

Congestion Management Process for the Mid-Hudson Valley Transportation Management Area: Multi-Modal Accessibility

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Disclaimer

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1. Introduction

The availability of multi-modal transportation options can alleviate network congestion by offering alternative modes of transportation, reducing single-occupant vehicle travel, and improving service integration within and across modes. This Technical Memo evaluates existing multi-modal conditions for the Mid-Hudson Valley Transportation Management Area (TMA), identifies possible gaps in the network, and recommends improvements. Table 1 provides a glossary of relevant terms for understanding this analysis.

Table 1: Glossary of Terms	
Multi-Modal Transportation	Diverse transportation options including walking, bicycling, public transit, carpooling and vanpooling.
Park & Ride	A parking lot, often near public transportation or a major highway, that allows a driver to leave their vehicle and transfer to a bus, train, carpool, or vanpool for the remainder of their journey. Park & ride lots are usually owned by NYSDOT, a county, or a local municipality.
Multi-Use Path	A path separated from motorized traffic and dedicated to bicyclists, pedestrians, and other non-motorized users.
Fixed Route Transit Service	A transit system that runs along a prescribed route, operating according to a fixed schedule.
Flag Stop Transit Service	A transit system that stops by request at any safe point along a fixed route, rather than only at prescribed stops.
Transit Hub	A centralized location where transit systems converge and passengers can choose between a variety of modes or a variety of routes (such as at a bus hub).

2. Performance Measures

The analysis evaluated regional multi-modal accessibility using the following measures: Park & ride availability, Transit availability, Bicycle networks, Bicycle parking availability, Bicycle racks on buses, and Pedestrian networks (see performance measure definitions in Table 2).

Table 2: Multi-Modal Performance Measures	
Park & ride availability	The number of park & ride spaces and their percent occupancy during observations.
Transit availability	The percentage of the population within a half-mile/quarter-mile of a train station, ferry station, transit hub, or bus route.
Bicycle networks	The mileage of existing multi-use paths (including bridges with multi-use paths).
Bicycle parking availability	The number and percent of intermodal locations (train stations, ferry stations, transit hubs, park & ride lots) with bike parking (racks and lockers).
Bicycle racks on buses	The percentage of public buses with bicycle racks.
Pedestrian networks	The percentage of sidewalk coverage within a half-mile/quarter-mile of key transit locations (train stations, ferry stations, transit hubs).

3. Methodology

Park & ride availability

Park & ride availability is measured by the total number of park & ride spaces and their utilization. Each MPO made site visits to park & ride facilities in their respective county for at least three weekdays in October 2018 to count the number of spaces and the number occupied. Only park & rides that are owned, operated or supported by public agencies were considered in this analysis. Leased spaces in shared parking lots were not inventoried unless there was a clear method to identify park & ride vehicles. The TMA-wide average represents the overall utilization of park & ride spaces from all the lots surveyed.

Transit availability

Transit availability is measured by the percentage of the population within a half-mile and a quarter-mile of a train station, ferry station, transit hub, or bus route. The half-mile and quarter-mile buffers were created to represent a 5 to 10-minute walk. Bus routes were used to measure bus availability because many of the public bus operators operate on a flag stop system, meaning a rider can flag down the bus at any point along the route. The population for each census block group (based on American Community Survey (ACS) 5-year estimates for 2012-2016) was used along with the number of structures (based on County level GIS data) to calculate the population per structure. All address points within the half- and quarter-mile buffers were selected for each respective county. The selected structures were then multiplied by the population per structure ratio to estimate the population within each buffer. This was compared to the overall population to determine the percentage near transit.

Bicycle networks

Bicycle networks are measured by the mileage of existing paved multi-use paths, unpaved paths if the location and width made it appropriate for transportation use, and bridges with multi-use paths. Each MPO reported bicycle network mileage based on existing GIS data. Future iterations of this analysis could include dedicated on-street facilities such as bike lanes and protected bike lanes, if data is available.

Bicycle parking availability

Bicycle parking availability is measured by the number and percent of intermodal locations—including train stations, ferry stations, transit hubs, and park & ride lots—that have bicycle parking (racks and lockers). This data was based on field visits, existing databases, station maps, and street-level imagery.

Bicycle racks on buses

Bicycle racks on buses is measured by the percentage of public buses with bicycle racks. Since transit operations vary by MPO, the analysis focused on buses used for local fixed-route service.

Pedestrian networks

Pedestrian networks are measured by the percentage of sidewalk coverage within a half-mile and a quarter-mile of key transit locations including train stations, ferry stations, and transit hubs. Each MPO performed a GIS analysis for their respective county. Quarter mile and half mile buffers were created for each transit location, representing a 5- to 10-minute walk. The potential sidewalk network was

calculated by the roadway mileage multiplied by two to represent each side of the roadway. The percentage coverage is the ratio of existing sidewalk mileage to potential sidewalk mileage within the buffer area.

Due to varying sidewalk data availability by MPO, sidewalk coverage could not be calculated for every key transit location. DCTC evaluated the Poughkeepsie bus hub, Beacon ferry/train station, and other train stations throughout the county, UCTC evaluated the City of Kingston, and OCTC evaluated the Metro-North Port Jervis Line train stations, the City of Middletown Transit Hub at the Coach USA facility, and the Newburgh-Beacon Ferry in the City of Newburgh. These evaluations could be expanded as sidewalk data improves in the future.

4. Results

Table 3 shows the results for each multi-modal measure for the individual MPOs as well as the TMA as a whole. The Multimodal Facilities Map shows the bicycle network and major transit locations including train stations, ferry locations, transit hubs, and park & ride lots.

Table 3: Multi-Modal Measures		DCTC	UCTC	OCTC	TMA total/average
Park & Ride availability	The number of park & ride spaces and their percent occupancy during observations.	460 spaces; 36% utilization	685 spaces; 55% utilization	2,501 spaces; 82% utilization	Total spaces: 3,646. Average utilization: 71%
Transit availability	The percentage of the population within a half-mile/quarter-mile of a train station, ferry station, transit hub, or bus route.	Half-mile buffer = 51%, Quarter-mile buffer = 38%	Half-mile buffer = 50%, Quarter-mile buffer = 37%	Half-mile buffer = 34%, Quarter-mile buffer = 25%	Average: Half-mile buffer: 45%, Quarter-mile buffer: 33%
Bicycle networks	The mileage of existing multi-use paths (including bridges with multi-use paths).	26.2 miles	50.4 miles	16.1 miles	Total: 92.7 miles
Bicycle parking availability	The number and percent of intermodal locations (train stations, ferry stations, transit hubs, park & ride lots) with bike parking (racks and lockers).	10 of 20 locations (50%)	6 of 11 locations (55%)	9 of 24 locations (38%)	Total locations: 25; overall coverage: 45%

Bicycle racks on buses	The percentage of public buses with bicycle racks.	100% (50 of 50 buses)	100% (31 of 31 buses)	88% (15 of 17 buses)	Average: 98%
Pedestrian networks	The percentage of sidewalk coverage within a half-mile/quarter-mile of key transit locations (train stations, ferry stations, transit hubs).	Half-mile buffer: Train Stations = 34%, Bus Hub = 86%. Quarter-mile buffer: Train Stations = 30%, Bus Hub = 86%.	Kingston Trailways and UCAT Kingston Plaza Hub: Half-mile buffer = 73%; Quarter-mile buffer = 92%	Half-mile buffer: Train Stations = 17%, Transit Hub = 80%, Ferry = 75%. Quarter-mile buffer: Train Stations = 20%, Transit Hub = 74%, Ferry = 79%.	N/A

5. Analysis

Park & Ride availability

While the overall utilization of park & rides averages 71% across the TMA, certain locations experience high levels of use. These include the Route 52 & Taconic Parkway park & ride in Dutchess County (up to 98% occupancy), the Rosendale park & ride (up to 100% occupancy) and Trailways bus station park & ride (up to 110% occupancy) in Ulster County, and six over-capacity lots in Orange County, all located along the State Route 17 corridor and used by Coach USA/Shortline. These include Monroe Lots A & B, Chester at the intersection of State Route 94, Tuxedo at the intersection of State Route 17A, Central Valley Lots 2 & 3 at Larkin Drive in Harriman, and Central Valley Lot 1 at Lacey Lane in Woodbury, which was a temporary lot and had limited capacity during observations due to the Exit 131 reconfiguration project. These over-capacity locations point to the need for additional park & ride capacity. The Exit 131 reconfiguration project, completed in late 2019, included improvements to the Central Valley Lot at Lacey Lane and the Central Valley Lots at Larkin Drive, increasing capacity for all three lots.

In Dutchess County, current plans include improvements at the Route 52 & Taconic Parkway park & ride and an expansion to include a second lot off Route 52 on the west side of the Taconic. In Ulster County, there is a potential expansion of the Rosendale park & ride lot. In Orange County, the locally-owned and maintained lot on Bakertown Road in the Village of Kiryas Joel will be expanded by 200 spaces and NYSDOT Region 8 is actively pursuing additional leased capacity in the Chester area.

The MPOs will continue to support NYSDOT’s efforts to expand park & ride capacity at critical locations, and to integrate park & rides with regional transit service where feasible. [Connect Mid-Hudson](#), the TMA’s Regional Transit Plan, will also address this issue.

Transit availability

Currently, about half of both Dutchess and Ulster county residents and one-third of Orange county residents live within a half-mile of transit. The MPOs will work with our transit partners to expand service where needed, and to promote transit-oriented development to concentrate housing in proximity to transit hubs. [*Connect Mid-Hudson*](#), the TMA’s Regional Transit Plan, will also address ways to improve access to transit through capital investments, schedule coordination, and service expansion or enhancement.

Bicycle Networks

There are currently more than 90 miles of multi-use paths in the three-county area. This is expected to increase to about 140 miles in the next few years due to several active projects, some of which are part of the Empire State Trail (EST) network. Major extensions include the Harlem Valley Rail Trail extension from Millerton to Columbia County (7 miles in Dutchess County), the Dutchess Rail Trail/EST extension to Putnam County (15.5 miles in Dutchess County), and the Poughkeepsie Urban Trail in the City and Town of Poughkeepsie (2.7 miles in Dutchess County); two trail segments in Kingston (2.5 miles), and two additions to the Heritage Trail in Orange County: a 4.5 mile extension from Hartley Road to the City of Middletown, and a 2.7 mile extension from the City of Middletown to Howells, which will create a continuous 20-mile path from the Village of Monroe to the Town of Wallkill with a connection to the bus hub in Middletown.

Once these projects are complete, some key regional gaps will remain (see the Multimodal Facilities Map for reference). In Dutchess County, these include between the City of Beacon and the Dutchess Rail Trail in Hopewell Junction; between the Dutchess Rail Trail in Poughkeepsie and destinations to the north; and between the Dutchess and Harlem Valley rail trails.

In Orange County, gaps will include between the Heritage Trail and destinations in the City of Middletown, through the Village of Goshen, and between Bailey Farm Road and the Harriman Train Station. Other long-term goals include connecting Orange County to the Empire State Trail.

In Ulster County, gaps exist between the Wallkill Valley Rail Trail and other bicycle infrastructure in the City of Kingston including the Kingston Greenline network, Kingston Point Rail Trail, and the O&W/Hurley Rail Trail. Additional gaps exist along the O&W Rail trail in the towns of Rochester and Wawarsing as well as gaps on the Hudson Valley Rail Trail in the Town of Shawangunk. With the recent completion of the Ashokan Rail Trail, gaps now exist between that facility and connections in the City of Kingston.

The MPOs will continue to work with our partners to further extend the multi-use path network and close these gaps, as well as to promote dedicated bicycle facilities in our centers to make bicycling a more viable transportation option across the TMA.

Bicycle parking availability

Currently, less than half of the intermodal locations in the three-county area have bicycle parking. At some of these locations, the bicycle parking is insufficient, poorly located, and/or poorly maintained. Installing bicycle parking at transit hubs is a simple and low-cost way to improve access to transit and allow for multi-modal trips. The MPOs will work with our transit partners to encourage additional bicycle parking at train stations, ferry stations, transit hubs, park & ride lots, and other locations. In addition to short-term racks, secure longer-term options such as lockers should be provided.

Bicycle racks on buses

All Dutchess County Public Transit buses, Ulster County Area Transit buses, and most Orange County public buses have bicycle racks. Orange County will work with their bus agencies to provide bike racks on 100% of their buses, and the MPOs will continue to support transit providers' efforts to support bicycle-bus integration, using tools such as those outlined in APTA's [Bicycle and Transit Integration guide](#).

Pedestrian networks

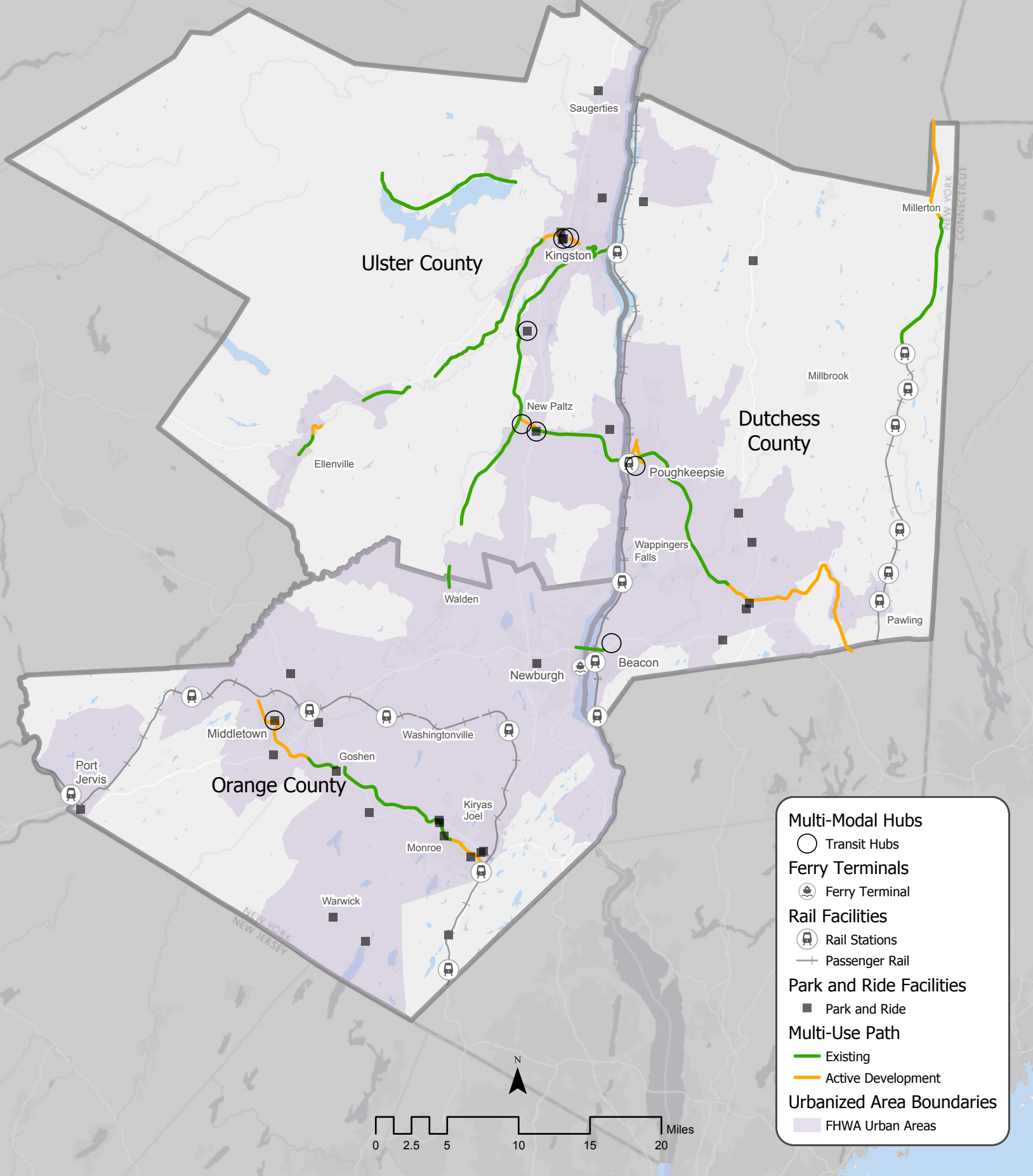
Sidewalk coverage near transit varies considerably by location, from more than 90% within a quarter-mile of the Kingston Trailways and UCAT hub, 86% within a quarter-mile of the Poughkeepsie bus hub, about 80% within a quarter-mile of the Newburgh ferry station, 74% within a quarter-mile of the Middletown Transit Hub, to 30% on average within a quarter-mile of all Dutchess County train stations and approximately 20% within a quarter-mile of the train stations in Orange County.

The three MPOs will continue to promote local sidewalk projects and improvements, particularly near transit. In addition, UCTC will work to improve their sidewalk databases in GIS to allow more complete analyses of sidewalk infrastructure.

6. Next Steps

As part of the TMA's strategy to reduce congestion, the three MPOs will continue to identify gaps in the multi-modal network and promote multi-modal transportation options. When appropriate, the MPOs will pursue corridor and/or intersection studies at priority locations and work with stakeholders to develop recommendations for implementation. If appropriate based on the location and issues identified, these studies will include an analysis of multi-modal access. The TMA will also continue to refine our multi-modal performance measures and analysis methodologies based on improving data and emerging best practices.

Mid-Hudson Valley TMA: Multi-Modal Facilities



Multi-Modal Hubs
 ○ Transit Hubs

Ferry Terminals
 ⚓ Ferry Terminal

Rail Facilities
 🚂 Rail Stations
 — Passenger Rail

Park and Ride Facilities
 ■ Park and Ride

Multi-Use Path
 🟢 Existing
 🟠 Active Development

Urbanized Area Boundaries
 🟪 FHWA Urban Areas

