



TOWN OF ULSTER ROUTE 9W **MOBILITY PLAN**



DRAFT EXISTING CONDITIONS REPORT

April 2023

Prepared For:



Prepared By:



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CHAPTER 1 – Introduction

The Route 9W Mobility Plan is sponsored by the Town of Ulster and the Ulster County Transportation Council (UCTC) to address peak hour traffic congestion, safety concerns, and multi-modal connectivity, while considering plans for future development and trends that impact travel in the US Route 9W corridor between Van Kleeck Lane and Leggs Mills Road.

The Route 9W Corridor in the Town of Ulster serves one of Ulster County’s largest commercial retail centers. As such, the corridor generates significant travel demand which must be accommodated by the existing roadway network and transportation infrastructure. Recent studies have indicated that peak hour traffic congestion negatively impacts Town residents and visitors, with long vehicle queues making it difficult to access goods and services, and excessive delay resulting in driver frustration. Likewise, pending redevelopments at the former IBM site and Hudson Valley Mall as well as fluctuations from a changing retail environment have the potential to worsen traffic conditions on Route 9W. Beyond vehicle concerns, the existing infrastructure provides little consideration of multi-modal needs with sidewalks and crosswalks absent at many key locations along the corridor. Recent safety studies have also indicated that areas of the Route 9W corridor experience above average crash rates.

This study will examine the Route 9W corridor in detail in order to identify transportation infrastructure improvements and complete streets features that promote mobility and safety for all roadway users, reduce the negative impacts of traffic congestion, and accommodate future growth in the 9W corridor and surrounding areas in the Town to promote access to jobs and retail. A robust stakeholder and community-driven process will be used throughout the study and during development of recommendations.

STUDY PURPOSE

At the outset of the study, the Study Advisory Committee (SAC) discussed and established the following Study Purpose Statement, which establishes the basis for consideration of alternatives, and future expenditures.

Study Purpose:

- ❖ The purpose of the study is to address traffic safety and connectivity for all users, and traffic congestion immediate to and surrounding the US Route 9W Corridor in the Town of Ulster, including future travel needs based on major development proposals and trends.

STUDY APPROACH

The SAC was established to guide this study, and review and provide feedback on interim and final study products. SAC members include staff from the Town of Ulster, Ulster County Transportation Council (UCTC), New York State Department of Transportation (NYSDOT) Region 8, as well as residents and businesses located along the corridor. A Technical Advisory Committee (TAC) comprised of the Town

Supervisor and UCTC Project Manager was also formed to review progress and advance the study. Specific SAC and TAC committee members are listed in the project's Public Participation Plan.

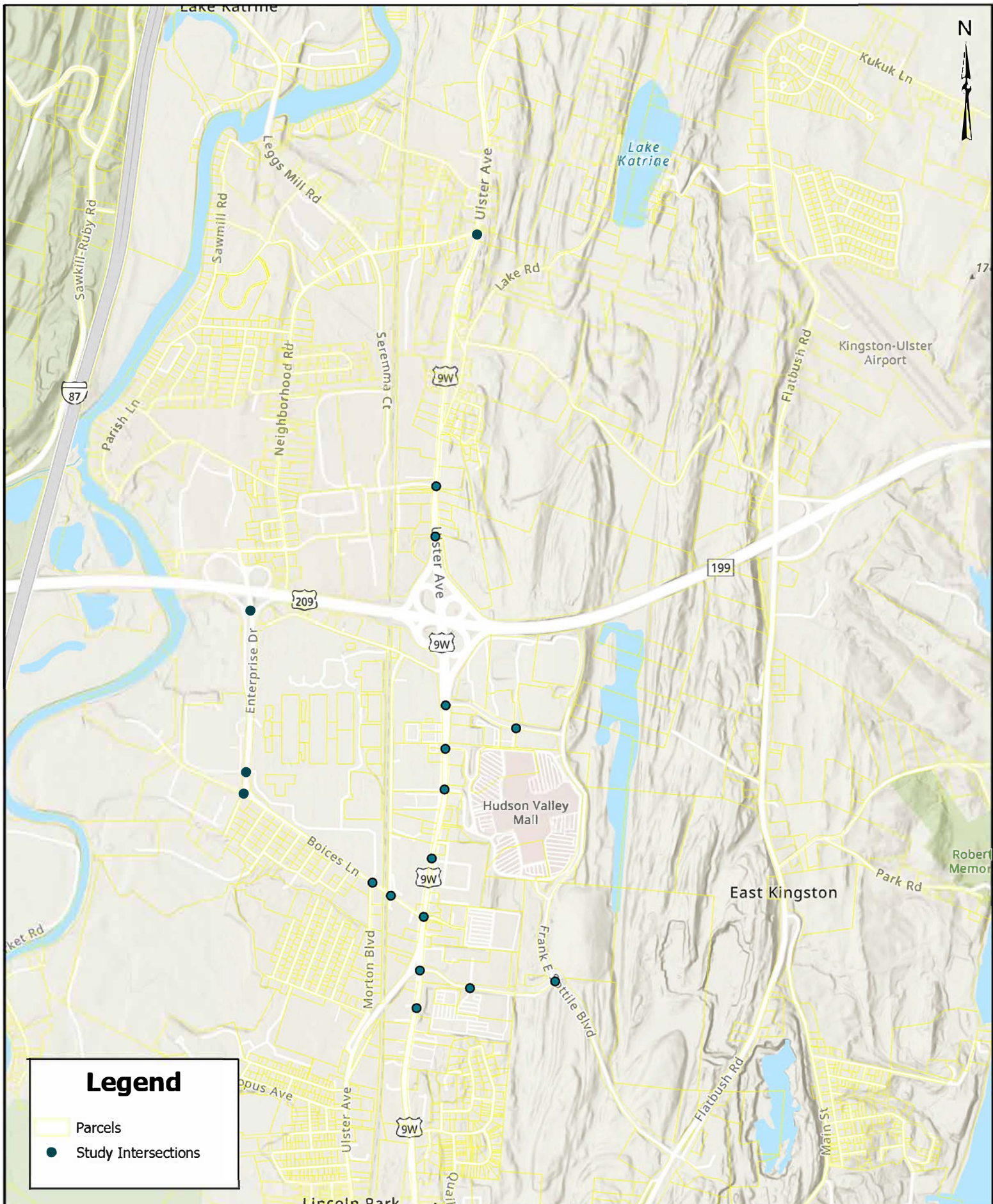
The goal of these committees is to share technical information, provide input on public outreach materials, enable informed decision-making, help shape the draft and final study recommendations, and provide overall guidance on the study as it progresses. The cross-section of agencies and interests on these committees, combined with the open public process, helps to ensure that diverse views are represented and the plan is comprehensive and publicly supported.

STUDY AREA

The study area generally extends along US Route 9W from Van Kleeck Lane to Leggs Mills Road and includes the adjacent segments of Boices Lane, Enterprise Drive, Miron Lane, and Frank Sottile Boulevard as depicted in Figure 1.1.

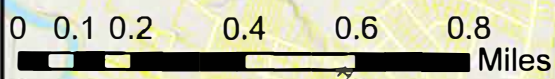


Image 1: Bicyclist on Crosswalk at Route 9W/Boices Lane Intersection



Legend

- Parcels
- Study Intersections



STUDY AREA



PROJECT: 121-408	DATE: 12/14/2022	FIGURE: 1.1
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PREVIOUS STUDIES

Several previous studies pertain to the corridor.

In 2007, the Town adopted a new Comprehensive Plan which establishes a vision, strategy, and framework to foster growth while preserving the rural and historic character of the Town. The plan includes several recommendations for the Route 9W corridor including access management improvements, additional roadway connections, and developing a hierarchy of roadway classifications. The plan also identifies the need for safety and streetscape enhancements as well as a sidewalk plan to better accommodate pedestrians.

In 2013, the UCTC in coordination with NYSDOT conducted a detailed study of traffic operations at the Boices Lane railroad crossing to address operational issues. The study recommended short-term traffic signal upgrades with pre-emption tied to the CSX rail crossing, and longer term widening of Boices Lane with pedestrian upgrades and to accommodate the redevelopment of Tech City.

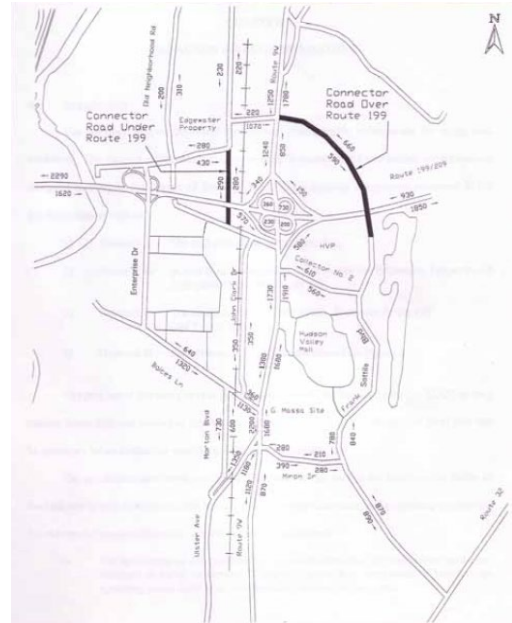


Image 2: Roadway Connections from Town Comprehensive Plan (2007)

Building on the recommendations of the 2007 Comprehensive Plan, the Town adopted the US Route 9W Corridor Enhancement plan in 2014 to act as a policy guide for future upgrades to the Route 9W corridor. The US Route 9W Corridor Enhancement Plan emphasizes the need for a uniformity of design throughout the corridor in order to improve the pedestrian experience and wayfinding for all users. The plan proposed specific streetscape and lighting enhancements in the corridor as well as new sidewalks on Route 9W and Frank Sottile Boulevard.

		<p>Proposal:</p> <p>Work with Central Hudson Gas & Electric and telephone and cable providers to reduce visual clutter of overhead cables and install period lighting.</p> <p>There is an opportunity to relocate the bulky telecommunication cables within linear green strip, which lies between stores on U.S. Route 9W and the malls. This will require coordination with local utilities.</p>	<p>Proposal:</p> <p>Install new streetlights on both sides of U.S. Route 9W. This action will involve the removal of some fixtures on the east side of the corridor, coupled with the installation of new fixtures on the west side of the corridor.</p> <p>The new streetlights should be staggered to form an even distribution of lighting along street.</p>	<p>Problem:</p> <p>There are no design elements, which help to form a unique identity of the U.S. Route 9W corridor in the Town of Ulster.</p> <p>The installation of streetlights w/ banners, sidewalks and street trees will provide common design elements, which can then be used as a base for creating a unique identity for the corridor.</p>	<p>Problem:</p> <p>While there are sidewalks along the western side of U.S. Route 9W, there are none on the east side.</p> <p>The Town of Ulster has secured Memorandums of Understanding (MOU) from developers to secure easements for sidewalks on the east side of the corridor. Once the remaining segments are secure, these sidewalk segments should be constructed.</p>		
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Image 2: Proposed Sidewalk Improvements from Route 9W Corridor Enhancement Plan (2014)

The Ulster County Planning Board published the Community Design Manual in 2017 in order to guide community development and design. The manual illustrates design principles and the potential impacts that policy can have on the built environment, by identifying land use typologies, key details about how each typology functions, and valuable tools for how to achieve desired design outcomes. Application of the design manual to the Route 9W corridor indicates that access management, streetscape improvements, and future redevelopment could all be beneficial to the Route 9W corridor.

In 2020, the Mid-Hudson Valley Transportation Management Area (TMA) conducted a macro-level screening to measure overall traffic congestion levels and identify the most congested areas in the Ulster, Dutchess, and Orange County region as part of the Congestion Management Process (CMP). The analysis identified several measures of congestion including peak period congestion, total delay and travel time reliability. The results of the analysis found that the Route 9W corridor near the Route 199 interchange is within the top ten locations for total delay based on the total excessive delay per mile criteria. The analysis notes that this is typical of higher volume roadways and major interchanges where high volume roadways intersect. As a result of the analysis, the Route 9W corridor was identified for further study to identify potential causes of excessive delay.

In addition to traffic congestion, the Route 9W corridor was identified in the Ulster County Road Safety Plan (2021) as a priority segment for safety improvements. The 2021 study used data and stakeholder input to identify, analyze, and prioritize roadway safety improvements. As a result of the analysis, the Ulster Avenue/Frank Sottile Boulevard intersection was identified on the list of top 50 priority intersections.

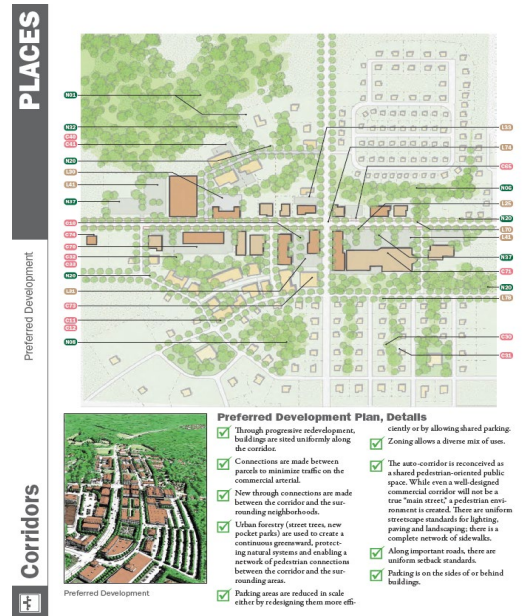


Image 3: Corridor Typology from Community Design Manual (2017)

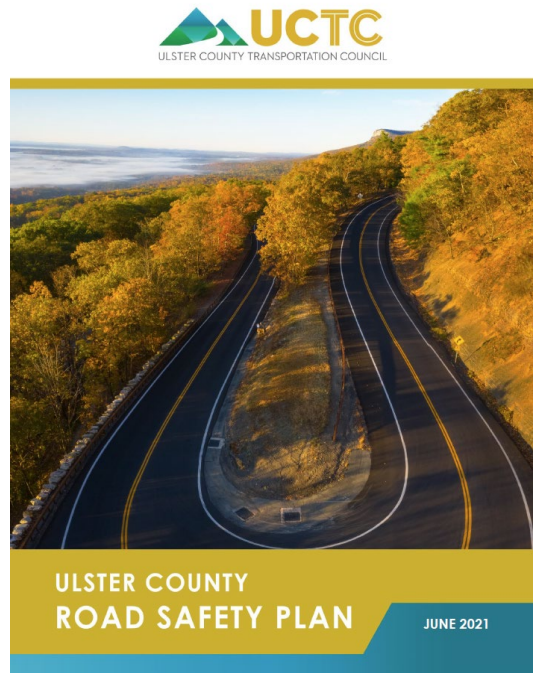


Image 4: Cover of Ulster County Road Safety Plan (2021)

CHAPTER 2 – Existing Conditions

STUDY AREA ZONING AND LAND USE

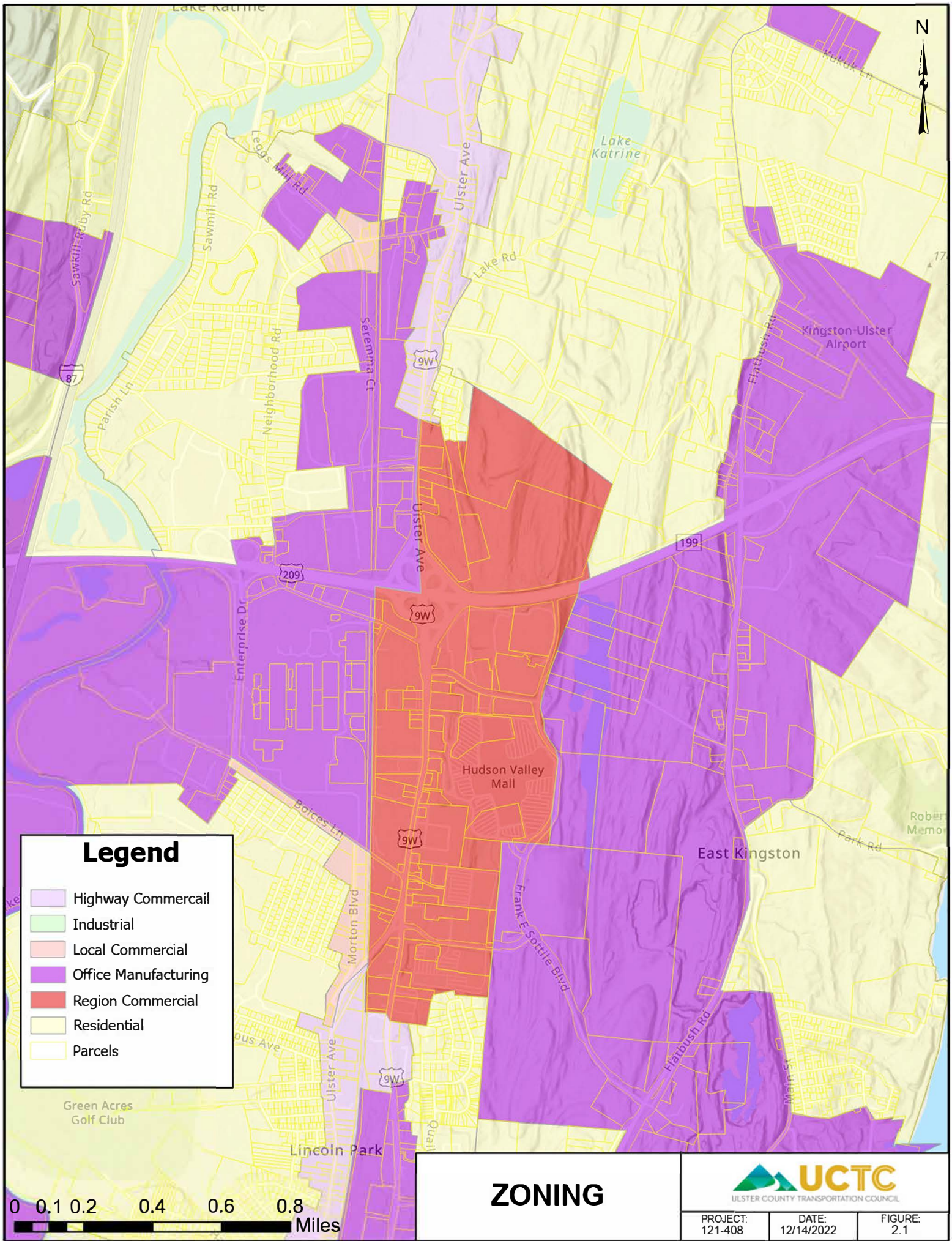
The purpose of zoning is to positively shape the community by regulating building size (height and width), lot coverage (placement of buildings), density, and land use by type.

Figure 2.1 shows that zoning in the study area is primarily commercial with office/manufacturing zones setback from the corridor to the east and west and residential zones located to the north and south. Specifically, the zoning code identifies three types of commercial zones (local, highway, and regional), with the local zone generally being the most restrictive and the regional zone the most permissive of the three commercial categories. Of these zones, the 9W corridor is primarily composed of Regional Commercial between Ulster Avenue and Grant Avenue.



Image 5: Retail land uses in Route 9W Corridor

Land uses in the study area are primarily residential and commercial. Figure 2.2 shows that commercial uses are primarily concentrated along US Route 9W and include a mix of retail establishments, gas stations, and fast food restaurants.



Legend

- Highway Commercial
- Industrial
- Local Commercial
- Office Manufacturing
- Region Commercial
- Residential
- Parcels

Green Acres Golf Club

Lincoln Park

ZONING

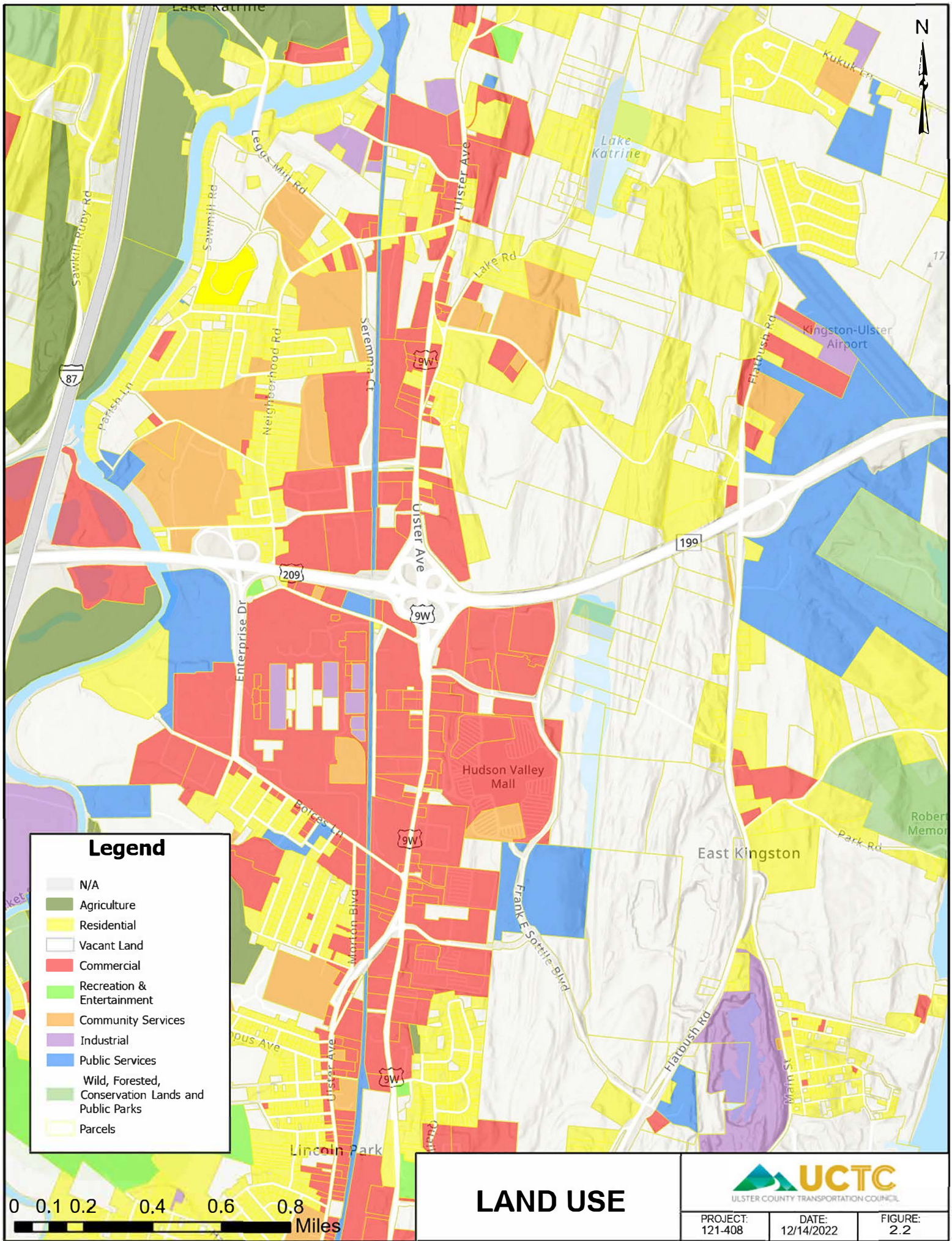


PROJECT:
121-408

DATE:
12/14/2022

FIGURE:
2.1

0 0.1 0.2 0.4 0.6 0.8 Miles



Legend

- N/A
- Agriculture
- Residential
- Vacant Land
- Commercial
- Recreation & Entertainment
- Community Services
- Industrial
- Public Services
- Wild, Forested, Conservation Lands and Public Parks
- Parcels

LAND USE



PROJECT:
121-408

DATE:
12/14/2022

FIGURE:
2.2

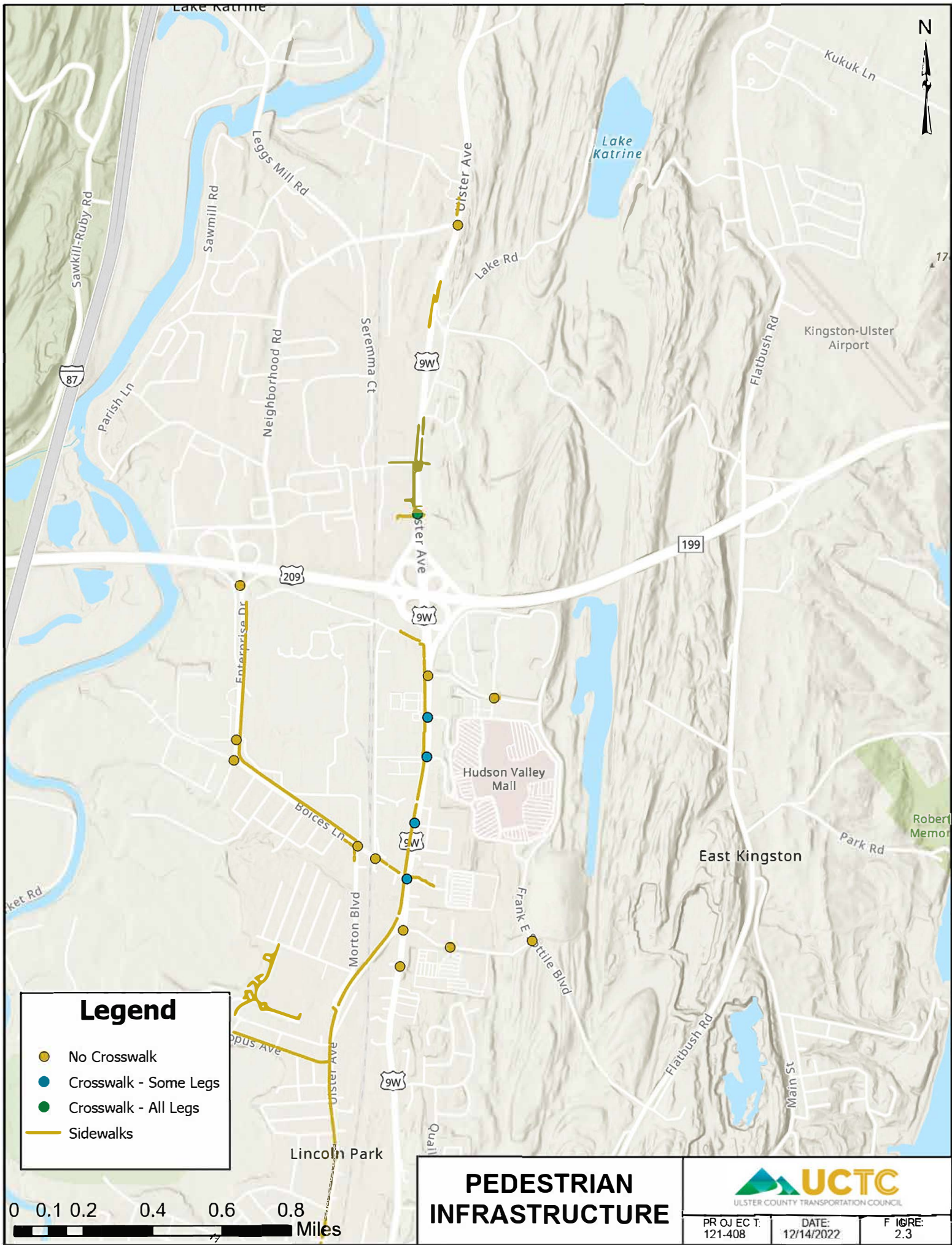
0 0.1 0.2 0.4 0.6 0.8 Miles

TRANSPORTATION INFRASTRUCTURE

The US Route 9W corridor provides north-south travel through the Town of Ulster from the southern Town Border with the City of Kingston to the northern Town border with the Town of Saugerties. South of Ulster Avenue, US Route 9W is a two-lane roadway with approximate 12-foot wide travel lanes and 8-foot wide shoulders. Between Ulster Avenue and Grant Avenue, Route 9W is a four to five lane thoroughfare spanning 55 to 60 feet-wide with two lanes in each direction and auxiliary turn lanes, before transitioning back to a two-lane roadway north of Grant Avenue, which generally aligns with the functional classification. Specifically, Route 9W is generally classified as a minor arterial within the Town of Ulster with the exception of the segment from Ulster Avenue to Route 209/Route 199 which is classified as a principal arterial (other). The posted speed limit is 35 mph between Ulster Avenue and Grant Avenue and 45 mph on the segments to the north and south. Data published by NYSDOT indicates that the pavement on Route 9W in the study area is in poor condition (Rated 5) indicating frequent distress.

Beyond the US Route 9W corridor, other major roads in the study area include Boices Lane, Enterprise Drive, and Frank Sottile Boulevard. Boices Lane and Enterprise Drive provide an alternate connection between Route 9W and Route 199/Route 209 and are both classified as minor arterials with a posted speed limit of 40 mph. Boices Lane generally provides two westbound lanes and a single eastbound lane, while Enterprise Drive provides two lanes in each direction. To the east of Route 9W, Frank Sottile Boulevard is classified as a major collector with a posted speed limit of 30 mph. The east-west segment of Frank Sottile Boulevard between the Hudson Valley Mall and Wal-Mart plaza provides two lanes in each direction, while the north-south segment provides a single lane in each direction.

Figure 2.3 shows the pedestrian infrastructure including an inventory of sidewalks and intersection pedestrian accommodations at all signalized intersections along US Route 9W within the study area. In addition to sidewalks, the pedestrian inventory included crosswalk type, pedestrian signals, push button type, and overall condition at each intersection. In general, sidewalks are provided on the west side of US Route 9W between Ulster Avenue and Old Neighborhood Road, and from Ulster Commons to Carle Terrace. An approximate 800 foot-long segment of sidewalk also exists on the east side of US Route 9W between Carle Terrace and Grant Avenue. There are no sidewalks on US Route 9W within the study area south of Ulster Avenue. Relative to intersection accommodations, the inventory shows that overall pedestrian crossing accommodations at the existing traffic signals are inconsistent, with crosswalks and pedestrian signals absent at several locations within the corridor.



Legend

- No Crosswalk
- Crosswalk - Some Legs
- Crosswalk - All Legs
- Sidewalks

0 0.1 0.2 0.4 0.6 0.8 Miles

**PEDESTRIAN
INFRASTRUCTURE**

UCTC
ULSTER COUNTY TRANSPORTATION COUNCIL

PROJECT: 121-408	DATE: 12/14/2022	FIGURE: 2.3
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AUTOMOBILE TRAFFIC CHARACTERISTICS (SPEEDS, VOLUMES, AND OPERATIONS)

Available traffic volume data from the NYSDOT Traffic Data Viewer was reviewed and mapped for the study area as shown on Figure 2.4 and is summarized in Table 2.1.

TABLE 2.1: STUDY AREA TRAFFIC VOLUMES

Road	Year	AADT	DDHV
Frank Sottile Boulevard	2018	5,150	220
Enterprise Drive	2017	11,000	490
Boices Lane	2019	12,150	490

AADT = Average Annual Daily Traffic; (vpd = vehicles per day)
DDHV = Directional Design Hour Volume; (vph - vehicles per hour)

An automatic traffic recorder was installed in November 2022 on US Route 9W approximately 1,300-foot north of Boices Lane to document traffic characteristics including daily traffic volumes, peak travel times, and travel speed information. Due to potential changes in travel patterns resulting from the Covid-19 Pandemic, this data was compared to pre-pandemic 2019 conditions and is summarized in Table 2.2.

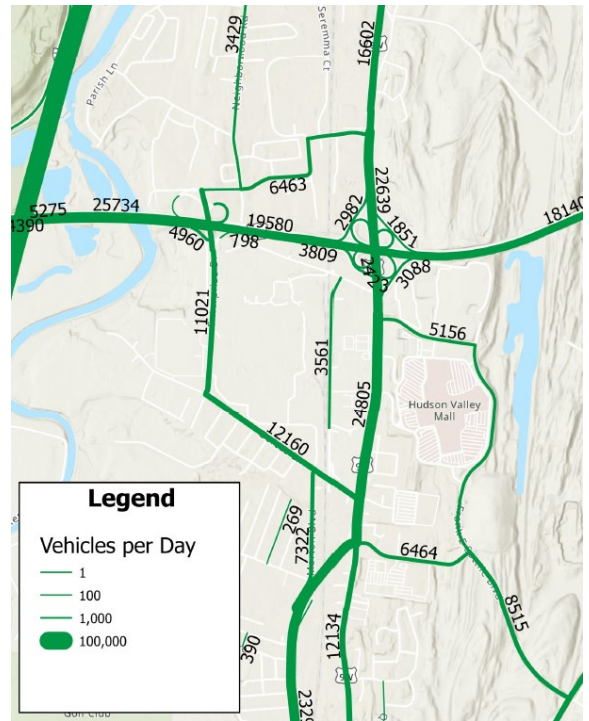


FIGURE 2.4: STUDY AREA TRAFFIC VOLUMES

TABLE 2.2: ROUTE 9W TRAFFIC VOLUME AND SPEED SUMMARY

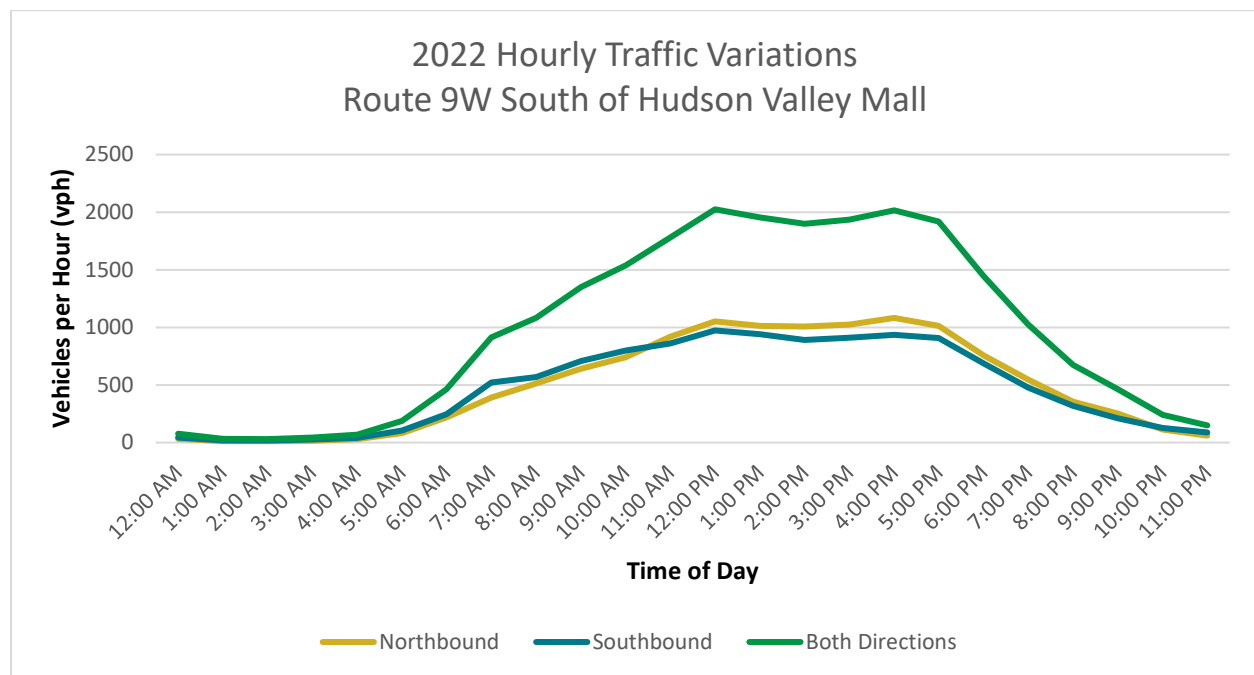
		US Route 9W 1,300-Foot North of Boices Lane	
		2019	2022
Volume	ADT (vpd)	27,100	26,800
	DHV	2,150	2,000
	DDHV	1,150	1,100
Speed (mph)	Average Northbound	30	28
	Southbound	30	29
	85 th Percentile Northbound	36	35
	Southbound	36	36
Heavy Vehicle Classification	Northbound	2.6%	4.6%
	Southbound	2.7%	4.5%

ADT = Average Daily Traffic; (vpd = vehicles per day)
DHV = Design Hour Volume; (vph - vehicles per hour)
DDHV = Directional Design Hour Volume; (vph - vehicles per hour)

The table shows that the 2022 daily traffic volumes on US Route 9W are generally within one-percent of pre-pandemic conditions with peak hour volumes generally within five-percent. A comparison of 2019 and 2022 speeds indicate that average and 85th percentile¹ speeds have remained generally unchanged. In terms of vehicle classification, the data indicates an increase in the proportion of heavy vehicles using the corridor, which could be attributed to increases in online shopping and deliveries.

Figure 2.5 shows the directional traffic volumes for a typical weekday and shows that traffic volumes generally increase throughout the morning and then remain steady through the evening peak hour before decreasing overnight which is typical of commercial corridors.

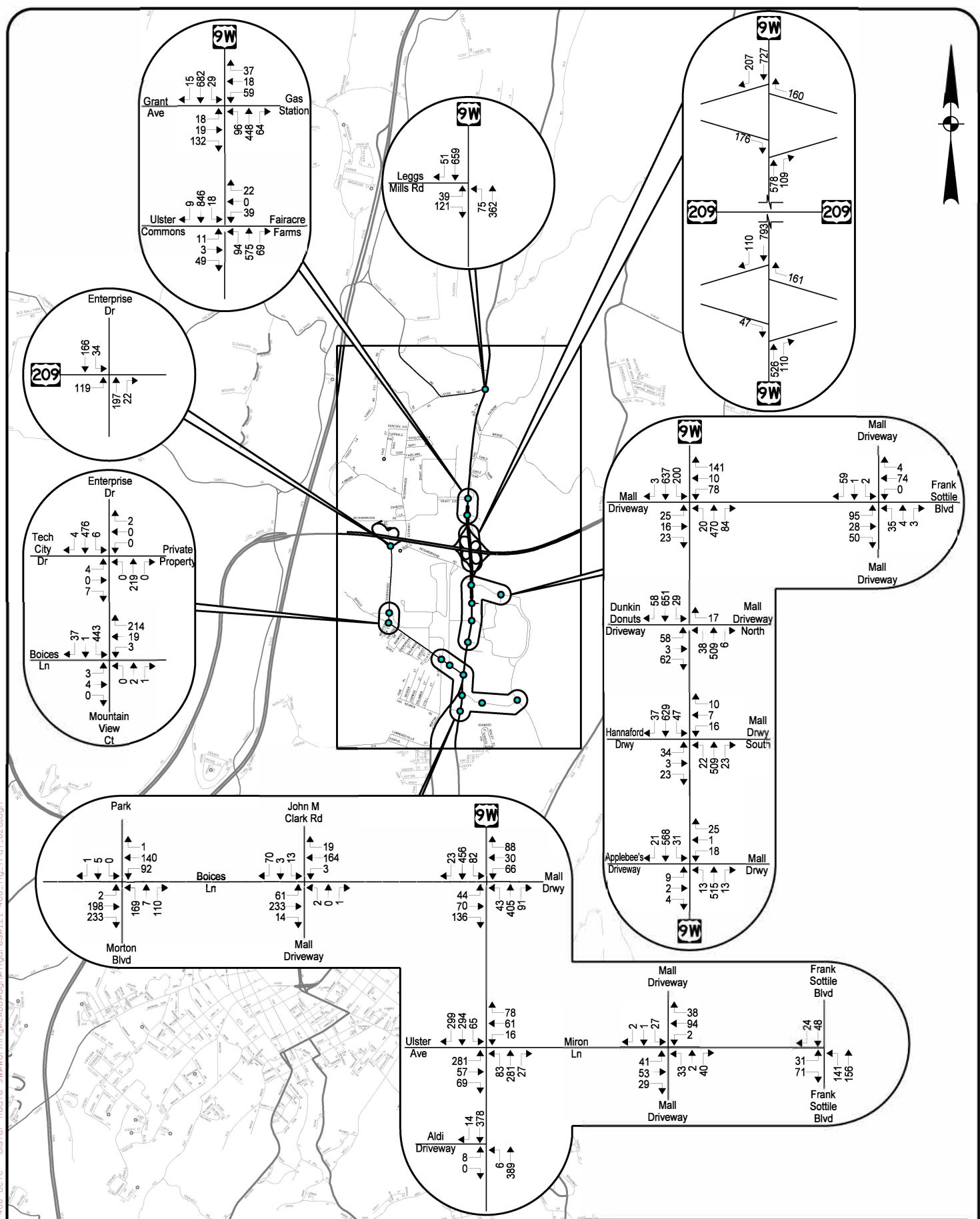
FIGURE 2.5: HOURLY TRAFFIC VARIATIONS



Intersection turning movement counts and pedestrian counts were also conducted during the morning (AM) and evening (PM) peak periods to facilitate the development of a traffic simulation model, and are shown on Figure 2.6.

Intersection Level of Service (LOS) and capacity analysis relate traffic volumes to the physical characteristics of an intersection. Evaluations of the signalized intersections were made using Synchro software which automates the procedures in the Highway Capacity Manual published by the Transportation Research Board (TRB). Levels of service range from A to F, with LOS A conditions considered excellent (less than 10 seconds of delay) while LOS F represents conditions with very long delays (greater than 80 seconds at signalized intersections). Table 2.3 summarizes the existing LOS results in the study corridor.

¹ The 85th percentile speed is the speed at or below which 85 percent of motorists travel.

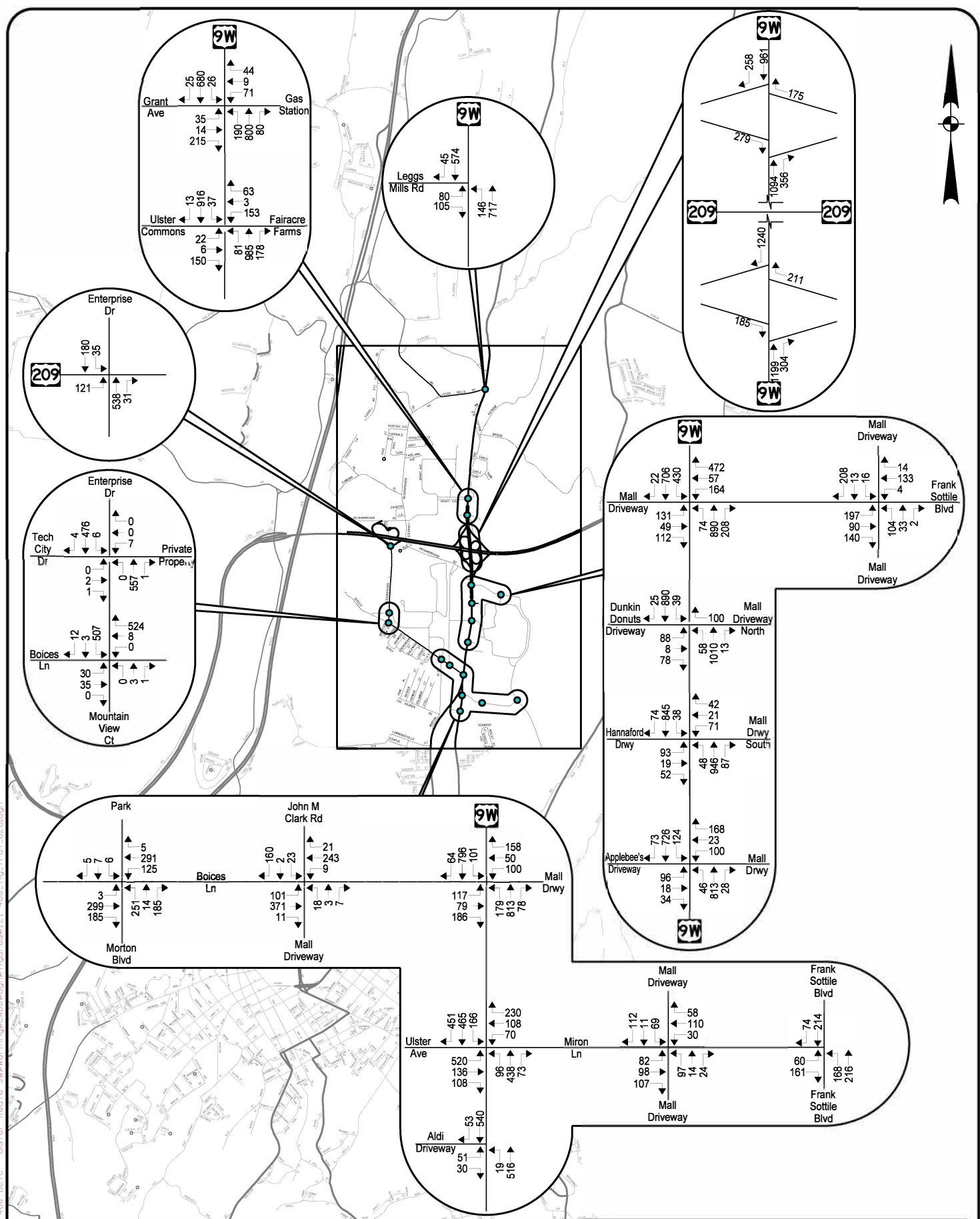


2022
AM PEAK HOUR TRAFFIC VOLUMES

TOWN OF ULSTER
ULSTER COUNTY, NEW YORK



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2022
PM PEAK HOUR TRAFFIC VOLUMES

TOWN OF ULSTER
ULSTER COUNTY, NEW YORK



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TABLE 2.3: 2022 OVERALL INTERSECTION LEVEL OF SERVICE

Study Intersection		2022 Existing	
		AM Peak	PM Peak
1	Route 9W at Leggs Mills Rd (U-94)	B (15.2)	B (12.6)
2	Route 9W at Grant Ave (U-86)	B (10.7)	B (11.9)
3	Ulster Ave at Ulster Commons / Fairacre Farms (U124PS)	A (5.1)	B (11.0)
4	Ulster Ave at Frank Sottile Blvd / Burlington/Staples (U-49)	B (17.8)	C (30.7)
5	Ulster Ave at HV Mall north driveway / CVS/Dunkin Donuts (U-79PS)	A (8.7)	B (11.6)
6	Ulster Ave at HV Mall south driveway / Hannaford (U-78PS)	B (14.4)	B (15.4)
7	Ulster Ave at Applebee's/Bed Bath & Beyond/Marshalls (U-51PS)	A (3.5)	B (13.5)
8	Ulster Ave at Boices Lane / Home Depot (U-61)	A (7.3)	B (14.9)
9	Ulster Ave at Miron Lane / Rt 9W south leg (U-17)	D (35.2)	D (44.0)
10	Ulster Ave at Family Dollar / Aldi (U-114PS)	A (5.2)	A (8.0)
11	Miron Ln / Home Depot Dwy	B (10.8)	B (12.7)
12	Frank Sottile Blvd / Miron Ln	A (6.9)	A (7.9)
13	Frank Sottile Blvd / Plaza Dwy	B (18.7)	C (24.3)
14	Boices Ln / John M Clark Rd	C (15.2)	D (25.1)
15	Boices Ln / Park Dwy / Morton Blvd	B (10.3)	B (12.9)
16	Enterprise Dr / Mountain View Ct / Boices Ln	B (14.7)	C (16.0)
17	Enterprise Dr / Tech City	C (23.1)	C (24.3)
18	Enterprise Drive at Rt 209 EB on/off ramps (U-91)	A (7.4)	A (5.9)
19	Ulster Ave/Rt 209 EB off ramp	A (1.2)	D (27.7)

X (Y.Y) = Level of Service (Average delay in seconds per vehicle)

BOLD = LOS E or F for at least one movement

The results of the level of service analysis show that the majority of intersections in the study area currently operate at overall LOS C or better during the morning and evening peak hours. The exception is the Route 9W/Ulster Avenue/Miron Lane intersection which currently operates at LOS D during the AM and PM peak hours. Although overall level of service does not indicate excessive delay in the corridor, some movements such as side-street approaches or left turns from Route 9W experience longer delays and experience LOS D/E during the peak hours. Likewise, closely spaced intersections may experience queuing impacts that are not evident from the level of service calculation. These queuing impacts are evident in the travel time analysis as summarized below.

Based on the above analyses, overall corridor travel times were calculated for the approximate 2 mile length of the corridor. Chart X summarizes the travel times by direction and shows that it generally takes six to seven minutes to travel through the corridor with slightly longer travel times in the southbound direction.

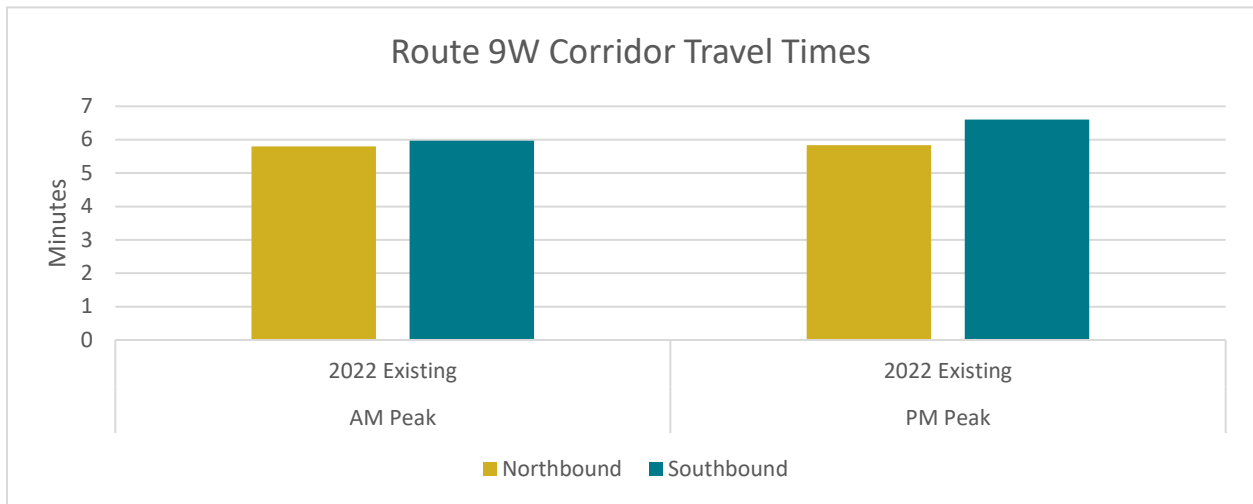


FIGURE 2.7: 2022 CORRIDOR TRAVEL TIMES

PEDESTRIAN AND BICYCLE TRAFFIC CHARACTERISTICS

Pedestrian counts were conducted during the vehicle intersection turning movement counts to provide an estimate of overall pedestrian activity in the corridor. Table 2.4 summarizes pedestrian activity in the corridor.

TABLE 2.4: PEDESTRIAN ACTIVITY SUMMARY

Intersection	AM Peak	PM Peak	Total
9W/Leggs Mills Road	1	0	1
9W/Grant Avenue	0	0	0
9W/Fairacre Farms	0	0	0
9W/Frank Sottile Boulevard	2	2	4
9W/Hudson Valley Mall North	0	1	1
9W/Hudson Valley Mall South	1	3	4
9W/Kings Mall	0	5	5
9W/Boices Lane	3	6	9
9W/Ulster Avenue/Miron Lane	2	1	3
9W/Aldi Driveway	1	1	2
Boices Lane/John Clark Road	1	4	5
Boices Lane/Morton Boulevard	3	4	7
Boices Lane/Enterprise Drive	0	0	0
Enterprise Drive/Tech City Drive	0	0	0
Enterprise Drive/US 209 EB Ramp	0	0	0
Miron Lane/Kohl's Driveway	0	0	0
Miron Lane/Frank Sottile Boulevard	0	0	0
Frank Sottile Boulevard/Wal-Mart Driveway	0	2	2
Total	14	29	43

The table shows that pedestrian activity in the study area is generally low with fewer than 10 pedestrian crossings per hour at any given location and no pedestrian activity at eight of the intersections examined. Pedestrian activity is generally the highest on Boices Lane near 9W and 9W between Boices Lane and the south Hudson Valley Mall entrance drive. Relative to bicycle activity, no bicycles were observed during the peak hour traffic counts.

Although bicycle and pedestrian activity are generally low, it is important that the roadway infrastructure accommodate these users when they need or choose to travel through the Route 9W corridor. During a field visit, a bicyclist was observed traveling southbound on Route 9W near Leggs Mills road, and again approximately 10 minutes later near the Ulster Avenue intersection, indicating that there is demand for multi-modal travel in the corridor.



Image 6: Bicyclist traveling on Route 9W

SAFETY ASSESSMENT

Crash data was provided by NYSDOT for the most recent five years of available data June 1, 2017 to May 31, 2022, for the study area roadway segments. The source data was a spreadsheet summarizing crash data from the NYSDOT Crash Location & Engineering Analysis & Reporting (CLEAR) System which replaced the Accident Location Information System (ALIS) and Safety Information Management System (SIMS). A safety screening was performed on the crash data including calculation of segment crash rates (including intersection crashes) and intersection only crash rates. Tables 2.5 summarizes the crashes in the corridor by severity.

TABLE 2.5: SUMMARY OF CRASH SEVERITY

Crash Severity	Number of Crashes	Percent of Total
Property Damage Only	985	75.0%
Possible Injury	242	18.5%
Injury	34	2.5%
Serious Injury	47	3.5%
Fatal	4	0.5%
Total	1,313	100%

The table shows that three quarters of all crashes that occurred in the study area during the five year period resulted in property damage only while the remaining 25 percent resulted in injuries, and unfortunately several deaths. Based on the new CLEAR system, crashes are coded based on the extent of injuries in order to better differentiate between minor injuries and serious injuries. The data indicates that 47 serious injuries occurred within the study area with a predominate cluster on the segment of Route 9W between Ulster Avenue and Boices Lane as shown in Figure 2.8.

In addition to crash severity, the data was reviewed to identify patterns by crash type as summarized in Table 2.6.

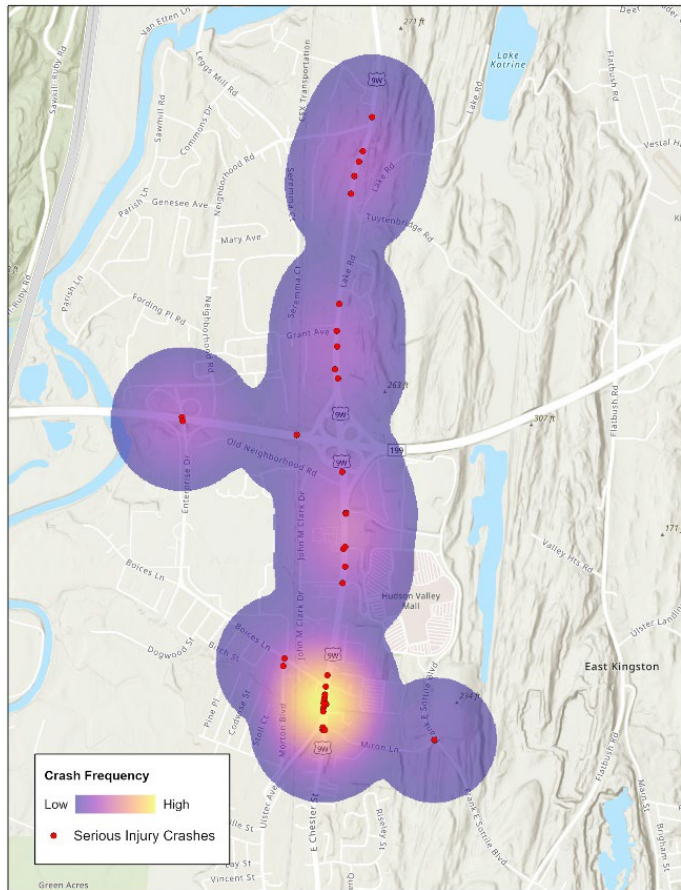


FIGURE 2.8: SERIOUS INJURY CRASH HEAT MAP

TABLE 2.6: SUMMARY OF CRASH TYPES

Crash Severity	Number of Crashes	Percent of Total
Motor Vehicle	1,230	93.5%
Fixed Object	49	3.75%
Animal	23	1.75%
Bicycle	6	0.5%
Pedestrian	5	0.5%
Total	1,313	100%

The data shows that vehicle collisions account for the large majority of crashes, followed by collisions with fixed objects. There were six bicycle and five pedestrian crashes, accounting for approximately 0.5 percent each. Figure 2.9 shows the distribution of bicycle and pedestrian crashes in the study area and shows clusters near Boices Lane, the North Hudson Valley Mall entrance, and Leggs Mills Road.

While the above tables and maps illustrate the number of crashes that occurred within the study area, they do not account for variations in traffic volumes at different intersections or roadway segments. As such, crash rates were calculated in order to relate the number of crashes to traffic volumes at the study area intersections and Route 9W segments, and are summarized in Table 2.7.

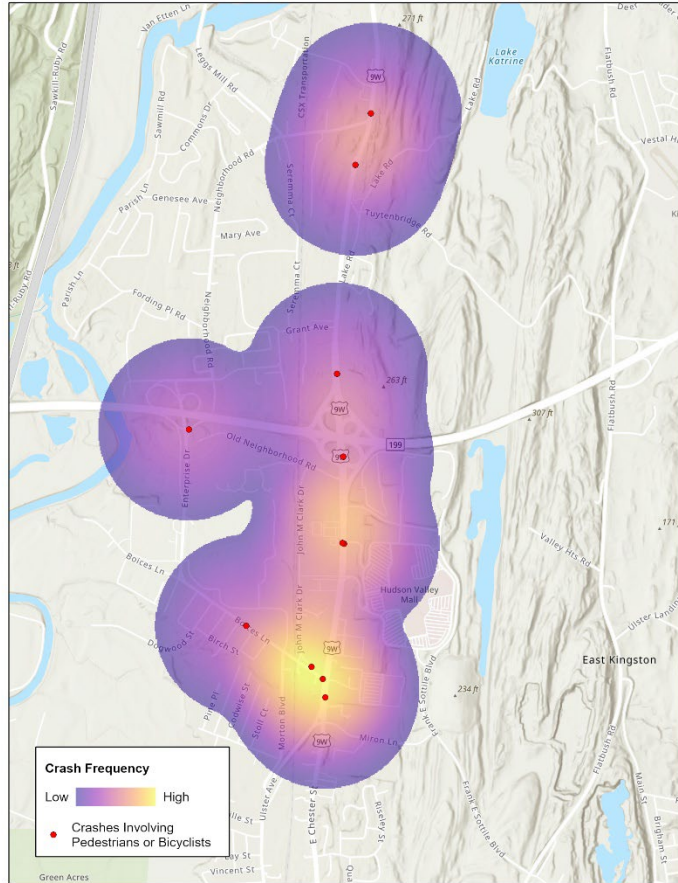


FIGURE 2.9: BICYCLE AND PEDESTRIAN CRASH HEAT MAP

TABLE 2.7: SUMMARY OF CRASH RATES

Crash Location	# of Crashes	Crash Rate	
		Calculated	NYSDOT Average
Intersection Crashes Only (Accidents/Million Entering Vehicles)			
9W/Leggs Mills Road	17	0.32	0.32
9W/Grant Avenue	28	0.62	0.56
9W/Fairacre Farms	33	0.62	0.56
9W/Frank Sottile Boulevard	118	1.45	0.56
9W/Hudson Valley Mall North	45	0.81	0.56
9W/Hudson Valley Mall South	36	0.63	0.56
9W/Kings Mall	24	0.44	0.56
9W/Boices Lane	163	2.90	0.56
9W/Ulster Avenue/Miron Lane	79	1.86	0.56
9W/Aldi Driveway	7	0.14	0.32
Boices Lane/John Clark Road	12	0.62	0.56
Boices Lane/Morton Boulevard	29	1.06	0.56
Boices Lane/Enterprise Drive	2	0.09	0.56
Enterprise Drive/Tech City Drive	0	0.00	0.56
Enterprise Drive/US 209 EB Ramp	4	0.10	0.56
Miron Lane/Kohl's Driveway	5	0.31	0.56
Miron Lane/Frank Sottile Boulevard	12	0.53	0.32
Frank Sottile Boulevard/Wal-Mart Driveway	1	0.05	0.32
Roadway Segment - Including Intersections (Accidents/Million Vehicle Miles)*			
US Route 9W from Leggs Mills Road to Route 199/Route 209	255	9.27	4.27
US Route 9W from Route 199/Route 209 to Van Kleeck Lane	761	18.09	4.27
US Route 9W from Leggs Mills Road to Van Kleeck Lane	1016	7.61	4.27

*Note the segment crash rate includes intersection crashes and was compared to the NYS mainline and juncture accidents average crash rates.

The crash rate analysis shows that the majority of intersections within the study area have crash rates that are comparable to the statewide average for similar facilities (within 1.5 times the NYSDOT rate). The notable exceptions are the Route 9W/Frank Sottile Boulevard intersection and the cluster of intersections on Boices Lane and Route 9W including the intersection of Ulster Avenue, which experience crash rates greater than 1.5 times the NYSDOT average. It is noted that although the signalized intersection in the study area are generally comparable to the statewide average, the segment crash rate for the entirety of the Route 9W corridor is nearly double the NYSDOT average rate, with the southern portion of Route 9W (south of Route 209/Route 199) experiencing a rate nearly double that of the northern portion. These higher segment crash rates could be attributed to the activity at driveways, as crash rates are typically higher in corridors with greater driveway densities.

The four intersections identified above with crash rates greater than 1.5 times the NYSDOT average were examined further to identify any crash patterns and potential for mitigation. Additionally, the area near the car wash located on the west side of Route 9W within the Ulster Avenue slip ramp was added to the detailed analysis upon request of the study advisory committee. The additional details are summarized in Table 2.8.

TABLE 2.8: INTERSECTION CRASH DETAILS

Crash Location	Collision Severity					Collision Type										Total
	Non-Reportable	Property Damage	Injury	Fatal	Total	Rear-End	Right Angle	Left Turn	Overtaking	Right Turn	Head On	Other	Pedestrian	Bicycle	Unknown	
<i>Route 9W/ Frank Sottile Boulevard</i>	21	69	28	0	118	36	32	4	30	4	3	8	0	0	1	118
<i>Route 9W/ Boices Lane</i>	12	97	54	0	163	40	69	18	21	4	2	7	0	0	2	163
<i>Route 9W/ Ulster Avenue/ Miron Lane</i>	10	52	17	0	79	26	9	10	26	3	0	5	0	0	0	79
<i>Boices Lane/ Morton Boulevard</i>	3	18	8	0	29	5	19	2	0	0	1	1	0	0	1	29
<i>Car Wash Area</i>	1	32	13	0	46	9	25	5	7	0	0	0	0	0	0	46

The table shows the following patterns:

- Rear end, right angle, and overtaking collisions were the predominant crash types at the Route 9W/Frank Sottile Boulevard intersection and account for 83 percent of all crashes at this location. The distribution among these collision types is generally evenly split. This could indicate operational issues with the double southbound left turn lanes, or potential weaving.
- Right angle collisions are the predominant crash type at the Route 9W/Boices Lane intersection, accounting for 42 percent of all crashes at this location. Rear end collisions are the second most common crash type, accounting for an additional 24 percent. This could indicate potential signal timing or sight distance issues.
- Rear end and overtaking collisions were the predominant crash type at the Route 9W/Ulster Avenue/Miron Lane intersection and account for 65 percent of all crashes at this location. This could indicate operational issues with the double southbound left turn lanes.
- Right angle collisions are the predominant crash type at the Boices Lane/Morton Boulevard intersection and account for approximately 65 percent of all crashes at this location. This could indicate issues with the signal visibility or signal timing.
- Right angle collisions are the predominant crash type in the vicinity of the car wash, accounting for approximately 50 percent of all crashes at this location.

This could indicate operational issues with the car wash driveway and vehicles turning across the southbound Route 9W mainline and slip lane.

- Injury crashes generally account for 20 to 30 percent of all crashes at these intersections. There were no bicycle or pedestrian collisions at these locations.

TRAVEL PATTERNS

An origin-destination (O-D) assessment was performed to identify existing travel patterns and inform the development and analysis of future alternatives. Data was queried from Replica, a web-based data platform that uses a regional travel activity model to simulate movements of residents, visitors, and commercial vehicles over the course of a typical weekday. The model uses numerous data sources including location based data, spend data, and demographic data to provide detailed trip tables. The O-D data was developed into an overall matrix with origin zones (from) on the vertical axis and the destinations (to) on the horizontal axis, which was used to identify the relative amount of local traffic compared to trips passing through the corridor.

TABLE 2.9: OVERALL ORIGIN-DESTINATION MATRIX (DAILY TRIPS)

Origins	Destinations							Total
	Route 9W South	Ulster Avenue	Route 209 West	Route 9W North	Route 199 East	Frank Sottile Boulevard	Internal	
Route 9W South	-	190	260	1170	210	30	5900	7760
Ulster Avenue	325	-	240	1000	1370	100	7165	10200
Route 209 West	425	315	-	1100	6310	50	13200	21400
Route 9W North	1260	1100	1270	-	555	40	4235	8460
Route 199 East	200	1000	6150	560	-	45	6645	14600
Frank Sottile Boulevard	20	70	0	20	20	-	1120	1250
Internal	6240	7205	13480	4460	6835	325	28290	66835
Total	8470	9880	21400	8310	15300	590	66555	130505

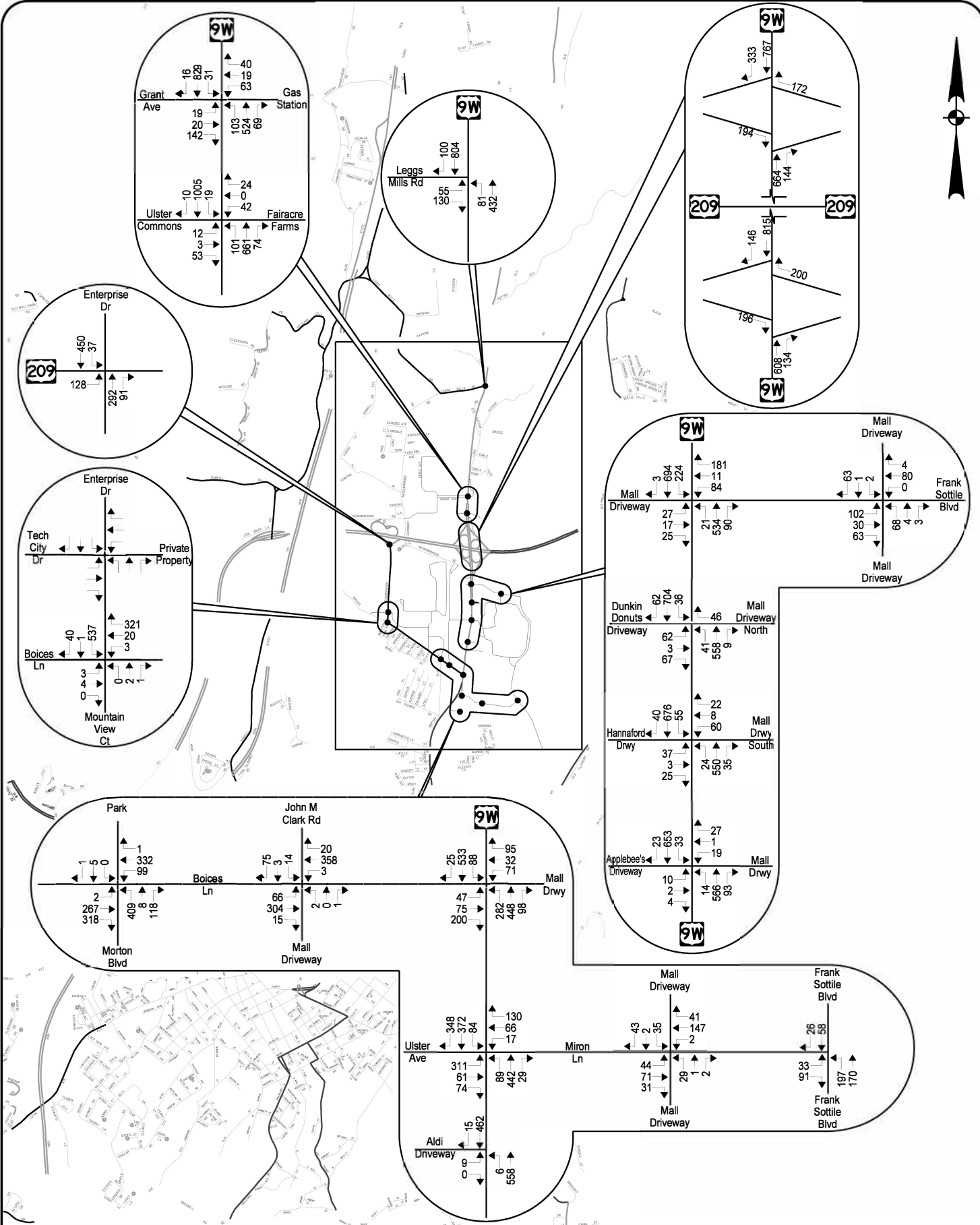
The percentage of through traffic on Route 9W can be calculated by comparing the total number of trips originating north and south of the corridor to the number of trips passing through external points on Route 9W to the north and south, Ulster Avenue, Frank Sottile Boulevard, and using the US 209/NY 199 interchange. Per the above matrix, this equates to approximately half of all trips to and from the north and 25 percent of all trips to and from the south.

TRAFFIC VOLUME FORECASTS

Traffic forecasts were prepared for a 20-year planning horizon (2045) and are necessary to ensure that concepts being considered can reasonably accommodate existing and future traffic. Several factors were considered during the development of the traffic forecasts including historic traffic growth and specific nearby development projects, as well as discussions with the Study Advisory Committee. The team found the following:

- Regression analysis of 5 Automatic Traffic Recorder (ATR) sites in the area over the last 15 years showed traffic growth rates have generally been declining.
- Discussions with the Technical Advisory Committee consisting of representatives from UCTC and The Town of Ulster determined that a one-tenth percent per year background growth rate would be reasonable for this study.
- Known redevelopment projects at the former IBM site and Hudson Valley Mall are anticipated to result in additional traffic throughout the study area. Trip generation was estimated for these projects and the resulting traffic was distributed through the study area based on the results of the origin-destination study, resulting in approximately 1,600 and 2,000 additional trips during the morning and evening peak hours respectively.
- Consideration of the background growth rate and specific development projects results in an approximate 10 to 20 percent total growth over the 20-year period depending on location in the corridor. This equates to an approximate $\frac{1}{2}$ to 1 percent per year growth rate.

The Future No-Build Volumes are shown on Figure 2.10.

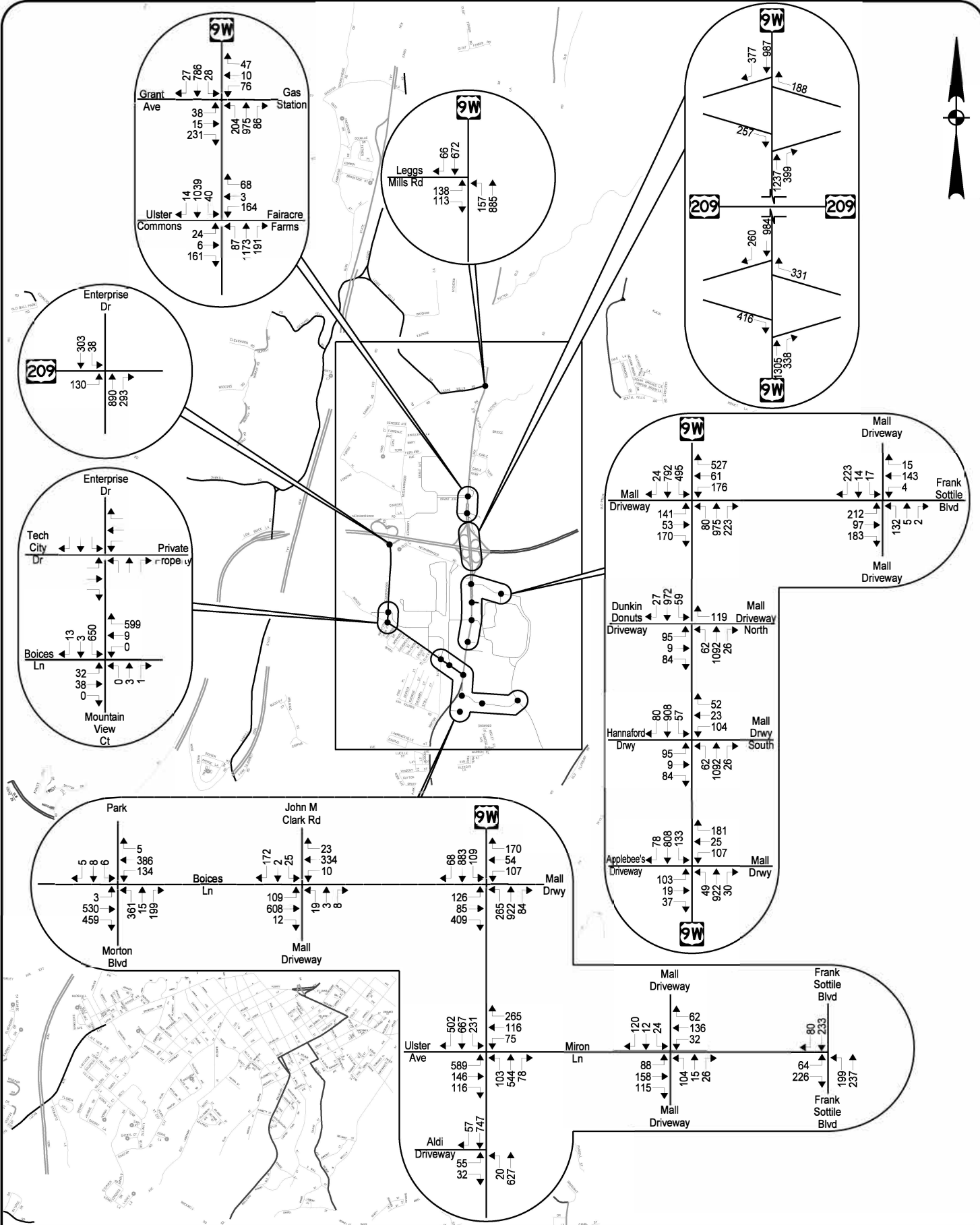


2045
AM PEAK HOUR TRAFFIC VOLUMES

TOWN OF ULSTER
ULSTER COUNTY, NEW YORK



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2045
PM PEAK HOUR TRAFFIC VOLUMES

TOWN OF ULSTER
ULSTER COUNTY, NEW YORK



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2045 TRAFFIC OPERATIONS

The detailed traffic simulation models developed for the existing conditions assessment were updated based on the above traffic forecasts for the AM and PM peak hours. Likewise, the overall level of service and travel time results of the analysis were updated and are summarized in Table 2.10 and Figure 2.11.

TABLE 2.10: OVERALL INTERSECTION LEVEL OF SERVICE COMPARISON

Study Intersection		AM Peak Hour		PM Peak Hour	
		2022 Existing	2045 Forecast	2022 Existing	2045 Forecast
1	Route 9W at Leggs Mills Rd	B (15.2)	C (28.9)	B (12.6)	B (19.3)
2	Route 9W at Grant Ave (U-86)	B (10.7)	B (10.6)*	B (11.9)	B (15.4)
3	Ulster Ave at Ulster Commons / Fairacre Farms	A (5.1)	A (5.1)*	B (11.0)	B (11.6)
4	Ulster Ave at Frank Sottile Blvd / Burlington/Staples	B (17.8)	B (18.2)	C (30.7)	D (35.0)
5	Ulster Ave at HV Mall north driveway / CVS/Dunkin Donuts	A (8.7)	A (9.3)	B (11.6)	B (12.3)
6	Ulster Ave at HV Mall south driveway / Hannaford	B (14.4)	B (17.2)	B (15.4)	B (16.8)
7	Ulster Ave at Applebees/Bed Bath & Beyond/Marshalls	A (3.5)	A (3.4)*	B (13.5)	B (13.5)*
8	Ulster Ave at Boices Lane / Home Depot	A (7.3)	B (18.5)	B (14.9)	D (35.3)
9	Ulster Ave at Miron Lane / Rt 9W south leg	D (35.2)	D (36.4)	D (44.0)	D (49.7)
10	Ulster Ave at Family Dollar / Aldi	A (5.2)	A (5.6)	A (8.0)	A (9.5)
11	Miron Ln / Home Depot Dwy	B (10.8)	B (11.2)	B (12.7)	B (13.2)
12	Frank Sottile Blvd / Miron Ln	A (6.9)	A (7.3)	A (7.9)	A (9.0)
13	Frank Sottile Blvd / Plaza Dwy	B (18.7)	C (20.9)	C (24.3)	C (28.4)
14	Boices Ln / John M Clark Rd	C (15.2)	C (21.1)	D (25.1)	E (47.9)
15	Boices Ln / Park Dwy / Morton Blvd	B (10.3)	B (15.1)	B (12.9)	C (20.3)
16	Enterprise Dr / Mountain View Ct / Boices Ln	B (14.7)	C (19.1)	C (16.0)	C (24.7)
17	Enterprise Dr / Tech City	C (23.1)	-	C (24.3)	-
18	Enterprise Drive at Rt 209 EB on/off ramps	A (7.4)	A (6.1)*	A (5.9)	A (6.3)
19	Ulster Ave/Rt 209 EB off ramp	A (1.2)	A (1.8)	D (27.7)	F (74.5)

X (Y.Y) = Level of Service (Average delay in seconds per vehicle)

BOLD = LOS E or F for at least one movement

*Decrease in delay between Existing (2022) and Future (2045) due to

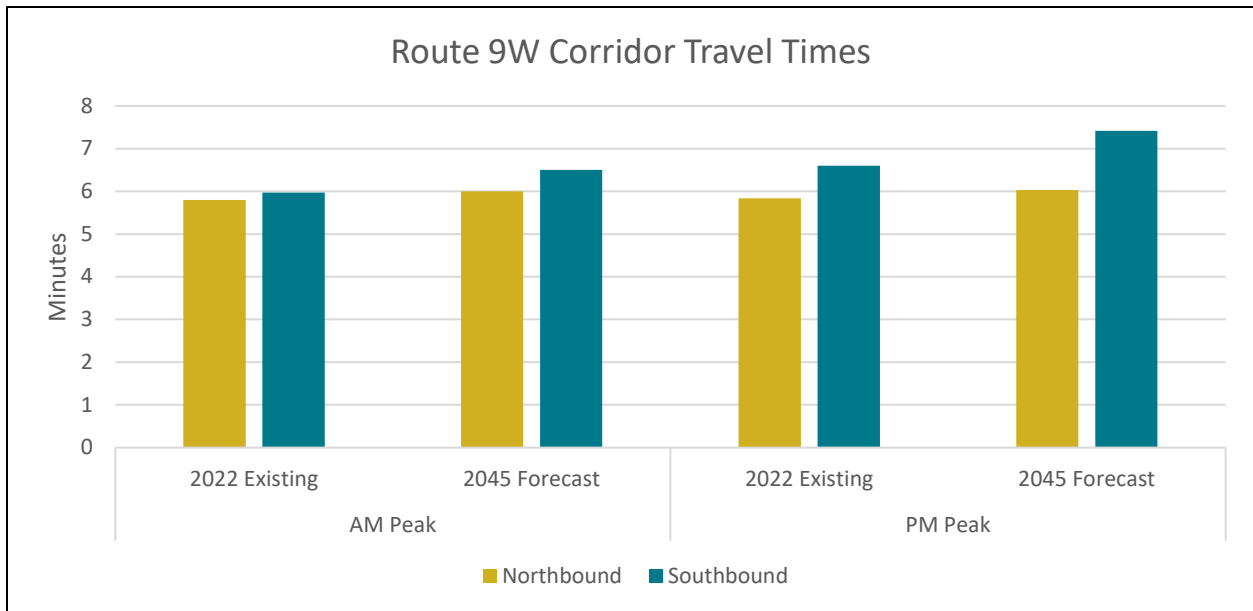


FIGURE 2.11: CORRIDOR TRAVEL TIME COMPARISON

The future traffic analysis indicates that after accounting for growth, traffic delays will generally increase, with intersections currently operating poorly continuing to experience long delays. This is particularly the case on the movements to and from side streets and driveways. Relative to corridor travel times, overall end to end travel time is expected to increase by approximately five percent, resulting in one minute of additional travel.

NEEDS SUMMARY

Based on the above assessment of traffic volumes and operations, multi-modal infrastructure, and crash history, it is apparent that the Route 9W operates poorly for most users. Traffic operations issues result in driver frustration while lack of sidewalks, crosswalks, and bicycle infrastructure make walking and bicycling in the corridor unappealing. These factors as well as the frequency and severity of crashes in the corridor indicate that there is a need to improve traffic operations and safety, and provide additional multi-modal accommodations to promote access for all users.