

Freight
Key Trends, Possible Future and Implications
for Transportation in Dutchess

Freight is an often overlooked but critical component of our transportation system. It includes road, rail, air, and water-based movement of goods. Technological trends are changing the nature of freight in profound ways, and it may look very different in the future. Staff reviewed data and projections related to freight movement across the nation and state to identify key trends. This tech memo outlines four key trends in freight and their implications for transportation in Dutchess County.

Trend 1. Continued dominance and growth in trucking

According to the Census Bureau’s 2012 Commodity Flow Survey, 97 percent of all freight tonnage in New York State is transported by truck. Nationally, trucking freight volume is expected to grow more than 35 percent from 2018 to 2028.ⁱ

The New York State Freight Plan designates three highway freight routes as part of the “84 Corridor” in Dutchess County: I-84 (including the Newburgh-Beacon Bridge), NY 55 (including the Mid-Hudson Bridge) and NY 22 from Route 55 to Putnam County.ⁱⁱ Other key truck facilities, based on DCTC’s analysis of heavy vehicle volumes, include segments of Routes 9, 9D, 52, 82, and 44 (see chart below).ⁱⁱⁱ

Route	Location	Dir 1 Heavy Vehicle %	Dir 2 Heavy Vehicle %	Total Heavy Vehicle %	Avg Daily Heavy Vehicle Volume
I-84	East Fishkill west of Taconic	East - 15	West - 14	15	7,142
NY 22	Pawling south of village	North - 9	South - 10	10	1,778
NY 55	Poughkeepsie west of Titusville Rd	East - 4	West - 4	4	1,435
US 9	Fishkill south of I-84	North - 6	South - 7	6	1,113
NY 82	East Fishkill west of Beekman Rd	North - 6	South - 6	6	866
US 44	Poughkeepsie/Pleasant Valley west of West Rd	East - 5	West - 5	5	769
NY 22/NY 55	Pawling/Dover south of NY 55 split	North - 12	South - 10	11	756
NY 55	LaGrange east of Taconic	East - 6	West - 5	5	707
US 44	Pleasant Valley east of West Rd	East - 5	West - 4	4	682
NY 52	East Fishkill west of NY 376	East - 8	West - 8	8	664
US 44/NY 22	Amenia/North East south of NY 199	East - 12	West - 13	13	662
NY 9D	Fishkill/Wappinger south of Old Hopewell Rd	North - 3	South - 3	3	644

Marple Rd	Poughkeepsie east of N. Grand Ave	East - 18	West - 2	10	639
NY 52	East Fishkill west of Taconic	East - 5	West - 4	4	634
NY 82	Fishkill/Wappinger west of All Angels Hill Rd	North - 4	South - 5	4	632
NY 52	Fishkill east of US 9	East - 4	West - 4	4	624
US 44	Pleasant Valley west of Taconic	East - 5	West - 5	5	618
US 9	Poughkeepsie/Hyde Park south of St. Andrews Rd	North - 3	South - 3	3	618

Data from the New York State Bridge Authority provide a sense of local trends in trucking. In 2018, the Newburgh-Beacon Bridge carried more than 2.6 million commercial trips, representing about ten percent of total traffic. Most of the commercial vehicles were 5-axle trucks (a typical semi-trailer). Overall, commercial traffic volumes have declined slightly on this bridge over the past decade, though there has been significant growth in 6-axle trucks.

The Mid-Hudson Bridge carries less traffic and a smaller percentage of commercial trips. In 2018, it carried about 437,000 commercial trips, representing three percent of total traffic. Most of the commercial vehicles on this bridge were 2-axle trucks (small trucks like FedEx and UPS). Over the past decade, commercial volumes on the Mid-Hudson Bridge have increased slightly, consistent with overall traffic growth. There has been substantial growth in 6-axle trucks and smaller but still significant growth in 4-axle trucks.

The Freight Plan estimates that between 2012 and 2040, truck volume on the 84 Corridor (which includes the three designated routes listed above) will increase by 47 percent, truck tonnage will increase by 43 percent, and truck value will increase by 68 percent.^{iv} Maps from the Freight Plan showing projected future freight volumes, tonnage, and value on routes across the state are included at the end of this memo for reference.

While freight is changing, as discussed below, trucks will likely continue to carry most of the freight in Dutchess County, and we can expect trucking freight volume to continue to grow. This will mean more truck traffic and likely further deterioration of roads and bridges. It will be critical to maintain or improve travel time reliability on key truck routes, maintain or improve pavement conditions on key truck routes, and use technology to manage incidents and direct trucks to the best routes.

Trend 2. Growth in local, small-scale, on-demand deliveries

Research shows that freight deliveries to households now exceed freight deliveries to companies, and the delivery rate to households has increased 300 percent over the past four years.^v Much of this is related to e-commerce and on-demand deliveries.

This dramatic growth means more traffic, parking demand and curb-side competition, and likely pavement deterioration on local streets, which are typically not designed for trucks.

To address this growth will require monitoring local pavement conditions, gathering data on local delivery trips and traffic, and planning for delivery and curb space management. There is also a need to work with delivery companies on solutions such as night and weekend deliveries, e-bike delivery, optimized routing, consolidated deliveries, dedicated hubs for package pick-ups, and same-day surcharges.

Trend 3. Potential for autonomous freight and unmanned delivery vehicles

Autonomous vehicle research has focused on fleets, and freight is an obvious candidate for the introduction of autonomous vehicles. In particular, trucks may become autonomous, at least in controlled environments like limited access highways, at ports, and between logistics centers.

This could help address the current shortage of truck drivers, but also lead to further trucking job losses. As the technology spreads outside of controlled environments, it raises potential safety concerns related to vehicle-truck interactions.

Cargo ships may also become autonomous, given the relatively controlled environments in which they operate.^{vi} Similar to trucking, this could result in job losses and potential safety concerns with other ships or waterway users.

At a smaller scale, unmanned terrestrial delivery vehicles (driverless vehicles) and unmanned aerial delivery vehicles (drones) are being tested in various locations around the country for local deliveries.^{vii} This could reduce truck trips, especially for short distance trips. However, driverless delivery vehicles may generate more total trips due to customers' growing reliance on same-day delivery, as has been seen with e-commerce deliveries. Additionally, drone deliveries will require delivery spaces such as smart lockers, as well as regulations for flights and landings.

It will be important to monitoring this trend and understand best practices, and to identify potential locations for testing autonomous freight technology.

Trend 4. Expansion of freight traffic at Stewart Airport; potential Hudson Valley Regional Airport expansion

Recent trends show growth in freight traffic at Stewart Airport, primarily due to shipments by UPS and FedEx.^{viii} To accommodate this growth, it will be important to maintain freight connections between Stewart Airport and Dutchess County and improve them where needed.

Dutchess County's Hudson Valley Regional Airport is continuing to develop its capacity and could serve as a smaller-scale freight hub in the future. The feasibility of this will depend on maintaining and improving the local road network and considering impacts to adjacent residential areas and environmental assets.

Conclusion

While freight is not something that the DCTC has traditionally focused on (aside from our 1996 Goods Movement Plan), it will become an increasingly local issue in the future, raising concerns and challenges for our municipalities. It is important for us and our members to understand

freight-related trends and our roles in addressing the challenges they bring. DCTC's role, working with local and State partners, could include the following:

1. Analyze travel time reliability on key truck routes and recommend potential improvements
2. Monitor pavement conditions on key truck routes and local streets (for deliveries)
3. Suggest appropriate technology to help manage incidents and direct trucks to the best routes
4. Gather and analyze data on local delivery trips and traffic
5. Help municipalities plan for delivery and curb space
6. Suggest ways for municipalities to work with delivery companies on solutions (such as night and weekend deliveries, e-bike delivery, optimized routing, consolidated deliveries, dedicated hubs for package pick-ups, and same-day surcharges).
7. Monitor trends in autonomous freight/deliveries (road, shipping, drones) and understand best practices
8. Identify potential locations for testing autonomous freight technology
9. Evaluate access issues and potential access improvements for Stewart Airport
10. Work with County officials to understand plans for the Hudson Valley Regional Airport and potential transportation issues
11. Develop a Regional Freight Plan with Ulster and Orange County partners

Figure 7-3: 2040 Truck Volume Map, TRANSEARCH Data (Daily Volumes)



Figure 7-5: 2040 Truck Tonnage Map, TRANSEARCH Data

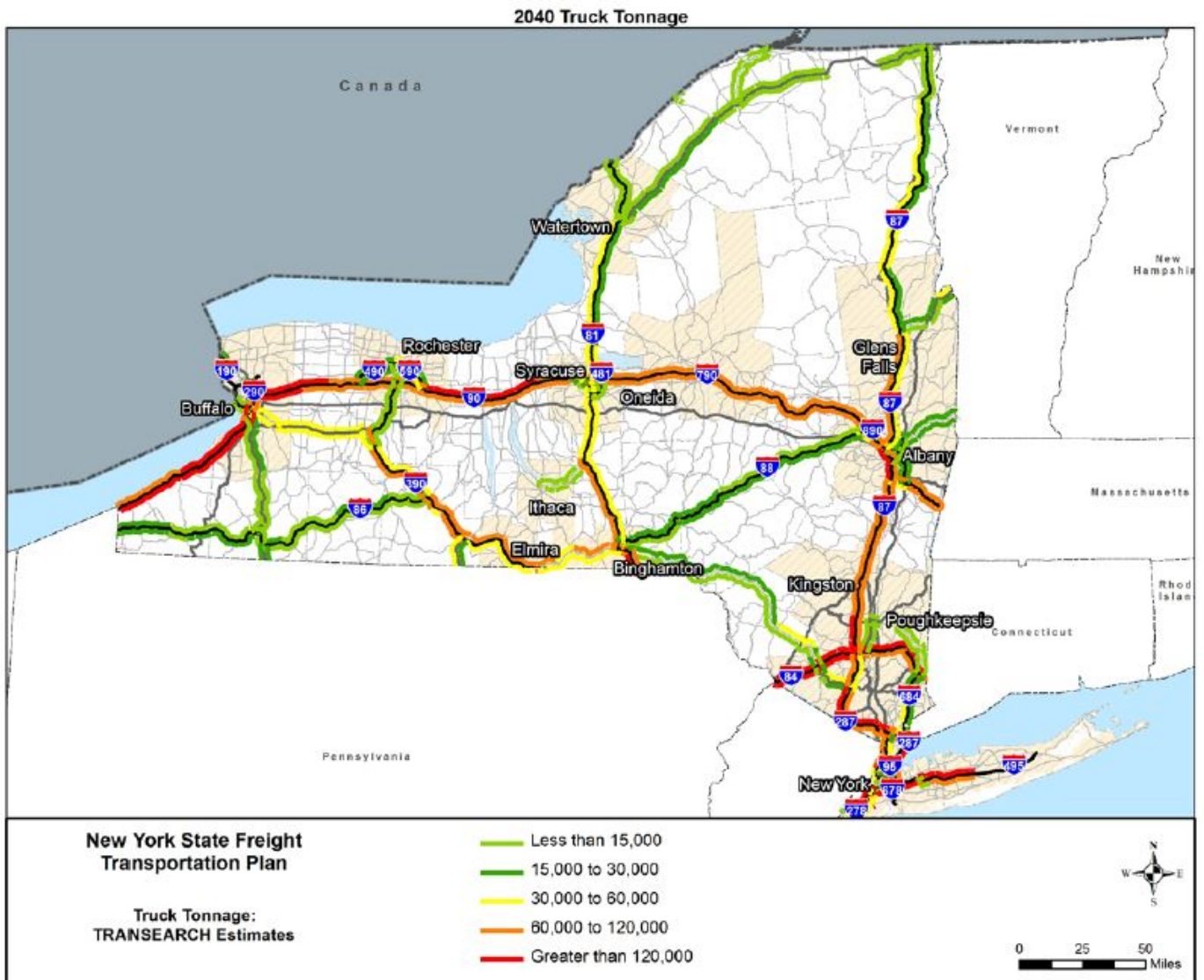
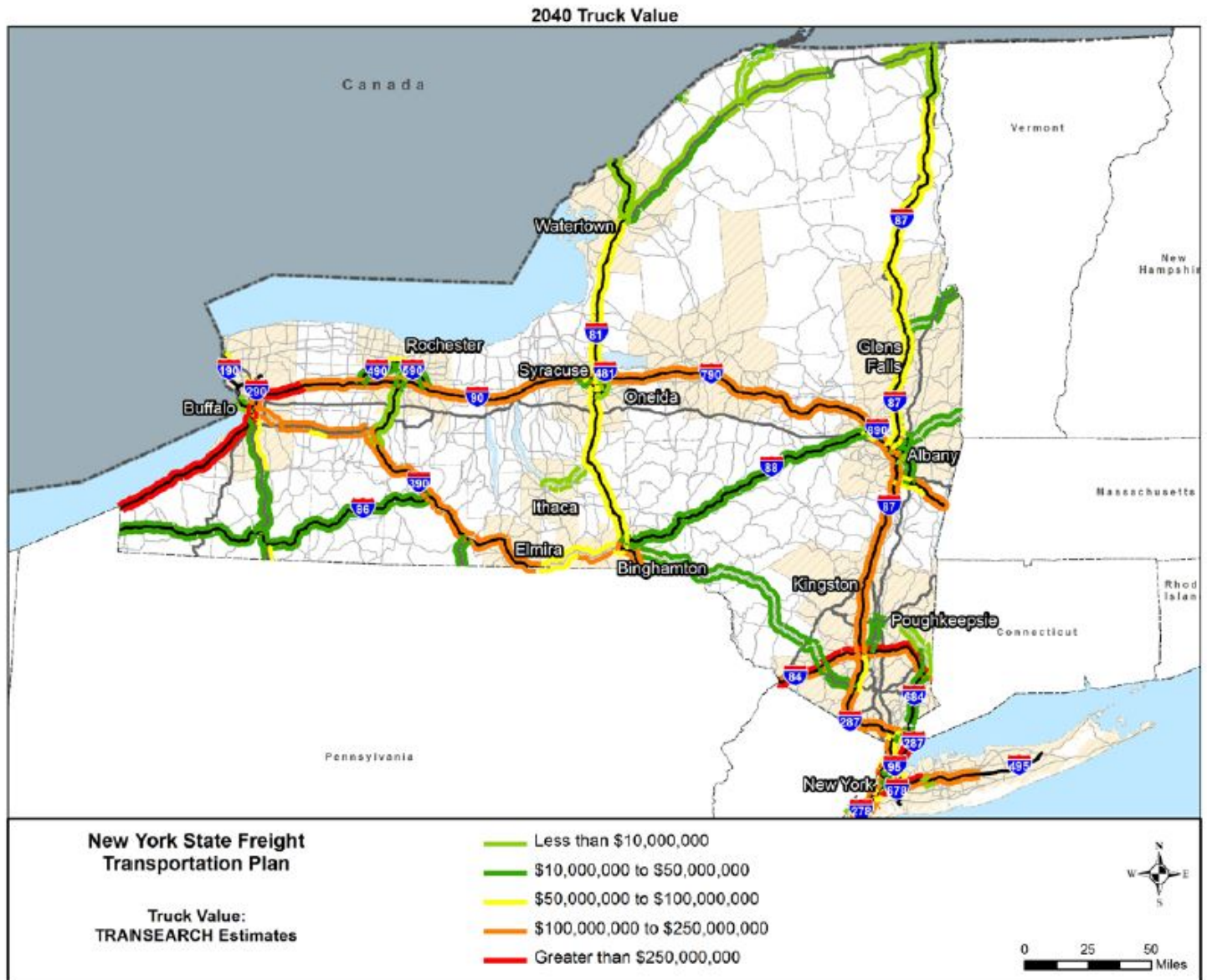


Figure 7-7: 2040 Truck Value Map, TRANSEARCH Data



ⁱ NYMTC 2050 Socioeconomic & Demographic Forecast Update: Development & Enhancements; Technical Memorandum 1: Existing Trends Analysis, April 2019 (p 49)

ⁱⁱ New York State Freight Transportation Plan, Appendix C, <https://www.dot.ny.gov/freight-plan>

ⁱⁱⁱ Data analyzed from DCTC Traffic Data Viewer (<https://gis.dutchessny.gov/traffic-data/>)

^{iv} New York State Freight Transportation Plan, Technical Memorandum 5, p 218

^v Jose Holguin-Veras, RPI/Volvo, speaking at NYSAMPO 2019 conference.

^{vi} Jamie Winders, Syracuse University Autonomous Systems Policy Institute, speaking at NYSAMPO 2019 conference

^{vii} NYMTC 2050 Socioeconomic & Demographic Forecast Update: Development & Enhancements; Technical Memorandum 1: Existing Trends Analysis, April 2019 (p 65). See for example [Kroger grocery](#) delivery pilot.

^{viii} Based on an analysis of data from <http://www.panynj.gov/airports/traffic-statistics.html>