

Congestion Management Process for the Mid-Hudson Valley Transportation Management Area

Step 2 Report: Congested Roads

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1. Forward

Federal transportation law¹ requires that a Metropolitan Planning Organization located within a Transportation Management Area institute a Congestion Management Process. Such a process demonstrates how the organization will quantify, evaluate, and manage congestion throughout the region's transportation network. Effective October 1, 2005, the three Metropolitan Planning Organizations (MPOs) of the Mid-Hudson Valley Transportation Management Area (TMA) – the Orange County Transportation Council, Poughkeepsie-Dutchess County Transportation Council, and Ulster County Transportation Council – adopted a single Congestion Management Process (CMP) for the TMA, which was subsequently accepted by the Federal Highway Administration. The CMP outlines the overall commonalities among the three MPOs, such as a single definition for congestion and common types of data collection, but provides enough flexibility to allow for locally derived methods to mitigate congestion in individual communities. The CMP achieves this through a four step process that began with the first step of using the three respective travel demand models to measure congestion against a single set of parameters. This report details the second step in the CMP: locating the areas of congestion in the Mid-Hudson Valley TMA.

Metropolitan Planning Organization (MPO): Federal regulations require that all Urbanized Areas, U.S. Census defined metropolitan areas with over 50,000 people, be represented by a MPO, which is responsible for ensuring that Federal transportation dollars (highway and transit) are committed through a locally driven, comprehensive planning process.

2. The Mid-Hudson Valley TMA

The Mid-Hudson Valley TMA includes portions of three counties: Dutchess, Orange, and Ulster, covering a population of almost 352,000 people. The TMA designation arose from the creation of the Poughkeepsie-Newburgh Urbanized Area (UA) by the U.S. Census Bureau in May 2002. This designation combined the previously separate Poughkeepsie UA and Newburgh UA, forming a single UA with a population exceeding the 200,000 person threshold used to establish a TMA. A third MPO, the Ulster County Transportation Council (UCTC), received its formal designation as the MPO for the newly created Kingston UA. Though each is a separate, independent organization, the three MPOs work together in managing the TMA, since each share a portion of the larger Poughkeepsie-Newburgh UA.

3. Types of Congestion

There are two basic types: recurring and non-recurring. Recurring congestion refers to congestion that arises on a routine basis at the same place and generally at the same time, a condition that may hint at a systemic imbalance between roadway capacity and existing demand – otherwise known as a “bottleneck.” Some refer to this as volume based congestion.

¹ On August 10, 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA) was signed into law, continuing the tradition of federal transportation investment implemented under the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21). SAFTEA maintains the requirement that a TMA actively measure and manage congestion; however, the law uses the new term: Congestion Management Process (CMP).

Non-recurring congestion, the second type, describes those atypical times when a vehicle crash, road construction, or poor weather impedes traffic. This also includes traffic resulting from heavy demand associated with a special event, such as a County fair or holiday shopping; this is sometimes referred to as incident based congestion.

Our ability to formulate viable management solutions begins with an understanding of these two types of congestion. It also underscores the complexities of trying to measure and manage congestion, especially with regard to non-recurring or incident based congestion, which can be extremely difficult to predict. For the short term, Step 2 focuses on recurring, peak hour congestion.

4. Summary of Step 1

Step 1 in the CMP establishes a set of Volume-to-Capacity (V/C) ratios to define moderate, heavy, and severe roadway congestion in the three counties. V/C ratios measure congestion from the standpoint of supply and demand. A particular road has a finite capacity or limit to the number of vehicles that can safely travel on it at any one time. Sometimes, the number of vehicles using the road exceeds its capacity, thus creating congestion. This condition is most prevalent during morning and evening peak commuting periods; though, there are exceptions.

To calculate a V/C ratio – or percent of use – travel demand models take existing traffic volume data and dividing it by roadway capacity, which is based on the road type (functional classification). The OCTC, PDCTC, and UCTC each maintain a travel demand model for their respective county.

For Step 1, this CMP classifies recurring weekday, peak hour (4:00-5:00 pm) congestion into three categories: moderate, heavy, and severe (Table 1). The categories relate to three ranges of V/C ratios. A facility operating between 80 to 89-percent of its capacity during peak periods is classified as having moderate congestion, while a facility operating at 90 to 99-percent of capacity is classified as having heavy congestion. When the measured V/C ratio exceeds the 100-percent threshold, the facility is classified as having severe congestion.

Table 1. Vehicle-to-Capacity Ratio Designations for the Mid-Hudson Valley TMA CMP

| Level of Congestion | Vehicle-to-Capacity Ratio¹ |
|----------------------------|--|
| Moderate | V/C ratio = 0.80 – 0.89 |
| Heavy | V/C ratio = 0.90 – 0.99 |
| Severe | V/C ratio \geq 1.00 |

¹ As calculated for weekday peak hour volume.

V/C ratios present some limitations, because they do not fully account for speed variations, maneuverability, or travel time. The OCTC, PDCTC, and UCTC intend to use travel time measurements in future iterations of this CMP. These time measurements will likely be used to better understand travel patterns on severely congested roads.

5. Step 2: Congested Roads in the Mid-Hudson Valley TMA

As stipulated in the main CMP document, Step 2 focuses on the identification of roads with moderate, heavy, and severe congestion during the weekday afternoon, peak hour period (4:00-5:00 pm). The OCTC, PDCTC, and UCTC identified these congested roads through their individual travel demand models; and though a very useful tool, a model may overlook some areas of congestion due to changes in travel patterns or other variables. The MPOs will attempt to mitigate these occurrences as they gain more experience with the CMP process. The long range strategy of using travel time surveys to measure congestion on high volume roads will help in this effort.

Tables 2, 3, and 4 list congested road segments in Dutchess, Orange and Ulster Counties, while Figures 1, 2, and 3 map their locations.

Dutchess County

For Dutchess County, the PDCTC identified 33 lane miles of congested roads. Of this total, 20.96 lane miles are under NYS jurisdiction, 8.11 under Dutchess County jurisdiction, and 3.94 under local jurisdiction. As for the type of congestion identified, 7.26 lane miles were categorized as severely congested, 5.54 as heavily congested, and 20.21 as moderately congested. With a V/C ratio of 1.27 during the peak hour, CR 77 (Vassar Rd.), between Spring Rd. and CR 110 (Jackson Rd.), in the Town of Poughkeepsie stands as the most congested road segment in Dutchess County. Other severely congested roads include portions of CR 44 (Red Oaks Mill Rd.) in the Town of Poughkeepsie and portions of NYS Route 55 in the Town of LaGrange. Of those road segments identified as severely congested, 3.6 lane miles are under NYS jurisdiction, 3.08 lane miles are under Dutchess County jurisdiction, and only 0.58 lane miles under local jurisdiction (Town of Poughkeepsie and Village of Wappingers Falls).

Orange County

The OCTC identified over 31 lane miles of congested roads. Of this total, 29 miles are under NYS jurisdiction and roughly 2 miles under Orange County jurisdiction. In terms of congestion, 4.8 miles experienced heavy congestion, while 26.4 miles fell under moderate congestion. The on ramp from US 9W onto eastbound I-84 in the Town of Newburgh experienced the highest level of congestion with a V/C ratio of 0.97. Other heavily congested roads include the off ramp from I-87 northbound to US 17 westbound in the Town of Woodbury, and NYS 211 from Wisner Ave. to Beattie Ave. in the City of Middletown. The OCTC also identified 42 congested intersections in Orange County, with 11 experiencing heavy congestion and 31 experiencing moderate congestion. With V/C ratios of 0.99, NYS 17K at CR 23 (Rockcut Rd.) in the Town of Newburgh and NYS 94 at North St. in the Village of Washingtonville are the two most congested intersections identified in Orange County.

Ulster County

A number of State, County and local road segments, park-and-ride lots, and railroad crossings in Ulster County were identified as experiencing either severe recurring or non-recurring congestion. Road segments experiencing the most severe recurring congestion include the US 9W corridor at the Mid Hudson Bridge area, NYS Thruway exit areas at both Kingston and New Paltz, and several local street corridors in the Kingston area such as the Broadway corridor and the Route 9W corridor in Port Ewen and the Town of Ulster mall area. Park-and-ride lots at both

the Kingston and New Paltz Thruway exits (Exits 19, and 18) experience serious recurring congestion as demand exceeds the supply of parking spaces nearly every day of the week. Finally, serious non-recurring vehicle, pedestrian, and transit congestion exists along the CSX railroad corridor in the City of Kingston and Saugerties areas. Regional CSX freight movements cause lengthy and unpredictable road closures seriously affecting the reliability of the roadway system and for emergency responders. In the Kingston area, the most problematic at-grade railroad crossings include Flatbush Avenue, Gage Street, Foxhall, Ten Broeck, and Smith Avenues, and Boices Lane in the Town of Ulster. In Saugerties, the Route 212 at-grade railroad crossing can be problematic for vehicles, transit, pedestrians, and emergency responders, particularly during special events.

6. Next Steps

Having identified those road segments with weekday peak hour congestion, the OCTC, PDCTC, and UCTC can better target their resources to develop appropriate countermeasures. This simple accomplishment satisfies the goal set forth for Step 2 in the main CMP document. For Step 3, the three MPOs will investigate ways to mitigate congestion problems in their counties, including project based solutions. Pursuant to the schedule established in the CMP, the MPOs will identify and promote possible solutions in conjunction with the project solicitation process for their respective 2008-2012 Transportation Improvement Programs (TIP); currently scheduled to begin in the fall of 2006.

Table 2. Location of Congested Road Segments in Dutchess County

| Congestion Level | Road Name | From | To | Maximum V/C Ratio | Total Congested Lane Miles |
|----------------------------|-----------------------------|-----------------------------|-------------------------------|--------------------------|-----------------------------------|
| Severe | CR 77 (Vassar Rd) | Spring Rd | CR 110 (Jackson Rd) | 1.27 | 0.62 |
| | CR 44 (Red Oaks Mill Rd) | Romca Rd | CR 49 (Titusville Rd) | 1.19 | 0.76 |
| | CR 44 (Red Oaks Mill Rd) | Walker Rd | Romca Rd | 1.19 | 0.34 |
| | NYS 55 | Stringham Rd | Ramp from TSP SB | 1.15 | 0.50 |
| | NYS 376 | Degarmo Hills Rd | CR 104 (New Hackensack Rd) | 1.11 | 0.92 |
| | Spring Rd | US 9 | Kerr Rd | 1.10 | 0.29 |
| | NYS 55 | Ramp from TSP SB | Ramp to TSP SB | 1.09 | 0.06 |
| | North Mesier Ave | East Main St | High St | 1.09 | 0.29 |
| | NYS 55 | Arlington High School | Stringham Rd | 1.06 | 0.19 |
| | NYS 55 | TSP Ramps | TSP Ramps | 1.06 | 0.26 |
| | NYS 55 | Ramp to TSP SB | Ramp from TSP SB | 0.92 | 0.01 |
| | NYS 55 | Ramp from TSP SB | Ramp to TSP NB | 0.97 | 0.11 |
| | NYS 55 | Ramp to TSP NB | Ramp from TSP NB | 0.97 | 0.09 |
| | CR 44 (New Hackensack Rd) | NYS 376 | Walker Rd | 1.05 | 0.36 |
| | NYS 55 | CR 49 (Titusville Rd) | Mandalay Rd | 1.05 | 0.59 |
| | CR 49 (Titusville Rd) | CR 44 (Red Oaks Mill Rd) | Daley Rd | 1.04 | 0.96 |
| | NYS 55 | CR 47 (Freedom Rd) | Driveway | 1.04 | 0.69 |
| | NYS 55 | Driveway | Arlington High School | 1.03 | 0.19 |
| CR 104 (New Hackensack Rd) | CR 94 (All Angels Hill Rd) | NYS 376 | 1.00 | 0.05 | |
| Heavy | North Mesier Ave | High St. | US 9 | 0.96 | 0.68 |
| | CR 49 (Titusville Rd) | Daley Rd | Ramp to CR 21 (Noxon Rd) | 0.95 | 0.88 |
| | CR 49 (Titusville Rd) | Ramp to CR 21 (Noxon Rd) | CR 21 (Noxon Rd) | 0.93 | 0.09 |
| | NYS 52 | Ramp to/from TSP NB | CR 29 (Carpenter Rd) | 0.93 | 0.72 |
| | CR 114 (Main St) | South Grand Ave | Jones St | 0.92 | 0.32 |
| | NYS 55 | Ramp from TSP NB | NYS 82 | 0.90 | 2.50 |
| CR 104 (New Hackensack Rd) | CR 110 (Jackson Rd) | St. Nicholas Rd | 0.90 | 0.34 | |
| Moderate | NYS 52 | CR 29 (Carpenter Rd) | NYS 216 | 0.88 | 1.52 |
| | NYS 82 | Orchard Pl | CR 9 (Beekman Rd) | 0.88 | 0.49 |
| | NYS 376 | Ramp to NYS 376 | Lake Walton Rd | 0.87 | 0.73 |
| | NYS 376 | CR 29 (Hillside Lake Rd) | Ramp to NYS 376 | 0.87 | 0.06 |
| | Hooker Ave | South Grand Ave | Park Ave | 0.87 | 0.14 |
| | South Grand Ave | Fulton Ave | US 44/ NYS 55 EB (Haight Ave) | 0.87 | 0.29 |
| | NYS 9G | CR 41 (Crum Elbow Rd) | Lister Dr | 0.86 | 1.84 |
| | Hooker Ave | Park Ave | Wilbur Blvd | 0.86 | 0.14 |
| | NYS 52 | Ramp to I-84 WB | Ramp from I-84 EB | 0.86 | 0.03 |
| | Main St | Knolls Blvd | South Grand Ave | 0.86 | 0.17 |
| | NYS 82 | NYS 376 SB | NYS 376 NB | 0.86 | 0.17 |
| | NYS 52 | Old Glenham Rd | Ramp from I-84 EB | 0.86 | 0.31 |
| | NYS 55 | Mandalay Dr | CR 47 (Freedom Rd) | 0.85 | 2.85 |
| | NYS 113 (Spackenkill Rd) EB | CR 74 (Cedar Ave) SB | CR 74 (Cedar Ave) NB | 0.85 | 0.01 |
| | Fishkill Ave | Main St | Verplank Ave | 0.85 | 0.33 |
| | NYS 9G | Lister Dr | Greentree Dr | 0.85 | 0.88 |
| | NYS 113 (Spackenkill Rd) | Spackenkill Rd | Ramp from Wilbur Blvd | 0.85 | 0.59 |
| | NYS 113 (Spackenkill Rd) | Ramp from Wilbur Blvd | Wilbur Blvd | 0.85 | 0.03 |
| | Spring Rd | Kerr Rd | CR 77 (Vassar Rd) | 0.85 | 1.10 |
| | Main St | South Hamilton St | South Clinton St | 0.84 | 0.28 |
| | NYS 113 (Spackenkill Rd) | Wilbur Blvd | Hagan Dr | 0.84 | 0.69 |
| | NYS 113 (Spackenkill Rd) | Hagan Dr | CR 74 (Cedar Ave) | 0.84 | 0.76 |
| | NYS 113 (Spackenkill Rd) EB | Ramp from CR 74 (Cedar Ave) | CR 74 (Cedar Ave) SB | 0.83 | 0.02 |
| | NYS 52 | Ramp from I-84 EB | Ramp to I 84 EB | 0.83 | 0.06 |
| | South Grand Ave | College Ave | Fulton Ave | 0.82 | 0.24 |
| | NYS 82 | NYS 55 | CR 89 (Waterbury Hill Rd) | 0.82 | 2.12 |
| | US 44 (Dutchess Tpk) | CR 43 (Degarmo Rd) | Barnes Rd | 0.81 | 0.86 |
| | CR 104 (New Hackensack Rd) | St. Nicholas Rd | CR 94 (All Angels Hill Rd) | 0.81 | 1.53 |
| | CR 110 (Jackson Rd) | CR 104 (New Hackensack Rd) | Sherwood Dr | 0.80 | 1.55 |
| | CR 110 (Jackson Rd) | Sherwood Dr | CR 77 (Vassar Rd) | 0.80 | 0.31 |
| | NYS 52 | Ramp to I-84 EB | Ramps to I-84 WB | 0.80 | 0.12 |

Table 3. Location of Congested Road Segments in Orange County

| Congestion Level | Road Name | From | To | Maximum V/C ratio | Total Congested Lane Miles |
|-------------------------|--------------------------|------------------------------|--------------------------------|--------------------------|-----------------------------------|
| Heavy | I-84 EB On-Ramp | US 9W | I-84 | 0.97 | 0.16 |
| | I-87 NB Off-Ramp | I-87 NB | US 17 WB/Harriman Toll | 0.94 | 0.74 |
| | NYS 211 (Wicham Ave) | Wisner Ave | Beattie Ave | 0.94 | 0.07 |
| | NYS 32 | US 9W | I-84 Ramps | 0.92 | 0.21 |
| | US 6 | NYS 293 | US 17 | 0.92 | 2.78 |
| | NYS 94 | NYS 208 | North St | 0.90 | 0.06 |
| | CR 72 (Sterling Mine Rd) | Rockland County Line | CR 84 (Sterling Lake Rd) | 0.90 | 0.75 |
| Moderate | NYS 32 | North Galleria Dr | CR 9 (Smith Clove Rd) | 0.89 | 0.95 |
| | US 6 | Queensboro Circle | NYS 293 | 0.89 | 2.96 |
| | US 9W | NYS 32 | Ulster County Line | 0.87 | 4.87 |
| | US 6 | River Rd | Pennsylvania Line | 0.87 | 0.19 |
| | NYS 17K | Wisner Ave | Westbrook RD | 0.87 | 0.31 |
| | CR 72 (Eagle Valley Rd) | New Jersey Line | CR 84 (Sterling Lake Rd) | 0.87 | 0.35 |
| | US 17 EB On-Ramp | NYS 211 | US 17 EB | 0.85 | 0.12 |
| | NYS 207 | Church St | CR 84 (Scotchtown Ave) | 0.85 | 0.27 |
| | US 6/NYS 17M | US 17 | I-84 Ramps | 0.84 | 4.07 |
| | CR 107 (Quacker Ave) | NYS 32 | US 9W | 0.84 | 0.40 |
| | NYS 208 | US 17 WB Ramps | CR 27 (Clove Rd) | 0.83 | 2.74 |
| | US 6 | CR 15 | Jersey Ave | 0.83 | 0.58 |
| | NYS 207 | NYS 300 | Riley Rd | 0.83 | 0.19 |
| | NYS 17K | CR 23 (Rockcut Rd) | I-84 WB Ramps | 0.83 | 0.48 |
| | NYS 17M | CR 5 (Lakes Rd) | CR 19 / CR 44 (Freeland) | 0.83 | 0.90 |
| | Kings Hwy (CR 13) | CR 45 (Laroe Rd) | NYS 17M | 0.83 | 0.41 |
| | NYS 208 | I-84 | NYS 17K | 0.83 | 1.07 |
| | US 17 WB | Exit 131B | Exit 128 (CR 54 Craigville Rd) | 0.82 | 4.49 |
| | NYS 52/208 Overlap | NYS 52 (Main St) | NYS 208 (Ulster Ave) | 0.81 | 0.01 |
| | I-84 WB Off-Ramp | I-84 WB | NYS 32 | 0.81 | 0.19 |
| | NYS 17M | CR 13 (Kings Hwy) | Main St | 0.81 | 0.20 |
| | NYS 17M | Genung St | Bennet St | 0.80 | 0.08 |
| | I-87 SB On-Ramp | Harriman Toll (NYS 32/US 17) | I-87 | 0.80 | 0.50 |
| CR 5 (Lakes Rd) | NYS 17M | High St | 0.80 | 0.06 | |

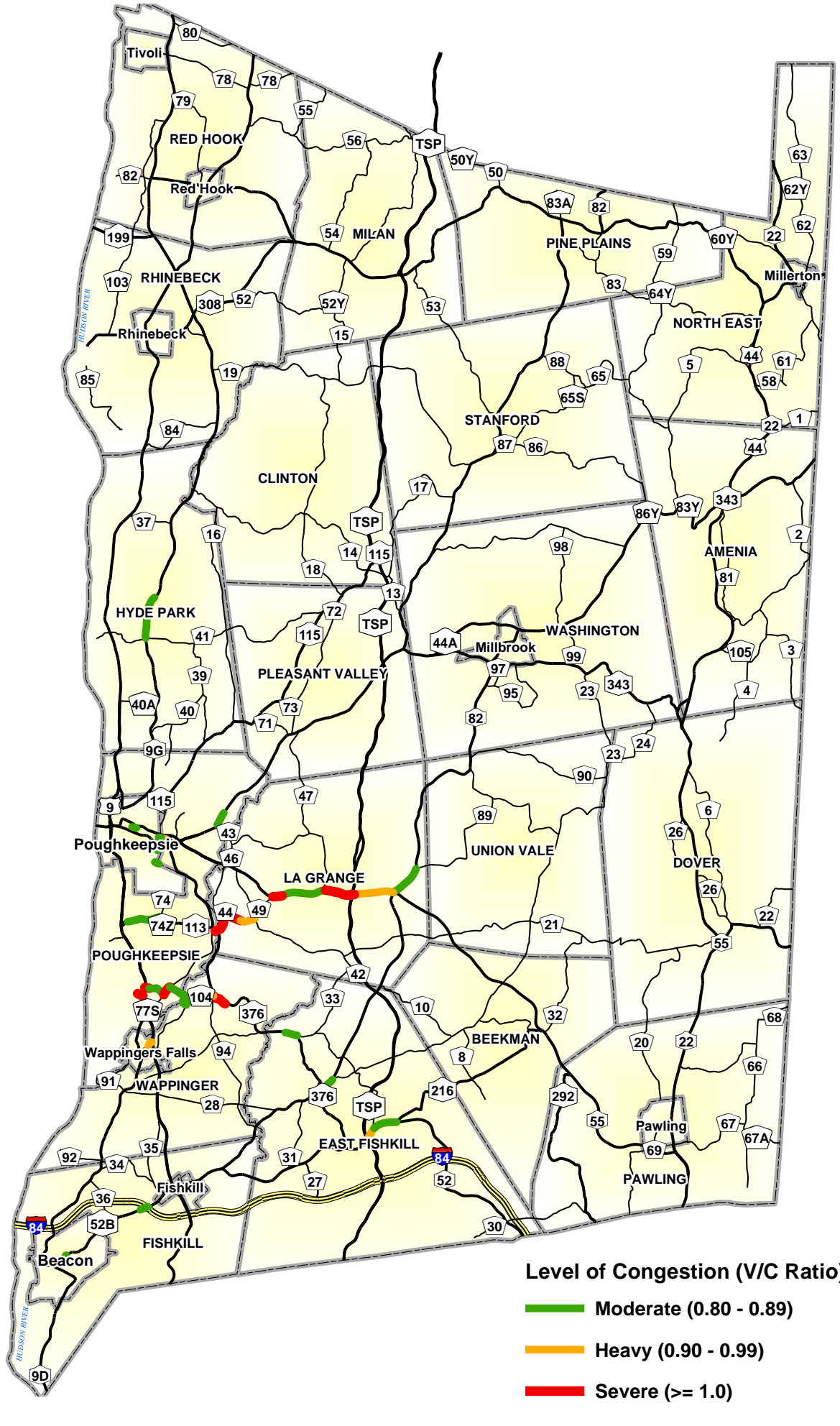
Table 4. Location of Congested Intersections in Orange County

| Congestion Level | Intersection Name | Maximum V/C Ratio |
|------------------|--|-------------------|
| Heavy | NYS 17K/CR 23 (Rockcut Rd) | 0.99 |
| | NYS 94/North St | 0.99 |
| | NYS 32/I-84 WB Ramps | 0.98 |
| | NYS 17K/Lakeside Rd | 0.97 |
| | NYS 32/CR 107 (Quacker St) | 0.94 |
| | NYS 300/NYS 94/NYS 32 | 0.93 |
| | NYS 17K/NYS 300 | 0.93 |
| | US 6/CR 15 (Clove Rd) | 0.93 |
| | US 6/ River Rd | 0.93 |
| | NYS 208/Peddler Hill Rd | 0.91 |
| | CR 13 (Kings Hwy)/CR 45 (Laroe Rd) | 0.90 |
| Moderate | US 9W/ I-84 EB Off-Ramp | 0.89 |
| | NYS 17K/Fullerton St | 0.88 |
| | NYS 32/ Gardenertown | 0.88 |
| | NYS 300/NYS 207 | 0.87 |
| | NYS 17M/CR 13 (Kings Hwy) | 0.87 |
| | US 9W/Mill St | 0.86 |
| | NYS 300/I-84 EB On-Ramps | 0.86 |
| | NYS 300/Stewart Ave | 0.86 |
| | CR 107 (Quacker St)/CR 32 (Willow Ave) | 0.86 |
| | NYS 32/NYS 17K | 0.85 |
| | US 9W/North St | 0.85 |
| | NYS 300/NYS 52 | 0.84 |
| | NYS 211/Wisner Ave | 0.84 |
| | NYS 17M/CR 5 (Lakes Rd) | 0.84 |
| | NYS 208/Museum Village Rd | 0.84 |
| | NYS 17K/Racquet Rd | 0.83 |
| | US 9W/Lattentown Rd | 0.83 |
| | NYS 32/CR 9 (Smith Clove Rd) | 0.82 |
| | NYS 32/Washington St | 0.82 |
| | NYS 94/NYS 208 | 0.82 |
| | US 9W/ NYS 17K | 0.82 |
| | NYS 211 / NYS 17M / CR 11 | 0.81 |
| | NYS 17M / CR 40 / CR 19 | 0.81 |
| | US 6/Jersey Ave | 0.81 |
| | NYS 208/NYS52 | 0.81 |
| | NYS 208/CR 44 (Seven Spring Rd) | 0.80 |
| | NYS 32/CR 20 (Orrs Mills Rd) | 0.80 |
| | US 9W/Old Albany Post Rd | 0.80 |
| | NYS 211 / Highland Ave | 0.80 |
| | NYS 211 / NYS 17M / Center St | 0.80 |
| | US 9W/NYS 32 | 0.80 |
| NYS 208/NYS17K | 0.80 | |

Table 5. Location of Congested Road Segments in Ulster County

| Congestion Level | Road Name | From | To | Maximum V/C Ratio | Total Congested Lane Miles |
|------------------|-----------------------|-------------------------|-------------------------|-------------------|----------------------------|
| Severe | US 44/NYS 55 | Mid-Hudson Bridge | Mid-Hudson Bridge | 1.47 | 0.31 |
| | N Front St | Frog Alley | Washington Ave | 1.34 | 0.16 |
| | US 9W E Chester St | N of Van Kleeks Ln | Ulster Ave | 1.34 | 0.21 |
| | US 44/NYS 55 | US 44/NYS 55 EB | US 9W Overpass | 1.31 | 0.28 |
| | N Front St | Washington Ave | Frog Alley | 1.30 | 0.09 |
| | US 44/NYS 55 | Ramp from US 9W | US 44/NYS 55 EB | 1.30 | 0.28 |
| | US 44/NYS 55 | US 9W Overpass | US 44/NYS 55 EB | 1.30 | 0.16 |
| | Traffic Circle Ramp | I-87 | NYS 28 W | 1.29 | 0.06 |
| | Broadway | Railroad Ave | Grand St | 1.28 | 0.14 |
| | Albany Ave | Clinton St | Maiden Ln | 1.27 | 0.20 |
| | Clinton St | Pearl St | Main St | 1.26 | 0.07 |
| | Clinton St | Main St | John St | 1.26 | 0.07 |
| | NYS 209 | Ulster Landing Road | Rhinecliff Bridge | 1.19 | 0.58 |
| | US 44/NYS 55 EB | US 44/NYS 55 EB | Mid-Hudson Bridge | 1.18 | 0.30 |
| | Broadway | Liberty St | Franklin St | 1.12 | 0.04 |
| | Washington Ave | N Front St | Hurley Ave | 1.12 | 0.06 |
| | Broadway | St. James St | Liberty St | 1.10 | 0.13 |
| | US 9W | Horton La | Sunset Dr | 1.08 | 0.05 |
| | NYS 299 | Ramp to I 87 | Ramp from I-87 | 1.04 | 0.01 |
| | Broadway | Franklin St | Downs St | 1.03 | 0.05 |
| | Broadway | Downs St | Oneil St | 1.03 | 0.08 |
| | Broadway | Oneil St | Field Ct | 1.03 | 0.07 |
| | Delaware Ave | Hasbrouck Ave | Ramp to US 9W | 1.02 | 0.04 |
| | US 9W NB | Ramp from NYS 209 | Ramp from NYS 209 | 1.02 | 0.07 |
| US 9W NB | Frank Sottile Blvd | Ramp to NYS 209 | 1.01 | 0.02 | |
| Broadway | Cornell St | Thomas St | 1.00 | 0.04 | |
| Broadway | Thomas St | Railroad Ave | 1.00 | 0.04 | |
| Heavy | US 9W | Tuytenbridge Rd | Leggs Mill rd | 0.99 | 0.28 |
| | Broadway | Grand St | E O'Reilly St | 0.98 | 0.08 |
| | NYS 28 | Jockey Hill Rd | Hurley Mtn Rd | 0.98 | 0.80 |
| | Broadway | Delaware Ave | Stuyvesant St | 0.97 | 0.15 |
| | US 9W | Carle Terrace | Tuytenbridge Rd | 0.97 | 0.27 |
| | NYS 299 | N Putt Corners Rd | I 87 | 0.95 | 0.15 |
| | US 9W | Miron La | E Chester St | 0.94 | 0.07 |
| | US 9W | S of Frank Sottile Blvd | Frank Sottile Blvd | 0.92 | 0.55 |
| | Traffic Circle | I-587 | I-87 | 0.90 | 0.07 |
| | US 9W | Mall Ct | Mall Ct | 0.90 | 0.15 |
| Moderate | Broadway | Field Ct | Cornell St | 0.89 | 0.06 |
| | NYS 299 | I-87 Overpass | Entrance to I-87 | 0.89 | 0.15 |
| | US 9W NB | Milton Ave | White St | 0.89 | 0.03 |
| | US 9W NB | Macks La | S Roberts Rd | 0.89 | 0.56 |
| | US 9W | Ulster Ave | Mall Ct | 0.88 | 0.15 |
| | US 9W | Salem St | Horton La | 0.87 | 0.21 |
| | US 9W NB | S Roberts Rd | Ramp to US 44/NYS 55 EB | 0.87 | 0.12 |
| | US 9W NB | Ramp to US 44/NYS 55 | US 44/NYS 55 Overpass | 0.87 | 0.11 |
| | Broadway | Mcentee St | Stuyvesant St | 0.86 | 0.09 |
| | Ramp to US 9W SB | Delaware Ave | US 9W | 0.86 | 0.15 |
| | Broadway | E Chester St | Delaware Ave | 0.84 | 0.10 |
| | Washington Ave | Kingston City Line | Sawkill Rd | 0.84 | 0.11 |
| | Main Street / NYS 299 | S Manheim Blvd | Duzine Rd | 0.83 | 0.27 |
| | NYS 28 | Jockey Hill Rd | Spillway Rd | 0.83 | 0.76 |
| | NYS 28 | Spillway Rd | Beesmer Rd | 0.83 | 1.25 |
| | NYS 28 | Beesmer Rd | Zena Rd | 0.83 | 0.73 |
| | Washington Ave | Hurley Ave | Kingston City Line | 0.83 | 0.26 |
| | Pearl St | Fair St | W of Clinton Ave | 0.81 | 0.05 |
| | NYS 299 | Duzine Rd | N Putt Corners Rd | 0.81 | 0.35 |
| | US 44/NYS 55 WB | US 44/NYS 55 | Mid-Hudson Bridge | 0.81 | 0.69 |
| | US 44/NYS 55 WB | US 44/NYS 55 | Ramp to US 9W NB | 0.81 | 0.30 |
| Greenkill Ave | S Wall St | Fair St | 0.80 | 0.01 | |
| I-587 | Albany Ave | Broadway | 0.80 | 0.05 | |
| US 9W | Leggs Mill Rd | Katrine La | 0.80 | 0.12 | |
| US 9W | Katrine La | Old Stage Rd | 0.80 | 0.43 | |

Figure 1: Congested Road Segments in Dutchess County



Level of Congestion (V/C Ratio)

- Moderate (0.80 - 0.89)
- Heavy (0.90 - 0.99)
- Severe (>= 1.0)



Figure 2: Congested Road Segments and Intersections in Orange County

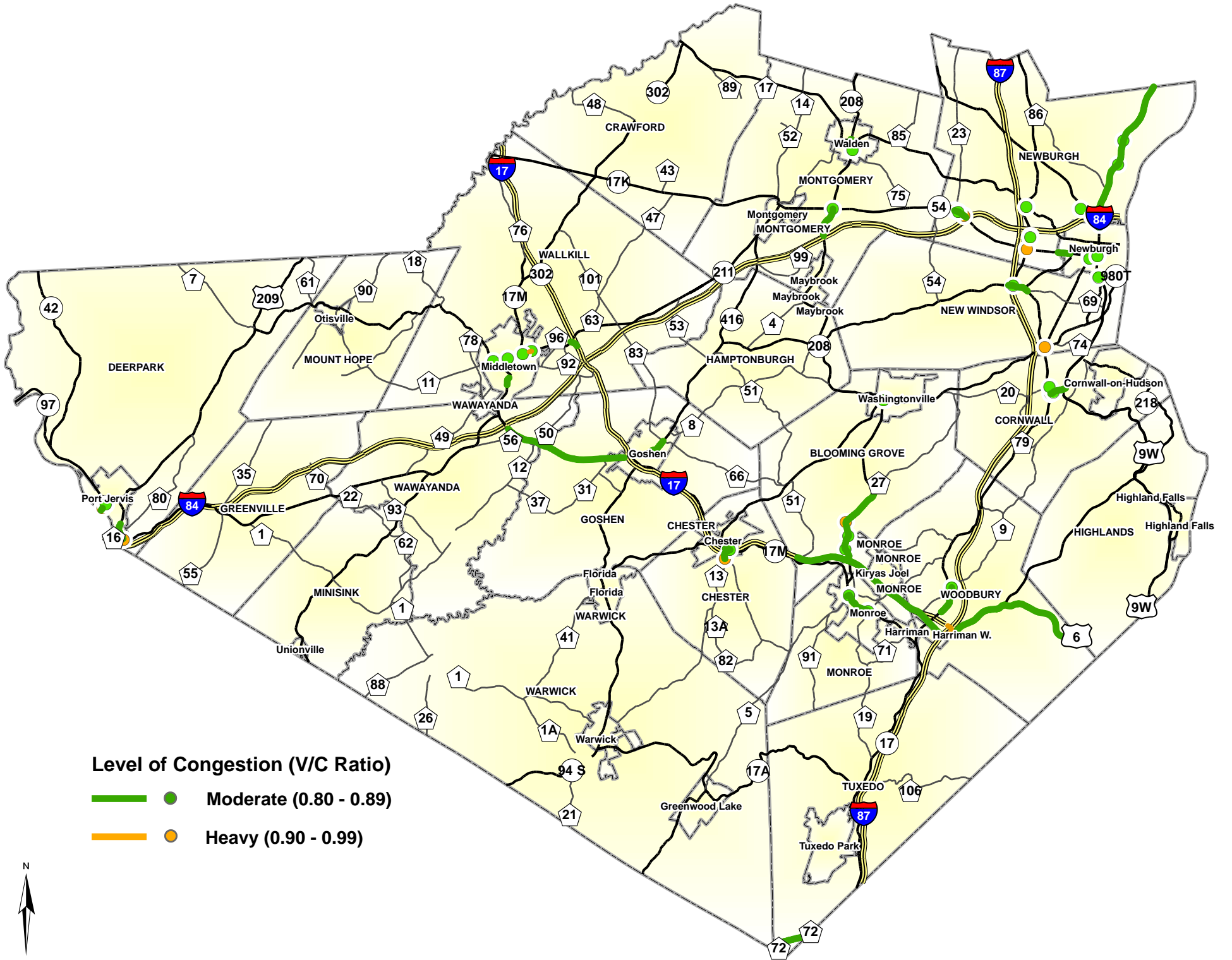
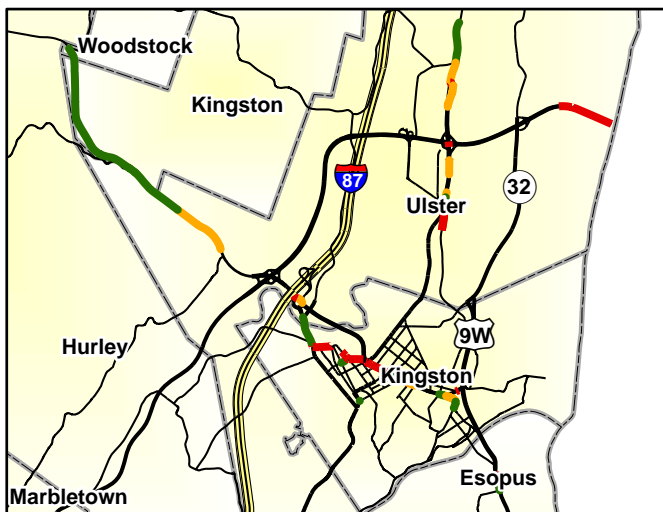
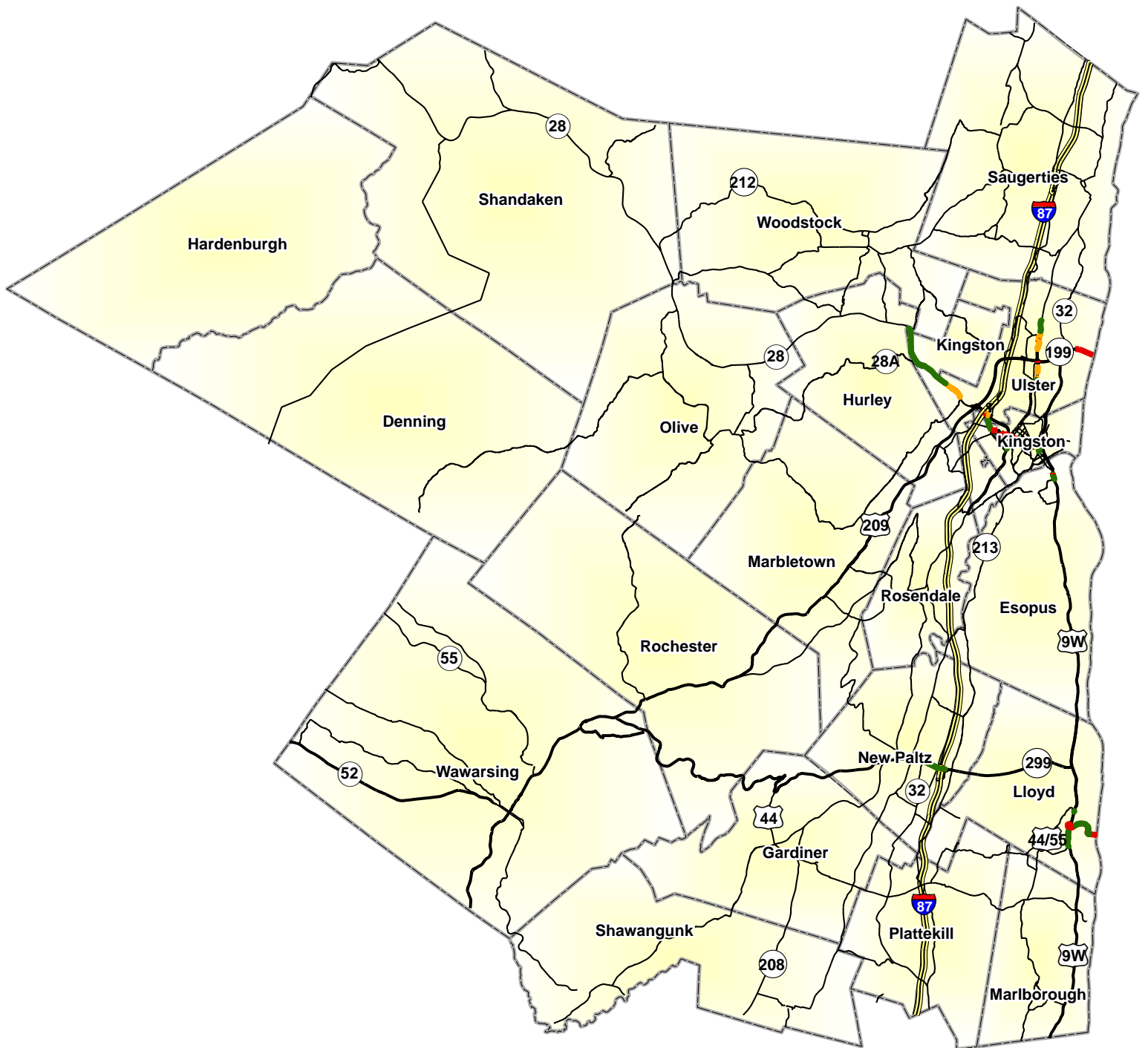


Figure 3: Congested Road Segments in Ulster County



Level of Congestion (V/C Ratio)

Green Moderate (0.80 - 0.89)

Orange Heavy (0.90 - 0.99)

Red Severe (≥ 1.0)

