Chapter 5

Transportation & Resource Overview

Moving Dutchess seeks to identify projects and plans necessary to maintain the transportation system in a state of good repair and meet future travel needs, while preserving our natural and historical resources in the most sustainable manner possible. Inventorying and assessing existing conditions is a necessary step in this process. This chapter provides an overview of transportation facilities and resources in Dutchess County. The first section discusses the key components of the transportation system including roads, bridges, transit, sidewalks, and trails, as well as descriptions of park-and-ride facilities, goods movement, transportation safety and security, and ADA accessibility. The second section discusses key natural and historical resources in the County, including wetlands, floodplains, air quality, agricultural land, and historic districts.

Transportation Corridors

Discussions about the transportation system tend to focus on jurisdiction and function, which separates highways from transit, the driver from the bicyclist, and the interstate from the neighborhood road. Though convenient and easily understood, this glosses over the reality that travelers only see one system. This is not to say that facility type and jurisdiction are unimportant, but for most travelers, they are concerned about completing a trip safely, reliably, and efficiently.

Since the County's transportation system is an inter-related, multi-jurisdictional network, it is useful to first discuss it in terms of corridors. Corridors, which cut across transportation modes and municipal boundaries, are the key paths for inter- and intra-county travel. *New Connections*, the Council's 2007 MTP, identified three key transportation corridors in Dutchess County: the Hudson, Mid-County, and Harlem Valley corridor (see Figure 5-1).

Hudson Corridor

Located in the western portion of the County, centered on the Hudson River, the Hudson Corridor has been the traditional focus of activity in the County, and led to the development of densely populated centers in Beacon and Poughkeepsie. The corridor contains the most robust transportation system in the County, including three major north-south highways (Routes 9, 9D, and 9G), passenger rail service (Amtrak and Metro-North Railroad), and the heaviest concentration of local and regional bus service (Dutchess County LOOP and City of Poughkeepsie Transit). In addition, the New York State Bridge Authority maintains three bridges that connect Dutchess to Orange and Ulster counties (the Newburgh-Beacon Bridge, Mid-Hudson Bridge, and Kingston-Rhinecliff Bridge).

Mid-County Corridor

Located in the central portion of the County, the Mid-County Corridor spans a variety of land use patterns, from rural and agricultural areas in the north to suburban patterns in the south. Development is typically residential with service-related commercial activities and public facilities and pockets

of industrial and manufacturing activity located near Interstate-84. Significant growth in this area over the past twenty years has led to increased demands on the transportation system. The major north-south connection in the corridor is the Taconic State Parkway (TSP), which serves as a major commuter facility, especially south of Route 44. The TSP prohibits commercial truck traffic. Major east-west connections include Interstate-84 and Routes 44, 52, 55, 199, and 376. The Dutchess County LOOP bus system provides service along some parts of the corridor.

Harlem Valley Corridor

Located in the eastern-most portion of the County, this corridor is predominantly rural with pockets of denser residential and commercial development. Route 22 serves north-south travel, while Routes 44, 55, 199, and 343 provide east-west connections to Connecticut. Metro-North provides service to New York City and White Plains from five stations on the Harlem Line, and Dutchess County LOOP provides bus service to some Harlem Valley communities. The Harlem Valley Rail Trail connects the Wassaic train station to the Village of Millerton, and will ultimately connect north into Columbia County.

Transportation System

Dutchess County's transportation system is an interconnected network of roads, bridges, bus routes, rail lines, sidewalks, and trails. Though unique in character, they accomplish the same purpose: providing people with a means of access and mobility. The Transportation System Map at the end of this chapter shows the locations of major transportation facilities in Dutchess County.

Roads

The roads in Dutchess County support the highest share of trips and are the most-used element of our transportation system. Measured by centerline, there are over 2,480 miles of public roads in the County, ranging from major highways such as Interstate 84, commuter roads such as the Taconic State Parkway, major State highways such as Routes 22 and 55, and major County roads such as CR 93 (Myers Corners Rd).[1]

I-84 is a major east-west highway for the Northeast corridor.

Though State highways and County roads are the most recognizable roadways, they make up only 30 percent of total

road centerline mileage in Dutchess County. Local roads, those under city, town, and village jurisdiction, account for 69 percent of total road mileage. Table 5-1 and Figure 5-2 show the distribution of centerline mileage by jurisdiction.

With much of the County's road network under local control, local land use decisions and policies have direct effects on the transportation system. Routine site plan and subdivision reviews may seem minor, but over time, these decisions and policies, often made by communities in isolation from one another, have a cumulative impact on the function and safety of the transportation system. The impacts of these land use decisions often transcend a single community and affect nearby communities and the region.

Another way to understand the road network is by examining functional classification. Functional classification groups roads into classes according to their character and the role they play in the network. This hierarchy ranges from roads for long interstate trips (Interstates) to roads providing access to individual properties (local roads). Table 5-2 shows total centerline mileage by functional class (as of 2010).

These functional classifications are directly related to federal-aid eligibility, which determines whether a road or other facility may receive federal transportation funding. The Council, in conjunction with NYSDOT and local agencies, periodically reviews and updates the functional classification of public roads based on how they are used. Federal-aid highways are all the public roads not functionally classified as either local (rural or urban) or rural minor collector. As a result, federal-aid highways include State, County, and major Town and City roads. Based on functional classification, approximately 26 percent (630 lane miles) of the road mileage in Dutchess County is federal-aid eligible, which is consistent with the national average.[2]

The Council collects traffic count data for County and local roads and receives count data from NYSDOT for State highways. Based on a review of data from 2000-2010, the following roads have consistently had the highest ranges of Average Annual Daily Traffic (AADT) volumes in the County:

1. I-84: 48,000-67,000
2. Route 9 (south of Poughkeepsie): 15,000-54,000
3. Route 44 (east of Pleasant Valley): 12,000-44,000
4. Taconic State Parkway (south of LaGrange): 16,000-34,000
5. Route 55 (west of Pawling): 7,000-28,000
6. Route 376: 5,000-27,000
7. Route 82 (south of LaGrange): 7,000-24,000
8. Route 9 (north of Poughkeepsie): 7,500-22,000
9. Route 44 (west of Pleasant Valley): 3,000-21,000
10. CR 77 (Vassar Rd): 10,000-20,000
11. CR 93 (Myers Corners Rd): 6,000-18,000
12. CR 44 (Red Oaks Mill Rd): 11,000-17,000

In order to identify locations experiencing the most traffic congestion, the Council, in conjunction with the Orange and Ulster County Transportation Councils, conducted travel time surveys on major road corridors in the region. The GPS data, collected in 2011, measured the time it took to travel road segments for five time periods: weekday morning, mid-day,

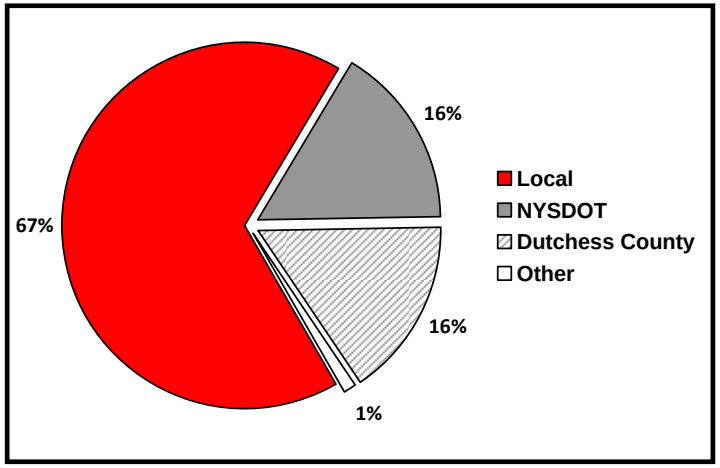
Table 5-1. Total Road Centerline Mileage in Dutchess County by Jurisdiction (as of 2010)

Jurisdiction	Total Centerline Mileage	Percent of Total Mileage	Total Federal-Aid Eligible	Percent Federal-Aid Eligible
NYSDOT	405	16%	396	98%
Dutchess County	394	16%	151	38%
Town	1,468	59%	44	3%
City or Village	187	8%	40	21%
Other	29	1%	2	7%
Total	**2,484**		**634**	**26%**

Table 5-2. Functional Classification Mileage in Dutchess County (as of 2010)

Functional Classification	Total Centerline Mileage	Total Federal-Aid Eligible	Percent Federal-Aid Eligible
Rural			
Principal Arterial (Expressway)	125	125	
Minor Arterial	28	28	
Major Collector	111	111	21%
Minor Collector	165	0	
Local	826	0	
Total Rural	1,255	264	
Urban			
Principal Arterial (Interstate)	23	23	
Principal Arterial (Expressway)	14	14	
Principal Arterial (Other)	71	71	
Minor Arterial	79	79	30%
Major Collector	184	184	
Local	859	0	
Total Urban	1,229	371	
Total	**2,484**	**634**	**26%**

Figure 5-2. Percent of Total Centerline Mileage in Dutchess County by Jurisdiction



and evening, Saturday, and Sunday.

The data was used to calculate a Travel Time Index (TTI) for the segments, where the TTI is the ratio of time it takes to travel a segment during the peak hour versus the time it takes to travel at free flow. The TTI analysis used three profiles to classify congestion:

1. >1.30 = Congested
2. 1.15-1.30 = Approaching Congestion
3. <1.15 = Not congested

Based on the congestion analysis, the following roadways experienced congestion during one or more peak periods in 2011:[3]

1. Route 52 (westbound) from I-84 to the Taconic State Parkway: Weekday evening (TTI = 1.58)
2. Route 9 (northbound) from I-84 to Route 44/55: Weekday evening (TTI = 1.54)
3. Route 9 (southbound) from Route 9G to Route 44/55: Saturday (TTI =1.53)
4. Route 9 (southbound) from Route 44/55 to I-84: Saturday (TTI = 1.52) and Weekday evening (TTI = 1.51)

The Transportation System Performance maps show more detailed travel time data by roadway segment for AM, Mid-day, PM, Saturday, and Sunday peak periods.

In 2009 State-owned highways in Dutchess County had an average surface rating of 6.7.[4] The rating system measures pavement condition on a scale of 1 to 10, with 1 being the worst and 10 the best. As shown in Table 5-3, over 285 miles (66 percent) were rated in good or excellent condition, while only 5 percent were rated poor (defined as having frequent and severe road distress).

Table 5-3. Pavement Condition of State Highways in Dutchess County (2009)

Surface Rating	Length (Miles)	Percent of State Road Mileage
Excellent	43	10
Good	242	56
Fair	124	29
Poor	24	5

The following State highway segments in Dutchess County had ratings of 5 or lower:

1. Route 22 between Dunn Rd and NYS Route 343 in Amenia.
2. Route 44 between Deep Hollow Rd and Turkey Hollow Rd in Washington and Amenia.
3. Route 52 between Eagles Nest Rd and Corporate Park Rd in Fishkill and East Fishkill.
4. Route 82 between NYS Route 55 and Sunset Hill Rd in LaGrange, and between O'Brien Hill Rd and CR 9 (Clove Rd) in Union Vale.
5. Route 199 between Mount Ross Rd and Stissing Mountain Rd.
6. Route 376 between the NYS Route 82 overlap in East Fishkill.

Dutchess County rates its roads based on a Pavement Condition Index (PCI), which incorporates data on surface condition and roughness. The PCI is classified into four categories:

1. Excellent (PCI = 90-100): a new road or road with few minor deficiencies, such as tiny cracks.
2. Good (PCI = 75-90): a road with a few minor distresses (e.g. small cracks, bumps, edge cracking), but a smooth overall ride.
3. Fair (PCI = 55-75): a road with moderate cracking, larger transverse and longitudinal cracks in travel lanes, some sagging of pavement, and more edge cracking. Noticeable surface and sub-base distresses are present on more than 30 percent of its surface.
4. Poor (PCI < 55): a road with extensive longitudinal and transverse cracks, frequent potholes, and rutting.

As shown in Table 5-4, in 2009, County-owned roads had an average PCI of 84, an overall good condition. Almost 85 percent of County-owned roads were in excellent or good condition.[5]

Table 5-4. Pavement Condition of Dutchess County Routes (2009)

PCI Rating	Length (Miles)	Percent of County Road Mileage
Excellent	147.3	38
Good	185.3	47
Fair	54.3	14
Poor	6.0	2

Based on 2009 data, seven County road segments were rated poor:

1. CR 12 (Schultzville Rd) in the Town of Clinton: Germond Rd-Harpers Rd (0.9 miles).
2. CR 78 (Broadway) in the Village of Tivoli: Montgomery St to Bridge RH-25 (0.1 miles).
3. CR 81 (Old Route 22) in the Town of Amenia: CR 3 (Bog Hollow Rd) to Firehouse Rd (0.8 miles).
4. CR 18 (Centre Rd) in the Town of Clinton: CR 19 (Slate Quarry Rd) to Fiddlers Bridge Rd (2.3 miles).
5. CR 93 (Middlebush Rd) in the Town of Wappinger: Route 9D to Old Route 9 (0.8 miles).
6. CR 105 (Sinpatch Rd) in the Town of Amenia: CR 105 fork to CR 4 (Poplar Hill Rd) (1.1 miles).
7. CR 84 (Primrose Hill Rd) in the Town of Rhinebeck: Route 9 to Old Albany Post Rd (0.4 miles).

A section of CR 42 (Arthursburg Rd) in LaGrange exhibiting poor pavement conditions (Photo: Dutchess County DPW).

Bridges

Dutchess County contains 360 road bridges, defined as a bridge structure with a span over 20 feet long. NYSDOT and Dutchess County are collectively responsible for 75 percent of these bridges (37 and 38 percent respectively). The remaining 25 percent are under the responsibility of local municipalities, the New York State Bridge Authority (NYSBA), National Park Service (NPS), or other entities. The number of bridges by jurisdiction is shown in Table 5-5.

Table 5-5. Jurisdiction of Bridges in Dutchess County

	Number of Bridges	Percent of Total
NYSDOT	133	37
Dutchess County	138	38
Local	54	15
NYSBA	3	1
NPS	5	1
Other	27	8

As of 2010 the average age of all bridges in Dutchess County was 54 years, with 135 (38 percent) built prior to 1940.[6] NYSDOT rates bridge conditions on a scale ranging from 1 to 7, with 7 being new condition and a rating of 5 or higher considered good condition. NYSDOT defines a deficient bridge as one with a rating of lower than 5. A deficient condition rating indicates deterioration to a level that requires corrective maintenance or rehabilitation to restore the bridge to a fully functional, non-deficient condition; it does not imply that the bridge is unsafe. Dutchess County has 150 bridges that are classified as deficient under the NYSDOT rating system; this represents 42 percent of bridges in the County. In 2010 non-NYSBA operated bridges in the County had an average NYSDOT condition rating of 4.9.[7] Bridge conditions by jurisdiction are summarized in Table 5-6. Please note that these ratings do not account for damage caused by Tropical Storm Irene (August 28-29, 2011).

Table 5-6. Bridge Condition by Jurisdiction (2010)

	Average Condition Rating	Number Rated Deficient	Percent Deficient
NYSDOT	5.3	41	31
Dutchess County	5.1	64	46
Local	4.6	27	50
Other	5.0	18	66

NYSDOT also identifies bridges that have limits on the type of vehicles that can use them. These limits are based on a design or condition that affects the bridge's capacity to accommodate heavy vehicles. Classified as "R" posted bridges, they are signed with a "No Trucks with R Permits" sign. As of 2011 there were 12 "R" posted bridges in the County.

The federal bridge rating system, which differs from the state system, rates bridges on a scale of 1 to 9. The federal ratings are used to identify bridges that do not meet contemporary Federal Highway Administration (FHWA) standards. Those bridges are classified as either structurally deficient or functionally obsolete.

According to the FHWA, bridges are considered structurally deficient if significant load-carrying elements are found to be in poor condition due to deterioration or damage, inadequate load capacity, or repeated bridge flooding causes traffic delays. A structurally deficient bridge does not imply that it is unsafe or likely to collapse. A structurally deficient bridge, when left open to traffic, typically requires significant maintenance and repair to remain in service and eventual rehabilitation or replacement to address deficiencies. In order to remain in service, structurally deficient bridges are often posted with weight limits.

This bridge on CR 83A (North Main St) in Pine Plains (BIN 3365150) is rated structurally deficient (Photo: NYSDOT-Region 8, Eric Foster).

Functionally obsolete refers to a bridge's inability to meet current standards for managing the volume of traffic it carries, not its structural integrity. A bridge may be functionally obsolete if it has narrow lanes, no shoulders, or low clearances.

As shown in Table 5-7, in 2010, 42 bridges (12 percent) in Dutchess County were classified as structurally deficient and 112 (31 percent) were classified as functionally obsolete.[8]

Table 5-7. Number of Structurally Deficient and Functionally Obsolete Bridges by Jurisdiction (2010)

	Structurally Deficient	Functionally Obsolete
NYSDOT	6	60
Dutchess County	22	28
Local	11	14
Other	3	10

In 2009 the three NYSBA bridges in Dutchess carried over 47.2 million vehicles - an increase of 2.5 million vehicles since 2000. Almost half of the vehicles (24.7 million) were carried on the Newburgh-Beacon Bridge, while the Mid-Hudson and Kingston-Rhinecliff bridges carried 13.7 and 8.8 million vehicles respectively.[9] Crossings on NYSBA bridges are summarized in Table 5-8.

Table 5-8. Average Daily Vehicle Crossings for NYSBA bridges in Dutchess County

	2000	2009	% Change
Newburgh-Beacon	63,313	67,786	7.1
Mid-Hudson	35,232	37,579	6.7
Kingston-Rhinecliff	18,545	24,062	29.7

Transit

Bus and rail transit play an important role in the County's transportation system, by providing travelers with transportation alternatives to the private automobile. This benefits those who do not own a car and those who cannot drive, including young people, older adults, and disabled persons, as well as those who prefer not to drive. Transit, especially commuter rail, can offer more convenient access than the private car to jobs and destinations in the New York City metro area and other transit-oriented locations. Transit also enables employees and customers to access businesses, services, shopping areas, and other destinations. Lastly, transit benefits the environment, especially regional air quality, by reducing personal vehicle trips.

Dutchess County benefits from a diverse range of transit services, but access to these services is neither universal nor evenly distributed across the County. This unevenness is due to limited resources for the operating costs of transit, as well as insufficient population densities to support robust transit service in parts of the County, especially the east and north. Changes in future development patterns or demographics may support improved transit in presently underserved areas. The following local and regional transit services operate in Dutchess County:

Dutchess County LOOP Bus System

Dutchess County operates a bus system that provides fixed route service on major road corridors, connecting the higher population density areas to major activity centers in the County. The LOOP system operates six fixed routes, as shown in Table 5-9, running on Routes 9, 9D, 44, 52, and 55.

Table 5-9. Dutchess County LOOP Bus Routes

	Primary Service Areas
Route A	Poughkeepsie-Wappingers Falls-Fishkill
Route B	Poughkeepsie-Wappingers Falls-Beacon
Route C	Poughkeepsie-Hyde Park-Rhinebeck-Tivoli
Route D	Poughkeepsie-Millbrook-Wassaic-Dover
Route E	LaGrange-Union Vale-Beekman-Pawling
Route F	Beacon-Fishkill-Hopewell Junction

All of the fixed routes operate Monday to Saturday, except for Route F, which operates Monday to Friday. LOOP does not provide bus service on Sundays.

Passengers board a diesel-electric LOOP bus in the City of Poughkeepsie (Photo: Dutchess County LOOP).

Fares on the LOOP bus system vary by passenger type and fare program. As of September 1, 2011, LOOP used the following fare structure:

1. Single Trip One-Way Fare: $1.75.
2. Senior Citizens, Medicare Card Holders, Children (aged 5 to 12), and Students: $0.75 per single trip.
3. Monthly Commuter Pass: $45 - designed for individuals who commute during regular business hours.
4. Monthly Ride-Anytime Pass: $62 - designed for frequent passengers, valid on all buses and at all times.
5. Special Transit Card: $0.75 per single trip – designed for disabled passengers, valid on all buses and at all times.

In addition to the six fixed routes, the LOOP system operates three RailLink lines, which provide peak period bus service to the Poughkeepsie, New Hamburg, and Beacon train stations. These routes are designed to meet peak hour commuter trains operated by Metro-North Railroad.

LOOP also provides three non-fixed route bus services:

1. ADA Paratransit: mandatory complementary paratransit service for the City of Poughkeepsie and Dutchess County. This serves individuals who live within ¾ mile of a City bus or LOOP fixed route and have a disability that precludes them from riding the fixed route service.
2. Dial-a-Ride: demand-responsive service open to the general public. Municipalities contract with the County for the service. To register, passengers must be a resident of a municipality with a current contract and the trip must originate in one of those municipalities. As of 2011, the service operated in six communities: City and Town of Poughkeepsie, and Towns of East Fishkill, Fishkill, Hyde Park, and Wappinger
3. Flex Service: demand-responsive, curb to curb service open to the public in areas without fixed-route service and outside the ¾ mile ADA-required areas. The service requires a reservation and is provided Monday to Thursday only during limited hours.

Dutchess County LOOP operates three RailLink routes that serve the Hudson Line train stations in Dutchess County (Photo: Dutchess County LOOP).

Ridership on the LOOP bus system has fluctuated over the years. As shown in Table 5-10, total ridership decreased by 38 percent from 2008 to 2010, primarily due to a major service reduction that occurred in 2009. On June 30, 2010, LOOP implemented a new route structure and schedule. Average

monthly ridership by route is shown in Table 5-11.

Table 5-10. Passengers served by the LOOP Bus System (2008-2010)

	2008	2009	2010
Fixed Route	620,140	496,375	387,936
RailLink	42,623	28,489	22,618
Total	664,771	526,873	412,564

Table 5-11. Average Monthly Passengers on LOOP Bus Routes (July 2010-February 2011)

	Average Monthly Ridership (July 2010-February 2011)
Route A	9,277
Route B	9,111
Route C	3,522
Route D	1,646
Route E	951
Route F	2,531
System Total	27,038

The LOOP bus system operates 48 buses that are based at a County-owned facility in the Town of LaGrange. Most of the buses have front-end bicycle racks, which carry two bicycles each. On buses without bicycle racks, bicycles can be secured on board in an unused wheelchair station. Bicycle racks are planned to be installed on all LOOP buses over the next year. Table 5-12 summarizes the vehicles in the LOOP bus fleet.

Table 5-12. Number and Average Age of Dutchess County LOOP Buses (As of January 1, 2011)

	Number	Average Age
Medium Duty Buses	37	2.7
Heavy Duty Buses	11	6.2
Support Vehicles	8	5.2

City of Poughkeepsie Bus System

The City of Poughkeepsie operates a bus system that provides fixed route service in and around the Poughkeepsie area. The area's high population density and proximity to major activity centers makes it conducive to transit service. Table 5-13 summarizes total passengers on the system over the last three years.

Table 5-13. Total Passengers- City of Poughkeepsie Bus System (2008-2010)

	2008	2009	2010	Annual Average
Fixed Route	423,867	433,930	406,578	421,458

The Poughkeepsie bus system operates six routes, with Monday to Friday service only. The Main Street and Northside routes are the most heavily used, as shown in Table 5-14.

Fares on the Poughkeepsie bus system vary by passenger type and fare program. As of April 1, 2011, the City used the following fare structure:

1. Adult (12 years old and over): $1.50 per single trip.

2. Senior Citizens, Students, Medicare, and Disabled passengers: $0.50 per single trip.
3. Children (6-11 years old): $0.50 per single trip.
4. Children under 6 years old: Free.
5. Transfers: $0.30 per single trip.

A City of Poughkeepsie diesel-electric bus on Market St.

Table 5-14. Total Passengers- City of Poughkeepsie Bus Routes (2010)

	2010 Ridership
Galleria Mall	69,408
Main Street	111,995
Northside	115,423
Southside	66,837
Shopper's Special	22,116
Special	20,799

The City operates seven buses based at a City-owned facility. Table 5-15 summarizes the vehicles in the City bus fleet.

Table 5-15. Number and Average Age of City of Poughkeepsie Buses (as of January 1, 2011)

	Number	Average Age
Light Duty Buses	6	4.3
Medium Duty Buses	1	8.0
Support Vehicles	n/a	n/a

A transit hub, which would serve as a transfer point for the LOOP and City bus systems, is planned in Poughkeepsie's Central Business District on Market Street.

Regional Bus Service

A variety of public and private operators provide inter-county bus services:

1. *Ulster County Area Transit (UCAT)* operates the Ulster-Poughkeepsie LINK bus, which provides weekday and weekend service between Rosendale, New Paltz, Highland and the Poughkeepsie Metro-North Station.
2. *Leprechaun Lines* operates weekday commuter service between Beacon, Poughkeepsie, and Stewart Airport and between Poughkeepsie, Wappingers Falls, Fishkill, and White Plains in Westchester County. It also provides weekend service between Stewart Airport, Beacon, and New York City.
3. *Coach USA/ShortLine* provides regular service between Rhinebeck, Poughkeepsie, and Fishkill in Dutchess County

and New York City (via Newburgh and northern New Jersey), as well as service between Poughkeepsie and Binghamton.

4. *Trailways* provides regular service between Poughkeepsie and Albany, New York City, Long Island, and other destinations (via Kingston and Newburgh).

Passenger Rail Service

Amtrak and Metro-North Railroad provide passenger rail service in Dutchess County. Each system is further described below.

Metro-North Railroad

There are eight Metro-North stations in Dutchess County: Poughkeepsie, New Hamburg, and Beacon on the Hudson Line, and Wassaic, Ten Mile River, Dover Plains, Harlem Valley/Wingdale, and Pawling on the Harlem Line.

From 2000 to 2009, weekday ridership from Dutchess County increased by 32 percent. Table 5-16 summarizes Metro-North weekday inbound boardings by line and by station. In 2009, Metro-North carried over 6,270 passengers on an average weekday from Dutchess County, compared to approximately 4,750 passengers in 2000. Weekend ridership over the same period increased by 45 percent in Dutchess County, from an average of approximately 5,790 weekend passengers in 2000 to 8,374 passengers in 2009.[10]

Metro-North trains on the Harlem Line.

Parking is provided at all Metro North stations in Dutchess County except for the seasonal Appalachian Trail station. Most stations have reserved permit parking (monthly, 3 month, 6 month, or 12-month), as well as daily metered parking (16 hour and 24 hour). Parking is generally free on weekends and holidays. Since the Pawling station's parking is operated by the Village, Metro-North does not collect parking data for that station.

Table 5-16. Metro-North Weekday Inbound Boardings by Line and Station (2000-2009)

		WEEKDAY INBOUND BOARDINGS		
Line	Station	2000	2009	% Change 2000-2009
Hudson	Poughkeepsie	1,448	1889	30%
	New Hamburg	939	1,024	9%
	Beacon	1,775	2498	41%
	Total Hudson Line	**4,162**	**5,411**	**30%**
Harlem	Wassaic	139	285	105%
	Tenmile River	27	28	4%
	Dover Plains	97	148	53%
	Harlem Valley-Wingdale	120	134	12%
	Pawling	209	266	27%
	Total Harlem Line	**592**	**861**	**45%**

Parking utilization rates for the seven Dutchess County stations with Metro-North parking are shown in Table 5-17 (as of November, 2010). They range from 89 percent at the New Hamburg station to 58 percent at the Ten Mile River station. The three Hudson Line stations all have waiting lists for parking permits. As of November, 2010, the Poughkeepsie station had the longest wait list, with 81 persons. The Beacon station had a 64-person wait list, and the New Hamburg station had a 29-person wait list.[11]

Table 5-17. Parking Utilization Rates at Metro-North Operated Parking Facilities (2010)

Station	Parking Utilization Rate
New Hamburg	89
Beacon	88
Wassaic	79
Poughkeepsie	78
Harlem Valley-Wingdale	78
Dover Plains	64
Tenmile	58

Amtrak

Amtrak operates rail service in Dutchess County on its Empire and Adirondack Corridors, which connect to cities across the United States. The Empire Corridor runs 463 miles between Penn Station in New York City and Toronto, Canada with stops at Yonkers, Croton-Harmon, Poughkeepsie, Rhinecliff, Albany, Saratoga Springs, Utica, Syracuse, Rochester, and Niagara Falls. The service runs 13 round trips between Albany and New York, with a 5 hour travel time. For the period March 2010 to March 2011, the service had an 82.7 percent on-time performance rate.

The Adirondack Corridor mimics the Empire Corridor, but continues north to Montreal, Canada after stopping in Albany, with additional stops in Schenectady, Saratoga Springs, Ticonderoga, and Plattsburgh. The Adirondack line averaged a 68.9 percent on-time performance rate between March 2010 and March 2011.

In 2009, the Empire Service carried over 925,000 passengers. Ridership to and from the Dutchess County stations has fluctuated: between 2000 and 2010, ridership increased by close to 30 percent at the Poughkeepsie Station but decreased by 12 percent at Rhinecliff, for an overall decrease of two percent. However, ridership at both stations has increased since 2006, for a total increase of over 9 percent.[12]

An Amtrak train at the Rhinecliff station in Rhinebeck.

Several public and private operators provide bus service to Metro-North and Amtrak stations. The Poughkeepsie Station is served by City of Poughkeepsie Bus, Mulligan Bus, Leprechaun Lines, ShortLine, and LOOP's Poughkeepsie RailLink. The New Hamburg and Beacon stations are served by separate LOOP RailLink shuttles. The Newburgh-Beacon Ferry also serves the Beacon station. On the Harlem Line, the Pawling, Wingdale, and Dover Plains stations are served by Dutchess County LOOP.

Passenger Ferry Service

The Newburgh-Beacon Ferry, operated by Metro-North Railroad and NY Waterway, provides passenger service during weekday peak periods. It is timed to serve trains arriving and departing the Beacon Metro-North station. In 2011, ridership varied from 300 to 400 passengers per day.[13]

As of 2011, a private water taxi between the City of Kingston in Ulster County and the Rhinecliff hamlet in the Town of Rhinebeck operates on Friday evenings and weekends during the summer and fall. A regular ferry between Kingston and Rhinecliff has been discussed for several years and is being pursued by the City of Kingston.

Human Service Agency & Non-Profit Transportation Services

A number of social service agencies in the County provide transportation services that supplement the public and private transit systems described above. Many of these services rely on advance reservations and serve limited trip purposes and areas.

1. *Friends of Seniors*: Provides Countywide transportation for elderly persons to medical appointments and food shopping. The service is volunteer-based, relying on private vehicles for transportation. It does not provide transportation to clients in wheelchairs.
2. *Pawling Community Resources & Services Center*: Provides transportation to the Pawling community to medical appointments in the Poughkeepsie area, Putnam County, and nearby locations in Connecticut.

3. *Martin Luther King Cultural Center*: Provides transportation to people over 60 years old or disabled with medical, social, shopping, personal and nutritional needs through their Dial-a-Van program. It mostly serves Beacon, parts of Fishkill, Poughkeepsie, and Wappingers Falls.
4. *Devereux New York*: Serves residents in Dutchess, Ulster, and southern Columbia counties who have developmental disabilities. Services include transportation for vocational, recreational, educational, and medical trips.
5. *North East Community Center*: Provides seniors in northeastern Dutchess with transportation to medical appointments and personal trips. Transportation is provided by volunteers and rides are free with a suggested donation.
6. *Northern Dutchess Caregivers Coalition*: Provides transportation to seniors in northern Dutchess for medical appointments and shopping.
7. *In Flight*: Provides transportation for northern Dutchess residents with developmental disabilities to medical appointments, employment, daytime rehabilitation, recreation, and shopping.

Sidewalks & Trails

Dutchess County benefits from a variety of sidewalk and trail systems. These facilities provide an essential link in the transportation system by enabling people to travel short and long distances without a car. These facilities also support recreational activities that help the local economy.
Dutchess County contains approximately 435 linear miles of sidewalks.[14] This total includes publicly and privately owned sidewalks, ranging from traditional systems in cities and villages, to campus systems at colleges and office parks, and storefront sidewalks at commercial locations. Approximately 370 miles of the sidewalks are publicly owned. Over half of the sidewalks (232 miles) are located in the County's pedestrian-oriented, higher-density cities, villages, and urbanized towns. The City of Poughkeepsie alone accounts for 25 percent of all sidewalks in the County-- approximately 115 miles. When combined with the Town of Poughkeepsie and City of Beacon, with 90 and 56 miles of sidewalks respectively, the three communities account for 60 percent of all sidewalks in the County.

The City of Poughkeepsie is home to an extensive sidewalk system that supports pedestrian activity and promotes a sense of community.

Dutchess County also hosts over 300 miles of trails, mostly in parklands. The trail facilities listed below represent the most significant facilities in the County.

1. Walkway Over the Hudson State Historic Park: This 1.3 mile long pedestrian-bicycle bridge opened in 2009 on the former Poughkeepsie Railroad Bridge. It is managed and maintained by the NYS Office of Parks, Recreation, and Historic Preservation. It is open year round from 7:00 am to sunset.
2. Dutchess Rail Trail: This trail uses a portion of the abandoned Maybrook Rail line right-of-way that Dutchess County acquired in the mid-1980s. When complete, the trail will connect Poughkeepsie and Hopewell Junction in East Fishkill, a length of approximately 11.2 miles. The trail construction occurred in four phases:
   - Phase I: Route 376 to Lake Walton Rd in East Fishkill; opened in 2007.
   - Phase II: Morgan Lake to Overocker Rd in the Town of Poughkeepsie; opened in 2009.
   - Phase III: segments from Hopewell Junction to NYS Route 376 and Lake Walton Rd to Old Manchester Rd in LaGrange; opened in spring 2011.
   - Phase IV: Old Manchester Rd to Overocker Rd, including a bridge over NYS Route 55 and the Wappinger Creek; construction began in 2011.
3. Harlem Valley Rail Trail: Upon completion, this trail will run from the Wassaic train station in Amenia to Chatham in Columbia County, a length of 46 miles. As of 2011 the trail was open between the Wassaic station and Main Street (Route 44) in the Village of Millerton, a distance of 10.7 miles, and between Under Mountain Road in the Town of Ancram, Columbia County and Copake Falls Station (4 miles). The 8-mile section from Main Street in the Village of Millerton to Under Mountain Road is in development.
4. Publicly accessible hiking and walking trails include 25 miles of the Appalachian Trail in Beekman, Pawling, and Dover and approximately 10 miles in the Hyde Park Trail System as well as numerous state, County, and local parks. Most trails are used primarily for recreational purposes, but as new trails are established and existing trails are extended and connected, these facilities will provide important connections to destinations within the larger community.

Stage 3 of the Dutchess Rail Trail in East Fishkill (Photo: Dutchess DPW).

The Dutchess County Department of Planning and Development's Centers and Greenspaces guide identifies existing and emerging centers in the County. These centers are intended to be walkable, mixed-use areas in cities, villages, town centers, and hamlets. In these centers, sidewalks, crosswalks, pedestrian signals, lighting and other amenities should be used to facilitate walking.

Bicycle Routes

NYSDOT has several signed bicycle routes in the County, as listed below. These routes typically use existing State and County roads and accommodate bicyclists on shared travel lanes and/or shoulders and are intended for experienced adult bicyclists.

1. NYS Bicycle Route 9: Signed route between New York City and Montreal, Canada, a distance of 340 miles. In Dutchess County it passes through Fishkill, Wappinger, Poughkeepsie (Town and City), Hyde Park, Rhinebeck, and Red Hook on 53 miles of State, County, and local roads.
2. NYS Bicycle Route 17: Signed route between Lake Erie and Wappinger. It connects with Bicycle Route 9 at the intersection on Route 9D and CR 93 (Middlebush Road) in the Town of Wappinger, and crosses the Newburgh-Beacon Bridge.
3. NYS Bicycle Route 22: Signed route along the entire length of Route 22, from New Lebanon in Columbia County to Brewster in Putnam County.
4. NYS Bicycle Route 199: Signed route along Route 199 from Route 32 in Ulster County, over the Kingston-Rhinecliff Bridge, to Route 308 at the Red Hook/Rhinebeck/Milan Town line.
5. NYS Bicycle Route 308: Signed route along Route 308 in Rhinebeck from Route 9 to Route 199.

NYS Bicycle Routes are signed alongside highway route shields, such as this one in the Village of Red Hook.

In addition NYSDOT has identified future potential bicycle routes on Routes 44, 52, 55, and 82, which are not yet signed.

Park & Ride Facilities

There are nine park-and-ride facilities in Dutchess County. These facilities are typically located along major highways, and provide places for commuters to park their cars to catch a carpool, vanpool, bus or train to work. They are typically free to use, and are served by express and commuter bus services or Metro-North Railroad. Park-and-ride facilities in the County include the following:

1. East Fishkill: Kimberly Corners Shopping Plaza on Route 82, ¼ mile east of the Taconic State Parkway interchange (51 spaces, carpool only).
2. East Fishkill: I-84 at Lime Kiln Road (90 spaces; carpool only).
3. East Fishkill: Taconic State Parkway at Route 52 (100 spaces; carpool only).
4. Hopewell Junction: Le Chambord Inn on Route 52, ¼ mile east of the Taconic State Parkway interchange (40 spaces, carpool only).
5. Hyde Park: Dutch Reform Church, Route 9 (15 spaces; carpool and LOOP connection).
6. LaGrange: Taconic State Parkway at Todd Hill Road (28 spaces; carpool only).
7. Stanford: Taconic State Parkway at Bulls Head Road (25 spaces; carpool only).
8. Wappingers Falls: Fishkill Transportation Center near Route 9D, adjacent to Dutchess Stadium (100 spaces; carpool and LOOP service to Metro-North Beacon station).
9. Rhinebeck: Route 199, near Route 9G and Kingston Rhinecliff Bridge (31 spaces; carpool only).

Goods Movement

Goods movement in Dutchess County primarily consists of transporting local goods between businesses and homes. However, a major distribution center for GAP/Old Navy is located in the Town of Fishkill near the I-84 and Route 9 intersection.

Regional goods movement occurs along the rail lines, Interstate 84, and the Hudson River. The Hudson River serves tankers and barges carrying heavy materials such as coal, fuel, and stone. CSX transportation operates rail freight service on the Hudson/Empire Line, mostly through service between Selkirk (near Albany) and points south.

The GAP/Old Navy distribution center in Fishkill is a major freight hub near I-84.

According to the Census Bureau's 2007 Commodity Flow Survey, 92.6 percent of all freight tonnage in New York State was transported by truck; an increase of 2.3 percent from 2002. Other modes such as rail accounted for only 2 percent of freight movement in 2007, with the remaining 5 percent split between pipeline, air, water, and multiple modes. The survey estimated that 66 percent of truck freight in New York

State was shipped fewer than 50 miles and that 72 percent of freight tonnage originating from New York State was destined for locations within the state.[15]

Shipping Docks

Dutchess County maintains five private shipping docks with access to the Hudson River's deep water channel:

1. A.C. Dutton Lumber Corporation Dock: located one mile north of the Mid-Hudson Bridge in the City of Poughkeepsie, this dock is occasionally used by U.S. Coast Guard vessels for mooring during shore leave.
    - Depth Alongside: 32 feet
    - Berthing Space: 450 feet
2. Love/Effron Dock: located one mile south of the Mid-Hudson Bridge, this dock receives petroleum products by barge.
    - Depth Alongside: 13 feet
    - Berthing Space: 460 feet
3. New York Trap Rock Corporation Clinton Plant Dock: located 2.6 miles north of the Wappinger Creek in Wappinger, this dock is used to transport dolomite by ship and barge.
    - Depth Alongside: 10 feet
    - Berthing Space: 2,025 feet
4. Point Street Terminal Dock: located 0.3 miles north of the Wappinger Creek in Wappinger, this dock is used to receive petroleum products by barge.
    - Depth Alongside: 12 feet
    - Berthing Space: 230 feet
5. Sousa Poughkeepsie Terminal Dock: located 1.2 miles south of the Mid-Hudson Bridge, this dock is not currently used.
    - Depth Alongside: 18 feet
    - Berthing Space: 150 feet

In 2009 the U.S. Army Corps of Engineers reported that 13 million short tons of domestic freight and 1.3 million short tons of foreign freight were shipped on the Hudson River between New York City and Waterford, NY. Petroleum and petroleum products comprised 56 percent of goods shipped through this corridor, with gasoline and distillate fuel oil making up 88 percent of all petroleum products shipped.[16] This data is summarized in Table 5-18.

Table 5-18. Major Commodities Shipped on the Hudson River (2009)

Commodity	Short Tons
Petroleum and Petroleum Products	8,104,817
Soil, Sand, Gravel, Rock, and Stone	2,364,518
Cement and Concrete	1,215,549
Chemicals and Related Products	1,041,034
Food and Farm Products	596,954
Coal, Lignite, and Coal Coke	36,820

Airports

The airports in Dutchess County serve private general aviation aircraft only. Commercial service at the Dutchess County airport was suspended in August 2001. There are five public airports in the County: Airhaven (Hyde Park), Dutchess County

Airport (Wappinger), Sky Acres (Union Vale), Sky Park (Red Hook) and Stormville (East Fishkill).

Stewart International Airport, located in neighboring Orange County at the intersection of the New York State Thruway (I-87) and I-84, is a regional airport managed by the Port Authority of New York and New Jersey. The airport offers scheduled passenger service to cities in Florida and major airline hubs in Atlanta, Dallas, Detroit, and Philadelphia. The airport also handles a limited amount of domestic and international air freight. In 2010, over 1,300 passengers accessed the airport by bus.[17] Passenger, freight, and aircraft movement data for Stewart Airport is shown in Table 5-19.

Table 5-19. Selected Statistics for Stewart International Airport (2008-2010)

	2008	2009	2010
Total Passenger Traffic	789,307	390,065	395,244
Total Aircraft Movements	72,643	44,571	47,032
Total Freight (Short-tons)	17,721	10,755	12,934

Safety & Security

Vehicle Safety

The most common measure for roadway safety is the number and type of crashes. The NYS Department of Motor Vehicles (DMV) collects crash data from State, County, and local agencies. The most recent published data covers the period from 2007 to 2009, with some 2010 data. In 2010 there were 6,482 reportable crashes in Dutchess County, resulting in 13 fatalities and 2,883 non-fatal injuries. From 2007 to 2009, the County-wide crash rate was constant at 0.9 fatal and injury crashes per roadway mile, which was below the statewide average of 1.2 for the three years.[18] Table 5-20 summarizes crashes over the three year period.

The number of crashes in Dutchess County represented 2.1 percent of all crashes in the state for 2010, which was slightly higher than the County's 1.5 percent share of the state's total population. In 2009, 42 percent of all crashes in the County occurred between noon and 6:00 p.m.; an additional 25 percent occurred between 6:00 a.m. and noon. Driver inattention was the most common contributing factor, contributing to 17.4 percent of crashes. Unsafe speed (16.7 percent), following too closely (14.8 percent), and failure to yield (12.3 percent) were the other most common contributing factors.

Table 5-20. Number and Types of Vehicle Crashes in Dutchess County (2008-2010)

	2008	2009	2010	3-year Average
Fatal/Injury Crashes	2,118	2,083	2,163	2,121
Non-Injury Crashes	4,517	4,558	4,319	4,465
Total	6,635	6,641	6,482	6,586

Drivers under the age of 29 were involved in 36 percent of all crashes, though they made up only 24 percent of all licensed drivers in the County. From 2007 to 2009 there were a total of 668 alcohol-related crashes in Dutchess County, for an annual average of 223. These crashes resulted in 17 fatalities, representing 25 percent of all crash-related fatalities over the

three years. Figure 5-2 shows crash-related fatalities over the last ten years.

In 2009 the Village of Fishkill had a crash rate of 5.8 crashes per mile, the highest in Dutchess County. The following municipalities averaged more than one crash per roadway mile in 2009:

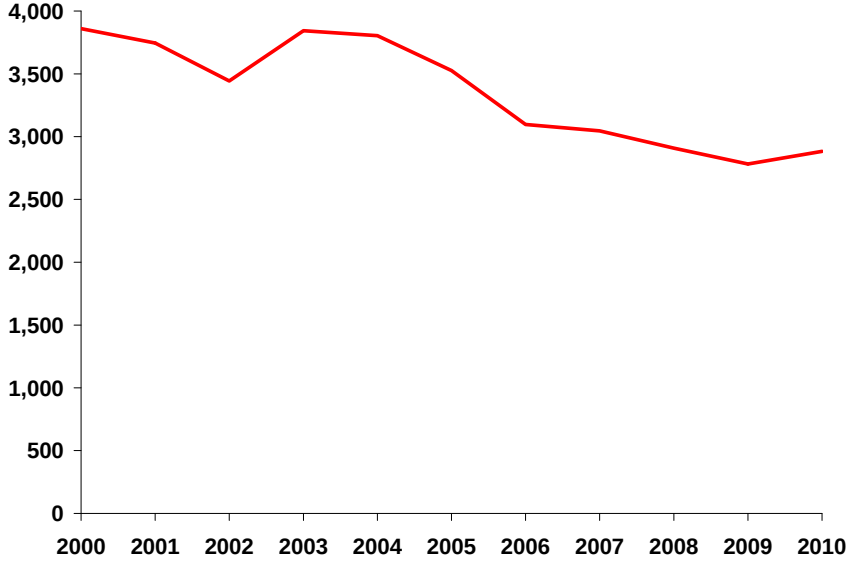
1. Village of Fishkill: 5.8
2. City of Poughkeepsie: 4.0
3. Village of Wappingers Falls: 2.4
4. Town of Fishkill: 2.0
5. Town of Poughkeepsie: 1.7
6. Town of Wappinger: 1.6
7. Town of Wappinger: 1.6
8. Town of LaGrange: 1.1

From 2000 to 2009, Dutchess County averaged 29 traffic-related fatalities a year. The number of traffic fatalities spiked in 2004 with 46 fatalities, but has stabilized at 20 to 25 in recent years (see Figure 5-3). From 2000 to 2009, Dutchess County averaged 3,400 traffic-related injuries a year. The number of traffic fatalities spiked in 2003 with 3,843 injuries, but declined by 28 percent from 2003 to 2009 (see Figure 5-4).

Motorcycle crashes are a growing concern across the nation and state. From 2007 to 2009 there was an average of 118 reported motorcycle crashes per year in Dutchess County. During this period, 11 motorcyclists were killed and 323 were injured. In 2009, 93 percent of all motorcycle crashes in the County resulted in injury or death to the motorcyclist.

Figure 5-3. Total Crash-Related Fatalities in Dutchess County (2000-2009)

Figure 5-4. Total Crash Related Injuries in Dutchess County (2000-2009)



SAFETEA-LU requires that New York State submit an annual report that lists High Accident Locations (HALs) on State facilities. The HALs represent the top five percent of crash locations on public roads: those identified with "severe safety needs." The locations are designated based on a statewide severity weighted ranking of all reported crashes. Fatal and severe injury crashes are weighted more heavily than other crashes.

NYSDOT's 2010 HAL report includes one location in Dutchess County, at the I-84/Route 9D intersection in the Town of Fishkill. According to NYSDOT, the existing interchange is insufficient to handle the traffic flow and does not have enough length for the required left turn lanes. An interchange reconstruction is tentatively scheduled at this location in 2016. In the interim, NYSDOT has made signal phasing improvements.

NYSDOT categorizes the I-84/Route 9D intersection in Fishkill as a High Accident Location (HAL).

SAFETEA-LU also requires states to define their High Risk Rural Roads (HRRR). States are required to identify these roadways and expend HRRR funds on any rural collector or rural local road with a crash rate that exceeds the statewide average, or one that due to increased traffic is likely to have a crash rate that exceeds the statewide average. There are seven designated HRRR locations in Dutchess County on State and County roads. Funds are distributed by the NYSDOT regional office through a competitive process. At this time, no HRRR projects are planned.

In 2009 NYSDOT evaluated one location on Route 9 in Dutchess County through its Highway Safety Improvement Program. Improved pavement markings and signing at the site led to a 25 percent reduction in injury crashes and a 32 percent reduction in total crashes.[19]

Pedestrian & Bicycle Safety

The most recent published pedestrian crash data from the NYS Department of Motor Vehicles (DMV) covers 2009. In that year, there were 86 reported crashes involving pedestrians and 35 reported crashes involving bicyclists in Dutchess County. These represented 1.3 percent and 0.5 percent of the reported crashes in the County, respectively. Four pedestrians were killed, 81 pedestrians were injured, and 33 bicyclists were injured as a result of motor vehicle crashes in 2009.[20] Table 5-21 summarizes the most recent published pedestrian and bicycle crash data.

Table 5-21. Non-motorized Crashes in Dutchess County (2007-2009)

	2007	2008	2009
Pedestrian/Motor Vehicle Crashes	75	73	86
Bicycle/Motor Vehicle Crashes	30	39	35
Total	105	112	121

NYSDOT's Accident Location Information System (ALIS), an online database, contains more detailed crash data from police agencies and DMV reports. Using this data, pedestrian-vehicle crashes from 2007 to 2009 were summarized by municipality and rates were developed based on the average number of reported pedestrian crashes per 1,000 population. The highest rates (pedestrian crashes per 1,000 population) by municipality are as follows:

1. Village of Fishkill: 1.18
2. City of Poughkeepsie: 0.86
3. Village of Red Hook: 0.50
4. Village of Tivoli: 0.44
5. Village of Millerton: 0.37
6. Village of Rhinebeck: 0.33
7. Village of Wappingers Falls: 0.28
8. Town of Hyde Park: 0.26
9. Town of Poughkeepsie: 0.23
10. Dutchess County (overall): 0.23

ADA Accessibility

The Americans with Disabilities Act of 1990 (ADA) requires state and local governments to make their programs and services accessible to persons with disabilities. This includes removing any physical barriers from public facilities, including sidewalks.

Section 28 CFR 35.150 requires public entities with 50 or more employees to identify barriers that may limit accessibility for persons with disabilities, and to develop a transition plan describing how the identified barriers will be addressed.
In August 2010, NYSDOT completed an ADA compliance inventory of sidewalks, crosswalks, and curb ramps on State roadways. A draft ADA plan was released in December 2010. The plan identifies intersections and sidewalk segments on State roads that are not yet fully ADA accessible.

In Dutchess County, NYSDOT identified a total of 78 locations that are not ADA accessible, including 39 intersections and 39 sidewalk segments. These include portions of Routes 9, 9D, 44, 52, 55, 82, 113, 199, 308, 343, and 376 (see Appendix C for details). According to NYSDOT's Draft Plan, 90 percent of the 43 miles of NYSDOT sidewalks in the County comply with ADA. The next phase of the Plan will include a prioritized list of improvements. NYSDOT expects to fully comply with ADA by March 2019.

The City of Poughkeepsie developed an ADA Transition Plan in 1992 based on an inventory of City-owned facilities. The Transition Plan identifies fifty sites and ranks them as first, second, third or fourth priority for improvements. The sites include city buildings, parks, fire houses, and parking facilities. The plan also includes an inventory of crosswalk locations at approximately 400 intersections. Each location is rated based

on whether it requires a curb ramp, detectable warnings, updated geometry and/or updated alignment. The plan prioritizes ramp improvement locations as follows:

1. At crosswalks along accessible routes serving public entities.
2. At crosswalks along accessible routes serving places of public assembly and business.
3. All remaining crosswalks.

The plan states that all street corners which are integral with street paving or repair programs shall have construction of accessible curb ramps incorporated within the scope of such paving or repair programs. Since the 1992 plan, the City has incorporated many of the ramp improvements into sidewalk and street projects.

At this time NYSDOT and the City of Poughkeepsie are the only two agencies in the County that have conducted a comprehensive ADA evaluation of their pedestrian system.

Transit Safety

SAFETEA-LU added language in several provisions emphasizing that safety and security should be considered throughout the planning, programming and operation of transit systems.

Metro-North Railroad tracks customer injuries at each station. It also measures the number of customer injuries per million customer rides. Between 2006 and 2010, total injuries at Dutchess County stations have ranged from four in 2006 to 14 in 2010. Most of the injuries occur at the Beacon and Poughkeepsie stations.

Amtrak also tracks the number of incidents by station. Over the past five years, there has been an average of 3 incidents per year at the Rhinecliff station.

Dutchess County's Division of Mass Transit collects data on crashes involving LOOP buses. In 2010 there were a total of 17 crashes; 15 were deemed "preventable" and 2 "non-preventable." This is a decrease from 2008, which had 26 crashes, and 2009, which had 21 crashes (13 preventable and 8 non-preventable). Preventable crashes are those which the driver could have reasonably avoided by controlling their speed, maintaining safe following distance, yielding right-of-way, signaling, and observing other safe driving practices.

LOOP has completed several safety initiatives. These include ADA training for all employees; pre- and post-trip inspection training for all drivers; "Driving Sense and Sensibilities" training for drivers (a video on safe driving practices); "Lock Out-Tag Out" procedures to prevent buses that are being worked on or are out of service from being moved; and a new policy requiring all employees to wear reflective safety vests. LOOP also has a seat belt policy, cell phone policy, and drug-free workplace policy.

In 2011, LOOP's safety plans, policies, and procedures were reviewed by a First Transit Regional Director of Safety. The review was positive, finding that LOOP has improved its safety procedures. The First Transit Director suggested some

additional safety procedures, and planned to participate in several monthly safety meetings.

The City of Poughkeepsie also tracks crashes involving its buses. In 2010 there were 9 crashes, similar to 2009, in which there were 8 crashes. Between 2006 and 2008 there were two to four crashes per year.

Safety training for City bus drivers involves morning check-in meetings every day with the dispatcher to review any issues, annual defensive driving training, and driver training videos from NYSDMV to review skills and best practices. Drivers take both written and on-road commercial drivers tests every two years. The City's Public Works department has a safety manager who reviews reports of any incidents and helps the bus system develop strategies to avoid future incidents.

Traffic Safety Programs & Plans

Dutchess County Traffic Safety Board

Transportation safety in Dutchess County is promoted through awareness, education, and enforcement programs sponsored by the Dutchess County Traffic Safety Board. These include the following programs:

1. Selective Traffic Enforcement Program (STEP): Support of targeted enforcement to reduce aggressive driving, speeding, and other unsafe driving behaviors.
2. Buckle Up New York (BUNY) Campaign: Support of targeted and expanded law enforcement efforts to increase compliance with the State seatbelt law.
3. Child Passenger Safety (CPS) Program: Training in proper child passenger safety seat installation, coordinated seat check events, distribution of car seats and educational materials, and participation in the County CPS Coalition, which coordinates efforts County-wide.
4. Bicycle/Pedestrian Safety: Bicycle safety presentations, bicycle rodeos, helmet check events, and distribution of bicycle helmets, reflective materials, and educational materials. Pedestrian safety focuses on educational programs for youth groups and organizations.
5. Safe Older Driver Mobility: Distribution of information and educational materials related to safe driving habits, transportation alternatives, and available services; Car Fit program to adapt older drivers' vehicles for safer driving; and Driver Evaluation Program.
6. School Bus Safety Awareness: Distribution of school bus safety video, teaching guides, and educational materials for school children; School Bus Driver of the Year award and driver skills rodeo; and promotion of Operation Safe Stop to educate the public about stopping for school buses.
7. Motorcycle Safety Awareness: Promotion of motorcycle training programs; educational materials for riders and motorists; promotion of approved helmets and rider safety gear; and targeted enforcement at safety checkpoints.
8. Transportation safety promotion through brochures, educational materials, press releases, and events.

Strategic Highway Safety Plan

To help raise awareness and reduce crashes, the *New York State Strategic Highway Safety Plan* focuses on promoting public awareness of pedestrian and bicycle safety issues, providing education and training, developing engineering solutions, and increasing enforcement in high-crash locations.

ALIS Database

In 2007, NYSDOT, in conjunction with the DMV and the Office of Cyber Security & Critical Infrastructure Coordination (CSCIC), developed an online database of motor vehicle crashes called the Accident Location Information System, or ALIS. Access to the database was given to all MPOs in the state for testing and use.

The data in ALIS comes from two sources: 1) Traffic and Criminal Software (TraCS), which many police agencies have installed in patrol vehicles, and 2) DMV accident report forms (Form MV-104). TraCS allows crash data and locations to be coded in the ALIS database quickly and accurately, which greatly improves analysis and safety planning.

ALIS' functions include querying crashes by date, location, and other attributes; mapping crash locations; and creating reports. MPO and NYSDOT staff uses the ALIS data to identify priority areas for safety improvements. NYSDOT continues to refine the software and encourage police agencies to submit crash data via TraCS to enable better safety planning. As of 2011, 11 police agencies in the County (10 municipalities and the County Sherriff's Office) have installed TraCS, and all but one are submitting crash reports via TraCS.

The Council conducted an analysis of 2008-2010 ALIS crash data to identify high-crash locations in the County. The analysis identified locations that were above the County average for intersection and road segment crashes. The analysis classified crashes within 75 feet of an intersection as an intersection crash, with all others were classified as road segment crashes. For road segment crashes, the analysis used crash rates by facility type: Interstate, State, County, local, and private to identify locations above-average for their facility type.

Based on the crash analysis, the following intersections had the highest number of crashes from 2008-2010:

1. Route 9-Merritt Blvd intersection in the Town of Fishkill: 110 crashes
2. Route 9-CR 28 (Old Hopewell Rd) in Wappinger: 64 crashes
3. Route 9-CR 104 (New Hackensack Rd) in Wappingers Falls: 59 crashes
4. Route 44/55-Main St in the City of Poughkeepsie: 58 crashes
5. Route 9-CR 93 (Myers Corners Rd) in Wappinger: 56 crashes

The following road segments had the highest number of crashes from 2008-2010:

1. Route 44/55 from Route 9 to Rinaldi Blvd in the City of Poughkeepsie: 145 crashes
2. Route 9 (northbound) ¼ mile south of CR 93 (Myers Corners Rd) in Wappinger: 57 crashes
3. Route 9 (northbound) from Laurel St to Church St in the City of Poughkeepsie: 53 crashes
4. TSP (northbound) from Miller Hill Rd to I-84 in East Fishkill: 51 crashes
5. TSP (northbound) from Route 52 to Carpenter Rd in East Fishkill: 48 crashes
6. TSP (southbound) from Route 82 to CR 9 (Beekman Rd) in East Fishkill: 48 crashes

The following road segments had the highest crash rates per mile for 2008-2010:

1. Route 9D ramp over I-84 in Fishkill: 6,206 crashes per mile
2. I-84 overpass over Route 9 in Fishkill: 3,324 crashes per mile
3. Route 44/55 from Route 9 to Rinaldi Blvd in the City of Poughkeepsie: 3,037 crashes per mile
4. Route 52 underpass at TSP in East Fishkill: 2,980 crashes per mile
5. Main St from Donegan Pl to Rinaldi Blvd in the City of Poughkeepsie: 2,525 crashes per mile

Transportation Security

The Council recognizes the importance of safeguarding travelers' personal security. While most of the issues related to transportation security are outside the direct control of the Council, it is committed to supporting the efforts of federal, State, and local agencies in the development and implementation of their safety and security programs, wherever and whenever possible and appropriate.

The NYSDOT Transportation Master Plan discusses transportation security, and recommends identifying and protecting critical transportation infrastructure, conducting vulnerability and risk assessments, coordinating emergency preparedness and response strategies, and balancing security with reliability. NYSDOT works closely with major transportation operating agencies and emergency management agencies to carry out appropriate planning and response activities.

Metro-North Railroad provides security for customers and employees through the MTA Police Department, which

develops and implements deterrence, detection, response, and recovery initiatives. The security program is designed to minimize or eliminate risks wherever possible, minimize the potential consequences of those risks that cannot be eliminated, and respond to and recover from any risks that occur.

The Hudson Valley Transportation Management Center (HVTMC) in Hawthorne, New York coordinates highway and transit management, incident response, and traveler information for the region. It is supported by NYSDOT, New York State Police, and other agencies. The TMC uses Intelligent Transportation Systems (ITS) and other technologies, including traffic monitoring cameras, highway advisory radio, variable message signs, traffic signal coordination, and transit information system to allow transportation managers and the public to make better transportation decisions. The Council's role will be to continue to facilitate discussion as well as aid in emergency planning exercises at the TMC.

The Dutchess County Department of Emergency Response is responsible for developing and maintaining a Comprehensive Emergency Management Plan (CEMP) for Dutchess County. The CEMP seeks to provide an "all hazards" approach towards planning, response, and recovery operations as a result of larger scale emergencies and disasters within the County. The CEMP includes the results of a systematic investigation and analysis of potential hazards that could affect the County, an assessment of existing capabilities to deal with potential problems, and the development of necessary actions to achieve expected results. The Council will assist as needed in the development and implementation of the CEMP.

Natural & Historical Resources

Dutchess County's natural and historical resources play an important role in the daily activities of its residents and visitors. These resources must be considered when carrying out the metropolitan transportation planning process, especially during the programming and implementation of specific transportation projects. The Council conducted an inventory of natural and cultural resources from available data sources, including State and County GIS data, the *Natural Resource Inventory of Dutchess County (2010)*, *Greenway Connections*, and *New York State Open Space Plan (2009)*.

Natural Resources

Dutchess County encompasses over 509,000 acres of land (796 square miles), a territory that contains critical wetlands, varying topographies, rich agricultural lands, forests, and diverse animal species. Key natural resources include:

1. Hudson River: The Hudson River is the most significant watercourse in the region. The County is closely connected to the Hudson River, a relationship that dates back to the region's first settlers, who used the river as a means of travel and a venue to conduct commerce. Serving as the County's western border, it limits movement between Dutchess, Orange, and Ulster counties, forcing travelers to use one of three bridges or a ferry. The river carries a

significant amount of freight between Albany and New York City.

The Hudson River includes the State-designated Hudson River Estuary, defined as the tidal portion of the river from Troy to New York City. The NYSDEC manages the estuary to ensure clean water, protect fish and wildlife, and provide access to the river.

The Hudson River is one of the most important natural and historic resources in the Hudson Valley.

2. Wetlands: There are almost 30,000 acres of NYSDEC-designated wetlands in Dutchess County, representing six percent of the County's total area. These areas have water at or near the surface during the year, creating natural places for the storage, filtration, and recharge of groundwater. They are particularly important for waterfowl, wildlife, and plant species. Wetlands are regulated at the federal and state level, with State wetlands having a 100-foot buffer zone. Regulated wetlands often combine with low-lying floodplains along waterways to form linear patterns that are generally restricted from development and conducive to trails. At almost 2,800 acres, the DP-22 (Great Swamp) wetland in Dover and Pawling is the County's largest freshwater wetland, followed by the PP-8 wetland in Pine Plains at 1,100 acres and the SG-3 wetland in Red Hook at 700 acres.

3. Floodplains: As demonstrated by 2011's Tropical Storm Irene, flooding is common along many of the region's rivers and streams. Dutchess County has over 50,000 acres of land located in 100-year floodplains. Large areas along the Ten Mile River and Wappinger Creek are particularly prone to flooding, as is land adjacent to the Fallkill Creek, and Crum Elbow Creek. The 100-year floodplains are regulated by municipalities, which restrict residential and other uses that would be damaged by high waters. Since they store stormwater flows, filling floodplains for new construction endangers downstream properties.

4. Air Quality: Dutchess County is part of the Poughkeepsie Ozone Non-attainment Area, which includes Putnam and Orange counties. Based on data from the NYSDEC air monitoring station in Millbrook, the annual average parts per million (ppm) of ozone has remained constant at 0.027 since 2007. National Ambient Air Quality Standards (NAAQS) require that the 4th highest daily maximum 8-hour average for the most recent three year period not

exceed 0.075 ppm. From 2007 to 2009, the Millbrook station recorded an average of 0.075 ppm, thus meeting NAAQS standards.

5. Agricultural Lands: Dutchess County contains almost 175,000 acres of land certified by the NYS Department of Agriculture and Markets as Agricultural Districts. These districts are locally designated parcels that currently or could in the future serve agricultural purposes. The majority of these agricultural lands are located in the central, northern, and eastern areas of the County.

Though urban in many places, Dutchess County still retains a connection to its agricultural roots (Photo: Lindsay Carille).

6. Highlands: Ridgelines and hillsides provide large blocks of land for wildlife habitat, important species, and scenic woodlands. Because of steep slopes, exposed bedrock and shallow erodible soils, highlands are generally only appropriate for scattered housing, forests, and recreational uses.

7. Steep Slopes: Dutchess County contains two major areas with grades of 25 percent or more: the Hudson Highlands (including the Fishkill Ridge) located in southern Dutchess and the Taconic Ridge (Harlem Valley) in eastern Dutchess.

8. Forests: Large stands of woods exist in almost every part of the County, with the exception of the most densely urbanized areas, particularly around the City and Town of Poughkeepsie.

9. Endangered Species: The U.S. Fish and Wildlife Service has identified two endangered species in Dutchess County: the Indiana Bat and the Dwarf Wedgemussel Clam. In addition, the Bog Turtle has been designated a threatened species and the New England Cottontail Rabbit is a candidate species.

10. Critical Environmental Areas (CEAs): As of 2011 the NYSDEC had recognized 34 CEAs in Dutchess County. These are state or locally designated areas that have exceptional or unique character with respect to any of the following:
    - Benefit or threat to human health;
    - Natural setting (e.g., fish and wildlife habitat, forest and vegetation, open space and areas of important aesthetic or scenic quality);
    - Agricultural, social, cultural, historic, archaeological, recreational, or educational values; or

- An inherent ecological, geological or hydrological sensitivity to change that may be adversely affected by any change.

Following designation, the potential impact of any development proposal on the environmental characteristics of the CEA must be evaluated in the determination of significance prepared pursuant to State Environmental Quality Review (SEQR).

Tropical Storm Irene (August 28-29, 2011)

Tropical Storm Irene illustrated the importance of inter-municipal cooperation when managing the effects of a natural disaster. It also illustrated the importance that a safe and reliable transportation system plays in people's health, safety, and welfare.

Irene made landfall in New York City on August 28, 2011, producing 7-9 inches of rain on the eastern side of Dutchess County, and 9-11 inches of rain on the western side of Dutchess County, over a 24-hour period. According to the National Weather Service, the higher rainfall amounts nearly equated to a 500-year storm. The amount of rain, coupled with already saturated soils from previous storms, resulted in extreme flooding that impacted numerous State, County, and local roads and bridges.

The effects of Irene were far reaching. Several municipalities declared states of emergencies, including the City of Poughkeepsie and Towns of Hyde Park, Fishkill, and LaGrange, while Dutchess County Executive Steinhaus ordered the activation of the County's Emergency Operations Center. The Center greatly assisted State, County, and local response efforts, allowing agencies to quickly mobilize assets. For example, at the request of the Town of Poughkeepsie Police Department, Dutchess County LOOP buses were used to evacuate residents of a trailer park that had flooded.

Tropical Storm Irene damaged numerous roads in Dutchess County, including CR 19 (Bulls Head Rd) (left) and CR 15 (Round Lake Rd) (right) (Photos: Dutchess County DPW).

Hundreds of locations experienced flooding during the storm. The following facilities experienced some of the most serious storm-related impacts:

1. City of Poughkeepsie: Morgan Lake and Smith St, Winnikee Ave, areas along the Fallkill Creek, and Waryas Park.
2. City of Beacon: Red Flynn Dr.
3. Beekman: Beekman and Recreation Rd.
4. East Fishkill: East Hook Rd in Wiccopee.

5. Village and Town of Fishkill: Route 9/Elm St intersection
6. LaGrange: CR 21 (East Noxon Rd) near Rita Ln
7. Hyde Park: CR 41 (Crum Elbow Rd) east of the Cardinal Rd intersection to the Barre Memorials; Haviland Rd
8. Milan: CR 56 (Turkey Hill Rd) west of Odak Farms Rd, Battenfield Rd, Odak Farms Rd, and the intersection of CR 15 (Milan Hollow Rd) and CR 52 (Round Lake Rd).
9. Pawling: North Quaker Hill Rd.
10. Pleasant Valley: Shady Creek Rd, Route 44 in Washington Hollow, and Pleasant Valley Town Hall.
11. Red Hook: CR 82 (Barrytown Rd) near Seminary Rd.
12. Wappinger: Route 376/Airport Dr intersection.
13. Harlem Valley: Areas adjacent to the Ten-Mile River.

Irene resulted in extensive flooding, washouts, bridge damage, and culvert damage. Fallen debris clogged drainage channels, exacerbating flooding. Given the extent of damage, President Obama issued a federal disaster declaration for the State, authorizing the federal Department of Homeland Security (DHS) and Federal Emergency Management Agency (FEMA) to coordinate disaster relief efforts. This declaration will enable eligible areas to receive federal aid.

Dutchess County Agriculture & Farmland Protection Plan

The County's Open Space and Farmland Protection Matching Grant Program was established in 1999 to implement the Dutchess County Agriculture and Farmland Protection Plan and protect important agricultural and open space resources. Conservation of agricultural lands protects the environment, promotes local sustainability, and supports the local economy.

The Dutchess County Partnership for Manageable Growth is designed to help the County and municipalities implement the recommendations of adopted planning documents including *Directions: the Plan for Dutchess County*, the *Dutchess County Agriculture and Farmland Protection Plan*, *Greenway Connections*, and the *Dutchess County Water and Wastewater Plan*. It enhances the Open Space and Farmland Protection Matching Grant Program through a partnership program to improve water and sewer services throughout the County and initiatives to further Greenway Partnerships between the County and its municipalities.

Scenic Byways

The New York State Scenic Byways Program recognizes transportation corridors that are of particular statewide interest. These corridors are of scenic, recreational, cultural, natural, historic, or archaeological significance.

In 1992 the New York State Legislature designated the Taconic State Parkway as a State Scenic Byway in recognition of its scenic, cultural, and historic significance. The designation covers the entire 104 mile length of the Taconic between Westchester and Columbia counties. NYSDOT developed the Taconic State Parkway Scenic Byway Corridor Management Plan in 1999 to address management issues such as safety, vegetation, and land use, and to encourage tourism and recreation within the corridor.

There are no nationally-designated scenic byways in Dutchess County or the greater Mid-Hudson Valley, but several municipalities have designated local roads as scenic roads.

The Taconic State Parkway is a designated State Scenic Byway, as evidenced by this section in Pleasant Valley.

Historic Resources

Dutchess County hosts a number of important historic assets. These include the Hudson River Valley National Heritage Area, major lakes and riverfronts, and the Hudson River Greenway Trail. Initiatives such as the Hudson River Greenway Plan aim to enhance areas along the Hudson River by providing greater access to the waterfront and preserving areas along the Hudson River Corridor.

The Dutchess County Planning Department maintains a list of over 230 Historic Places in the County, based on the National Register of Historic Places, which is administered by the National Park Service to identify, evaluate and protect historic and archeological resources in the United States. There are also over 30 historic museums in the County.

In addition to individually-listed historic sites, several municipalities in the County have historic districts listed on the National Register. This designation facilitates the historic preservation of larger areas. The largest district in the County is the Hudson River Historic District, which includes over 13,500 acres. It is comprised of 1,261 parcels that span portions of five municipalities (towns of Hyde Park, Red Hook, and Rhinebeck, and villages of Rhinebeck and Tivoli) and extends north to Columbia County. The District is also a National Landmark District.

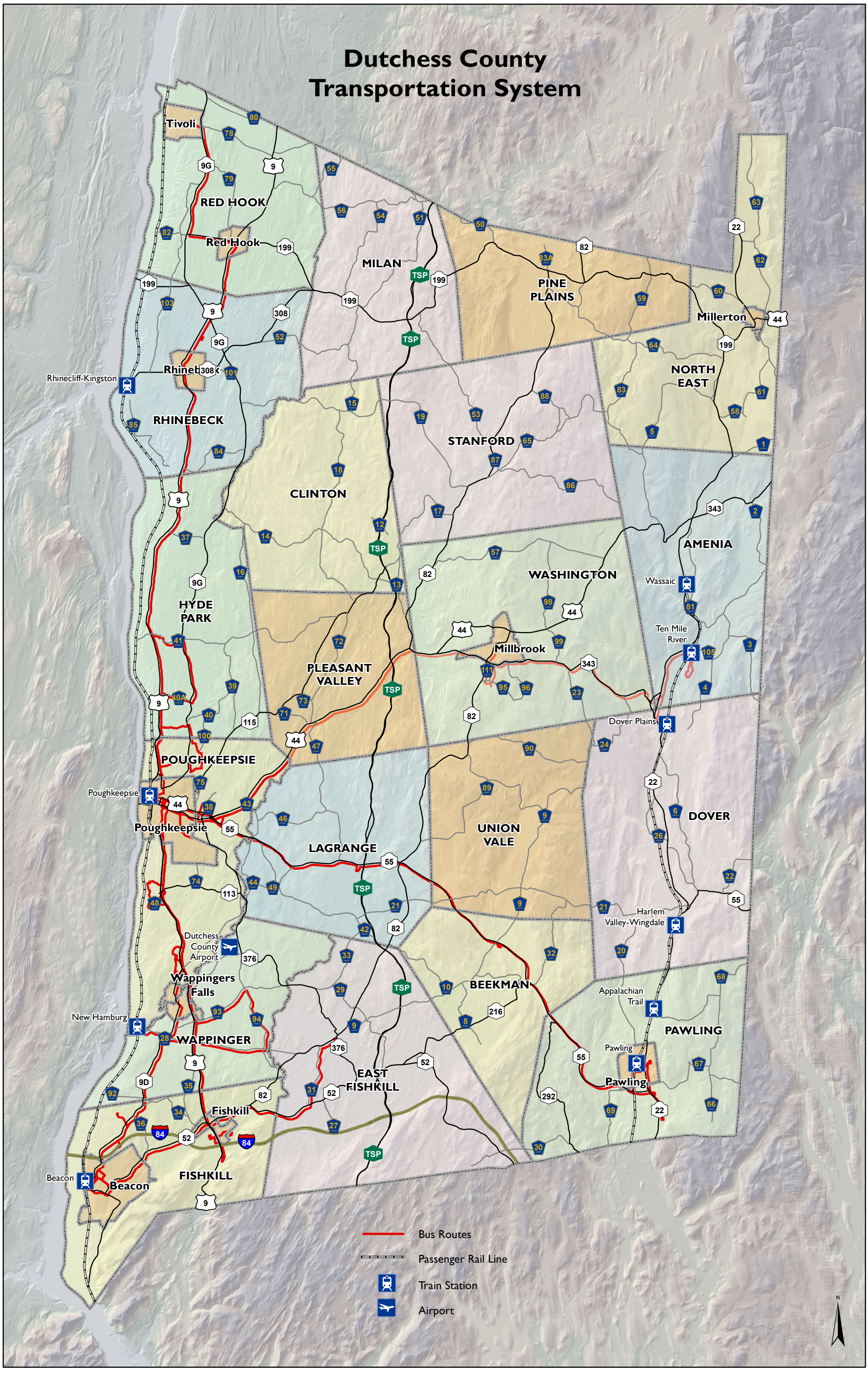
There are numerous other historic districts in the County, many of which are located along historic streets including:

1. City of Beacon: Lower Main St (7.5 acres)
2. City of Poughkeepsie: Academy St, Balding Ave, Dwight St–Hooker Ave, Garfield Place, Mill St–North Clover St, Union St, and Upper Mill St. (73 acres)
3. Town of Hyde Park: Main St, Albeston St, and Park Pl (7.4 acres)
4. Town of North East: Coleman Station (1,780 acres)
5. Town of Poughkeepsie: Main St and Stone St (1.6 acres)
6. Village of Rhinebeck: Rhinebeck Village (151 acres)
7. Town of Wappinger: Wheeler Hill Rd (339 acres)

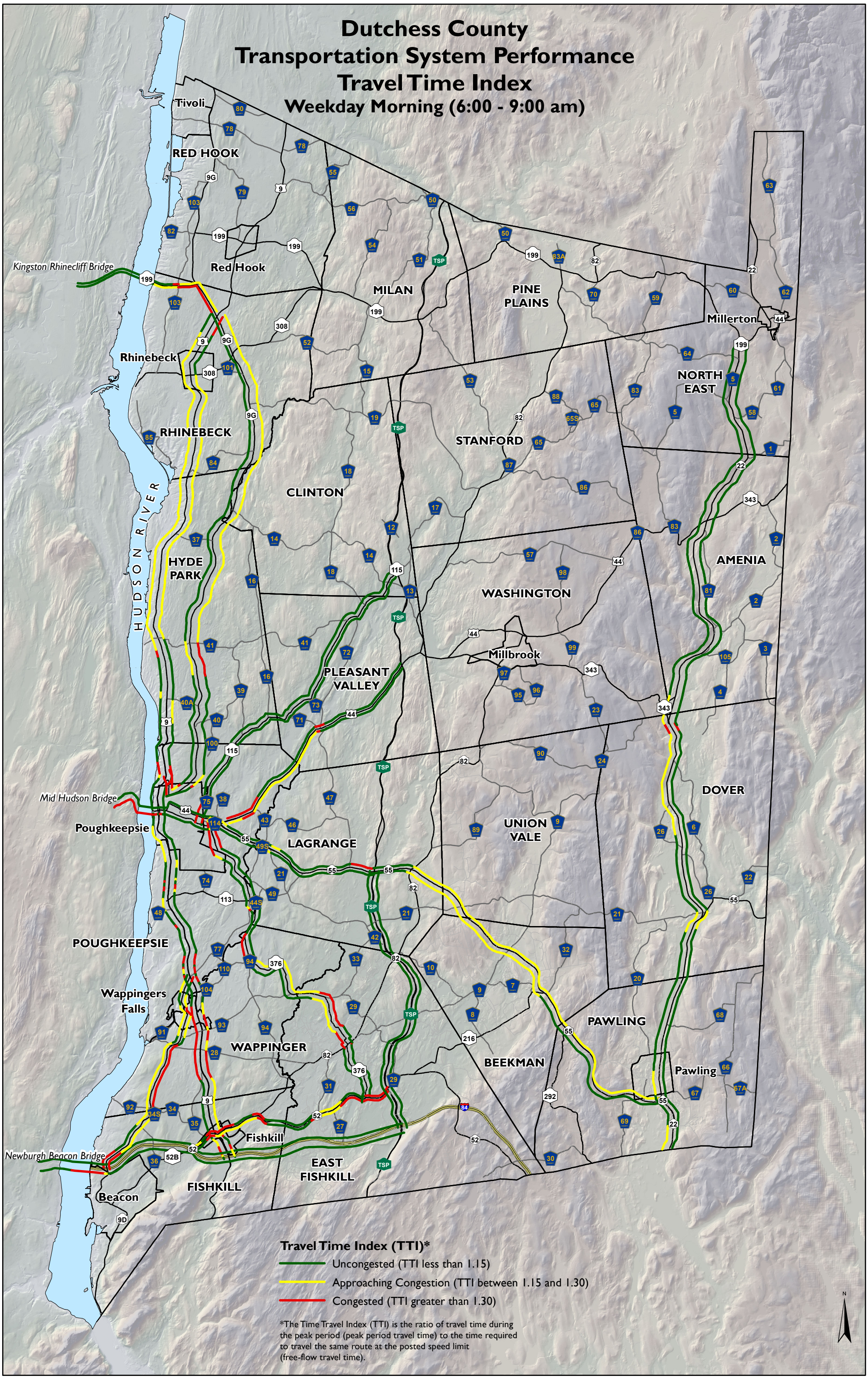
8. Village of Fishkill: Fishkill Village (108 acres)
9. Village of Tivoli & Town of Rhinebeck: Sixteen Mile (312 acres)
10. Village of Wappingers Falls (70 acres)

[1] NYSDOT, *Highway Mileage Summary Reports*, 2011 https://www.nysdot.gov/divisions/engineering/technical-services/highway-data-services/highway-mileage-summary
[2] NYSDOT, *Local Highway Inventory*, October 2010
[3] Eng-Wong, Taub & Associates, *Mid-Hudson Valley TMA Travel Time Survey*, August 2011
[4] NYSDOT, *2010 Region 8 Pavement Data Report*, 2011 available at https://www.nysdot.gov/divisions/engineering/technical-services/pavement-management
[5] Dutchess County Department of Public Works, 2009 and 2010 Pavement Condition Ratings, 2010
[6] NYSDOT, *State Highway Bridge Data*, 2010, https://www.nysdot.gov/main/bridgedata
[7] NYSDOT, Bridge Rating Inventory (GIS), 2011
[8] NYSDOT, Bridge Rating Inventory (GIS), 2011
[9] NYSDOT, *Historical Trends in Auto and Truck Bridge Crossing Volumes*, 2010
[10] Metro-North Railroad, 2000-2010 ridership data, 2011
[11] Metro-North Railroad, Parking utilization data, 2011
[12] Amtrak, Ridership data, 2011
[13] NTSDOT, Newburgh-Beacon Ferry ridership data, 2011
[14] Dutchess County Department of Planning and Development, Aerial photos (taken in 2010) and available GIS data.
[15] US Census Bureau, *Commodity Flow Survey*, 2007, http://www.census.gov/econ/cfs/
[16] US Army Corps of Engineers, *Waterborne Commerce Statistics*, 2009 http://www.ndc.iwr.usace.army.mil//wcsc/webpub09/Part1_WWYs_tonsbycommCY2009.HTM
[17] Port Authority of New York and New Jersey, *2010 Air Traffic Report*, 2011, http://www.panynj.gov/airports/pdf-traffic/ATR2010.pdf
[18] *Dutchess County Traffic Safety Data*, Institute for Traffic Safety and Research and the Governor's Traffic Safety Committee, 2011
[19] NYSDOT, Highway Safety Improvement Program, 2009, https://www.nysdot.gov/divisions/operating/osss/highway-repository/09HSIPAttach2.xls
[20] *Dutchess County Traffic Safety Data*, Institute for Traffic Safety and Research and the Governor's Traffic Safety Committee, 2011

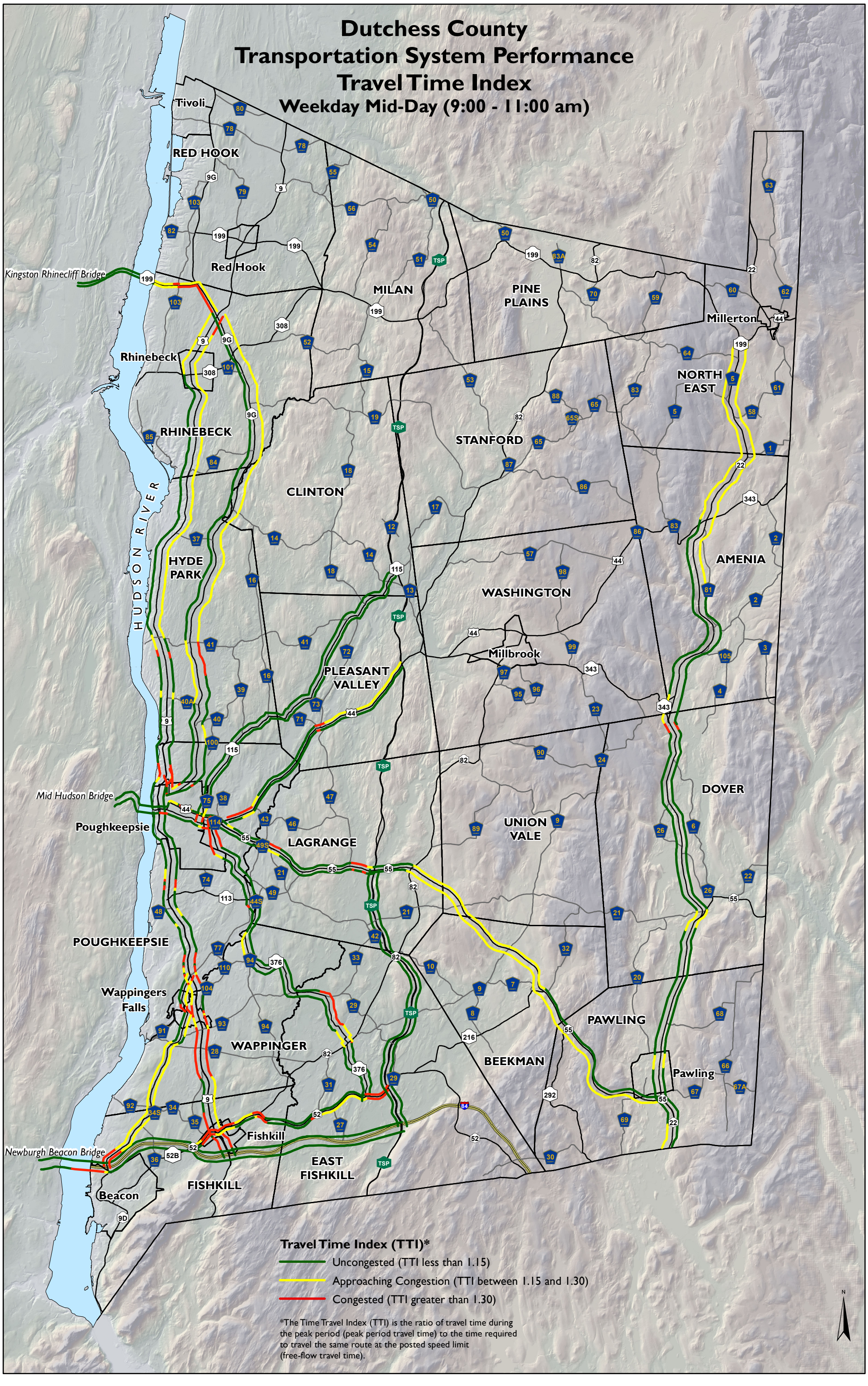
Dutchess County Transportation System



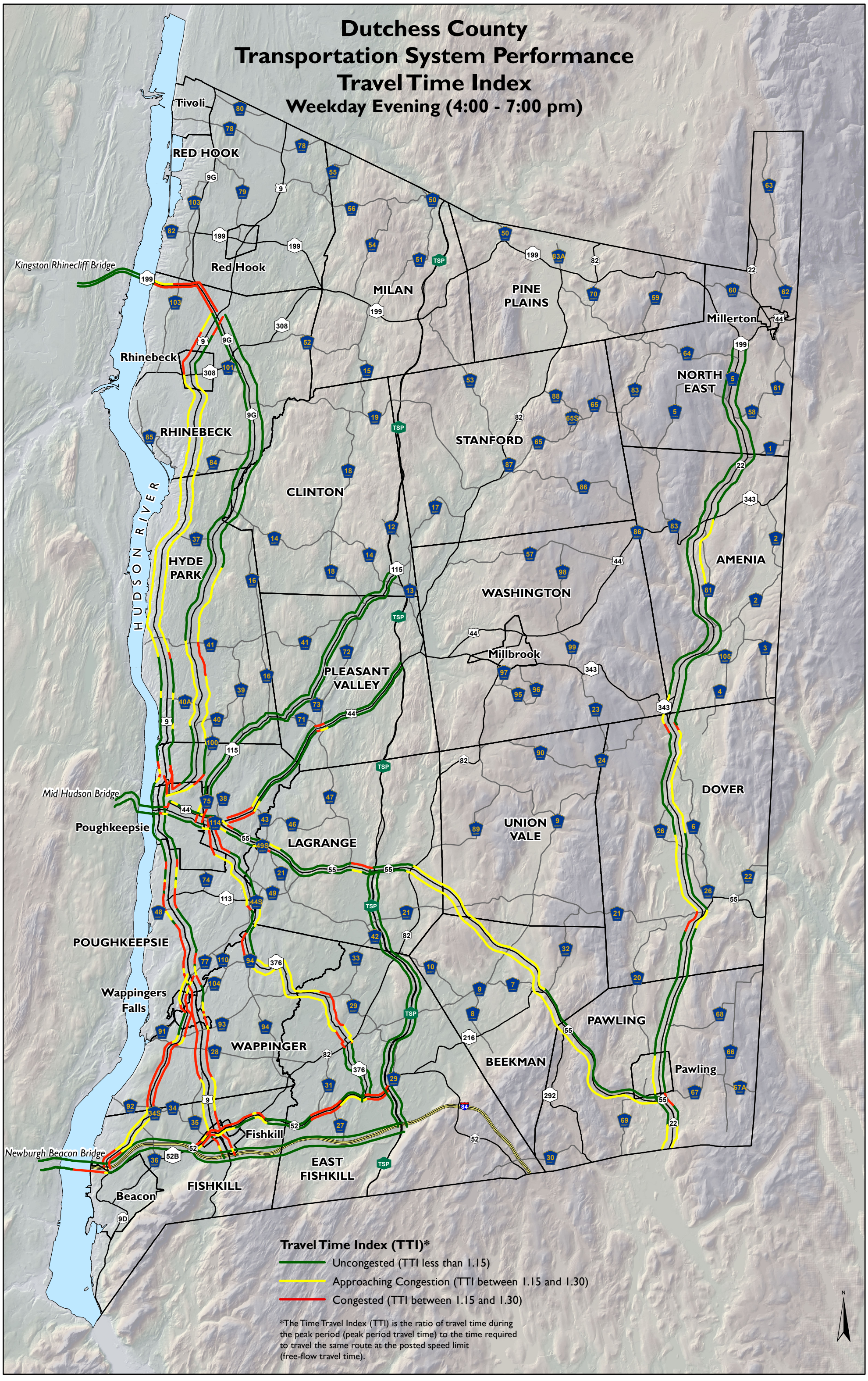
Dutchess County
Transportation System Performance
Travel Time Index
Weekday Morning (6:00 - 9:00 am)

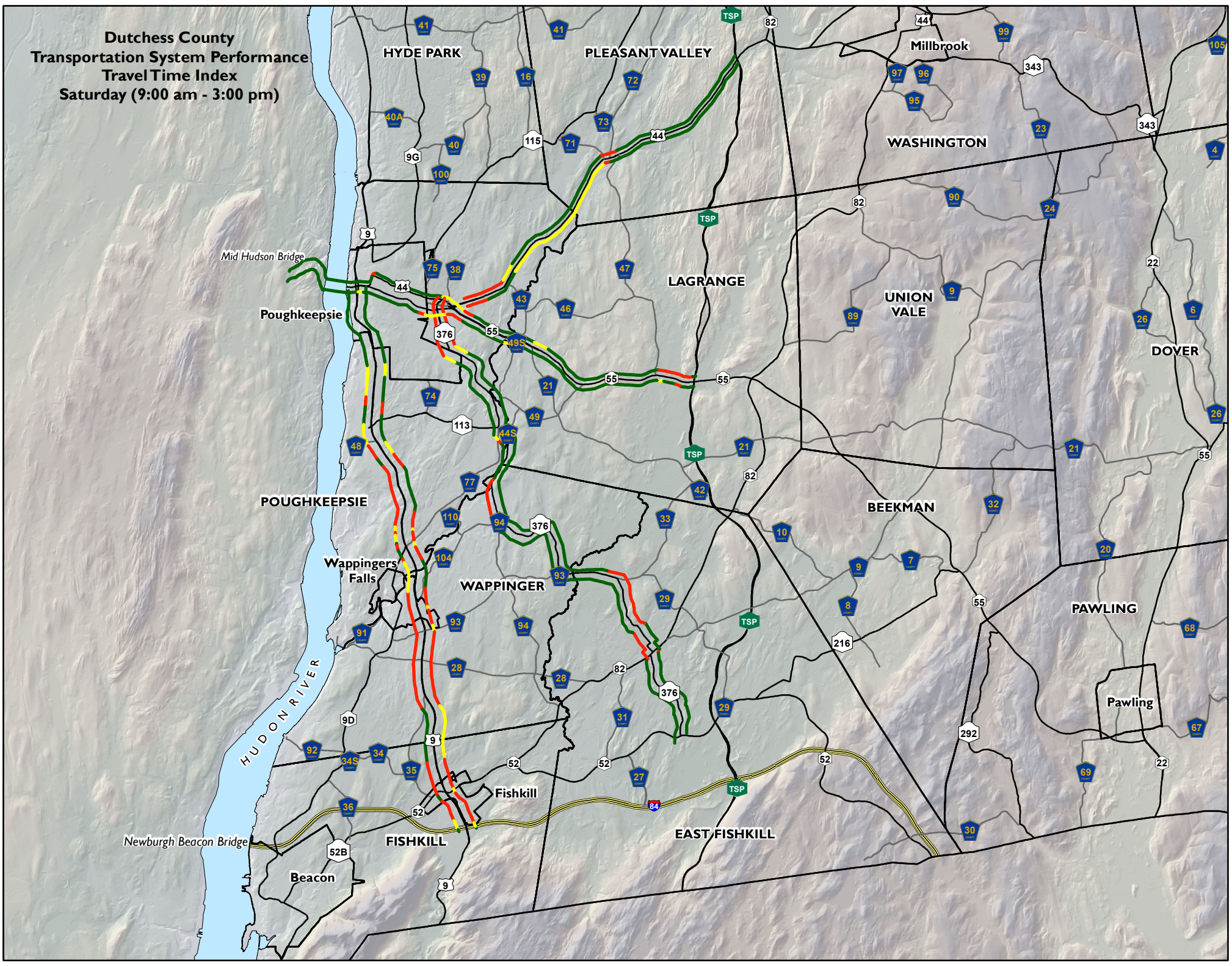


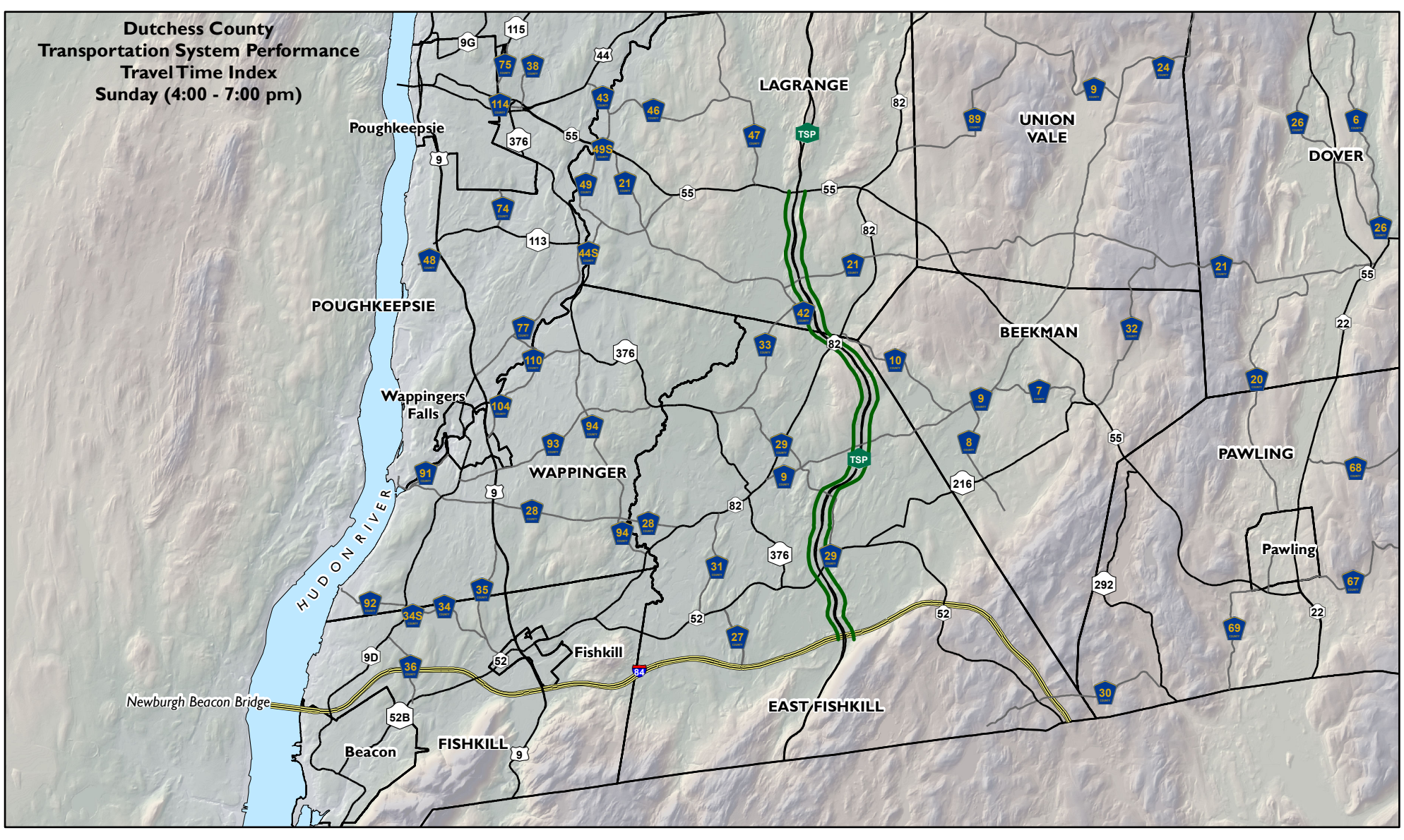
Dutchess County
Transportation System Performance
Travel Time Index
Weekday Mid-Day (9:00 - 11:00 am)



Dutchess County
Transportation System Performance
Travel Time Index
Weekday Evening (4:00 - 7:00 pm)







Travel Time Index (TTI)*

- Uncongested (TTI less than 1.15)
- Approaching Congestion (TTI between 1.15 and 1.30)
- Congested (TTI greater than 1.30)

*The Time Travel Index (TTI) is the ratio of travel time during the peak period (peak period travel time) to the time required to travel the same route at the posted speed limit (free-flow travel time).

N