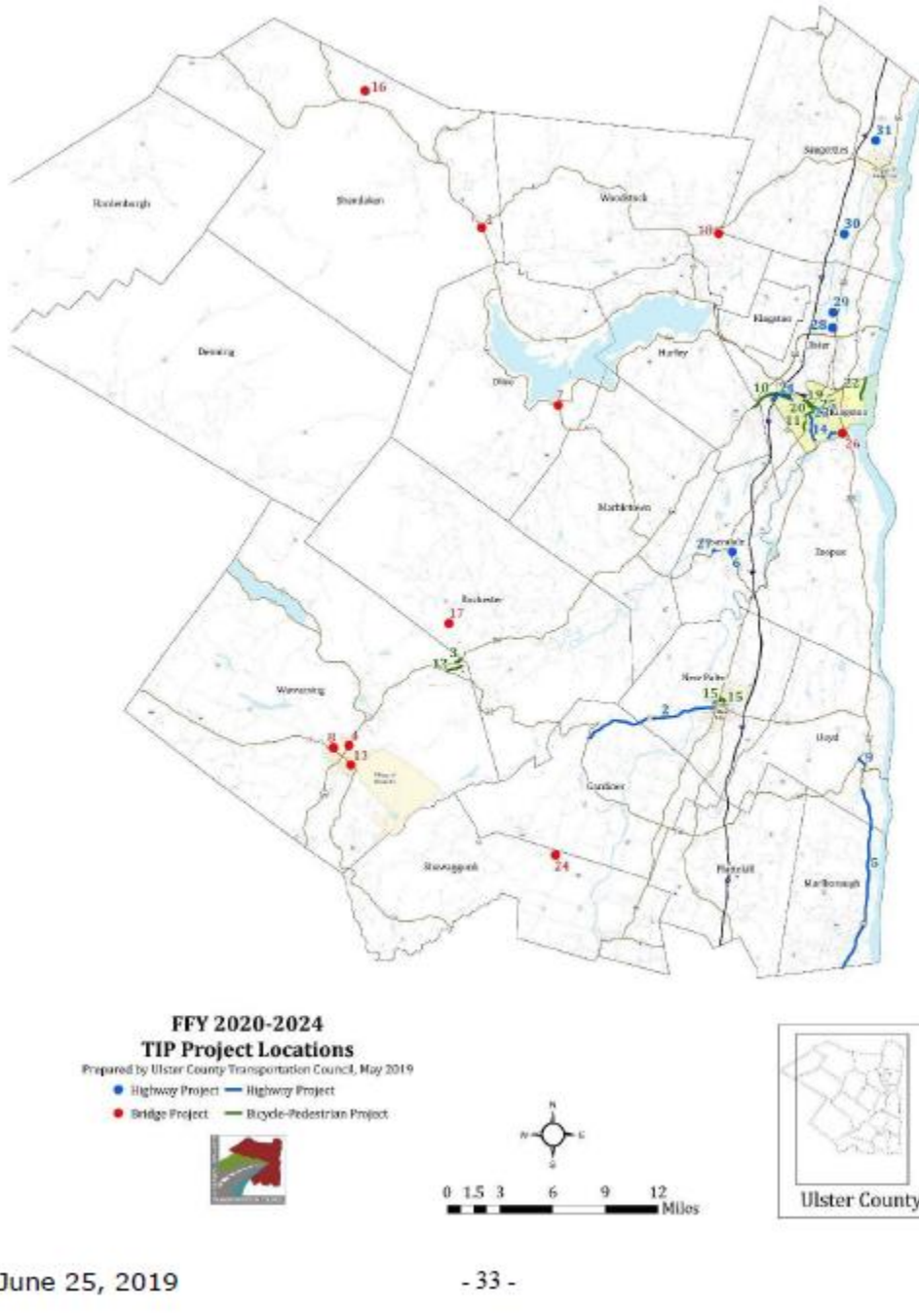
Table 3: UCTC TIP Projects (2020-2024)

Map Reference	PIN	Project Name	Project Description	Municipality
2	805111	County Route 2&8-Route 299 Roadway Repaving	Shoulder Widening	New Paltz/Gardiner
3	817747	Route 209 Sidewalk Improvement	Install sidewalks linking to Kerhonkson Elem. School	Shandaken
11	875913	Route 32 Klingberg Ave. to Amy Kay Pkwy. Sidewalks	Rehabilitate pedestrian facilities	Kingston
15	876122	Village of New Paltz Sidewalk Improvements	New sidewalks and curbing on Prospect, Church, and H.W. Dubois Dr. and replace sidewalk and curbing Huguenot St.	New Paltz
20	876184	Henry St. Pedestrian Improvements	Upgrade existing sidewalks on Henry St. from Broadway to Wall St. to address ADA compliance and enhance ped accessibility. Will add bicycle infrastructure, high visibility crosswalks, and bicycle parking	Kingston
21	876194	Hurley Ave. Repaving	Complete streets project, including addition of ADA ramps, widen shoulders and consideration of further bicycle/pedestrian improvements	Kingston

Map Reference	PIN	Project Name	Project Description	Municipality
	876207	Exempt	Systematic improvements to signalized intersections and uncontrolled crosswalks. Countermeasure identified in 2016 pedestrian safety plan. Local call for PSAP projects, no offset needed	Kingston
	876248	Exempt	Create buffered bike lanes and sidewalk on Henry W Dubois Dr.	New Paltz
	876254	Exempt	Construct and rehabilitate sidewalks and install crosswalks and ADA compliant ramps on Kingston/Flatbush and Foxhall Ave. Install bicycle infrastructure on Flatbush and Foxhall Avenues	Kingston
25	878049	Bike/Ped. Improvements along Broadway. TEP award	Construct bicycle and pedestrian facilities on Broadway corridor	Kingston
27	881354	Rt. 213 Sidewalk and road settlement repair in the vicinity of Binnewater Rd.	Restore sidewalk on Rt. 214 east and west of Binnewater Rd.	Rosendale
	881517	ADA Sidewalks – Exempt	Build or repair sidewalks to make ADA compliant in Ulster County as needed	Multiple

Figure 2: UCTC TIP Project Map

Figure 7: FFY 2020-2024 Project Location Map



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Ulster County Road Safety Assessment Report (2018)

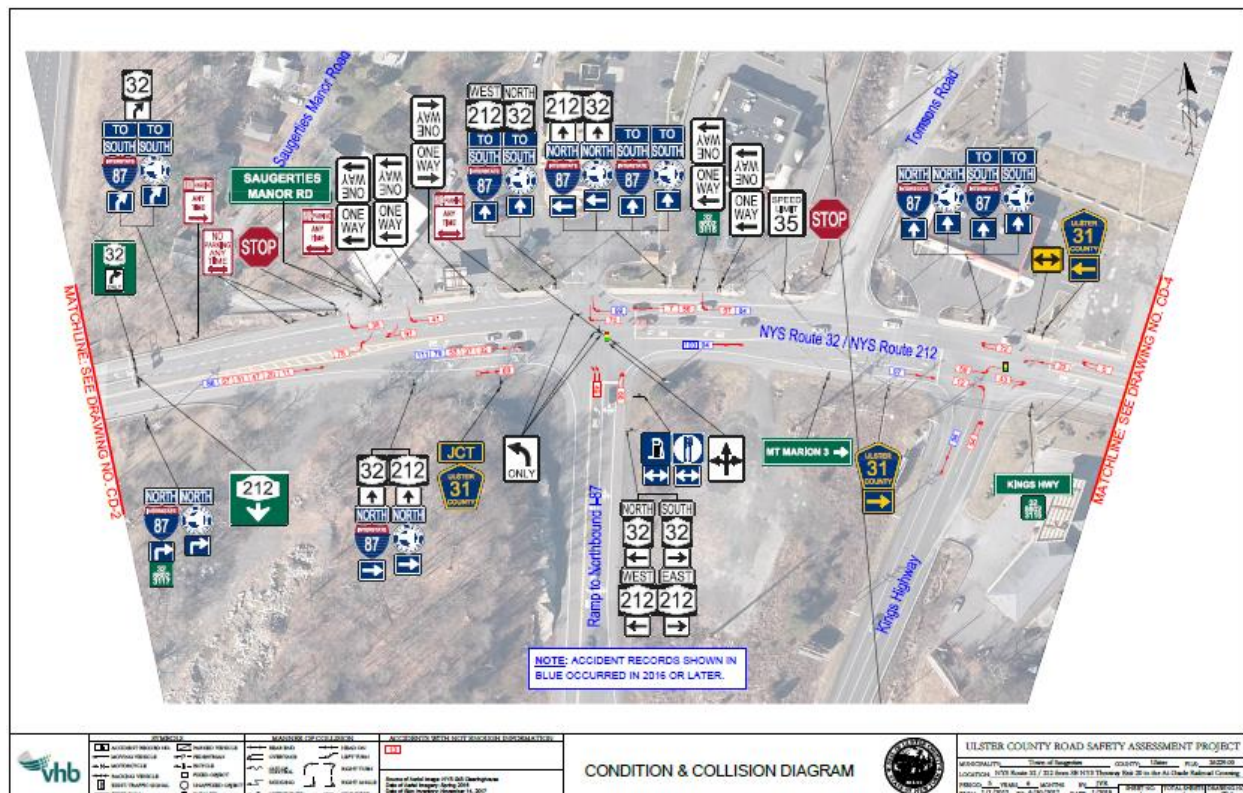
The objective of this Road Safety Assessment (RSA) was to perform a safety evaluation at three selected locations in Ulster County that have elevated levels of traffic congestion and crash frequency. The three locations included:

- Location 1: NYS Route 212 – Town of Woodstock.
- Location 2: NYS Route 32/NYS Route 212 – Town of Saugerties.
- Location 3: NYS Route 299 – Town of New Paltz.

The analysis included collection of existing condition data (road condition, speed, sign and pavement markings, traffic data, crash data, etc.), site visits, solicitation of ideas from stakeholders familiar with the area and with a background in planning, design, operations, or safety, and recommendations for each road segment. The recommendations for each site were related to roadway pavement/markings, signage, user behavior, and traffic/roadway/roadside characteristics.

Figure 3 shows a sample roadway signage inventory collected for the project.

Figure 3: Sample Roadway Sign Inventory



City of Kingston Comprehensive Plan (2015)

The City of Kingston Comprehensive Plan is the first Comprehensive Plan developed in more than 50 years. The document identifies a range of goals that should be met by 2025. Among these, Goal 5 is to, “Promote an effective and comprehensive transportation system that enhances safety, encourages and enables active mobility for all users of the streets...” To achieve that goal, the City identifies five key elements:

- 1) Improving the street system’s ability to move people and goods safely and efficiently.
- 2) Revitalizing the historic grid network that exists in Kingston by implementing Complete Streets solutions and policies.
- 3) Developing a long-range non-motorized transportation plan.
- 4) Improving the safety of the system for all users.
- 5) Promoting the increased use of public transportation.

To achieve these strategies, various road safety projects including roundabouts, road diets (four to three lane), traffic calming, limiting curb cuts, etc.) are identified and indicate a willingness by the City to explore a wide variety of safety approaches.



Above (top to bottom): View of Broadway from CSX Railroad overpass; view of Broadway looking west toward CSX Railroad overpass; and view from O'Neil Street looking toward Broadway. Each of these roadways is designed to primarily move high volumes of traffic, yet the wide width of each affords an opportunity to redesign these roadways with “complete street” design elements. Doing so will enhance the bicyclist and pedestrian experience and safety and result in a more inviting environment for people to live and visit.

Town of New Paltz Comprehensive Plan (2015)

The Town of New Paltz's Comprehensive Plan updates a Comprehensive Plan last completed in 1995. Sustainability is a theme found throughout the Plan, including the Transportation Goal which is, "To develop a transportation network that provides diverse transportation options that are safe, efficient, promote healthy lifestyles and reduce the Town's overall carbon footprint." Objective 5 within that goal is to increase safety throughout the transportation network. To accomplish this, the Plan identifies several action steps, including the following which are related to enhancing safety:

- Adopt a Town alternative transportation map identifying priority streets requiring sidewalks/multiuse paths to complete the non-motorized transportation network.
- Complete the connection of the Walkkill Valley Rail Trail with the Hudson Valley Rail Trail as identified in the New Paltz Transportation-Land Use Project.
- Develop access management regulation consistent with the recommendations of the New Paltz Transportation and Land Use Project.
- Develop new Town highway standards.
- Develop a planning map identifying areas where "complete streets" are to be developed.

Bicycle and pedestrian infrastructure are a key concern for the Town, as both modes are heavily utilized.