Congestion Management Process for the Mid-Hudson Valley Transportation Management Area: Technical Memo 1: TMA-wide Macro-Level Screening

January 2020

Dutchess County Transportation Council (DCTC)
85 Civic Center Plaza, Suite 107
Poughkeepsie, NY 12601
Phone: (845) 486-3600
Fax: (845) 486-3610
Email: dctc@dutchessny.gov
www.dutchessny.gov/dctc

Orange County Transportation Council (OCTC)
124 Main Street
Goshen, NY 10924
Phone: (845) 615-3840
Fax: (845) 291-2533
Email: octc@orangecountygov.com
https://www.orangecountygov.com/OCTC

Ulster County Transportation Council (UCTC)
244 Fair Street
PO Box 1800
Kingston, NY 12402
Phone: (845) 340-3340
Fax: (845) 340-3429
Email: uctc@co.ulster.ny.us
https://ulstercountyny.gov/transportation-council

Disclaimer

The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

Title VI Statement

The Dutchess County Transportation Council (DCTC), Orange County Transportation Council (OCTC), and Ulster County Transportation Council (UCTC) are committed to compliance with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, and all related rules and statutes. DCTC, OCTC, and UCTC assure that no person or group(s) of persons shall, on the grounds of race, color, age, disability, national origin, gender, or income status, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under all programs, services, or activities administered by the DCTC, OCTC, and UCTC whether those programs and activities are federally funded or not. It is also the policy of the DCTC, OCTC, and UCTC to ensure that their programs, polices, and other activities do not have disproportionate adverse effects on minority and low-income populations. Additionally, the DCTC, OCTC, and UCTC will provide meaningful access to services for persons with Limited English Proficiency.

Table of Contents

1. Introduction

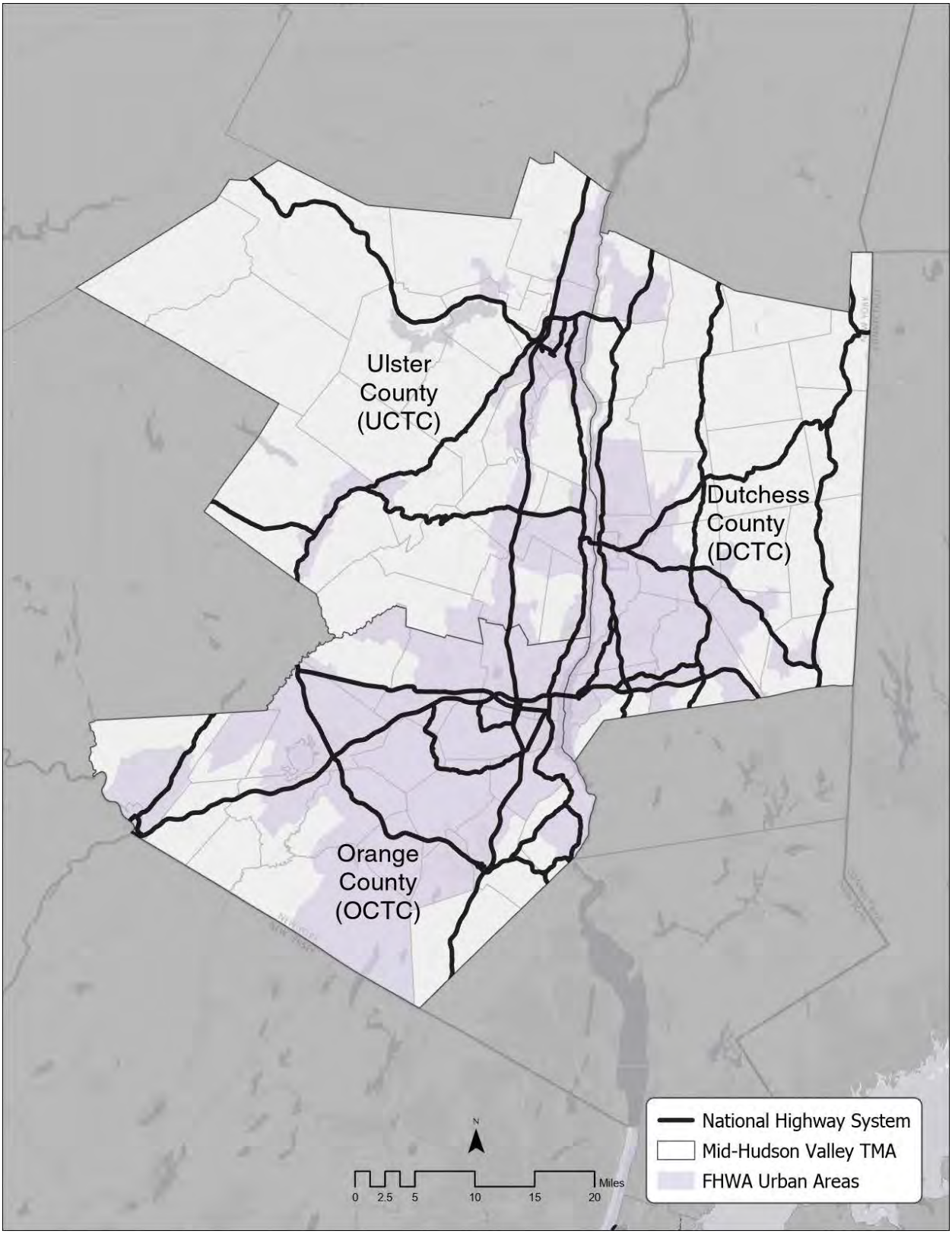
In accordance with the process laid out in the 2019 *Congestion Management Process for the Mid-Hudson Valley TMA,* our Step 2 analysis is divided into four parts:

1. A Transportation Management Area (TMA)-wide macro-level screening to measure overall congestion levels and identify the most congested areas in the region.
2. A micro-level investigation of the congested areas identified in the TMA-wide screening.
3. A county-wide macro-level screening to measure overall congestion levels and identify the most congested areas in each county.
4. A micro-level investigation of any congested areas identified in the county-wide screening that were not already addressed in the TMA-wide analysis.

For parts one and two, the three MPOs work together to produce joint memoranda. In parts three and four, each MPO works separately to produce memoranda specific to their county.

This technical memo is the first part of the analysis. The analysis explores methods to quantify congestion across the TMA that enables comparison to overall congestion in future updates of the analysis. It then uses the measures described below to identify the most congested or unreliable locations in the TMA for highways, freight, and transit. For transit, it focuses on inter-county services such as Metro-North Railroad, UCAT's inter-county bus routes, and privately-operated regional transit (e.g., Coach USA, Leprechaun Lines, Trailways). For freight, it focuses on those roads identified as part of a State Freight Route in the New York State Freight Transportation Plan.

Due to limitations of available data, the analysis focuses on the National Highway System (NHS), as shown in Map 1 below. Future updates may expand to include local roads. In addition, based on a review of the data and discussions with the AVAIL team, a threshold of ten percent of 'bins' (five-minute intervals) reporting was applied. This means that the analysis only reports results if at least ten percent of the possible five-minute intervals had data. This removes results that are based on relatively few data points.



Map 1: National Highway System in the Mid-Hudson Valley

2. Performance Measures

The *Congestion Management Process* document evaluated a variety of possible congestion measures and selected several that cover a range of congestion conditions.
This tech memo adds an additional measure (Travel Time Index) for the freight and transit analyses in order to provide three consistent measures for highway, freight, and transit, as well as one freight- and one transit-specific measure. Table 1 below, adapted from the *Congestion Management Process* document, describes the measures used to analyze each congestion management objective.

Table 1: CMP Objectives and Performance Measures		
Congestion Management Objectives	**Performance Measures**	**Definition of Measures**
Analyze highway congestion	Travel Time Index - TTI	The ratio of the average travel time during the worst peak period (weekdays, either 6-9 am or 4-7 pm) to the free-flow travel time. Free flow travel time is defined as the 15th percentile of off-peak travel times (weekdays 9 am-4 pm and 7 pm–10 pm and weekend 6 am-10 pm).
	Total Excessive Delay per mile - TED/mile (harmonic mean-based free flow)	The amount of time spent traveling below a specified threshold speed (20 mph or 60 percent of the free flow speed, whichever is greater) during all hours (weekdays and weekends). The time spent below the threshold speed is multiplied by the estimated volume on the segment during that hour. The total is divided per mile of total segment length for comparison across the network.
Analyze highway travel time reliability	Level of Travel Time Reliability - LOTTR	The ratio of the 80th percentile travel time over the 50th percentile travel time for the worst period (weekdays 6-10 am, 10 am-4 pm, or 4-8 pm, or weekends 6 am-8 pm). This measures the extent of unreliable travel times.
Analyze freight congestion and reliability	Travel Time Index - TTI	TTI (defined above) on freight routes as designated in the New York State Freight Transportation Plan.
	TED/mile on State-designated Freight Routes	TED/mile (defined above) on freight routes as designated in the New York State Freight Transportation Plan.
	LOTTR on State-designated Freight Routes	LOTTR (defined above) on freight routes as designated in the New York State Freight Transportation Plan.
	Truck Time Travel Reliability - TTTR	The ratio of the 95th percentile travel time over the 50th percentile travel time *for trucks only*, during the worst period (weekdays 6-10 am, 10 am-4 pm, 4-8 pm, 8 pm-6 am, or weekends 6 am-8 pm). The TMA will only apply this measure to interstates, which have the truck volume necessary for reliable results.
Analyze transit congestion and reliability	TTI on bus transit routes	TTI (defined above) on regional transit routes.
	TED/mile on bus transit routes	TED/mile (defined above) on regional transit routes.
	LOTTR on bus transit routes	LOTTR (defined above) on regional transit routes.
	Transit on-time performance	The percentage of stops that occur within a given time of the published schedule (often 1-5 minutes). Due to the limited data available for some providers, we focus on Metro-North.

When the ten percent data completeness threshold described above is applied, 97 percent of segments meet the threshold for the LOTTR, TTTR, and TTI measures, as do 94 percent for the TED/mile measure.

3. Step 2 Analysis

a. Overall Measures of System Congestion & Reliability

Each of the three highway measures—LOTTR, TTI, and TED/mile—employs a threshold of acceptability for road segments on the NHS.[1] Future iterations of the CMP analysis can evaluate the percentage of road segments that meet these thresholds and how it has changed over time.

For LOTTR, there is a national threshold of 1.5, indicating that travel time during the worst period fluctuates by 50 percent. This threshold was set by FHWA in their performance measure reporting and adopted by all three Mid-Hudson MPOs.[2] For TTI, there is no such national standard. This analysis uses a threshold of 2.0, meaning that it takes twice as long to traverse a segment during the most congested period as it does during a free-flow period. There is also no national threshold for TED/mile, and values range widely across different areas. This analysis uses 40,000, which is the same figure chosen by the Syracuse Metropolitan Transportation Council and results in a similar passing rate to the LOTTR and TTI thresholds. For TTTR this analysis uses 3.99, which is the threshold established for the Upstate region (including the Mid-Hudson TMA) in the NYS Freight Plan (see pg. 62).

It is possible that changes to the baseline data, such as adjustments to road segment limits, could make year-to-year comparison difficult. However, even under such a scenario, these thresholds can be a useful indicator of the overall congestion of our transportation system.

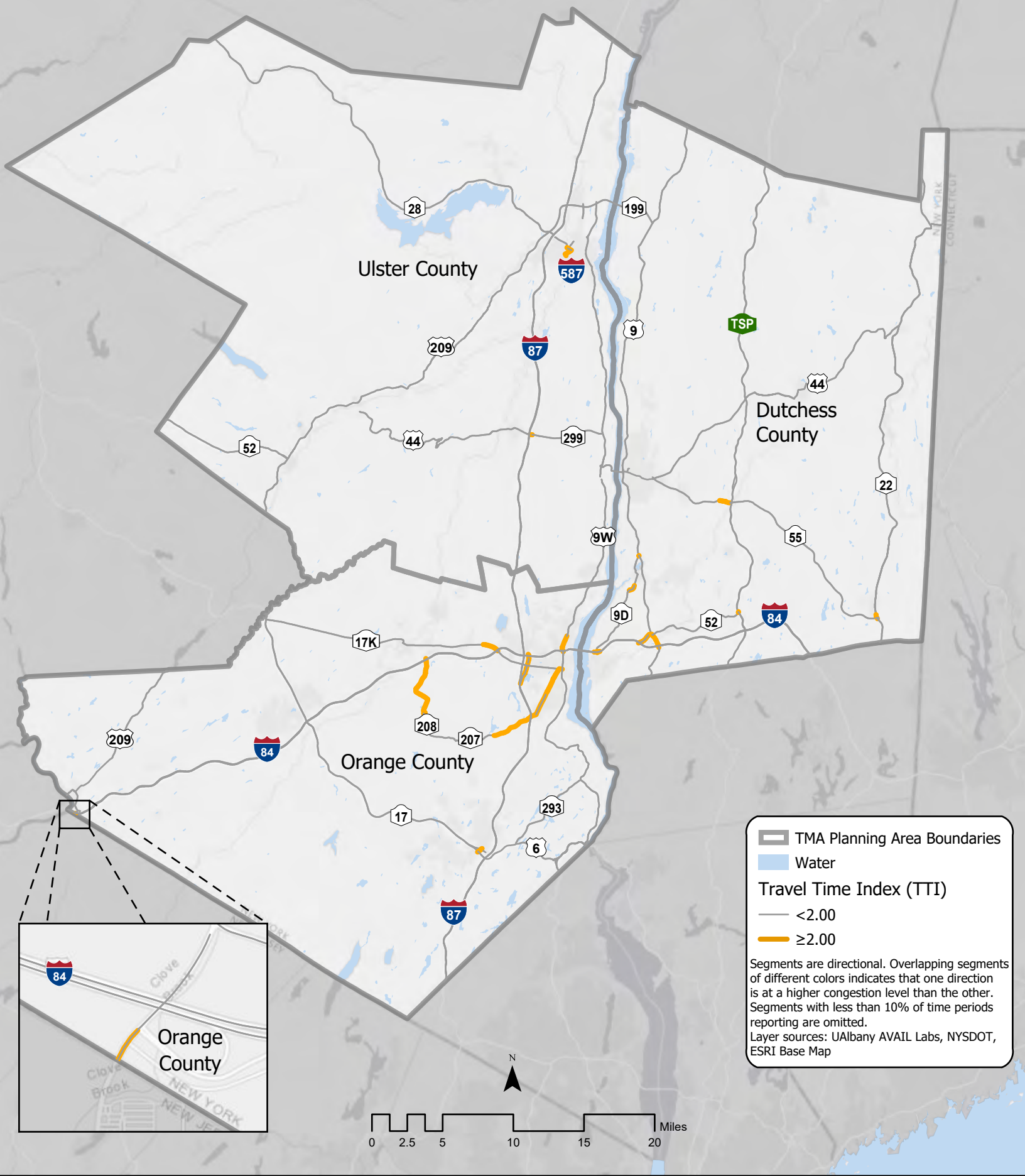
Based on 2018 data, 94 percent of Traffic Message Channels (TMCs)[3] that meet the data completeness threshold 'passed' the peak period congestion (TTI) threshold of 2.0. For reliability (LOTTR), 89 percent of segments 'passed' the threshold of 1.5, while 90 percent of segments 'passed' the threshold of 40,000 for total congestion (TED/mile), and 95 percent of interstate segments 'passed' the threshold of 3.99 for truck reliability (TTTR). Because many of the failing segments are small fragments near intersections and interchanges, the percentage of roadway miles that pass these thresholds is even higher.

This is summarized in Table 2. Maps 2, 3, 4 and 5 highlight segments that failed to meet these thresholds. A complete list of segments over the thresholds is included in Appendix A.

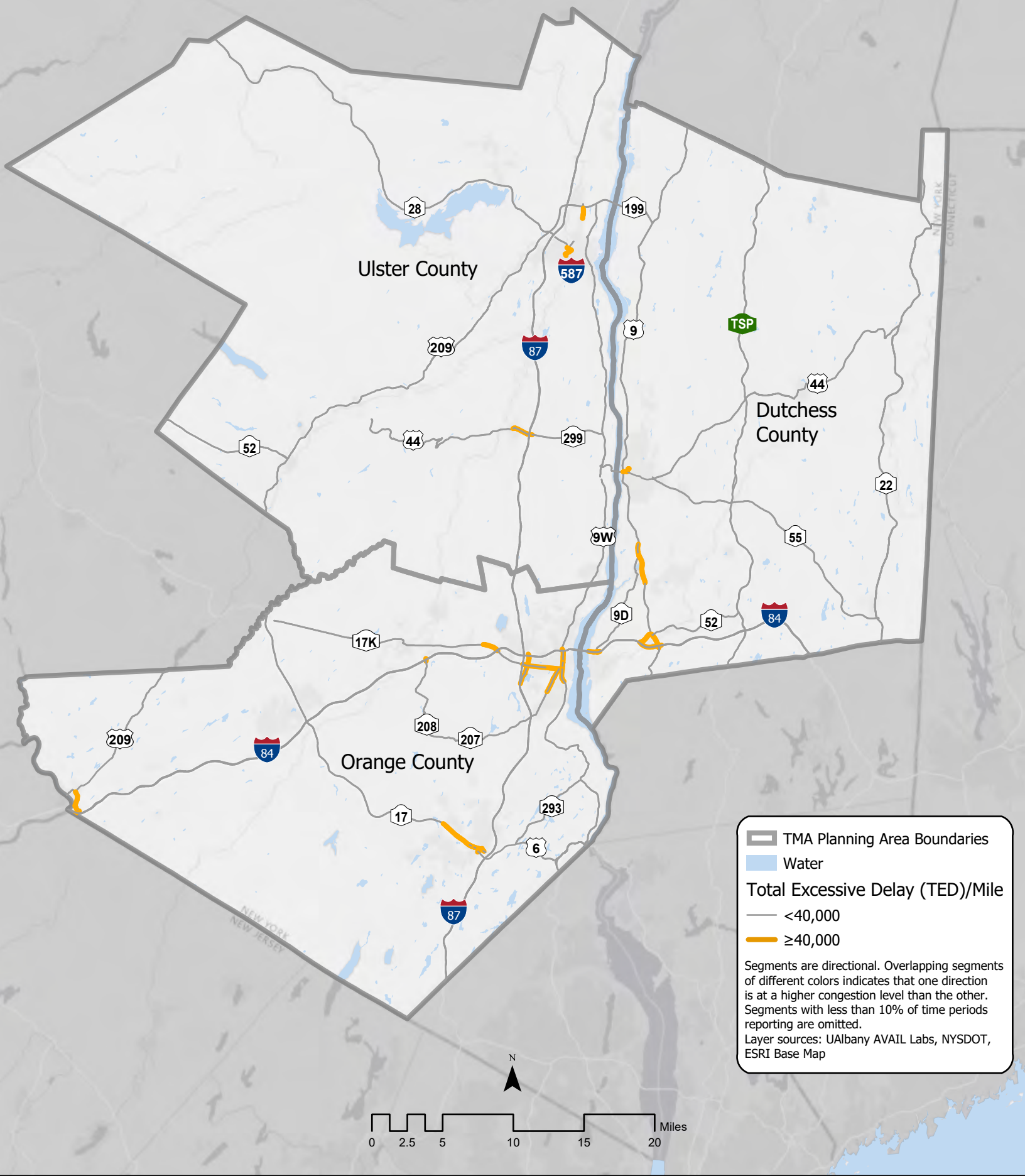
[1] 2017 and 2018 data are missing a few segments of the NHS in the City of Kingston and the vicinity of Stewart Airport. The addition of these few segments in future analyses should not have a large impact on comparisons.
[2] See https://www.law.cornell.edu/cfr/text/23/490.513
[3] Roads are broken into TMC segments for reporting. For more information on TMCs, see https://www.fhwa.dot.gov/policyinformation/presentations/hisconf/mon04_national_travel_time_data_processing_and_utilization_wenjing_pu.pdf

Table 2: TMA – Overall Congestion & Reliability			
Measure	**Threshold**	**% of Segments Passing**	**% of Roadway Miles Passing**
TTI – peak period congestion	2.0	94%	97%
TED/mile – total congestion	40,000	90%	96%
LOTTR – reliability	1.5	89%	94%
TTTR – freight reliability (interstates only)	3.99	95%	98%

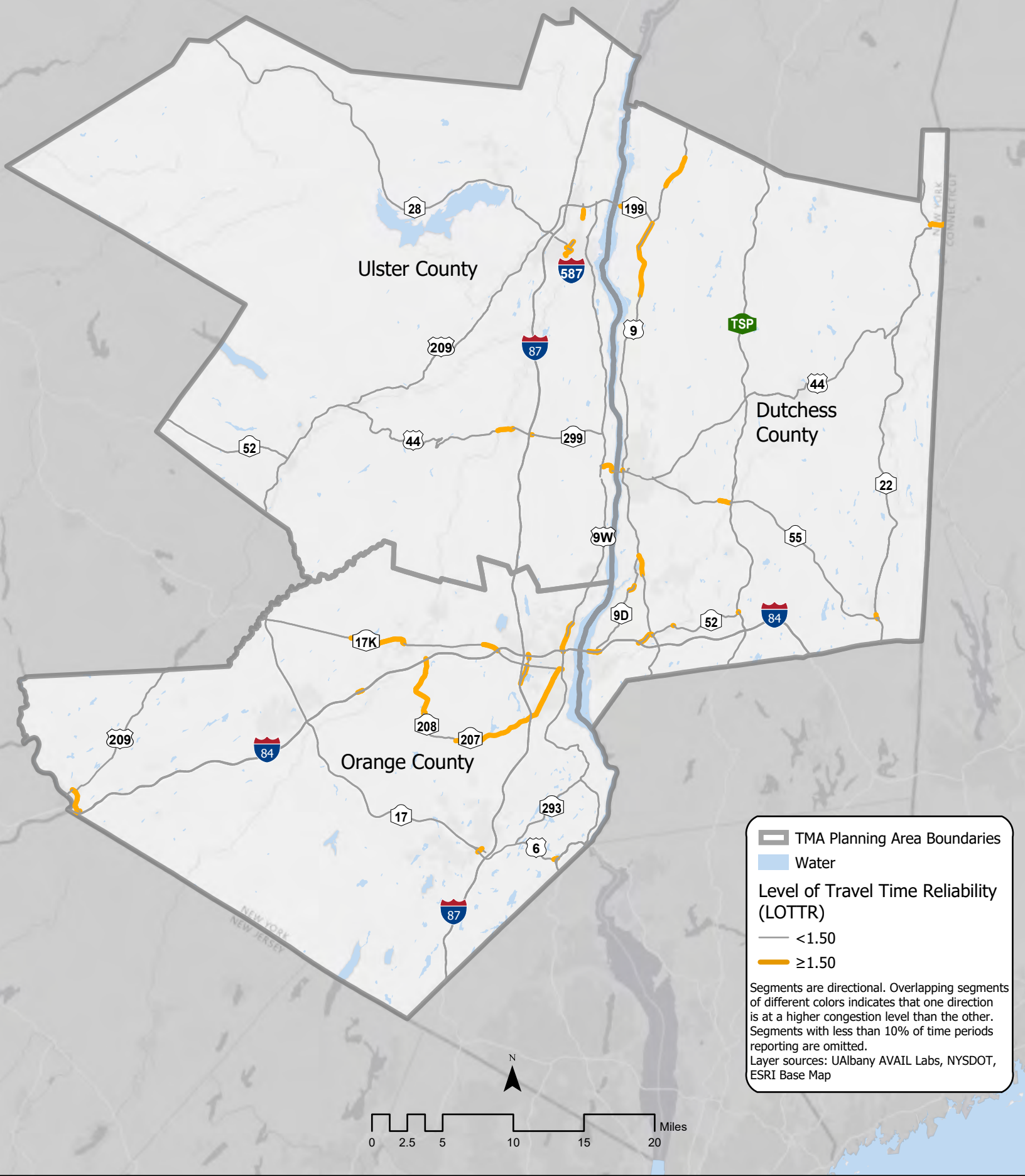
Map 2: Mid-Hudson Valley TMA Road Segments with TTI ≥2.00



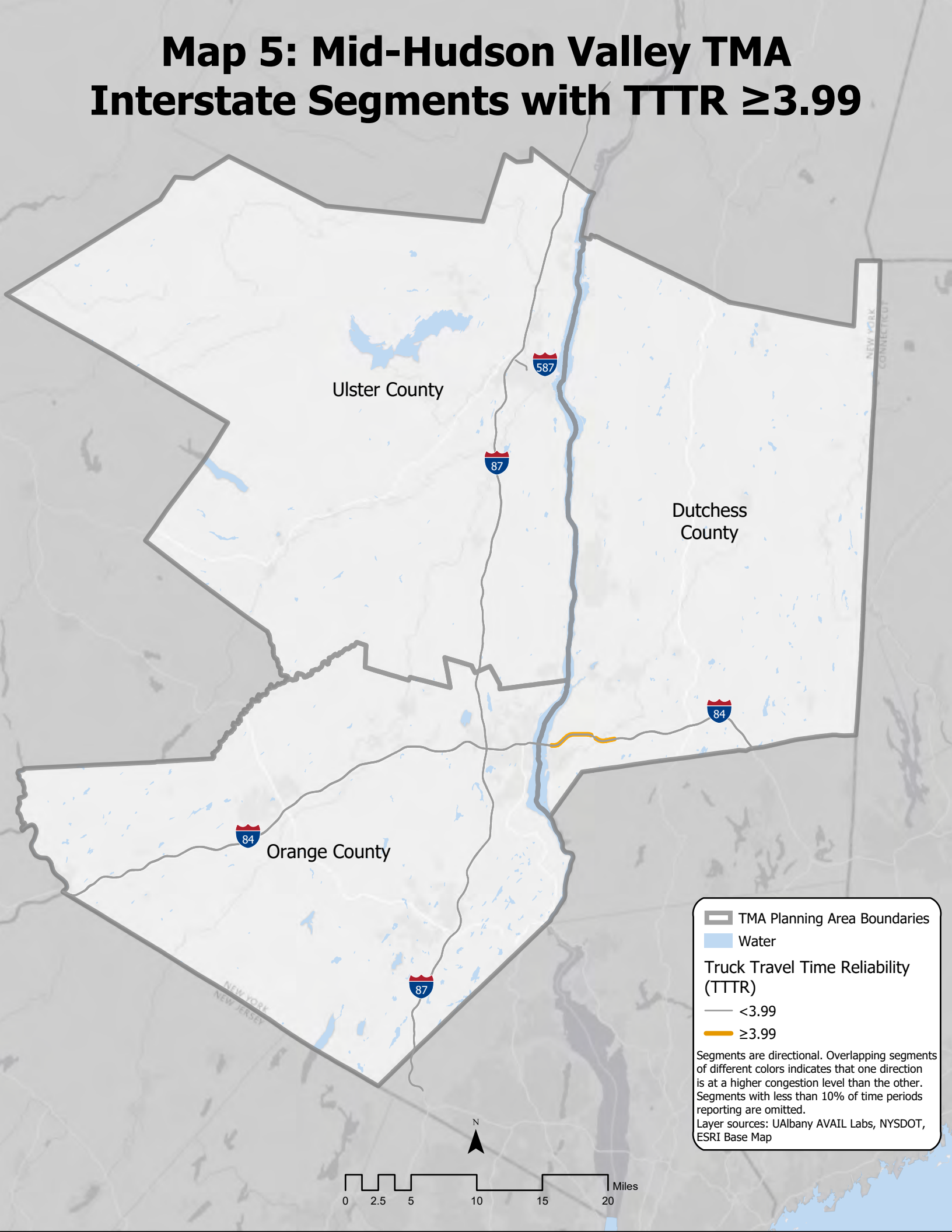
Map 3: Mid-Hudson Valley TMA Road Segments with TED/Mile ≥40,000



Map 4: Mid-Hudson Valley TMA Road Segments with LOTTR ≥1.50



Map 5: Mid-Hudson Valley TMA Interstate Segments with TTTR ≥3.99



b. Worst-performing segments for the TMA

Next, we use the measures described above to look at the worst-performing segments in the TMA for each mode: highway, transit, and freight. In many cases, multiple segments in the same location had high levels of congestion. These segments were grouped and ranked based on the worst-performing of the segments in that location.

Highway Congestion

1) Peak Period Congestion (TTI)

The top ten locations across the TMA for highway congestion, based on Travel Time Index (TTI), are listed below and shown in Table 3 and in Map 6.

1. **Route 9D and I-84 – Dutchess County**
2. **Route 17K near I-84 – Orange County**
3. **Route 9W and I-84 – Orange County**
4. **I-587 near Route 32 – Ulster County**
5. Route 300 and Route 17K – Orange County~
6. Route 208 near I-84 – Orange County
7. **Route 52 and Route 9 – Dutchess County**
8. Route 299 near I-87 – Ulster County
9. Route 300 near I-84 – Orange County~
10. Route 17 near Route 32 – Orange County~

Locations that appear on more than one Top 10 list are noted as follows:

* = TTI
~ = TED
^ = LOTTR

Locations that appear in all three lists are shown in **bold.**

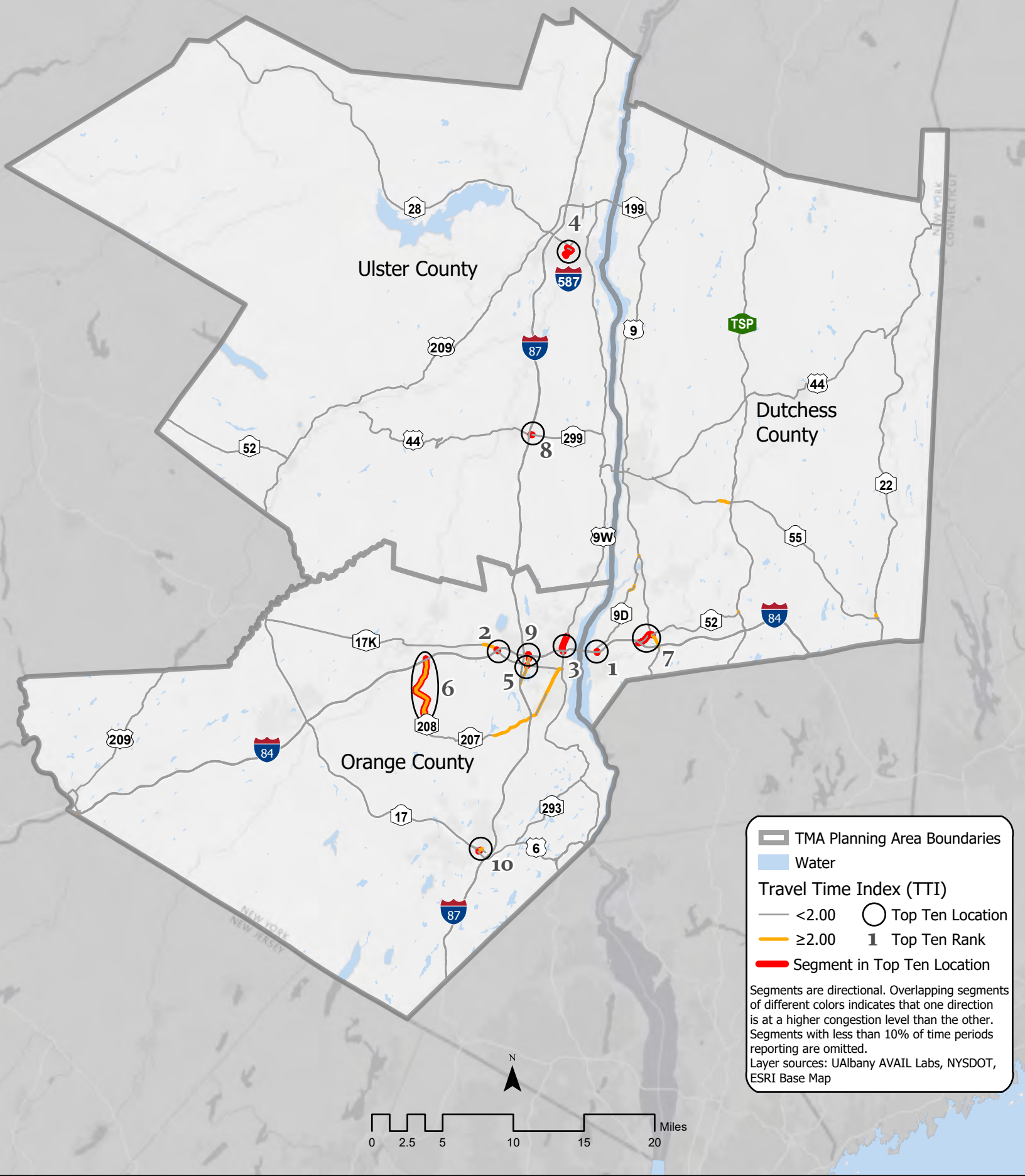
Most of these segments approach intersections or cross high-volume roadways, and a few are very small segments within an intersection. As shown in Table 3, eight of the ten locations experience their worst congestion during the PM peak. Only Routes 17K and 300 near I-84 (locations 2 and 9) experience their worst congestion during the AM peak. The three worst segments (SB Route 9D over I-84, EB Route 17K under I-84, and NB Route 9W under I-84) are all over 3.0, meaning that it takes more than three times as long to get through these segments during the peak period as it does in free-flow traffic.

TTI definition: The average travel time during a peak period compared to the free-flow travel time. A TTI of 2.0 means it takes twice as long to travel through a road segment during the peak as it does during free-flow conditions.

Table 3: TTI											
Location #	**Road Name**	**Nearest Intersecting Road**	**County**	**Municipality**	**Direction**	**Segment Length (miles)**	**TTI**	**AM TTI**	**PM TTI**	**TMC (Segment ID)**	**Description**
1	NY-9D	I-84	Dutchess	T/Fishkill	S	0.09	3.08	2.34	**3.08**	120N29714	Route 9D southbound crossing I-84
1	NY-9D	I-84	Dutchess	T/Fishkill	N	0.09	2.73	2.49	**2.73**	120P29714	Route 9D northbound crossing I-84
2	NY-17K	I-84	Orange	T/Newburgh	E	0.10	3.06	**3.06**	2.97	120P10129	Route 17K southbound between I-84 ramps
2	NY-17K	I-84	Orange	T/Newburgh	W	0.10	2.56	2.36	**2.56**	120N10129	Route 17K northbound between I-84 ramps
3	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	N	0.18	3.03	1.95	**3.03**	120P10186	Route 9W northbound under I-84
3	NY-32	I-84/US-9W/NY-52	Orange	T/Newburgh	N	0.12	2.63	2.03	**2.63**	120P11806	Route 9W northbound under I-84
3	US-9W	CR-86/ FOSTERTOWN RD	Orange	T/Newburgh	N	1.00	2.35	1.27	**2.35**	120+11197	Longer 9W northbound segment between I-84 and Fostertown Rd
3	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	S	0.18	2.35	2.05	**2.35**	120N10186	Route 9W southbound under I-84
4	NY-28	NY-32/ALBANY AVE	Ulster	Kingston	N	0.05	2.84	2.38	**2.84**	120P11874	Broadway/I-587 northbound through Albany Ave intersection
4	NY-32	I-587/NY-28/ CHANDLER DR	Ulster	Kingston	N	0.30	2.35	1.63	**2.35**	120+11824	Northbound Broadway approaching Albany Ave
5	NY-300	NY-17K/ CONNECTING ROAD	Orange	T/Newburgh	N	0.01	2.48	1.47	**2.48**	120P14132	Route 300 northbound in Broadway intersection
5	NY-300	NY-17K/ CONNECTING ROAD	Orange	T/Newburgh	S	0.01	2.38	1.54	**2.38**	120N14132	Route 300 southbound in Broadway intersection
6	NY-208	I-84	Orange	Montgomery	N	0.17	2.47	2.41	**2.47**	120P10081	Route 208 northbound under I-84
6	NY-208	I-84	Orange	Montgomery	N	4.54	2.39	2.36	**2.39**	120+10081	Route 208 northbound approaching I-84
7	NY-52	I-84	Dutchess	T/Fishkill	W	1.04	2.44	1.27	**2.44**	120+13957	Route 52 (Main St) westbound between I-84 and Route 9
7	NY-52	US-9	Dutchess	V/Fishkill	W	0.08	2.41	1.84	**2.41**	120P13956	Route 52 (Main St) westbound in Fishkill crossing Route 9
7	US-9	NY-52/MAIN ST	Dutchess	V/Fishkill	N	0.04	2.31	1.52	**2.31**	120P11235	Route 9 northbound approaching Route 52
7	NY-52	I-84	Dutchess	T/Fishkill	W	0.10	2.31	1.73	**2.31**	120P13957	Route 52 (Main St) westbound under I-84
8	NY-299	I-87/NEW YORK STATE TRWY	Ulster	New Paltz	E	0.11	2.32	1.57	**2.32**	120P10095	Route 299 (Main St) eastbound at the I-87 access ramps
8	NY-299	I-87/NEW YORK STATE TRWY	Ulster	New Paltz	W	0.11	2.31	1.73	**2.31**	120N10095	Route 299 (Main St) westbound at the I-87 access ramps
9	NY-300	I-84	Orange	T/Newburgh	N	0.32	2.29	**2.29**	1.89	120P14133	Route 300 northbound approaching I-84
10	NY-17	NY-32	Orange	Woodbury	N	0.17	2.28	1.55	**2.28**	120+06141	Route 17 eastbound between Route 6 and Route 32

*The higher peak (AM/PM) is bolded

Map 6: Mid-Hudson Valley TMA
Ten Highest Locations for TTI



2) Total Delay (TED/mile)

The top ten locations across the TMA for total delay, based on Total Excessive Delay per mile (TED/mile), are listed below and shown in Table 4 and in Map 7.

1. Routes 17/32 near Woodbury Commons – Orange County*
2. Route 300 near I-84/Route 17K – Orange County*
3. **Route 9W near I-84 – Orange County**
4. **Route 17K near I-84 – Orange County**
5. **I-587 near Route 32 – Ulster County**
6. **Route 52 and Route 9 – Dutchess County**
7. **Route 9D and I-84 – Dutchess County**
8. Route 17K near Route 9W – Orange County
9. CR-15 near I-84 – Orange County^
10. Route 9W near Route 199 – Ulster County

Segments that appear on more than one Top 10 list are noted as follows:

* = TTI
~ = TED
^ = LOTTR

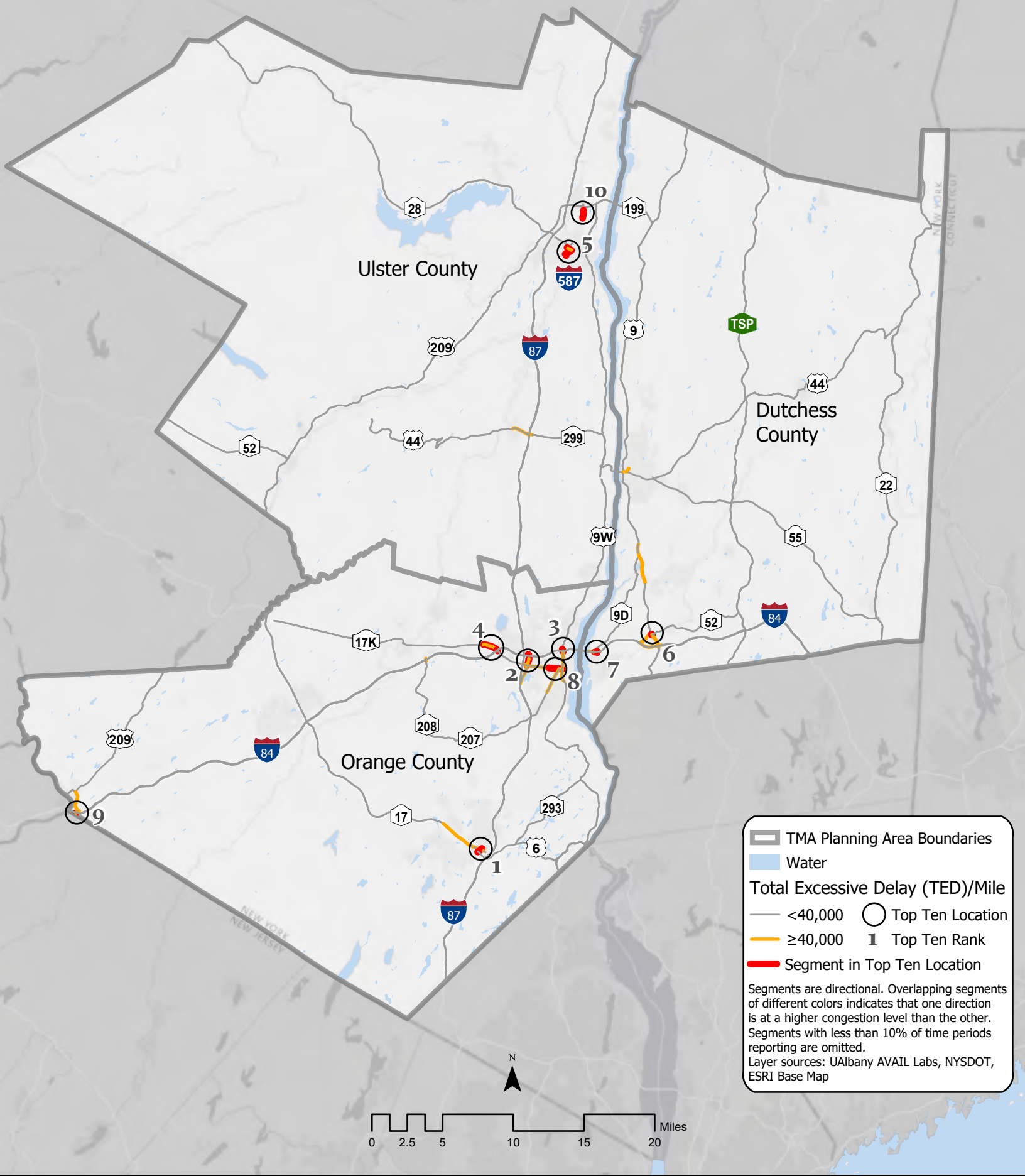
Segments that appear in all three lists are shown in **bold.**

Many of these segments cross high-volume facilities like I-84 or represent segments of State highways near signalized intersections. Since the TED measure incorporates the volume on each segment, we would expect high scores on higher-volume roadways. Note that the NY 17/32 interchange was under construction during this time period; improvements to this intersection should reduce delay in the future.

TED/mile definition: The sum of all the time drivers spend traveling below a given speed (usually 60% of free-flow speed). Higher volume roads are likely to have higher TED/mile scores.

Table 4: TED/mile									
Location #	Road Name	Nearest Intersecting Road	County	Municipality	Direction	Segment Length (miles)	TED/mile	TMC (Segment ID)	Description
1	NY-17	NY-32	Orange	Woodbury	N	0.17	404,276	120+06141	Route 17 eastbound between Route 6 and Route 32
1	NY-17	US-6	Orange	Woodbury	S	0.14	211,293	120-06140	Route 17 westbound between Route 6 and Route 32
1	NY-17	US-6	Orange	Woodbury	N	0.08	192,965	120P06140	Route 17 eastbound under Route 6
1	NY-17	US-6	Orange	Woodbury	S	0.08	176,170	120N06140	Route 17 westbound under Route 6
1	NY-32	NY-17	Orange	Woodbury	N	0.14	122,050	120P11797	Route 32 between Route 17 ramps
1	NY-32	NY-17	Orange	Woodbury	S	0.17	115,240	120N11797	Route 32 westbound under Route 17
1	NY-17	NY-32	Orange	Woodbury	S	0.17	113,770	120N06141	Route 32 westbound under Route 17
1	NY-17	NY-32	Orange	Woodbury	N	0.14	108,228	120P06141	Route 32 between Route 17 ramps
2	NY-300	NY-17K/CONNECTING ROAD	Orange	T/Newburgh	S	0.01	317,460	120N14132	Route 300 southbound in Broadway intersection
2	NY-300	NY-17K/CONNECTING ROAD	Orange	T/Newburgh	N	0.01	262,102	120P14132	Route 300 northbound in Broadway intersection
2	NY-300	NY-17K/CONNECTING ROAD	Orange	T/Newburgh	S	0.50	198,018	120-14132	Route 300 southbound between I-84 and Route 17K
2	NY-300	I-84	Orange	T/Newburgh	N	0.32	137,202	120P14133	Route 300 northbound crossing I-84
3	NY-32	I-84/US-9W/NY-52	Orange	T/Newburgh	N	0.12	230,866	120P11806	Route 9W northbound under I-84
3	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	S	0.18	200,994	120N10186	Route 9W southbound under I-84
3	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	N	0.18	198,745	120P10186	Route 9W northbound under I-84
3	NY-32	I-84/US-9W/NY-52	Orange	T/Newburgh	S	0.11	88,905	120N11806	Route 9W southbound under I-84
4	NY-17K	I-84	Orange	Montgomery	E	0.10	190,529	120P10129	Route 17K southbound between I-84 ramps
4	NY-17K	I-84	Orange	Montgomery	W	0.10	129,517	120N10129	Route 17K northbound between I-84 ramps
4	NY-17K	CR-54/S DRURY LN	Orange	Montgomery	W	1.05	89,272	120-12440	Route 17K west/southbound approaching I-84
5	NY-28	NY-32/ALBANY AVE	Ulster	Kingston	N	0.05	127,386	120P11874	Broadway/I-587 northbound through Albany Ave intersection
5	NY-28	NY-32/ALBANY AVE	Ulster	Kingston	S	0.05	124,585	120N11874	Broadway/I-587 connection southeast-bound through Albany Ave
5	NY-32	I-587/NY-28/CHANDLER DR	Ulster	Kingston	N	0.30	81,534	120+11824	Broadway northbound approaching Albany Ave
6	US-9	NY-52/MAIN ST	Dutchess	V/Fishkill	N	0.04	115,065	120P11235	Route 9 northbound approaching Route 52
6	US-9	NY-52/MAIN ST	Dutchess	V/Fishkill	S	0.03	112,604	120N11235	Route 9 southbound north of Route 52
6	NY-52	US-9	Dutchess	V/Fishkill	W	0.08	101,780	120P13956	Main St westbound in Fishkill crossing Route 9
6	NY-52	US-9	Dutchess	V/Fishkill	E	0.08	91,561	120N13956	Main St eastbound in Fishkill crossing Route 9
7	NY-9D	I-84	Dutchess	T/Fishkill	N	0.09	104,419	120P29714	Route 9D northbound crossing I-84
7	NY-9D	I-84	Dutchess	T/Fishkill	S	0.09	88,937	120N29714	Route 9D southbound crossing I-84
7	I-84	NEWBURGH-BEACON BRIDGE TOLL	Dutchess	T/Fishkill	W	0.01	82,324	120-04132	I-84 westbound west of Route 9D
8	NY-17K	US-9W/NY-32/ROBINSON AVE	Orange	C/Newburgh	E	0.97	89,535	120+10131	Route 17K (Broadway) eastbound approaching Route 9W
8	NY-17K	NY-207/WISNER AVE	Orange	C/Newburgh	W	0.97	87,354	120-12441	Route 17K (Broadway) westbound between Route 9W and Wisner Ave
9	CR-15	I-84	Orange	Port Jervis	N	0.07	89,469	120+14332	CR 15/NJ Route 23 under I-84 near Port Jervis
10	US-9W	US-209/NY-199	Ulster	Kingston	N	0.60	81,215	120+10204	Route 9W northbound approaching Route 199/209

Map 7: Mid-Hudson Valley TMA
Ten Highest Locations for TED/mile



3) Highway Travel Time Reliability (LOTTR)

The top ten worst locations across the TMA for reliability, based on Level of Travel Time Reliability (LOTTR), are listed below and shown in Table 5 and in Map 8.

1. **Route 9D and I-84 – Dutchess County**
2. **Route 9W near I-84 – Orange County**
3. **Route 17K near I-84 – Orange County**
4. Route 208 near I-84 – Orange County*
5. Route 299 near Route 32 – Ulster County
6. **Route 52 and Route 9 – Dutchess County**
7. **I-587 near Route 32 – Ulster County**
8. Route 55 near CR 47 (Freedom Rd) – Dutchess County
9. CR-15 near I-84 – Orange County~
10. Route 32 near Route 94 – Orange County

Segments that appear on more than one Top 10 list are noted as follows:

* = TTI
~ = TED
^ = LOTTR

Segments that appear in all three lists are shown in **bold.**

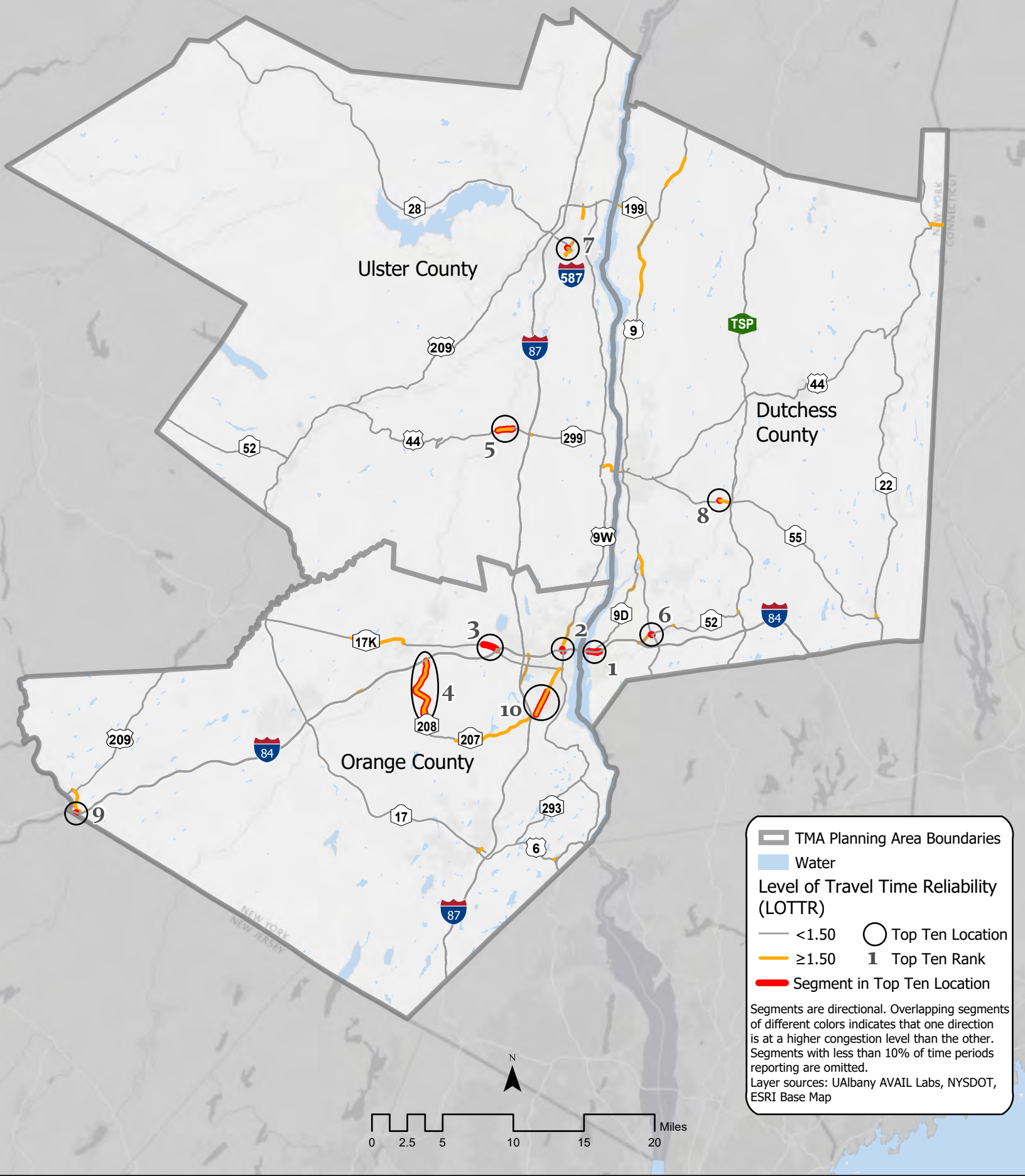
Most of these segments approach or intersect high-volume facilities. As shown in Table 5, seven of the ten locations experience their worst reliability during the weekend. Two locations experience their worst reliability during the PM peak, and one location (Route 55 in Dutchess County) experiences its worst reliability during the AM peak.

LOTTR definition: The 80th percentile travel time during a given time period compared to the average travel time during that same period. This reflects how much fluctuation there is day-to-day.

Table 5: LOTTR												
Location #	**Road Name**	**Nearest Intersecting Road**	**County**	**Municipality**	**Direction**	**Segment Length (miles)**	**LOTTR**	**AM LOTTR**	**Off-Peak LOTTR**	**PM LOTTR**	**Weekend LOTTR**	**TMC (Segment ID)**	**Description**
1	I-84	NEWBURGH-BEACON BRIDGE TOLL PLAZA	Dutchess	T/Fishkill	W	0.01	2.56	1.05	1.14	**2.56**	1.05	120-04132	I-84 westbound west of Route 9D
1	I-84	NY-9D/NORTH AVE	Dutchess	T/Fishkill	W	0.41	2.52	1.05	1.11	**2.52**	1.05	120N04133	I-84 westbound between Route 9D ramps
1	NY-9D	I-84	Dutchess	T/Fishkill	S	0.09	2.22	1.94	1.91	2.14	**2.22**	120N29714	Route 9D southbound crossing I-84
1	NY-9D	I-84	Dutchess	T/Fishkill	N	0.09	2.19	1.96	1.88	2.17	**2.19**	120P29714	Route 9D northbound crossing I-84
1	I-84	NEWBURGH-BEACON BRIDGE	Dutchess	T/Fishkill	W	0.41	2.14	1.07	1.14	**2.14**	1.06	120-04131	I-84 westbound west of Route 9D
2	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	N	0.18	2.47	1.79	1.84	2.25	**2.47**	120P10186	Route 9W northbound under I-84
3	NY-17K	CR-54/S DRURY LN	Orange	Montgomery	W	1.05	2.32	1.76	1.81	1.81	**2.32**	120-12440	Route 17K west/southbound approaching I-84
3	NY-17K	I-84	Orange	Montgomery	E	1.05	1.85	1.61	1.69	**1.85**	**1.85**	120+10129	Route 17K eastbound approaching I-84
4	NY-208	I-84	Orange	Wallkill	N	4.54	2.31	2	1.91	2.07	**2.31**	120+10081	Route 208 northbound approaching I-84
5	NY-299	NY-32/NY-208/CHESTNUT ST	Ulster	New Paltz	E	1.11	2.08	1.38	1.61	1.63	**2.08**	120+10094	Route 299 eastbound approaching New Paltz
6	NY-52	US-9	Dutchess	V/Fishkill	E	0.08	2	1.62	1.67	1.8	**2**	120N13956	Route 52 (Main St) eastbound in Fishkill crossing Route 9
6	NY-52	US-9	Dutchess	V/Fishkill	W	0.08	1.87	1.6	1.51	1.72	**1.87**	120P13956	Route 52 (Main St) westbound in Fishkill crossing Route 9
6	US-9	NY-52/MAIN ST	Dutchess	V/Fishkill	N	0.04	1.86	1.48	1.58	1.69	**1.86**	120P11235	Route 9 northbound approaching Route 52 (Main St)
7	NY-28	NY-32/ALBANY AVE	Ulster	Kingston	N	0.05	2	1.73	1.8	**2**	1.8	120P11874	Broadway/I-587 northbound through Albany Ave intersection
8	NY-55	FREEDOM RD	Dutchess	LaGrange	E	0.01	1.86	**1.86**	1.57	**	**	120P12473	Route 55 eastbound; short fragment approaching western-most roundabout
9	CR-15	I-84	Orange	Port Jervis	S	0.07	1.83	1.41	1.5	1.61	**1.83**	120N14332	CR-15 northbound near I-84 on/off ramps
10	NY-32	NY-94/BLOOMING GROVE TPKE	Orange	T/Newburgh	S	1.78	1.79	1.41	1.55	1.67	**1.79**	120-11802	Route 32 (Windsor Hwy) southbound approaching Route 94

*The highest peak (AM, off-peak, PM, or weekend) is bolded
**Data completeness threshold not met

Map 8: Mid-Hudson Valley TMA
Ten Highest Locations for LOTTR



Transit Congestion

To recognize the challenges of congestion to transit service, we repeated the above analysis on NHS roads that serve regional bus transit, defined as bus service that travels between and/or out of the three counties. These services are offered by companies like Coach USA, Leprechaun Lines, and Trailways, as well as Ulster County Area Transit's Link routes. The resulting tables include some of same segments as the highway tables above, along with segments that were not in the highway top ten lists but show up in this narrower analysis.

1) Peak Period Congestion (TTI) on Transit Routes

The top ten locations on regional transit routes for highway congestion, based on Travel Time Index (TTI), are listed below and shown in Table 6 and in Map 9.

1. **Route 9D near I-84 – Dutchess County**
2. **Route 17K near I-84 – Orange County**
3. **Route 9W near I-84 – Orange County**
4. **I-587 near Route 32 – Ulster County**
5. **Route 300 at Route 17K – Orange County**
6. **Route 208 near I-84 – Orange County**
7. **Route 52 and Route 9 – Dutchess County**
8. Route 299 near I-87 – Ulster County^
9. Route 300 near I-84 – Orange County
10. Routes 17/32 near Woodbury Commons – Orange County~

Segments that appear on more than one Top 10 list are noted as follows:

* = TTI
~ = TED
^ = LOTTR

Segments that appear in all three lists are shown in **bold.**

All top ten locations identified in the full highway TTI table serve regional transit, so Table 6 matches Table 3 above.

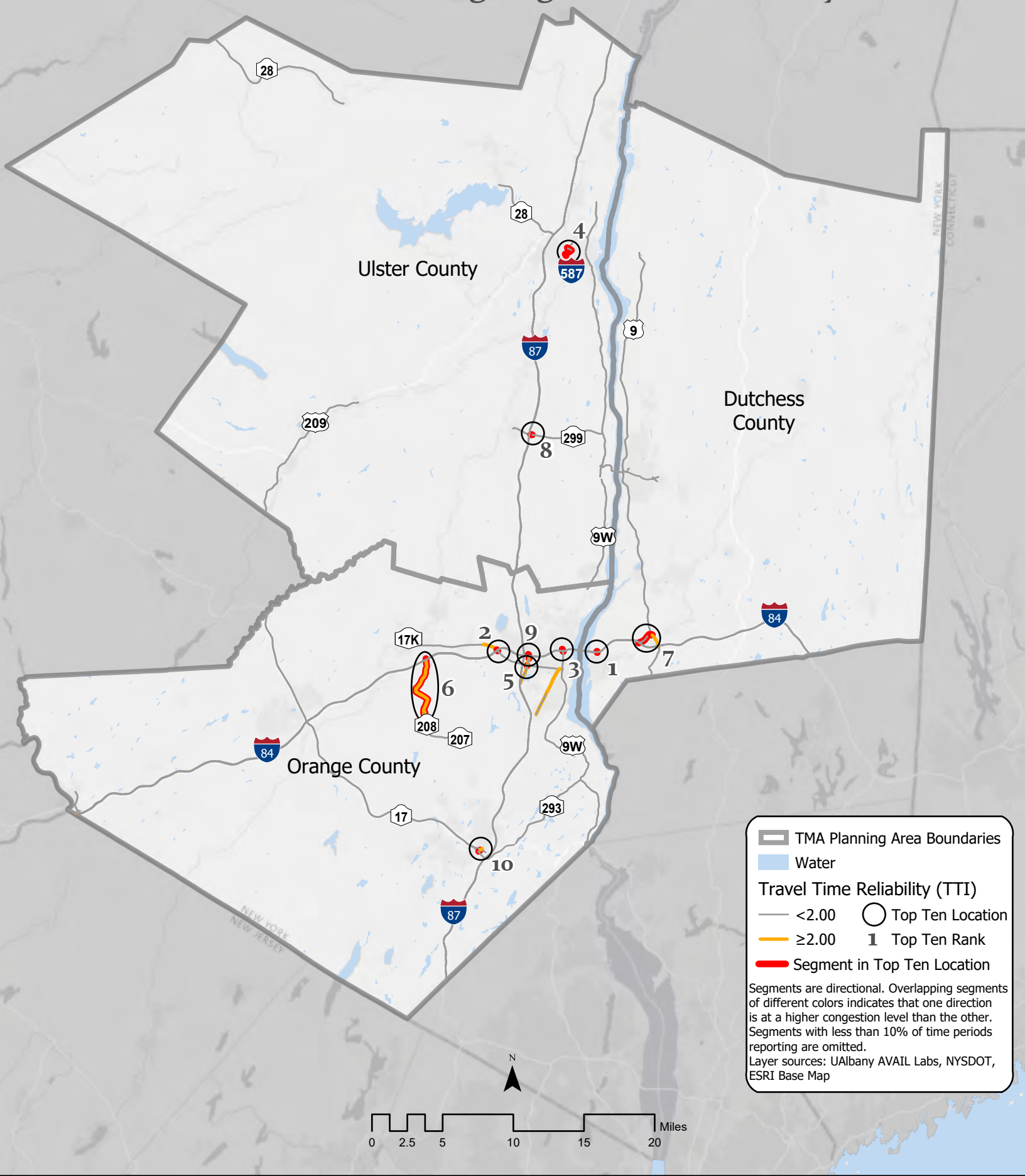
TTI definition: The average travel time during a peak period compared to the free-flow travel time. A TTI of 2.0 means it takes twice as long to travel through a road segment during the peak as it does during free-flow conditions.

Table 6: TTI (Regional Transit Routes Only)											
Location #	**Road Name**	**Nearest Intersecting Road**	**County**	**Municipality**	**Direction**	**Segment Length (miles)**	**TTI**	**AM TTI**	**PM TTI**	**TMC (Segment ID)**	**Description**
1	NY-9D	I-84	Dutchess	T/Fishkill	S	0.09	3.08	2.34	**3.08**	120N29714	Route 9D southbound crossing I-84
1	NY-9D	I-84	Dutchess	T/Fishkill	N	0.09	2.73	2.49	**2.73**	120P29714	Route 9D northbound crossing I-84
2	NY-17K	I-84	Orange	Montgomery	E	0.10	3.06	**3.06**	2.97	120P10129	Route 17K southbound between I-84 ramps
2	NY-17K	I-84	Orange	Montgomery	W	0.10	2.56	2.36	**2.56**	120N10129	Route 17K northbound between I-84 ramps
3	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	N	0.18	3.03	1.95	**3.03**	120P10186	Route 9W northbound under I-84
3	NY-32	I-84/US-9W/NY-52	Orange	T/Newburgh	N	0.12	2.63	2.03	**2.63**	120P11806	Route 9W northbound under I-84
3	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	S	0.18	2.35	2.05	**2.35**	120N10186	Route 9W southbound under I-84
4	NY-28	NY-32/ALBANY AVE	Ulster	Kingston	N	0.05	2.84	2.38	**2.84**	120P11874	Broadway/I-587 northbound through Albany Ave intersection
4	NY-32	I-587/NY-28/CHANDLER DR	Ulster	Kingston	N	0.30	2.35	1.63	**2.35**	120+11824	Broadway northbound approaching Albany Ave
5	NY-300	NY-17K/CONNECTING ROAD	Orange	T/Newburgh	N	0.01	2.48	1.47	**2.48**	120P14132	Route 300 northbound in Broadway intersection
5	NY-300	NY-17K/CONNECTING ROAD	Orange	T/Newburgh	S	0.01	2.38	1.54	**2.38**	120N14132	Route 300 southbound in Broadway intersection
6	NY-208	I-84	Orange	Wallkill	N	0.17	2.47	2.41	**2.47**	120P10081	Route 208 northbound under I-84
6	NY-208	I-84	Orange	Wallkill	N	4.54	2.39	2.36	**2.39**	120+10081	Route 208 northbound approaching I-84
7	NY-52	I-84	Dutchess	V/Fishkill	W	1.04	2.44	1.27	**2.44**	120+13957	Route 52 (Main St) westbound between I-84 and Route 9
7	NY-52	US-9	Dutchess	V/Fishkill	W	0.08	2.41	1.84	**2.41**	120P13956	Route 52 (Main St) westbound in Fishkill crossing Route 9
7	US-9	NY-52/MAIN ST	Dutchess	V/Fishkill	N	0.04	2.31	1.52	**2.31**	120P11235	Route 9 northbound approaching Route 52
7	NY-52	I-84	Dutchess	V/Fishkill	W	0.10	2.31	1.73	**2.31**	120P13957	Route 52 westbound under I-84
8	NY-299	I-87/NEW YORK STATE TRWY	Ulster	New Paltz	E	0.11	2.32	1.57	**2.32**	120P10095	Route 299 (Main St) eastbound at the I-87 access ramps
8	NY-299	I-87/NEW YORK STATE TRWY	Ulster	New Paltz	W	0.11	2.31	1.73	**2.31**	120N10095	Route 299 (Main St) westbound at the I-87 access ramps
9	NY-300	I-84	Orange	T/Newburgh	N	0.32	2.29	**2.29**	1.89	120P14133	Route 300 northbound approaching I-84
10	NY-17	NY-32	Orange	Woodbury	N	0.17	2.28	1.55	**2.28**	120+06141	Route 17 eastbound between Route 6 and Route 32

*The higher peak (AM/PM) is bolded

Map 9: Mid-Hudson Valley TMA Ten Highest Locations for TTI

NHS Roads Serving Regional Transit Only



2) Total Delay (TED/mile) on Transit Routes

The top ten locations on regional transit routes for total delay, based on Total Excessive Delay per mile (TED/mile), are listed below and shown in Table 7 and in Map 10.

1. Routes 17/32 near Woodbury Commons – Orange County*
2. **Route 300 near I-84 and Route 17K – Orange County**
3. **Route 9W near I-84 – Orange County**
4. **Route 17K near I-84 – Orange County**
5. **I-587 near Route 32 – Ulster County**
6. **Route 52 and Route 9 – Dutchess County**
7. **Route 9D near I-84 – Dutchess County**
8. Route 17K near Route 9W – Orange County
9. CR-15 near I-84 – Orange County^
10. **Route 208 near I-84 – Orange County**

Segments that appear on more than one Top 10 list are noted as follows:

* = TTI
~ = TED
^ = LOTTR

Segments that appear in all three lists are shown in **bold.**

All the segments identified in the Table 4 serve regional transit except for Route 9W near Route 199, which is replaced in this transit analysis with Route 208 near I-84.

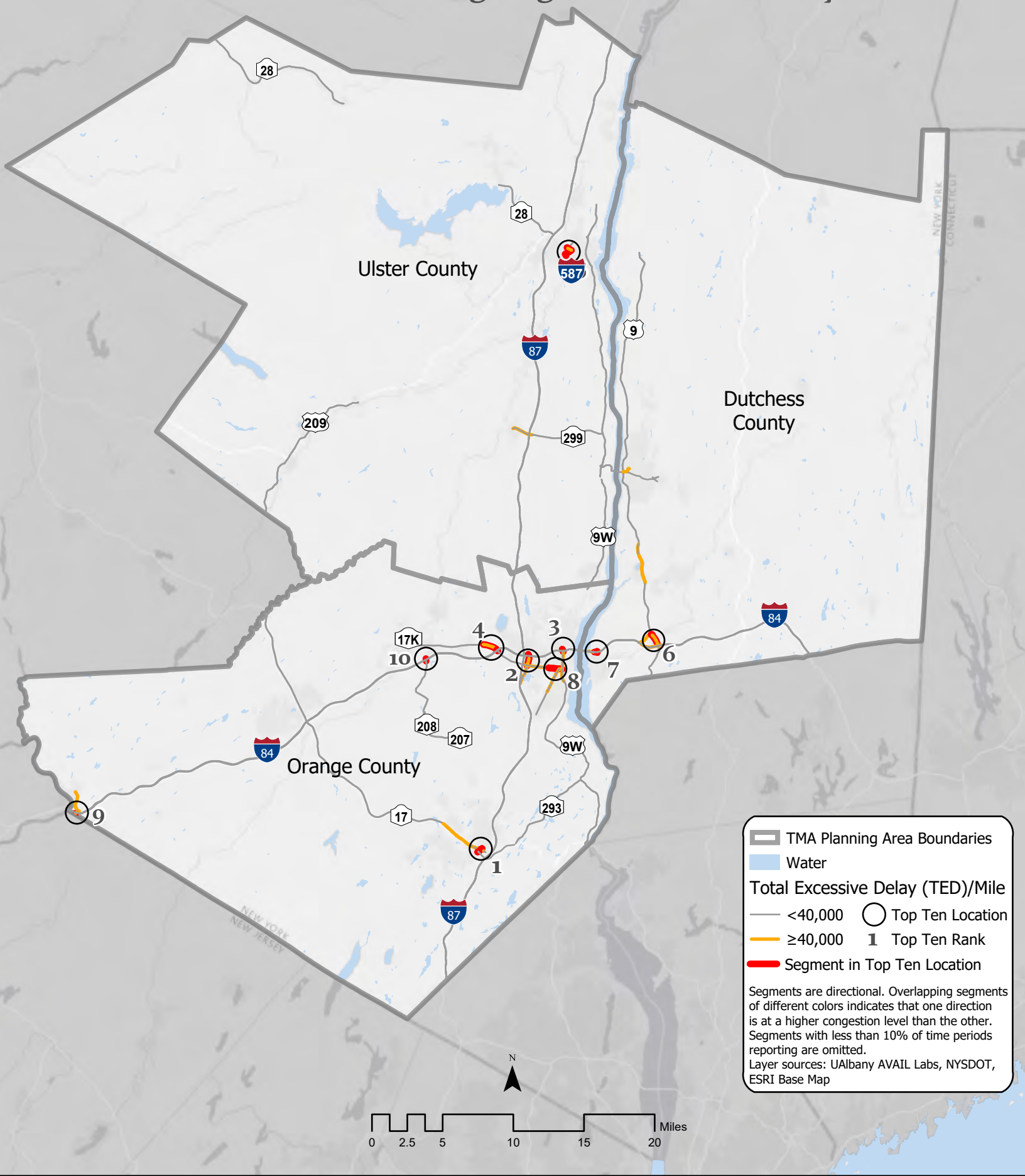
TED/mile definition: The sum of all the time drivers spend traveling below a given speed (usually 60% of free-flow speed). Higher volume roads are likely to have higher TED/mile scores.

Table 7: TED/mile (Regional Transit Routes Only)

Location #	Road Name	Nearest Intersecting Road	County	Municipality	Direction	Segment Length (miles)	TED/mile	TMC (Segment ID)	Description
1	NY-17	NY-32	Orange	Woodbury	N	0.17	404,276	120+06141	Route 17 eastbound between Route 6 and Route 32
1	NY-17	US-6	Orange	Woodbury	S	0.14	211,293	120-06140	Route 17 westbound between Route 6 and Route 32
1	NY-17	US-6	Orange	Woodbury	N	0.08	192,965	120P06140	Route 17 eastbound under Route 6
1	NY-17	US-6	Orange	Woodbury	S	0.08	176,170	120N06140	Route 17 westbound under Route 6
1	NY-32	NY-17	Orange	Woodbury	N	0.14	122,050	120P11797	Route 32 between Route 17 ramps
1	NY-32	NY-17	Orange	Woodbury	S	0.17	115,240	120N11797	Route 32 westbound under Route 17
1	NY-17	NY-32	Orange	Woodbury	S	0.17	113,770	120N06141	Route 32 westbound under Route 17
1	NY-17	NY-32	Orange	Woodbury	N	0.14	108,228	120P06141	Route 32 between Route 17 ramps
2	NY-300	NY-17K/CONNECTING ROAD	Orange	T/Newburgh	S	0.01	317,460	120N14132	Route 300 southbound in Broadway intersection
2	NY-300	NY-17K/CONNECTING ROAD	Orange	T/Newburgh	N	0.01	262,102	120P14132	Route 300 northbound in Broadway intersection
2	NY-300	NY-17K/CONNECTING ROAD	Orange	T/Newburgh	S	0.50	198,018	120-14132	Route 300 southbound between I-84 and Route 17K
2	NY-300	I-84	Orange	T/Newburgh	N	0.32	137,202	120P14133	Route 300 northbound crossing I-84
3	NY-32	I-84/US-9W/NY-52	Orange	T/Newburgh	N	0.12	230,866	120P11806	Route 9W northbound under I-84
3	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	S	0.18	200,994	120N10186	Route 9W southbound under I-84
3	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	N	0.18	198,745	120P10186	Route 9W northbound under I-84
3	NY-32	I-84/US-9W/NY-52	Orange	T/Newburgh	S	0.11	88,905	120N11806	Route 9W southbound under I-84
4	NY-17K	I-84	Orange	Montgomery	E	0.10	190,529	120P10129	Route 17K southbound between I-84 ramps
4	NY-17K	I-84	Orange	Montgomery	W	0.10	129,517	120N10129	Route 17K northbound between I-84 ramps
4	NY-17K	CR-54/S DRURY LN	Orange	Montgomery	W	1.05	89,272	120-12440	Route 17K west/southbound approaching I-84
5	NY-28	NY-32/ALBANY AVE	Ulster	Kingston	N	0.05	127,386	120P11874	Broadway/I-587 northbound through Albany Ave intersection
5	NY-28	NY-32/ALBANY AVE	Ulster	Kingston	S	0.05	124,585	120N11874	Broadway/I-587 southeast-bound through Albany Ave intersection
5	NY-32	I-587/NY-28/CHANDLER DR	Ulster	Kingston	N	0.30	81,534	120+11824	Broadway northbound approaching Albany Ave
6	US-9	NY-52/MAIN ST	Dutchess	V/Fishkill	N	0.04	115,065	120P11235	Route 9 northbound approaching Route 52
6	US-9	NY-52/MAIN ST	Dutchess	V/Fishkill	S	0.03	112,604	120N11235	Route 9 southbound north of Route 52
6	NY-52	US-9	Dutchess	V/Fishkill	W	0.08	101,780	120P13956	Route 52 (Main St) westbound in Fishkill crossing Route 9
6	NY-52	US-9	Dutchess	V/Fishkill	E	0.08	91,561	120N13956	Route 52 (Main St) eastbound in Fishkill crossing Route 9
6	US-9	I-84	Dutchess	T/Fishkill	S	0.76	79,165	120-11234	Route 9 southbound between Route 52 and I-84
7	NY-9D	I-84	Dutchess	T/Fishkill	N	0.09	104,419	120P29714	Route 9D northbound crossing I-84
7	NY-9D	I-84	Dutchess	T/Fishkill	S	0.09	88,937	120N29714	Route 9D southbound crossing I-84
7	I-84	NEWBURGH-BEACON BRIDGE TOLL PLAZA	Dutchess	T/Fishkill	W	0.01	82,324	120-04132	I-84 westbound west of Route 9D
8	NY-17K	US-9W/NY-32/ROBINSON AVE	Orange	C/Newburgh	E	0.97	89,535	120+10131	Route 17K (Broadway) eastbound approaching Route 9W
8	NY-17K	NY-207/WISNER AVE	Orange	C/Newburgh	W	0.97	87,354	120-12441	Route 17K (Broadway) westbound between Route 9W and Wisner Ave
9	CR-15	I-84	Orange	Port Jervis	N	0.07	89,469	120+14332	CR15/NJ Route 23 under I-84 near Port Jervis
10	NY-208	I-84	Orange	Wallkill	N	0.17	79,087	120P10081	Route 208 northbound under I-84

Map 10: Mid-Hudson Valley TMA
Ten Highest Locations for TED/mile

NHS Roads Serving Regional Transit Only



3) Highway Travel Time Reliability (LOTTR) on Transit Routes

The top ten worst locations on regional transit routes for reliability, based on Level of Travel Time Reliability (LOTTR), are listed below and shown in Table 8 and in Map 11.

1. **Route 9D near I-84 – Dutchess County**
2. **Route 9W near I-84 – Orange County**
3. **Route 17K near I-84 – Orange County**
4. **Route 208 near I-84 – Orange County**
5. **Route 52 and Route 9 – Dutchess County**
6. **I-587 near Route 32 – Ulster County**
7. CR-15 near I-84 – Orange County~
8. Route 32 near Route 94 – Orange County
9. **Route 300 at Route 17K – Orange County**
10. Route 299 near I-87 – Ulster County*

Segments that appear on more than one Top 10 list are noted as follows:

* = TTI
~ = TED
^ = LOTTR

Segments that appear in all three lists are shown in **bold.**

All but two of the top ten locations identified Table 5 serve regional transit. New locations include segments on Route 300 in Orange County and Route 299 in Ulster County. Weekend unreliability is just as pronounced here as in Table 5: seven locations experience their worst reliability over the weekend, while the remaining three experience their worst reliability during the PM peak. Regional transit service is generally limited on weekends, reducing the impact of reliability issues during that time.

LOTTR definition: The 80th percentile travel time during a given time period compared to the average travel time during that same period. This reflects how much fluctuation there is day-to-day.

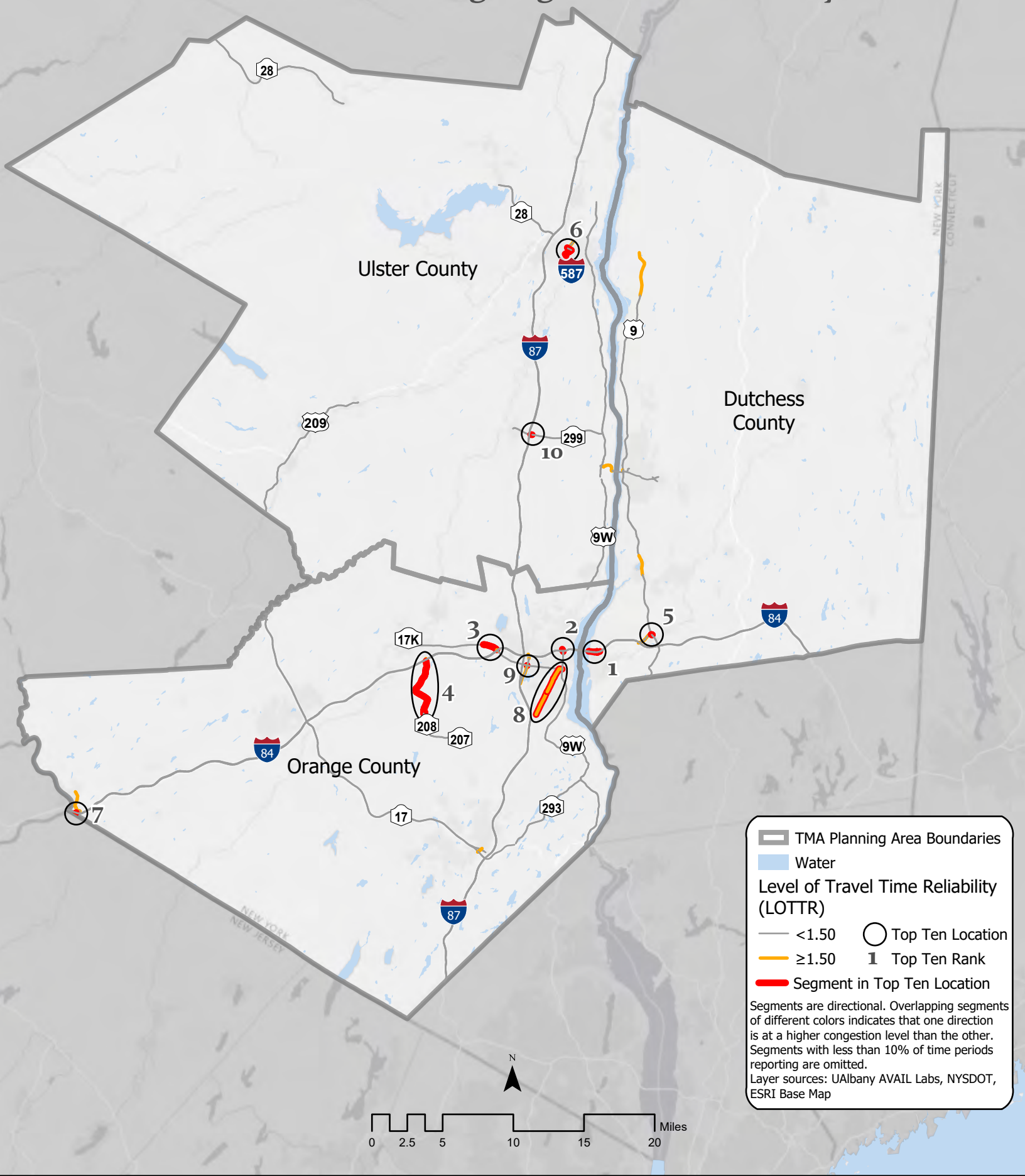
Table 8: LOTTR (Regional Transit Routes Only)

Location	Road Name	Nearest Intersecting Road	County	Municipality	Direction	Segment Length (miles)	LOTTR	AM LOTTR	Off-Peak LOTTR	PM LOTTR	Weekend LOTTR	TMC (Segment ID)	Description
1	I-84	NEWBURGH-BEACON BRIDGE TOLL PLAZA	Dutchess	T/Fishkill	W	0.01	2.56	1.05	1.14	**2.56**	1.05	120-04132	I-84 westbound west of Route 9D
1	I-84	NY-9D/NORTH AVE	Dutchess	T/Fishkill	W	0.41	2.52	1.05	1.11	**2.52**	1.05	120N04133	I-84 westbound between Route 9D ramps
1	NY-9D	I-84	Dutchess	T/Fishkill	S	0.09	2.22	1.94	1.91	2.14	**2.22**	120N29714	Route 9D southbound crossing I-84
1	NY-9D	I-84	Dutchess	T/Fishkill	N	0.09	2.19	1.96	1.88	2.17	**2.19**	120P29714	Route 9D northbound crossing I-84
1	I-84	NEWBURGH-BEACON BRIDGE	Dutchess	T/Fishkill	W	0.41	2.14	1.07	1.14	**2.14**	1.06	120-04131	I-84 westbound west of Route 9D
2	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	N	0.18	2.47	1.79	1.84	2.25	**2.47**	120P10186	Route 9W northbound under I-84
2	NY-32	I-84/US-9W/NY-52	Orange	T/Newburgh	N	0.12	1.78	1.68	1.68	**1.78**	1.76	120P11806	Route 9W; smaller northbound segment under I-84
3	NY-17K	CR-54/S DRURY LN	Orange	T/Newburgh	W	1.05	2.32	1.76	1.81	1.81	**2.32**	120-12440	Route 17K west/southbound approaching I-84
3	NY-17K	I-84	Orange	T/Newburgh	E	1.05	1.85	1.61	1.69	**1.85**	**1.85**	120+10129	Route 17K eastbound approaching I-84
4	NY-208	I-84	Orange	Wallkill	N	4.54	2.31	2.00	1.91	2.07	**2.31**	120+10081	Route 208 northbound approaching I-84
4	NY-208	NY-207/BURNSIDE DR	Orange	Wallkill	S	4.54	1.76	1.47	1.4	**1.76**	1.52	120-12381	Route 208 southbound between I-84 and Route 207
5	NY-52	US-9	Dutchess	V/Fishkill	E	0.08	2	1.62	1.67	1.8	**2**	120N13956	Route 52 (Main St) eastbound in Fishkill crossing Route 9
5	NY-52	US-9	Dutchess	V/Fishkill	W	0.08	1.87	1.60	1.51	1.72	**1.87**	120P13956	Route 52 (Main St) westbound in Fishkill crossing Route 9
5	US-9	NY-52/MAIN ST	Dutchess	V/Fishkill	N	0.04	1.86	1.48	1.58	1.69	**1.86**	120P11235	Route 9 northbound approaching Route 52
6	NY-28	NY-32/ALBANY AVE	Ulster	Kingston	N	0.05	2	1.73	1.8	**2**	1.8	120P11874	Broadway/I-587 northbound through Albany Ave intersection
6	NY-32	I-587/NY-28/CHANDLER DR	Ulster	Kingston	N	0.30	1.76	1.40	1.4	**1.76**	1.32	120+11824	Broadway northbound approaching Albany Ave
7	CR-15	I-84	Orange	Port Jervis	S	0.07	1.83	1.41	1.5	1.61	**1.83**	120N14332	Route 23 northbound near I-84 on/off ramps
8	NY-32	NY-94/BLOOMING GROVE TPKE	Orange	T/Newburgh	S	1.78	1.79	1.41	1.55	1.67	**1.79**	120-11802	Route 32 (Windsor Hwy) southbound approaching Route 94
8	NY-32	CR-69/UNION AVE	Orange	T/Newburgh	S	2.06	1.75	1.50	1.48	1.66	**1.75**	120-11803	Route 32 (Broadway/Lake St) between Route 9W and Union Ave
9	NY-300	NY-17K/CONNECTING ROAD	Orange	T/Newburgh	N	0.01	1.77	1.35	1.43	1.56	**1.77**	120P14132	Route 300 northbound in Broadway intersection
9	NY-300	NY-17K/CONNECTING ROAD	Orange	T/Newburgh	S	0.01	1.75	1.49	1.48	1.51	**1.75**	120N14132	Route 300 southbound in Broadway intersection
10	NY-299	I-87/NEW YORK STATE TRWY	Ulster	New Paltz	W	0.11	1.75	1.47	1.56	**1.75**	1.7	120N10095	Route 299 (Main St) westbound at the I-87 access ramps

*The highest peak (AM, off-peak, PM, or weekend) is bolded

Map 11: Mid-Hudson Valley TMA Ten Highest Locations for LOTTR

NHS Roads Serving Regional Transit Only



7) Metro-North On-Time Performance

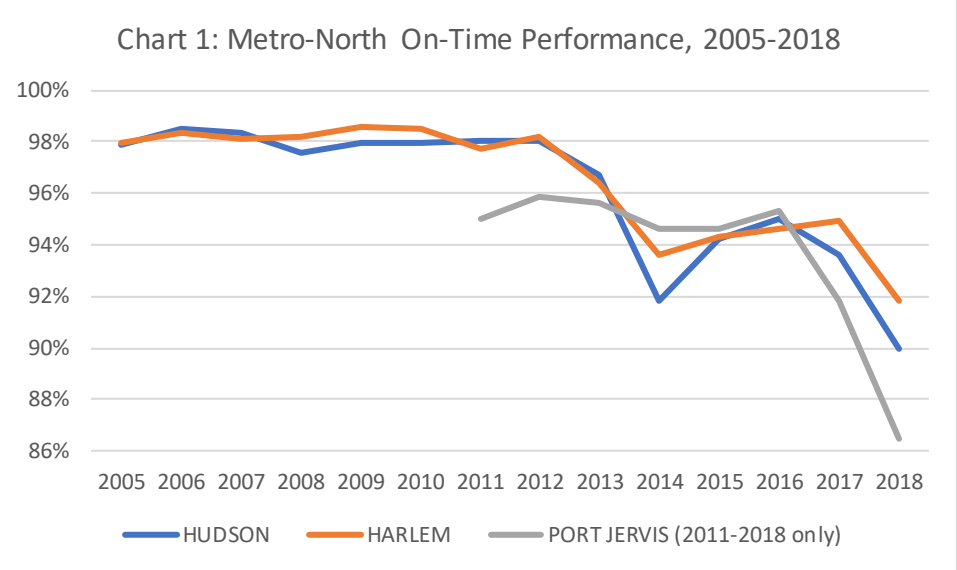
While trains are not subject to traffic congestion, they are susceptible to incident-based delays like maintenance work, fallen trees, or electrical issues. Rail travel is an important alternative to vehicle commuting in the Mid-Hudson region, and the reliability of that service is as critical as reliability on our roadways. From a travel demand management perspective, commuters and other travelers are less likely to choose to ride the train if it is perceived as unreliable. For these reasons, while the MPOs have little control over incidents that result in rail delays, it is valuable to track on-time performance for the three Metropolitan Transportation Authority (MTA) lines that run through the TMA, and to understand why performance levels may change. MTA defines "on-time" as arrival within six minutes of the scheduled time.

Metro-North provided the MPOs with on-time performance data for the Harlem and Hudson lines beginning in 2005 and for the Port Jervis line beginning in 2011. As shown in Table 9 and Chart 1, all three lines show a substantial decrease in reliability over that period. Metro-North attributes the decline to three factors:

a) Deferred maintenance on the tracks
b) New safety regulations requiring lower speeds in certain areas
c) Shortages of engineers and safety feature-equipped locomotives, especially on the Port Jervis line

New 2019 schedules have incorporated longer run times to account for some of these issues, but with substantial track maintenance ongoing and staffing-related issues unresolved, delays are likely to remain a reality in the near future. The process of installing Positive Train Control (PTC), a complex and federally-mandated safety system, is likely to have an effect as well. MTA has until the end of 2020 to install PTC.

Table 9: Metro-North On-Time Percentage			
Year	Line		
	Harlem	Hudson	Port Jervis
2005	98.0%	97.9%	N/A
2006	98.4%	98.5%	N/A
2007	98.1%	98.4%	N/A
2008	98.2%	97.6%	N/A
2009	98.6%	97.9%	N/A
2010	98.5%	98.0%	N/A
2011	97.7%	98.0%	95.0%
2012	98.2%	98.0%	95.9%
2013	96.4%	96.7%	95.6%
2014	93.6%	91.8%	94.6%
2015	94.3%	94.2%	94.6%
2016	94.6%	95.0%	95.3%
2017	94.9%	93.6%	91.8%
2018	91.8%	90.0%	86.5%



Freight Congestion

Congestion also has an impact on the transport of goods. Delays to freight on the road can result in delays in a factory or a loss of business in a retail outlet. Below is the congestion and reliability analysis for freight routes as defined in the New York State Freight Transportation Plan. As noted in Table 1, this analysis includes TTTR (Truck Travel Time Reliability) in addition to the three performance measures used to determine highway and transit congestion. TTTR uses data from trucks and sets a stricter threshold for reliability. This measure applies only to our interstates (I-84 and I-87), which have the truck volumes necessary for reliable results.

The limited geographic scope applied to these measures means that none of them return ten different locations with congestion that exceeds the thresholds.

1) Peak Period Congestion (TTI) on Freight Routes

The top locations on freight routes for highway congestion, based on Travel Time Index (TTI), are listed below and shown in Table 10 and in Map 12.

1. **Route 9W near I-84 – Orange County**
2. Route 55 near the Taconic Parkway – Dutchess County^
3. **I-84 near Route 9D – Dutchess County**

Only three locations on freight routes have a TTI above our threshold of 2.00. All three experience their worst congestion during the PM peak.

Segments that appear on more than one Top 10 list are noted as follows:

* = TTI
~ = TED
^ = LOTTR

Segments that appear in all three lists are shown in **bold.**

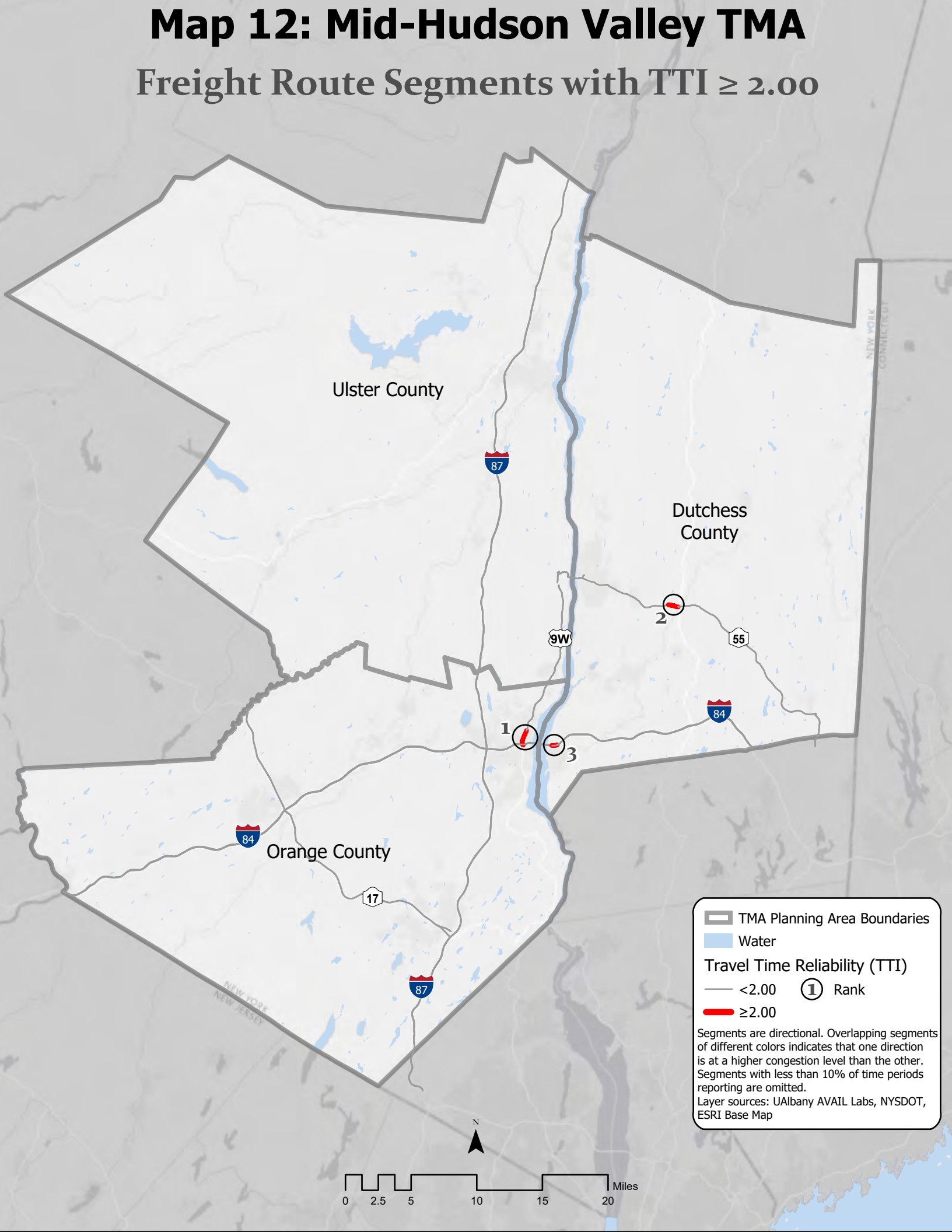
TTI definition: The average travel time during a peak period compared to the free-flow travel time. A TTI of 2.0 means it takes twice as long to travel through a road segment during the peak as it does during free-flow conditions.

Table 10: TTI (Freight Routes Only)										
Location #	**Road Name**	**Nearest Intersecting Road**	**County**	**Municipality**	**Direction**	**Segment Length (miles)**	**TTI**	**AM TTI**	**PM TTI**	**TMC (Segment ID)**	**Description**
1	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	N	0.18	3.03	1.95	**3.03**	120P10186	Route 9W northbound under I-84
1	NY-32	I-84/US-9W/NY-52	Orange	T/Newburgh	N	0.12	2.63	2.03	**2.63**	120P11806	Route 9W northbound under I-84
1	US-9W	CR-86/FOSTERTOWN RD	Orange	T/Newburgh	N	1.00	2.35	1.27	**2.35**	120+11197	Route 9W northbound between I-84 and Fostertown Rd
1	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	S	0.18	2.35	2.05	**2.35**	120N10186	Route 9W southbound under I-84
2	NY-55	TACONIC STATE PKWY	Dutchess	LaGrange	E	0.78	2.07	1.69	**2.07**	120+10169	Route 55 eastbound between Freedom Rd and the Taconic Parkway ramps
3	I-84	NY-9D/NORTH AVE	Dutchess	T/Fishkill	W	0.41	2.02	1.17	**2.02**	120N04133	I-84 westbound between Route 9D ramps
3	I-84	NEWBURGH-BEACON BRIDGE TOLL PLAZA	Dutchess	T/Fishkill	W	0.01	2.00	1.18	**2.00**	120-04132	I-84 westbound west of Route 9D

*The higher peak (AM/PM) is bolded

Map 12: Mid-Hudson Valley TMA

Freight Route Segments with TTI ≥ 2.00



2) Total Delay (TED/mile) on Freight Routes

The top locations on freight routes for total delay, measured as Total Excessive Delay per mile (TED/mile), are listed below and shown in Table 11 and in Map 13.

1) **Route 9W near I-84 – Orange County**
2) **I-84 near Route 9D – Dutchess County**
3) Route 44/55 near Route 9 – Dutchess County
4) I-84 near Route 9 & Route 52 – Dutchess County
5) Route 17 near Route 32 & Route 6 – Orange County

There are five locations on the freight network that surpass our threshold of 40,000. They are spread across the region's freight network, near major interchanges.

Segments that appear on more than one Top 10 list are noted as follows:

* = TTI
~ = TED
^ = LOTTR

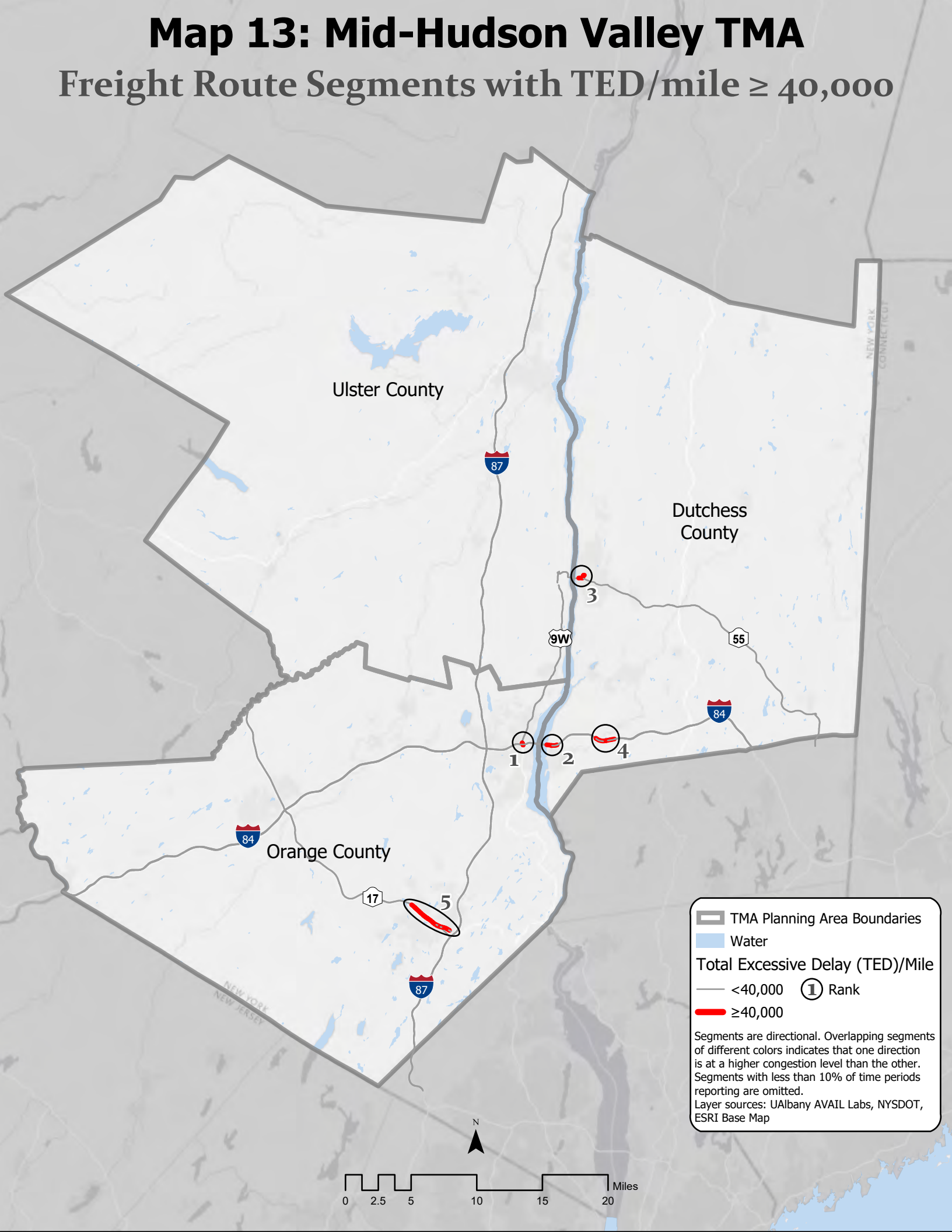
Segments that appear in all three lists are shown in **bold.**

TED/mile definition: The sum of all the time drivers spend traveling below a given speed (usually 60% of free-flow speed). Higher volume roads are likely to have higher TED/mile scores.

Table 11: TED/mile (Freight Routes Only)									
Location #	**Road Name**	**Nearest Intersecting Road**	**County**	**Municipality**	**Direction**	**Segment Length (miles)**	**TED/mile**	**TMC (Segment ID)**	**Description**
1	NY-32	I-84/US-9W/NY-52	Orange	T/Newburgh	N	0.12	230,866	120P11806	Route 9W northbound under I-84
1	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	S	0.18	200,994	120N10186	Route 9W southbound under I-84
1	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	N	0.18	198,745	120P10186	Route 9W; longer, overlapping northbound segment under I-84
1	NY-32	I-84/US-9W/NY-52	Orange	T/Newburgh	S	0.11	88,905	120N11806	Route 9W; shorter, overlapping southbound segment under I-84
2	I-84	NEWBURGH-BEACON BRIDGE TOLL PLAZA	Dutchess	T/Fishkill	W	0.01	82,324	120-04132	I-84 westbound west of Route 9D
2	I-84	NY-9D/NORTH AVE	Dutchess	T/Fishkill	W	0.41	75,601	120N04133	I-84 westbound between Route 9D ramps
2	I-84	NEWBURGH-BEACON BRIDGE	Dutchess	T/Fishkill	W	0.41	58,078	120-04131	I-84 westbound west of Route 9D
2	I-84	NY-9D/NORTH AVE	Dutchess	T/Fishkill	E	0.05	41,547	120+04133	I-84 eastbound approaching Newburgh-Beacon bridge toll booths
3	US-44	US-9	Dutchess	Poughkeepsie	W	0.04	63,894	120N10157	Route 44/55 westbound fragment between Route 9 ramps
3	US-44	US-9	Dutchess	Poughkeepsie	W	0.55	55,520	120-10157	Route 44/55 westbound between Civic Center Plaza and the Route 9 interchange
4	I-84	US-9	Dutchess	T/Fishkill	W	0.66	57,148	120N04135	I-84 between the Route 9 ramps
4	I-84	NY-52	Dutchess	T/Fishkill	W	0.82	44,136	120-04134	I-84 between Route 9 and Route 52
5	NY-17	US-6	Orange	Woodbury	W	0.34	48,560	120+05430	Route 17 westbound between Route 32 interchange and Route 6 merge
5	NY-17	NY-32/EXIT 131	Orange	Woodbury	W	0.41	47,037	120P05429	Route 17 westbound between Route 32 ramps
5	NY-17	US-6	Orange	Woodbury	W	0.33	46,316	120P05430	Route 17 westbound at Route 6 merge
5	US-6	NY-17/EXIT 130A	Orange	Woodbury	E	2.61	43,103	120-05438	Route 17 eastbound between the Route 208 entrance ramp and the Route 6/Route 17 split
5	NY-17	NY-32/EXIT 131	Orange	Woodbury	W	0.04	40,798	120+05429	Route 17 westbound fragment approaching Route 32 exit ramp

Map 13: Mid-Hudson Valley TMA

Freight Route Segments with TED/mile ≥ 40,000



3) Highway Travel Time Reliability (LOTTR) on Freight Routes

The top ten locations on freight routes for reliability, based on Level of Travel Time Reliability (LOTTR), are listed below and shown in Table 12 and in Map 14.

1) **I-84 near Route 9D – Dutchess County**
2) **Route 9W near I-84 – Orange County**
3) Route 55 near CR 47 (Freedom Rd) & the Taconic Parkway – Dutchess County*
4) I-84 near Wallkill Rest Area – Orange County
5) Route 44/55 near the Mid-Hudson Bridge – Ulster County

Five locations on freight routes surpass the threshold of 1.5 for LOTTR. Unlike previous LOTTR analyses, only one location (9W & I-84) experiences its worst reliability during the weekend. Three experience their worst reliability during the AM peak, one during the PM peak, and one during the off-peak period.

Segments that appear on more than one Top 10 list are noted as follows:

* = TTI
~ = TED
^ = LOTTR

Segments that appear in all three lists are shown in **bold.**

LOTTR definition: The 80th percentile travel time during a given time period compared to the average travel time during that same period. This reflects how much fluctuation there is day-to-day.

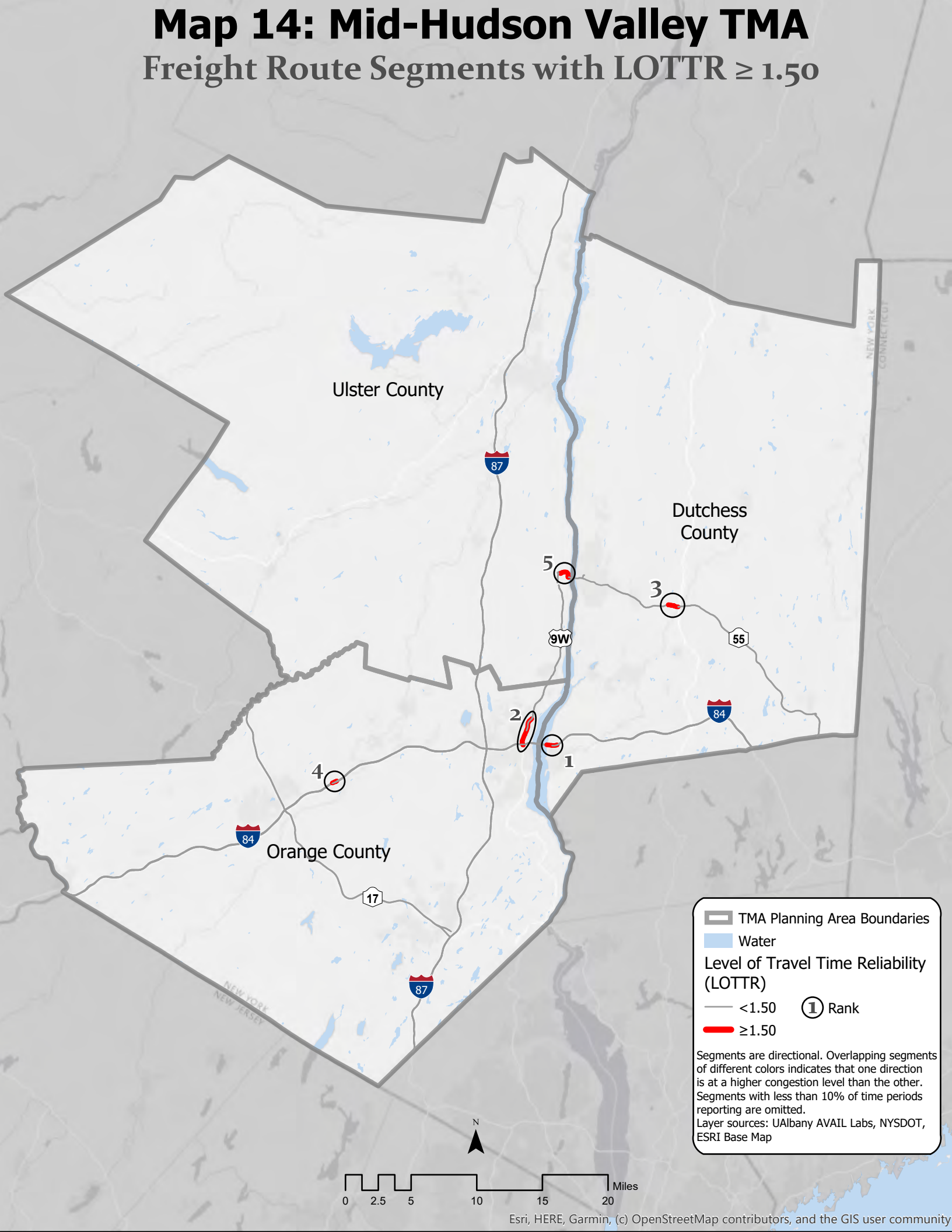
Table 12: LOTTR (Freight Routes Only)

Location #	Road Name	Nearest Intersecting Road	County	Municipality	Direction	Segment Length (miles)	LOTTR	AM LOTTR	Off-Peak LOTTR	PM LOTTR	Weekend LOTTR	TMC (Segment ID)	Description
1	I-84	NEWBURGH-BEACON BRIDGE TOLL PLAZA	Dutchess	T/Fishkill	W	0.01	2.56	1.05	1.14	**2.56**	1.05	120-04132	I-84 westbound west of Route 9D
1	I-84	NY-9D/NORTH AVE	Dutchess	T/Fishkill	W	0.41	2.52	1.05	1.11	**2.52**	1.05	120N04133	I-84 westbound between Route 9D ramps
1	I-84	NEWBURGH-BEACON BRIDGE	Dutchess	T/Fishkill	W	0.41	2.14	1.07	1.14	**2.14**	1.06	120-04131	I-84 westbound west of Route 9D
2	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	N	0.18	2.47	1.79	1.84	2.25	**2.47**	120P10186	Route 9W northbound under I-84
2	NY-32	I-84/US-9W/NY-52	Orange	T/Newburgh	N	0.12	1.78	1.68	1.68	**1.78**	1.76	120P11806	Route 9W; shorter northbound segment under I-84
2	US-9W	I-84/NY-52/NY-32/N PLANK RD	Orange	T/Newburgh	S	0.18	1.72	1.57	1.56	1.68	**1.72**	120N10186	Route 9W southbound under I-84
2	US-9W	CR-86/FOSTERTOWN RD	Orange	T/Newburgh	N	1.00	1.71	1.17	1.23	**1.71**	1.23	120+11197	Route 9W northbound segment between I-84 and Fostertown Rd
2	NY-32	I-84/US-9W/NY-52	Orange	T/Newburgh	S	0.11	1.52	1.37	1.41	**1.52**	1.51	120N11806	Route 9W; shorter southbound segment under I-84
2	US-9W	CR-86/FOSTERTOWN RD	Orange	T/Newburgh	S	1.01	1.52	**1.52**	1.25	1.45	1.32	120-11197	Route 9W southbound between Leslie Rd and Fostertown Rd
3	NY-55	FREEDOM RD	Dutchess	LaGrange	E	0.01	1.86	**1.86**	1.57	**	**	120P12473	Route 55 eastbound; short fragment approaching western-most roundabout
3	NY-55	TACONIC STATE PKWY	Dutchess	LaGrange	E	0.78	1.56	1.37	1.48	**1.56**	1.21	120+10169	Route 55 eastbound between Freedom Rd and the Taconic Parkway ramps
4	I-84	WALLKILL REST AREA	Orange	Wallkill	W	0.39	1.62	1.19	**1.62**	1.07	1.04	120N04125	I-84 westbound between the Wallkill rest area ramps
5	US-44	MID-HUDSON BRIDGE	Ulster	Lloyd	E	0.98	1.56	1.25	1.13	**1.56**	1.13	120+27984	Route 44/55 eastbound approaching the Mid-Hudson Bridge

*The highest peak (AM, off-peak, PM, or weekend) is bolded
**Data completeness threshold not met

Map 14: Mid-Hudson Valley TMA

Freight Route Segments with LOTTR ≥ 1.50



4) Truck Travel Time Reliability (TTTR) on Freight Routes (Interstates Only)

The top locations on interstates for truck reliability, based on Truck Travel Time Reliability (TTTR), are listed below and shown in Table 13 and in Map 15.

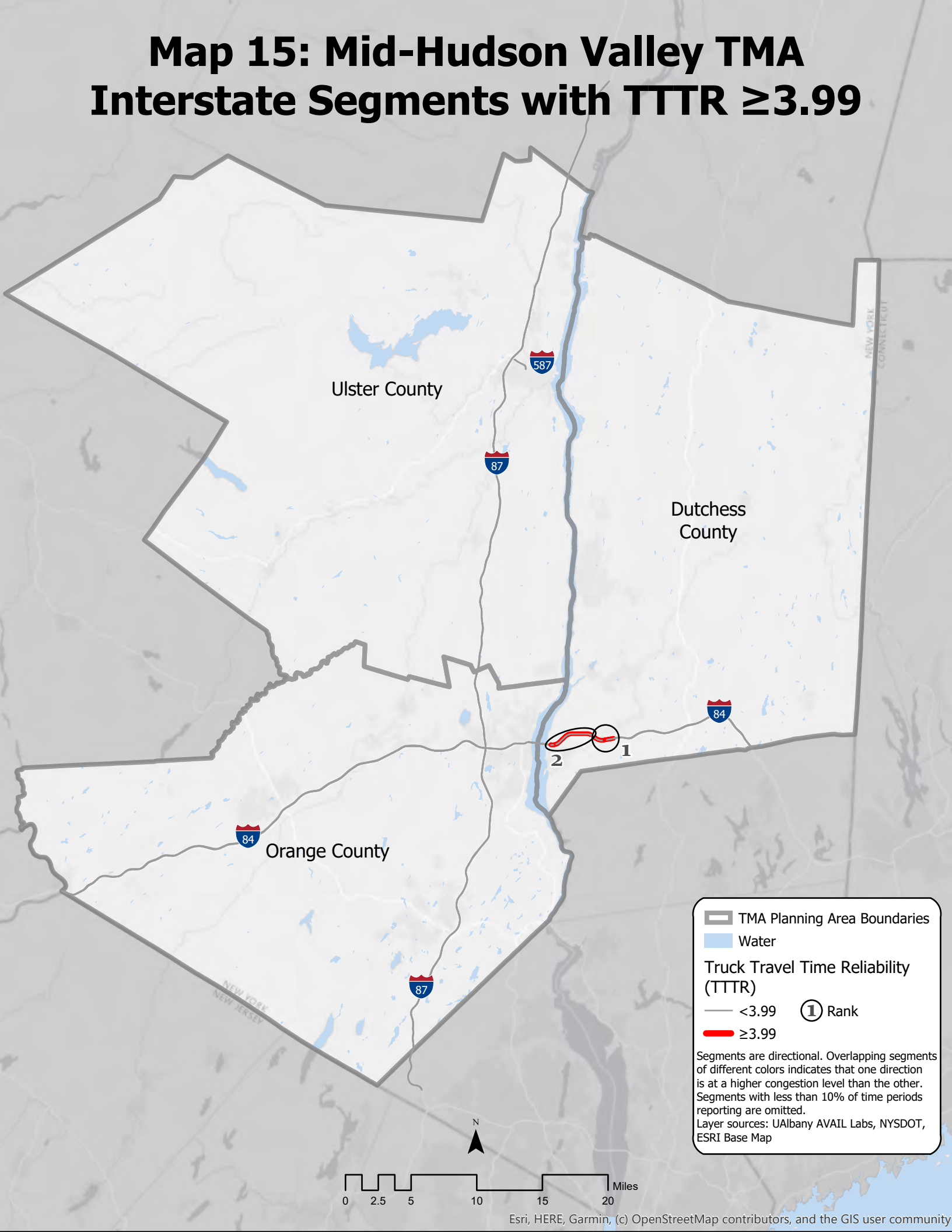
1. I-84 near Route 9 & Route 52 – Dutchess County
2. I-84 near Route 9D – Dutchess County

Only two locations have a TTTR above the threshold of 3.99. Both are along the I-84 corridor in Dutchess County, and both experience their worst congestion in the westbound direction during the PM peak.

TTTR definition: The 95th percentile travel time during a given time period compared to the average travel time during that same period. The 95th percentile travel time is used because reliability is especially important to freight. The data for this measure only includes trucks and is limited to interstates, which have enough trucks to provide reliable data.

Table 13: TTTR (Interstates Only)													
Location #	**Road Name**	**Nearest Intersecting Road**	**County**	**Municipality**	**Direction**	**Segment Length (miles)**	**TTTR**	**AM TTTR**	**Off-Peak TTTR**	**PM TTTR**	**Overnight TTTR**	**Weekend TTTR**	**TMC (Segment ID)**	**Description**
1	I-84	US-9	Dutchess	T/Fishkill	W	0.66	6.28	1.12	2.09	6.28	1.14	1.1	120N04135	I-84 westbound between the Route 9 ramps
1	I-84	NY-52	Dutchess	T/Fishkill	W	0.82	4.95	1.15	2.81	4.95	1.18	1.16	120-04134	I-84 westbound between Route 9 and Route 52
2	I-84	NY-9D/NORTH AVE	Dutchess	T/Fishkill	W	0.41	4.24	1.29	3.20	4.24	1.15	1.15	120N04133	I-84 westbound between Route 9D ramps
2	I-84	NEWBURGH-BEACON BRIDGE TOLL PLAZA	Dutchess	T/Fishkill	W	0.01	4.11	1.34	3.23	4.11	1.17	1.16	120-04132	I-84 westbound west of Route 9D
2	I-84	NY-9D/NORTH AVE	Dutchess	T/Fishkill	W	2.88	3.99	1.11	1.64	3.99	1.11	1.11	120-04133	I-84 westbound east of Route 9D

Map 15: Mid-Hudson Valley TMA Interstate Segments with TTTR ≥3.99



4. Summary

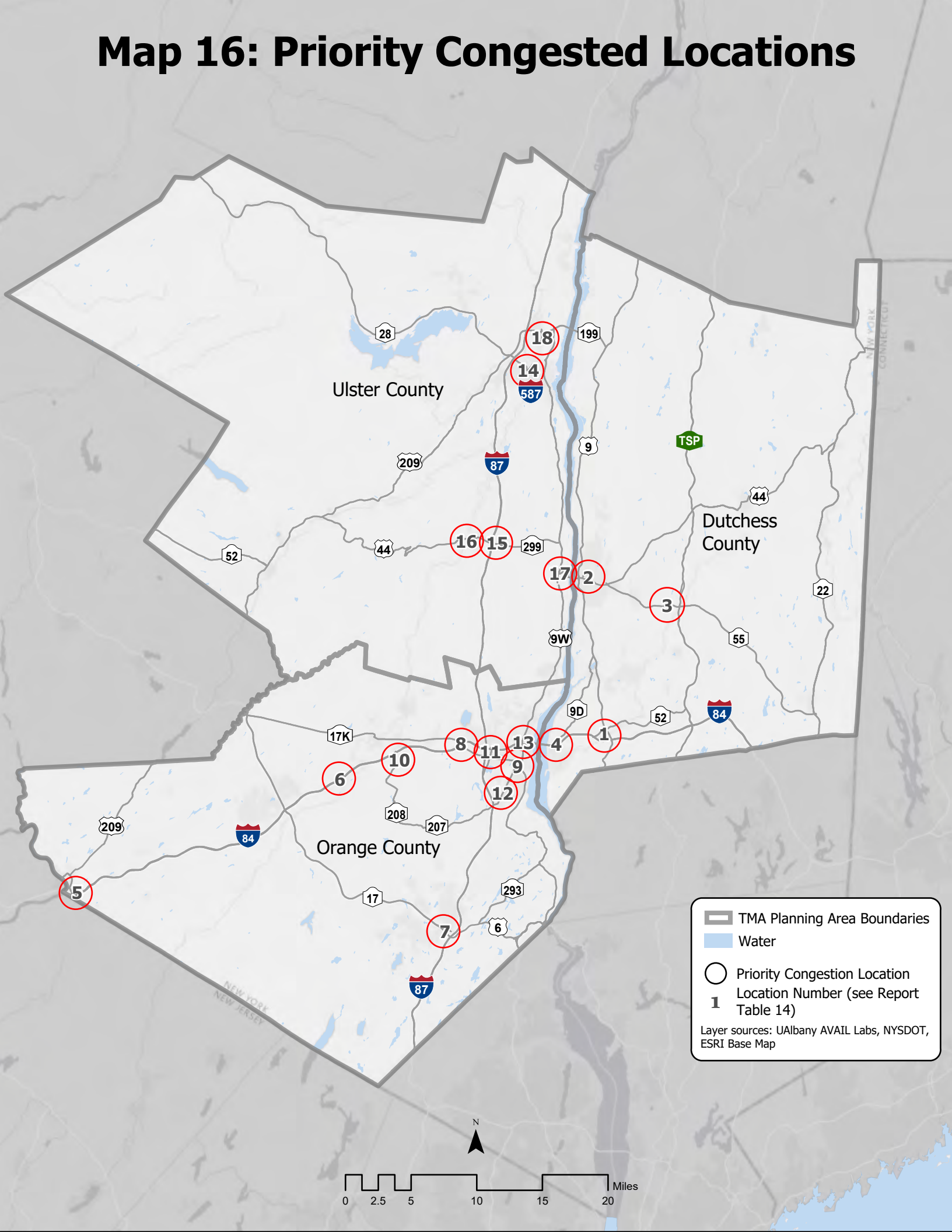
The next technical memo will take the results from this screening and analyze the worst-performing locations to better understand the underlying issues. This includes evaluating individual segments by season, day of week, and time of day, as well as looking at causal factors such as incident patterns, intersection geometry, traffic signal timing, and others. This analysis will focus on roadway congestion, including locations of concern for freight and bus transit.

Table 14 lists the locations that will be examined in this analysis. It is a compilation of the locations listed in Tables 3-8 and 10-13 above, with duplicates removed and neighboring locations combined. The list is organized by county, then alphabetically. It is subject to change as our process continues. These locations are also shown on Map 16.

Table 14: Priority Analysis Locations

Location	Name	County
1	I-84, Route 52, and Route 9	Dutchess County
2	Route 44/55 near Route 9	Dutchess County
3	Route 55 near the Taconic State Parkway	Dutchess County
4	Route 9D and I-84	Dutchess County
5	CR-15 near I-84	Orange County
6	I-84 near Wallkill Rest Area	Orange County
7	Route 17, Route 32 & Route 6	Orange County
8	Route 17K near I-84	Orange County
9	Route 17K near Route 9W	Orange County
10	Route 208 near I-84	Orange County
11	Route 300, I-84, and Route 17K	Orange County
12	Route 32 near Route 94	Orange County
13	Route 9W near I-84	Orange County
14	I-587 and Route 32	Ulster County
15	Route 299 near I-87	Ulster County
16	Route 299 near Route 32	Ulster County
17	Route 44/55 near the Mid-Hudson Bridge	Ulster County
18	Route 9W near Route 199	Ulster County

Map 16: Priority Congested Locations



Appendix A
Full Tables: Road Segments Over Thresholds

Travel Time Index (TTI): Threshold 2.00														
Ranking											Characteristics			
TTI	TED/mile	LOTTR	TMC (Segment ID)	Road Name	Nearest Intersecting Road	Direction	Miles	TTI Max	TTI AM	TTI PM	On a CMP Top-Ten List	Freight Route	Regional Transit	Interstate
1	28	6	120N29714	NY-9D	I-84	S	0.09	3.08	2.34	3.08	Yes		Yes	
2	10	27	120P10129	NY-17K	I-84	E	0.10	3.06	3.06	2.97	Yes		Yes	
3	7	3	120P10186	US-9W	I-84/NY-52/NY-32/N PLANK RD	N	0.18	3.03	1.95	3.03	Yes	Yes	Yes	
4	14	10	120P11874	NY-28	NY-32/ALBANY AVE	N	0.05	2.84	2.38	2.84	Yes		Yes	
5	22	7	120P29714	NY-9D	I-84	N	0.09	2.73	2.49	2.73	Yes		Yes	
6	4	18	120P11806	NY-32	I-84/US-9W/NY-52	N	0.12	2.63	2.03	2.63	Yes	Yes	Yes	
7	13	38	120N10129	NY-17K	I-84	W	0.10	2.56	2.36	2.56	Yes		Yes	
8	3	19	120P14132	NY-300	NY-17K/CONNECTING ROAD	N	0.01	2.48	1.47	2.48	Yes		Yes	
9	35	49	120P10081	NY-208	I-84	N	0.17	2.47	2.41	2.47	Yes		Yes	
10	41	31	120+13957	NY-52	I-84	W	1.04	2.44	1.27	2.44	Yes		Yes	
11	23	12	120P13956	NY-52	US-9	W	0.08	2.41	1.84	2.41	Yes		Yes	
12	125	5	120+10081	NY-208	I-84	N	4.54	2.39	2.36	2.39	Yes		Yes	
13	2	23	120N14132	NY-300	NY-17K/CONNECTING ROAD	S	0.01	2.38	1.54	2.38	Yes		Yes	
14	89	36	120+11197	US-9W	CR-86/FOSTERTOWN RD	N	1.00	2.35	1.27	2.35	Yes	Yes		
15	32	20	120+11824	NY-32	I-587/NY-28/CHANDLER DR	N	0.30	2.35	1.63	2.35	Yes		Yes	
16	6	33	120N10186	US-9W	I-84/NY-52/NY-32/N PLANK RD	S	0.18	2.35	2.05	2.35	Yes	Yes	Yes	
17	90	34	120P10095	NY-299	I-87/NEW YORK STATE TRWY	E	0.11	2.32	1.57	2.32	Yes		Yes	
18	18	14	120P11235	US-9	NY-52/MAIN ST	N	0.04	2.31	1.52	2.31	Yes		Yes	
19	51	24	120N10095	NY-299	I-87/NEW YORK STATE TRWY	W	0.11	2.31	1.73	2.31	Yes		Yes	
20	106	46	120P13957	NY-52	I-84	W	0.10	2.31	1.73	2.31	Yes		Yes	
21	12	61	120P14133	NY-300	I-84	N	0.32	2.29	2.29	1.89	Yes		Yes	
22	1	60	120+06141	NY-17	NY-32	N	0.17	2.28	1.55	2.28	Yes		Yes	
23	53	25	120-11803	NY-32	CR-69/UNION AVE	S	2.06	2.26	1.80	2.26	Yes		Yes	
24	36	15	120+10129	NY-17K	I-84	E	1.05	2.25	2.10	2.25	Yes		Yes	
25	27	4	120-12440	NY-17K	CR-54/S DRURY LN	W	1.05	2.25	2.23	2.25	Yes		Yes	
26	9	56	120P06140	NY-17	US-6	N	0.08	2.24	1.63	2.24	Yes		Yes	
27	20	35	120N11235	US-9	NY-52/MAIN ST	S	0.03	2.23	1.61	2.23	Yes		Yes	
28	24	11	120N13956	NY-52	US-9	E	0.08	2.17	2.09	2.17	Yes		Yes	
29	26	41	120+14332	CR-15	I-84	N	0.07	2.15	1.72	2.15	Yes		Yes	
30	134	59	120-29717	NY-9D	NEW HAMBURG RD/OLD HOPEWELL RD	S	0.55	2.15	1.43	2.15				
31	15	83	120N11874	NY-28	NY-32/ALBANY AVE	S	0.05	2.14	1.96	2.14	Yes		Yes	
32	84	47	120+11804	NY-32	US-9W/NY-17K/BROADWAY/ROBINSON AVE	N	2.06	2.13	1.94	2.13			Yes	
33	11	82	120N06140	NY-17	US-6	S	0.08	2.12	1.64	2.12	Yes		Yes	
34	39	50	120+14132	NY-300	NY-17K/CONNECTING ROAD	N	1.39	2.12	1.35	2.12			Yes	
35	206	22	120-12381	NY-208	NY-207/BURNSIDE DR	S	4.54	2.11	1.80	2.11	Yes		Yes	
36	8	87	120-14132	NY-300	NY-17K/CONNECTING ROAD	S	0.50	2.10	1.40	2.10	Yes		Yes	
37	145	26	120+11548	NY-22	CR-67/QUAKER HILL RD/E MAIN ST	N	0.31	2.09	1.41	2.09				
38	98	17	120-11802	NY-32	NY-94/BLOOMING GROVE TPKE	S	1.78	2.09	1.58	2.09	Yes		Yes	
39	67	28	120P29721	NY-9D	US-9/SOUTH RD	N	0.04	2.09	1.91	2.09				
40	16	67	120P11797	NY-32	NY-17	N	0.14	2.07	1.65	2.07	Yes		Yes	
41	103	70	120+10169	NY-55	TACONIC STATE PKWY	E	0.78	2.07	1.69	2.07	Yes	Yes		
42	66	32	120N10081	NY-208	I-84	S	0.17	2.07	2.07	2.03			Yes	

Travel Time Index (TTI): Threshold 2.00														
Ranking											Characteristics			
TTI	TED/mile	LOTTR	TMC (Segment ID)	Road Name	Nearest Intersecting Road	Direction	Miles	TTI Max	TTI AM	TTI PM	On a CMP Top-Ten List	Freight Route	Regional Transit	Interstate
43	159	21	120+10124	NY-94	NY-32/WINDSOR HWY	E	3.41	2.06	1.62	2.06				
44	37	2	120N04133	I-84	NY-9D/NORTH AVE	W	0.41	2.02	1.17	2.02	Yes	Yes	Yes	Yes
45	19	106	120N06141	NY-17	NY-32	S	0.17	2.02	1.73	2.02	Yes		Yes	
46	152	29	120P13952	NY-52	TACONIC STATE PKWY	W	0.07	2.01	1.47	2.01				
47	5	64	120-06140	NY-17	US-6	S	0.14	2.01	1.70	2.01	Yes		Yes	
48	31	1	120-04132	I-84	NEWBURGH-BEACON BRIDGE TOLL PLAZA	W	0.01	2.00	1.18	2.00	Yes	Yes	Yes	Yes
49	50	92	120P11234	US-9	I-84	N	0.25	2.00	1.57	2.00			Yes	
50	42	125	120+11235	US-9	NY-52/MAIN ST	N	0.76	2.00	1.36	2.00			Yes	

TED/Mile: Threshold 40,000												
Ranking									Characteristics			
TTI	TED/Mile	LOTTR	TMC (Segment ID)	Road Name	Nearest Intersecting Road	Direction	Miles	TED/Mile	On a CMP Top-Ten List	Freight Route	Regional Transit	Interstate
22	**1**	60	120+06141	NY-17	NY-32	N	0.17	404,276	Yes		Yes	
13	**2**	23	120N14132	NY-300	NY-17K/CONNECTING ROAD	S	0.01	317,460	Yes		Yes	
8	**3**	19	120P14132	NY-300	NY-17K/CONNECTING ROAD	N	0.01	262,102	Yes		Yes	
6	**4**	18	120P11806	NY-32	I-84/US-9W/NY-52	N	0.12	230,866	Yes	Yes	Yes	
47	**5**	64	120-06140	NY-17	US-6	S	0.14	211,293	Yes		Yes	
16	**6**	33	120N10186	US-9W	I-84/NY-52/NY-32/N PLANK RD	S	0.18	200,994	Yes	Yes	Yes	
3	**7**	3	120P10186	US-9W	I-84/NY-52/NY-32/N PLANK RD	N	0.18	198,745	Yes	Yes	Yes	
36	**8**	87	120-14132	NY-300	NY-17K/CONNECTING ROAD	S	0.50	198,018	Yes		Yes	
26	**9**	56	120P06140	NY-17	US-6	N	0.08	192,965	Yes		Yes	
2	**10**	27	120P10129	NY-17K	I-84	E	0.10	190,529	Yes		Yes	
33	**11**	82	120N06140	NY-17	US-6	S	0.08	176,170	Yes		Yes	
21	**12**	61	120P14133	NY-300	I-84	N	0.32	137,202	Yes		Yes	
7	**13**	38	120N10129	NY-17K	I-84	W	0.10	129,517	Yes		Yes	
4	**14**	10	120P11874	NY-28	NY-32/ALBANY AVE	N	0.05	127,386	Yes		Yes	
31	**15**	83	120N11874	NY-28	NY-32/ALBANY AVE	S	0.05	124,585	Yes		Yes	
40	**16**	67	120P11797	NY-32	NY-17	N	0.14	122,050	Yes		Yes	
58	**17**	110	120N11797	NY-32	NY-17	S	0.17	115,240	Yes		Yes	
18	**18**	14	120P11235	US-9	NY-52/MAIN ST	N	0.04	115,065	Yes		Yes	
45	**19**	106	120N06141	NY-17	NY-32	S	0.17	113,770	Yes		Yes	
27	**20**	35	120N11235	US-9	NY-52/MAIN ST	S	0.03	112,604	Yes		Yes	
56	**21**	74	120P06141	NY-17	NY-32	N	0.14	108,228	Yes		Yes	
5	**22**	7	120P29714	NY-9D	I-84	N	0.09	104,419	Yes		Yes	
11	**23**	12	120P13956	NY-52	US-9	W	0.08	101,780	Yes		Yes	
28	**24**	11	120N13956	NY-52	US-9	E	0.08	91,561	Yes		Yes	
127	**25**	121	120+10131	NY-17K	US-9W/NY-32/ROBINSON AVE	E	0.97	89,535	Yes		Yes	
29	**26**	41	120+14332	CR-15	I-84	N	0.07	89,469	Yes		Yes	
25	**27**	4	120-12440	NY-17K	CR-54/S DRURY LN	W	1.05	89,272	Yes		Yes	
1	**28**	6	120N29714	NY-9D	I-84	S	0.09	88,937	Yes		Yes	
92	**29**	78	120N11806	NY-32	I-84/US-9W/NY-52	S	0.11	88,905	Yes	Yes	Yes	
131	**30**	107	120-12441	NY-17K	NY-207/WISNER AVE	W	0.97	87,354	Yes		Yes	
48	**31**	1	120-04132	I-84	NEWBURGH-BEACON BRIDGE TOLL PLAZA	W	0.01	82,324	Yes	Yes	Yes	Yes
15	**32**	20	120+11824	NY-32	I-587/NY-28/CHANDLER DR	N	0.30	81,534	Yes		Yes	
57	**33**	62	120+10204	US-9W	US-209/NY-199	N	0.60	81,215	Yes			
108	**34**	164	120-11234	US-9	I-84	S	0.76	79,165	Yes		Yes	
9	**35**	49	120P10081	NY-208	I-84	N	0.17	79,087	Yes		Yes	
24	**36**	15	120+10129	NY-17K	I-84	E	1.05	76,005	Yes		Yes	
44	**37**	2	120N04133	I-84	NY-9D/NORTH AVE	W	0.41	75,601	Yes	Yes	Yes	Yes
52	**38**	43	120N11237	US-9	US-9/CR-77/VASSAR RD	S	0.04	75,261			Yes	
34	**39**	50	120+14132	NY-300	NY-17K/CONNECTING ROAD	N	1.39	75,072			Yes	
69	**40**	84	120-10203	US-9W	BOICES LN	S	0.73	73,684				
10	**41**	31	120+13957	NY-52	I-84	W	1.04	72,637	Yes		Yes	
50	**42**	125	120+11235	US-9	NY-52/MAIN ST	N	0.76	71,513			Yes	

TED/Mile: Threshold 40,000												
Ranking									Characteristics			
TTI	TED/Mile	LOTTR	TMC (Segment ID)	Road Name	Nearest Intersecting Road	Direction	Miles	TED/Mile	On a CMP Top-Ten List	Freight Route	Regional Transit	Interstate
72	**43**	58	120-10217	US-9	E MAIN ST	S	1.36	69,913			Yes	
106	**44**	154	120-10216	US-9	CR-93/MIDDLEBUSH RD/MYERS CORNERS RD	S	0.58	68,560			Yes	
73	**45**	91	120-13956	NY-52	US-9	E	1.01	64,746			Yes	
177	**46**	247	120+11805	NY-32	SOUTH ST	N	0.47	63,918			Yes	
65	**47**	111	120N10157	US-44	US-9	W	0.04	63,894	Yes	Yes	Yes	
79	**48**	88	120-10094	NY-299	NY-32/NY-208/CHESTNUT ST	W	1.36	63,743			Yes	
88	**49**	96	120+10217	US-9	E MAIN ST	N	0.58	62,900			Yes	
49	**50**	92	120P11234	US-9	I-84	N	0.25	60,027			Yes	
19	**51**	24	120N10095	NY-299	I-87/NEW YORK STATE TRWY	W	0.11	58,417	Yes		Yes	
102	**52**	8	120-04131	I-84	NEWBURGH-BEACON BRIDGE	W	0.41	58,078	Yes	Yes	Yes	Yes
23	**53**	25	120-11803	NY-32	CR-69/UNION AVE	S	2.06	57,183	Yes		Yes	
90	**54**	695	120N04135	I-84	US-9	W	0.66	57,148	Yes	Yes	Yes	Yes
70	**55**	100	120-10157	US-44	US-9	W	0.55	55,520	Yes	Yes	Yes	
89	**56**	151	120+10184	US-9W	NY-32/NY-17K/BROADWAY	N	0.93	52,506			Yes	
150	**57**	138	120-10185	US-9W	SOUTH ST	S	0.77	51,305			Yes	
148	**58**	101	120+11238	US-9	SPRING RD/OLD POST RD	N	0.80	51,059			Yes	
142	**59**	484	120+05430	NY-17	US-6	W	0.34	48,560	Yes	Yes	Yes	
207	**60**	155	120-11804	NY-32	US-9W/NY-17K/BROADWAY/ROBINSON AVE	S	0.47	47,858			Yes	
135	**61**	179	120-30610	NY-32	BROADWAY	S	0.36	47,637			Yes	
82	**62**	79	120+11134	US-6	US-209/FOWLER ST/KINGSTON AVE	W	1.59	47,589			Yes	
137	**63**	316	120P05429	NY-17	NY-32/EXIT 131	W	0.41	47,037	Yes	Yes	Yes	
192	**64**	514	120P05430	NY-17	US-6	W	0.33	46,316	Yes	Yes	Yes	
117	**65**	142	120+14133	NY-300	I-84	N	0.50	45,209			Yes	
42	**66**	32	120N10081	NY-208	I-84	S	0.17	44,356			Yes	
39	**67**	28	120P29721	NY-9D	US-9/SOUTH RD	N	0.04	44,311				
149	**68**	199	120+11806	NY-32	I-84/US-9W/NY-52	N	0.77	44,267			Yes	
101	**69**	549	120-04134	I-84	NY-52	W	0.82	44,136	Yes	Yes	Yes	Yes
84	**70**	97	120+12441	NY-17K	NY-207/WISNER AVE	E	1.85	44,072			Yes	
136	**71**	143	120+11237	US-9	US-9/CR-77/VASSAR RD	N	1.39	43,306			Yes	
276	**72**	169	120-05438	US-6	NY-17/EXIT 130A	E	2.61	43,103	Yes	Yes	Yes	
55	**73**	16	120N14332	CR-15	I-84	S	0.07	41,671	Yes		Yes	
219	**74**	130	120+04133	I-84	NY-9D/NORTH AVE	E	0.05	41,547	Yes	Yes	Yes	Yes
133	**75**	131	120N14133	NY-300	I-84	S	0.32	41,519			Yes	
113	**76**	113	120N11234	US-9	I-84	S	0.31	41,175			Yes	
160	**77**	248	120+05429	NY-17	NY-32/EXIT 131	W	0.04	40,798	Yes	Yes	Yes	

LOTTR: Threshold 1.50																
Ranking													Characteristics			
TTI	TED/mile	LOTTR	TMC (Segment ID)	Road Name	Nearest Intersecting Road	Direction	Miles	LOTTR	LOTTR AM*	LOTTR Off-Peak	LOTTR PM*	LOTTR Weekend*	On a CMP Top-Ten List	Freight Route	Regional Transit	Interstate
48	31	**1**	120-04132	I-84	NEWBURGH-BEACON BRIDGE TOLL PLAZA	W	0.01	2.56	1.05	1.14	2.56	1.05	Yes	Yes	Yes	Yes
44	37	**2**	120N04133	I-84	NY-9D/NORTH AVE	W	0.41	2.52	1.05	1.11	2.52	1.05	Yes	Yes	Yes	Yes
3	7	**3**	120P10186	US-9W	I-84/NY-52/NY-32/N PLANK RD	N	0.18	2.47	1.79	1.84	2.25	2.47	Yes	Yes	Yes	
25	27	**4**	120-12440	NY-17K	CR-54/S DRURY LN	W	1.05	2.32	1.76	1.81	1.81	2.32	Yes		Yes	
12	125	**5**	120+10081	NY-208	I-84	N	4.54	2.31	2.00	1.91	2.07	2.31	Yes		Yes	
1	28	**6**	120N29714	NY-9D	I-84	S	0.09	2.22	1.94	1.91	2.14	2.22	Yes		Yes	
5	22	**7**	120P29714	NY-9D	I-84	N	0.09	2.19	1.96	1.88	2.17	2.19	Yes		Yes	
102	52	**8**	120-04131	I-84	NEWBURGH-BEACON BRIDGE	W	0.41	2.14	1.07	1.14	2.14	1.06	Yes	Yes	Yes	Yes
67	124	**9**	120+10094	NY-299	NY-32/NY-208/CHESTNUT ST	E	1.11	2.08	1.38	1.61	1.63	2.08	Yes			
4	14	**10**	120P11874	NY-28	NY-32/ALBANY AVE	N	0.05	2.00	1.73	1.80	2.00	1.80	Yes		Yes	
28	24	**11**	120N13956	NY-52	US-9	E	0.08	2.00	1.62	1.67	1.80	2.00	Yes		Yes	
11	23	**12**	120P13956	NY-52	US-9	W	0.08	1.87	1.60	1.51	1.72	1.87	Yes		Yes	
51		**13**	120P12473	NY-55	FREEDOM RD	E	0.01	1.86	1.86	1.57	-	-	Yes	Yes		
18	18	**14**	120P11235	US-9	NY-52/MAIN ST	N	0.04	1.86	1.48	1.58	1.69	1.86	Yes		Yes	
24	36	**15**	120+10129	NY-17K	I-84	E	1.05	1.85	1.61	1.69	1.85	1.85	Yes		Yes	
55	73	**16**	120N14332	CR-15	I-84	S	0.07	1.83	1.41	1.50	1.61	1.83	Yes		Yes	
38	98	**17**	120-11802	NY-32	NY-94/BLOOMING GROVE TPKE	S	1.78	1.79	1.41	1.55	1.67	1.79	Yes		Yes	
6	4	**18**	120P11806	NY-32	I-84/US-9W/NY-52	N	0.12	1.78	1.68	1.68	1.78	1.76	Yes	Yes	Yes	
8	3	**19**	120P14132	NY-300	NY-17K/CONNECTING ROAD	N	0.01	1.77	1.35	1.43	1.56	1.77	Yes		Yes	
15	32	**20**	120+11824	NY-32	I-587/NY-28/CHANDLER DR	N	0.30	1.76	1.40	1.40	1.76	1.32	Yes		Yes	
43	159	**21**	120+10124	NY-94	NY-32/WINDSOR HWY	E	3.41	1.76	1.40	1.49	1.76	1.49				
35	206	**22**	120-12381	NY-208	NY-207/BURNSIDE DR	S	4.54	1.76	1.47	1.40	1.76	1.52	Yes		Yes	
13	2	**23**	120N14132	NY-300	NY-17K/CONNECTING ROAD	S	0.01	1.75	1.49	1.48	1.51	1.75	Yes		Yes	
19	51	**24**	120N10095	NY-299	I-87/NEW YORK STATE TRWY	W	0.11	1.75	1.47	1.56	1.75	1.70	Yes		Yes	
23	53	**25**	120-11803	NY-32	CR-69/UNION AVE	S	2.06	1.75	1.50	1.48	1.66	1.75	Yes		Yes	
37	145	**26**	120+11548	NY-22	CR-67/QUAKER HILL RD/E MAIN ST	N	0.31	1.75	1.27	1.42	1.72	1.75				
2	10	**27**	120P10129	NY-17K	I-84	E	0.10	1.74	1.52	1.59	1.62	1.74	Yes		Yes	
39	67	**28**	120P29721	NY-9D	US-9/SOUTH RD	N	0.04	1.74	1.62	1.65	1.74	-				
46	152	**29**	120P13952	NY-52	TACONIC STATE PKWY	W	0.07	1.74	1.33	1.27	1.65	1.74				
66	171	**30**	120+11248	US-9	NY-308/MARKET ST	N	3.21	1.74	1.26	1.54	1.49	1.74			Yes	
10	41	**31**	120+13957	NY-52	I-84	W	1.04	1.73	1.28	1.33	1.73	1.38	Yes		Yes	
42	66	**32**	120N10081	NY-208	I-84	S	0.17	1.73	1.59	1.55	1.55	1.73			Yes	
16	6	**33**	120N10186	US-9W	I-84/NY-52/NY-32/N PLANK RD	S	0.18	1.72	1.57	1.56	1.68	1.72	Yes	Yes	Yes	
17	90	**34**	120P10095	NY-299	I-87/NEW YORK STATE TRWY	E	0.11	1.72	1.39	1.44	1.72	1.61	Yes		Yes	
27	20	**35**	120N11235	US-9	NY-52/MAIN ST	S	0.03	1.71	1.35	1.50	1.60	1.71	Yes		Yes	
14	89	**36**	120+11197	US-9W	CR-86/FOSTERTOWN RD	N	1.00	1.71	1.17	1.23	1.71	1.23	Yes	Yes		
62		**37**	120P15541	ALBANY AVE	I-587/NY-32/NY-28/BROADWAY	E	0.13	1.70	1.54	1.55	1.70	-			Yes	
7	13	**38**	120N10129	NY-17K	I-84	W	0.10	1.70	1.60	1.67	1.56	1.70	Yes		Yes	
54	181	**39**	120N13952	NY-52	TACONIC STATE PKWY	E	0.07	1.70	1.2	1.29	1.70	1.42				
60	216	**40**	120+11334	US-44	NY--CT STATE BORDER	E	1.03	1.69	1.53	1.55	1.47	1.69				
29	26	**41**	120+14332	CR-15	I-84	N	0.07	1.68	1.60	1.55	1.55	1.68	Yes		Yes	

LOTTR: Threshold 1.50																
Ranking													Characteristics			
TTI	TED/mile	LOTTR	TMC (Segment ID)	Road Name	Nearest Intersecting Road	Direction	Miles	LOTTR	LOTTR AM*	LOTTR Off-Peak	LOTTR PM*	LOTTR Weekend*	On a CMP Top-Ten List	Freight Route	Regional Transit	Interstate
		42	120N15541	ALBANY AVE	I-587/NY-32/NY-28/BROADWAY	W	0.02	1.67	-	1.67	-	-			Yes	
52	38	**43**	120N11237	US-9	US-9/CR-77/VASSAR RD	S	0.04	1.67	1.32	1.40	1.56	1.67			Yes	
77	184	**44**	120-11250	US-9	NY-199/MARKET ST	S	2.50	1.67	1.46	1.63	1.63	1.67				
162	345	**45**	120+10127	NY-17K	NY-211/UNION ST	E	4.15	1.67	1.42	1.45	1.54	1.67				
20	106	**46**	120P13957	NY-52	I-84	W	0.10	1.65	1.54	1.47	1.65	1.64	Yes		Yes	
32	84	**47**	120+11804	NY-32	US-9W/NY-17K/BROADWAY/ ROBINSON AVE	N	2.06	1.64	1.48	1.55	1.63	1.64			Yes	
71	123	**48**	120-11248	US-9	NY-308/MARKET ST	S	2.35	1.64	1.26	1.40	1.54	1.64				
9	35	**49**	120P10081	NY-208	I-84	N	0.17	1.62	1.58	1.62	1.61	1.57	Yes		Yes	
34	39	**50**	120+14132	NY-300	NY-17K/CONNECTING ROAD	N	1.39	1.62	1.29	1.31	1.50	1.62			Yes	
53	120	**51**	120N13957	NY-52	I-84	E	0.12	1.62	1.38	1.39	1.49	1.62			Yes	
507	137	**52**	120N04125	I-84	WALLKILL REST AREA	W	0.39	1.62	1.19	1.62	1.07	1.04		Yes		Yes
96	160	**53**	120-12396	NY-299	CR-7/LIBERTYVILLE RD	W	1.11	1.62	1.39	1.61	1.59	1.62				
61		**54**	120+11074	US-6	EXIT 18	W	0.31	1.60	1.18	1.24	1.60	-				
63		**55**	120P13955	NY-52	NY-82	W	0.06	1.60	1.51	1.42	1.60	-				
26	9	**56**	120P06140	NY-17	US-6	N	0.08	1.60	1.43	1.47	1.53	1.60	Yes		Yes	
188	377	**57**	120-12438	NY-17K	CR-47/SCOTCHTOWN COLLABAR RD	W	4.15	1.60	1.24	1.37	1.51	1.60				
72	43	**58**	120-10217	US-9	E MAIN ST	S	1.36	1.59	1.16	1.31	1.59	1.58			Yes	
30	134	**59**	120-29717	NY-9D	NEW HAMBURG RD/OLD HOPEWELL RD	S	0.55	1.59	1.24	1.27	1.59	1.27				
22	1	**60**	120+06141	NY-17	NY-32	N	0.17	1.58	1.58	1.44	1.41	1.49	Yes		Yes	
21	12	**61**	120P14133	NY-300	I-84	N	0.32	1.58	1.58	1.49	1.45	1.58	Yes		Yes	
57	33	**62**	120+10204	US-9W	US-209/NY-199	N	0.60	1.58	1.37	1.36	1.39	1.58	Yes			
110	204	**63**	120+10104	NY-199	NY-9G/KALINA DR	E	1.53	1.58	1.13	1.17	1.58	1.18				
47	5	**64**	120-06140	NY-17	US-6	S	0.14	1.57	1.44	1.44	1.55	1.57	Yes		Yes	
59	85	**65**	120P14332	CR-15	I-84	N	0.07	1.57	1.50	1.50	1.47	1.57			Yes	
76	209	**66**	120-10167	US-44	NY-22/N ELM AVE	W	1.03	1.57	1.44	1.50	1.47	1.57				
40	16	**67**	120P11797	NY-32	NY-17	N	0.14	1.56	1.56	1.41	1.38	1.44	Yes		Yes	
83	88	**68**	120+27984	US-44	MID-HUDSON BRIDGE	E	0.98	1.56	1.25	1.13	1.56	1.13		Yes	Yes	
81	91	**69**	120-11824	NY-32	I-587/NY-28/CHANDLER DR	S	0.65	1.56	1.38	1.43	1.56	1.32			Yes	
41	103	**70**	120+10169	NY-55	TACONIC STATE PKWY	E	0.78	1.56	1.37	1.48	1.56	1.21	Yes	Yes		
123	97	**71**	120-11134	US-6	US-209/FOWLER ST/KINGSTON AVE	E	0.25	1.55	1.36	1.45	1.55	1.55				
87	104	**72**	120+11135	US-6	NY-97/NY-42/W MAIN ST	W	0.25	1.55	1.37	1.45	1.45	1.55				
125	110	**73**	120+11193	US-209	US-6/MAIN ST/FOWLER ST/KINGSTON AVE	N	0.25	1.55	1.39	1.55	1.50	1.50				
56	21	**74**	120P06141	NY-17	NY-32	N	0.14	1.54	1.54	1.42	1.39	1.49	Yes		Yes	
85		**75**	120P11133	US-6	I-84 (PORT JERVIS)	W	0.05	1.53	1.36	1.39	1.53	-			Yes	
64	87	**76**	120-04101	US-9	US-44/NY-55/CHURCH ST	S	0.04	1.53	1.20	1.31	1.53	1.31			Yes	
115	127	**77**	120+11803	NY-32	CR-69/UNION AVE	N	1.79	1.53	1.27	1.37	1.45	1.53			Yes	
92	29	**78**	120N11806	NY-32	I-84/US-9W/NY-52	S	0.11	1.52	1.37	1.41	1.52	1.51	Yes	Yes	Yes	
82	62	**79**	120+11134	US-6	US-209/FOWLER ST/KINGSTON AVE	W	1.59	1.52	1.27	1.34	1.52	1.39			Yes	
93	93	**80**	120-11197	US-9W	CR-86/FOSTERTOWN RD	S	1.01	1.52	1.52	1.25	1.45	1.32		Yes		
107	187	**81**	120+12432	NY-94	CLOVE RD	E	2.88	1.51	1.30	1.41	1.51	1.42				
33	11	**82**	120N06140	NY-17	US-6	S	0.08	1.50	1.43	1.40	1.50	1.48	Yes		Yes	

LOTTR: Threshold 1.50																
Ranking													Characteristics			
TTI	TED/mile	LOTTR	TMC (Segment ID)	Road Name	Nearest Intersecting Road	Direction	Miles	LOTTR	LOTTR AM*	LOTTR Off-Peak	LOTTR PM*	LOTTR Weekend*	On a CMP Top-Ten List	Freight Route	Regional Transit	Interstate
31	15	**83**	120N11874	NY-28	NY-32/ALBANY AVE	S	0.05	1.50	1.46	1.46	1.50	1.50	Yes		Yes	
69	40	**84**	120-10203	US-9W	BOICES LN	S	0.73	1.50	1.26	1.31	1.36	1.50				
112	121	**85**	120-14331	CR-15	NJ--NY STATE BORDER	S	0.07	1.50	1.39	1.41	1.43	1.50			Yes	
104	177	**86**	120-10123	NY-94	NY-208/SOUTH ST/GOSHEN AVE	W	2.88	1.50	1.37	1.39	1.50	1.43				

*A blank entry indicates that the segment had <10% of time periods reporting, and was excluded from analysis.