



NEW YORK METROPOLITAN TRANSPORTATION COUNCIL



# The Future of Mobility

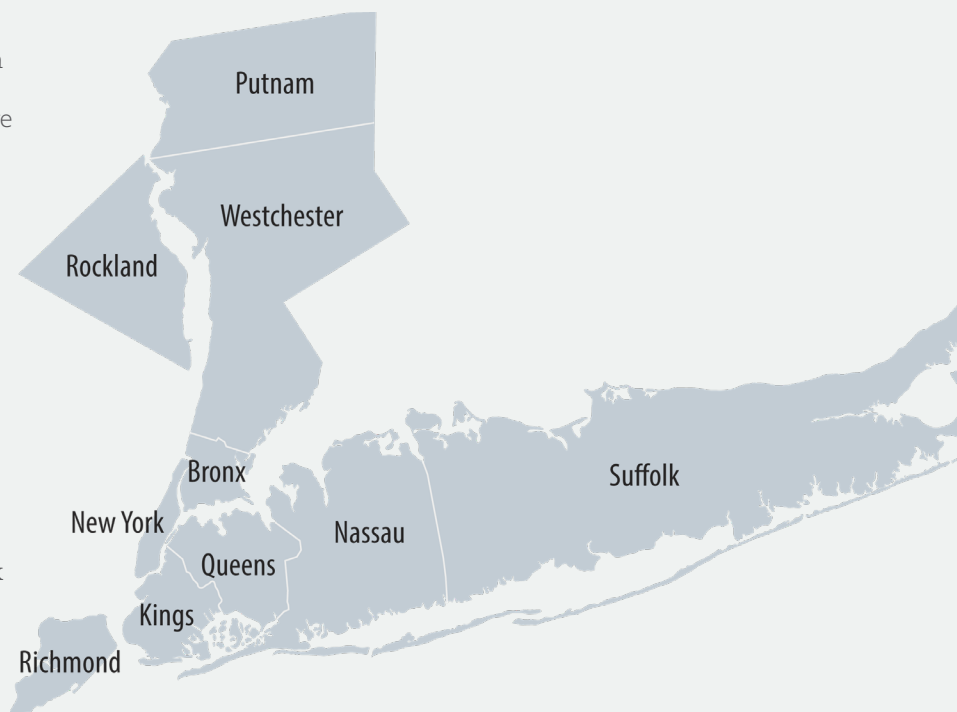
NYMTC 2019 ANNUAL REPORT

# About the New York Metropolitan Transportation Council (NYMTC)

NYMTC is a regional council of governments that is the metropolitan planning organization for New York City, Long Island and the lower Hudson Valley. NYMTC provides a collaborative planning forum to address transportation-related issues, develop regional plans and make decisions on the use of federal transportation funds.

## NYMTC's mission:

- To serve as a collaborative forum to address transportation-related issues from a regional perspective;
- To facilitate informed decision-making within the Council by providing sound technical analyses;
- To ensure the region is positioned to capture the maximum Federal funds available to achieve the goals of the Unified Planning Work Program, Regional Transportation Plan and Transportation Improvement Program; and
- To focus the collective planning activities of all Council members to achieve a shared regional vision.



## Council Members

### Voting Council Members

**Ron Epstein**  
NYMTC Acting Co-Chair and  
Executive Deputy Commissioner  
New York State Department of Transportation

**Laura Curran**  
NYMTC Co-Chair and  
Nassau County Executive

**Polly Trottenberg**  
Commissioner  
New York City Department of Transportation

**Marisa Lago**  
Director  
New York City Department of City Planning

**Fernando Ferrer**  
Acting Chairman  
Metropolitan Transportation Authority

**MaryEllen Odell**  
Putnam County Executive

**Ed Day**  
Rockland County Executive

**Steve Bellone**  
Suffolk County Executive

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**Richard Cotton**  
Executive Director  
Port Authority of New York and New Jersey

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Executive Director  
New Jersey Transit

**Mary D. Ameen**  
Executive Director  
North Jersey Transportation Planning Authority

**Basil Seggos**  
Commissioner  
New York State Department of  
Environmental Conservation

**Stephen Goodman**  
Regional Administrator  
Federal Transit Administration  
Region 2

**Richard Marquis**  
Division Administrator  
Federal Highway Administration  
New York Division

**Pete Lopez**  
Regional Administrator  
U.S. Environmental Protection Agency  
Region 2

**José M. Rivera, P.E.**  
Executive Director, NYMTC

**Ron Epstein**  
Council Secretary  
New York State Department of  
Transportation



“New York has demonstrated that the path forward to economic opportunity is through building new roads, bridges, airports and investing in our transit systems.”

### RONALD L. EPSTEIN

NYSDOT EXECUTIVE DEPUTY  
COMMISSIONER

#### ACTING CO-CHAIR MESSAGE

I would like to personally extend my appreciation to the members and staff of NYMTC for a productive and successful year. Your collaboration, dedication and commitment to shared goals is moving this region forward in ways that we never envisioned.

I also want to thank Governor Cuomo for his unparalleled leadership and unprecedented commitment to enhancing the region's infrastructure. This Governor, like no other, recognizes that the New York metropolitan area's economic competitiveness relies on a resilient and efficient transportation infrastructure network to continue attracting investment and creating jobs. In fact, with the nation's infrastructure deteriorating, New York has demonstrated that the path forward to economic opportunity is through building new roads, bridges, airports and investing in our transit systems.

Major projects continue to advance in the region that were unimaginable less than a decade ago. Examples of these transformative investments include the reconstruction of the Kosciusko Bridge; access improvements to JFK, such as reconstruction of the Kew Gardens Interchange and the planned expansion of the Van Wyck Expressway;

reconstruction of the Bruckner interchange, including new ramps to the Hunts Point Market; reconstruction of the Nassau Expressway to ensure a more resilient emergency coastal storm evacuation route; and the commencement of the new Hudson Link, an integrated program of mobility and enhanced bus services in the Lower Hudson Valley. This is just a few of the hundreds of projects that are already underway or planned in every county within the planning region.

These projects underscore the criticality of the Council's mission and are a tribute to the members' commitment to facilitating growth and enhancing sustainability. While the challenges may seem significant, always remember that the opportunities remain unlimited. I thank you for all that you do to help to make this region the best destination to live, work and play in the world.



“Our region is stronger when we work together and use our collective expertise to establish the multi-jurisdictional partnerships needed to make this region all we believe it can be.”

**LAURA CURRAN**  
NASSAU COUNTY EXECUTIVE

### CO-CHAIR'S MESSAGE

It has been a privilege to serve as NYMTC's co-chair this past year, especially given this was my first year as Nassau County Executive. I am especially grateful for the opportunity to serve as co-chair because it gave me the platform to meet and begin working with the other Principals in the NYMTC region to pursue a shared vision that supports planning for local and regional transportation initiatives.

In Nassau County, after decades of delays we're finally moving forward with plans to create a Nassau Hub Innovation District and develop the over 60 acres of county-owned land surrounding the Nassau Veterans Memorial Coliseum in Uniondale. The live / work / play District will include a cutting-edge life sciences and R&D cluster together with an entertainment hub. It will also incorporate multimodal connectivity and provide housing options for millennials and our workforce. These improvements will greatly contribute to the sustainable growth of Nassau's tax base.

Regionally, Nassau County is working closely with the Long Island Rail Road (LIRR) on the Mainline Expansion, or Third Track Project. Under Governor Cuomo's leadership, this project is now under construction on an accelerated schedule,

and when completed the LIRR's riders will benefit from increased service reliability and enhanced reverse commute options. In addition, many communities along the third track corridor are now reviewing and revising their zoning codes to address Transit-Oriented Development (TOD) opportunities adjacent to LIRR stations.

Like Nassau, NYMTC's other member agencies are all working on their respective initiatives, and when taken together we all get to share in the regional benefits of a sustainable transportation network that was planned, designed, and built through our collaborative efforts at NYMTC. Our region is stronger when we work together and use our collective expertise to establish the multi-jurisdictional partnerships needed to make this region all we believe it can be. And while my term as co-chair is coming to an end, my commitment to NYMTC and my fellow Principals remains strong, and I plan to remain engaged in Council activities.

Thank you again for the opportunity to serve as NYMTC's co-chair, and I look forward to working with all member agencies toward the achievement of our regional transportation goals.

A stylized, handwritten signature in blue ink, appearing to read 'Laura Curran'.



“Under the leadership of our Governor, the Mayor of New York City, and County Executives, we are seeing great improvements to transportation in the region, including new bridges, major airport upgrades, transit-oriented development, and improved resiliency to emergencies and extreme weather events.”

**JOSÉ M. RIVERA, P.E.**  
NYMTC EXECUTIVE DIRECTOR

### EXECUTIVE DIRECTOR'S MESSAGE

Technology-driven changes are impacting transportation faster than any time in my 35-year transportation engineering career. It is all but certain that during the next 25-year planning cycle, the way we move ourselves and our goods will continue to change.

These drivers of change, as they are called in NYMTC's *Plan 2045*, are transformative, although many see them as disruptive. In my opinion, the more prepared we are, and the more adaptable our transportation systems and infrastructure, the less disruptive these forces will be. Hence, this transformative period requires a visionary, nimble, and proactive approach.

This year's Annual Report focuses on these technology-driven changes including ride-sharing, e-commerce, the potential for automated and connected vehicles, and more emphasis on multimodal travel options.

In the last several years, we have experienced the impacts of e-commerce and ride-sharing applications and how critical wireless communications have become. Smart phones and other communication tools have helped create a more convenient, efficient, and better-connected transportation system.

Under the leadership of our Governor, the Mayor of New York City, and County Executives, we are seeing great improvements to transportation in the region, including new bridges, major airport upgrades, transit-oriented development, improved resiliency to emergencies and extreme weather events, and more innovative ways to preserve, maintain, and enhance our transportation systems and infrastructure.

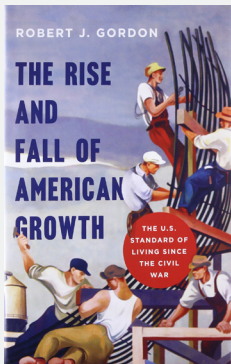
NYMTC is committed to leading regional planning efforts in this new paradigm with greater partnering, use of new data sources, and upgrades to its analytic tools and predictive capabilities to meet these challenges. You can read more about these commitments in the pages that follow.

It is my sincere honor to serve as Executive Director for NYMTC during these exciting times.

## 01

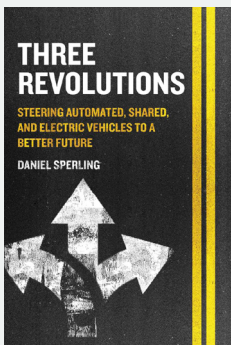
## Introduction

NYMTC's current Regional Transportation Plan, entitled *Plan 2045: Maintaining the Vision for a Sustainable Region*, observes that major changes are occurring across the nation and in NYMTC's planning area that are likely to significantly transform the provision, management, and use of transportation services and facilities. Advances in communication, vehicle technologies, and data collection could significantly change mobility – the way we travel and deliver goods and services – in the future. In addition, meeting the challenge of climate change, including achieving Governor Cuomo's goals of 40 percent reduction in emissions from 1990 levels and eventual economy-wide carbon neutrality, will require a fundamental shift in the transportation system away from vehicles powered by fossil fuels. Given this, NYMTC's planning process will likely be challenged by a transformation in the way people and goods are moved within, into, out of, and through NYMTC's planning area.



In **The Rise and Fall of American Growth: The U.S. Standard of Living Since the Civil War** (2016), author Robert J. Gordon's central idea is that . . .

*Civilization-defining transformations were the drivers of economic growth in the 100 years after the Civil War. Water and sewer systems, rail lines, public transportation, communications, and (perhaps most profoundly) the automobile connected cities, regions, and eventually the entire country. Emerging developments in transportation could, once again, remake landscapes and economies.*



In **Three Revolutions: Steering Automated, Shared, and Electric Vehicles to a Better Future** (2018), author Daniel Sperling and various contributors describe possible futures resulting from the transportation transformation:

*In one vision of the future, the three revolutions (i.e., shared, clean, automated vehicles) are steered toward the common good with forward-thinking strategies and policies. Citizens have the freedom to choose from many clean transportation options . . . Now imagine a very different future that could come about if our community is unprepared for the three revolutions. Traffic congestion gets worse . . . greenhouse gas emissions increase . . . transit services diminish.*

Anticipating the future of mobility, adapting to its changes, and shaping its outcomes are perhaps the most obvious challenges faced by NYMTC's continuing planning process.

## 02

## Future Mobility and NYMTC's Planning Process



### What is NYMTC's *Plan 2045*?

Federal regulations govern the planning process that must be undertaken by metropolitan planning organizations such as NYMTC to access and use federal transportation funding. The required planning process must be guided by a regional, long-range transportation plan. For NYMTC, *Plan 2045* is the current long-range plan, which it adopted in June 2017. The Plan was built from a framework of the NYMTC member agencies' eight shared strategic goals, associated desired outcomes, and near-term actions related to the goals and outcomes. The Plan's strategic framework guides NYMTC's planning process and the resulting use of federal funding for transportation projects.

NYMTC's members collaboratively developed *Plan 2045*'s goals and outcomes in a manner that was consistent with both national goals and federally-prescribed planning factors. In addition, *Coordinated Development Emphasis Areas* – which are locations where changes to land use and transportation will shape future growth and the way it is accommodated by the transportation system – and other sustainability initiatives are also part of this strategic framework.

*Plan 2045* forecasts the cost of preserving the transportation system through its horizon year, as well as funding expected to be available over that period. Additionally, it proposes funding for system enhancement projects, both within the expected available

### PLAN 2045's Shared Strategic Goals

- Enhance the regional environment;
- Improve the regional economy;
- Improve the regional quality of life;
- Provide convenient, flexible transportation access;
- Enhance safety and security;
- Build a case for obtaining resources;
- Improve resiliency; and
- Preserve the existing transportation system.

funding and as part of a speculative “vision” element. Thus, the Plan guides future transportation investments and establishes both eligibility for federal funding assistance and the availability of local resources to match that federal funding.

### **Plan 2045 and the Future of Mobility**

Understanding transformational change and developing reasonable forecasts of future impacts are challenging, yet crucial to the Plan’s role in identifying future needs and guiding the preservation and enhancement of the transportation system.

Plan 2045 acknowledges both the approaching transportation transformation and the impacts of major global trends, along with their potential impacts on future mobility, by articulating the following developments during its planning period:

- Personal mobility is likely to evolve away from personal vehicle ownership and toward shared mobility – increased use of shared, on-demand, automated vehicles. Daily transit trips are projected to grow during the planning period across the entire NYMTC planning area; however, by the 2045 horizon year, there will likely also be an increase in the volume of automobile trips, due in part to the evolution of shared mobility, as regional population and employment continues to grow.
- Goods movement is likely to be impacted by technological changes such as additive manufacturing (also known as 3D printing), commercial vehicle automation and automated delivery, the continuing automation of goods production, and the continuing growth of e-commerce as a business model. By 2045, commodity flows within, in and out of, and through the NYMTC planning area are expected to grow by 67 percent, to 610 million tons. This growth in commodity flows reflects anticipated population and economic growth, increasing wealth and consumer spending, and increasingly complex logistics and distribution networks, propelled in part by increased on-line activity.
- NYMTC’s planning area, along with metropolitan regions worldwide, will continue to face challenges from the impacts of major global trends including climate change, the future availability and cost of energy, the development of new technologies and energy sources, changing demographics and lifestyle expectations, changes in land use patterns, and limitations in and changes to current transportation finance methods.

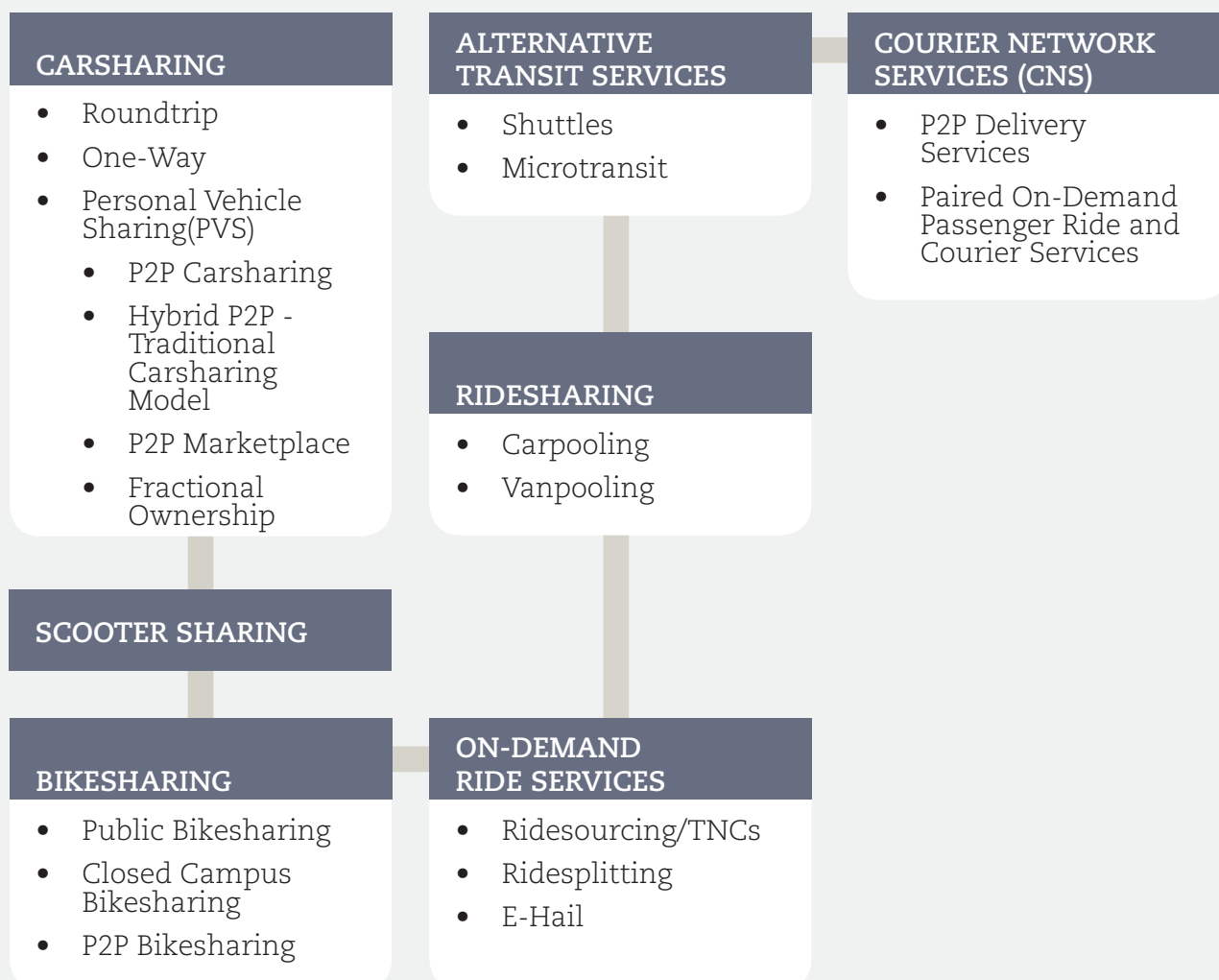
In acknowledging these likely evolutionary developments, Plan 2045 indicated the impracticality – at the time of its writing – of accurately predicting the quantitative impacts of transformative change on its forecasts for the transportation system. Even so, the Plan expresses little doubt that some combination of these drivers of change will have an impact on the demand

for transportation and/or the way transportation services are provided. As stated in the Plan's Forecasting and Trends chapter:

*It is likely that the impacts of the drivers of change on the Plan's socio-economic & demographic, and travel demand forecasts will be somewhat muted during the first ten years of the Plan, due mainly to the pace of development of the various technologies for communications/information and for vehicles themselves (both public and private) and the behavioral change that will mature along with the technologies. This will likely also be true of the employment and economic transformation, and operational and safety changes, since their overall development and acceptance will follow a similar dynamic.*

Beyond this initial ten-year period and through the 2045 horizon year, the impacts of these drivers on transportation demand and supply will likely be more evident due to the maturation of technologies and related behavioral adaptation. Some of these impacts may be far reaching, but it is not possible to reasonably forecast when and how the drivers will mature and what they will ultimately become.

### Key Areas of Shared Mobility



## 03

## Setting the Stage for the Next Long-Range Planning Cycle



Federal planning regulations require NYMTC to adopt an updated Regional Transportation Plan every four years. Therefore, NYMTC is preparing to develop its next Plan, which will have a 2050 horizon year, and is taking steps to enhance its forecasting capabilities in light of transformational change.

Transformational change and the future of mobility will affect how NYMTC approaches the strategic framework in its next Plan. Some possible outcomes of this change, such as increases in vehicular use, will influence how NYMTC and its members seek to fulfill goals related to the environment, economy, climate change, and quality of life. Other potential outcomes, such as evolving forms of shared mobility, will affect the way goals for transportation access, convenience, connectivity, safety, resilience, reduced emissions, and resources are pursued. Although *Plan 2045* lays the groundwork for beginning to anticipate these developments and formulate approaches, more attention will be needed in the next planning cycle to better understand current trends, potential futures, and possible outcomes, as outlined below:

### Recently Completed Research

Exploring research that has measured changes in mobility attributable to transformational change is an important step in preparing for the next planning cycle. Prominent examples of recent efforts include the following:

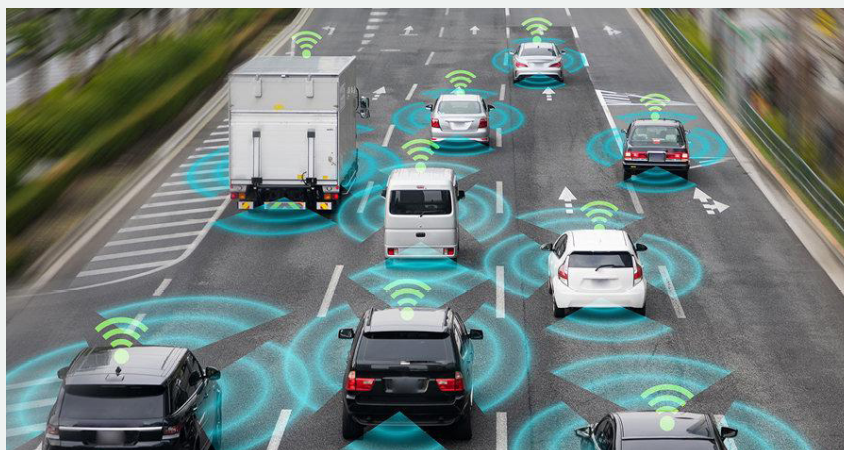
- **The University of California's (UC) Davis Institute of Transportation Studies** completed the first-ever study with representative data from major cities across the U.S. on on-line ride-hailing services and their impact on travel decisions.

The research suggests that ride-hailing can be complementary to public transit, but the net effect is an overall reduction in public transit use and a shift towards travel by lower occupancy vehicles. One caveat to this overall finding is that the study found that the complementary effect has been greatest with commuter rail service, so that it can be inferred that the impacts across the NYMTC planning area likely vary with location. The study also found that land use mix and population/job density impact the frequency of use of ride-hailing services.

- **Schaller Consulting** (2017) completed a detailed analysis of on-line ride-hailing services in New York City from 2014-2016. The analysis found that ride-hailing ridership tripled between June 2015 and the Fall of 2016 and that ride-hailing services accounted for the net addition of 600 million miles of vehicular travel to the City's roadway network during this period.
- **Walker Consultants** (2017) has found that a strong correlation exists between high parking costs in urban metropolitan areas and ride-hailing market penetration. Strong markets for ride-hailing services are found in dense urban centers with a bigger pool of potential customers and in places where parking costs become prohibitive.

### Additional Research and Improved Forecasting Capabilities

There are several aspects of future mobility that warrant additional research and improved forecasting capabilities so that the new Plan can anticipate future conditions and potential scenarios. These include:



- **Vehicle Technology** – legal and technical developments in vehicle technology must be monitored closely to define future scenarios for market penetration by Connected and Automated Vehicles (CAVs) and the potential impacts of that market growth through 2050. These future scenarios would

be based on assumed timeframes for CAVs to be in operation as a proportion of personal, public, and commercial vehicle fleets. As CAVs become an increasing proportion of the vehicle fleets in operation, advanced traffic management technologies could potentially increase the throughput of roadways and bus transit facilities and therefore significantly influence both transportation demand and supply.

Additionally, pilot testing of various levels of vehicle autonomy for automobiles, trucks, vans, and buses must be monitored to track the evolution of the technology as a means of predicting its future maturation. Similar attention must be paid to scenarios for the expanded use of electricity and lower-carbon fuels like hydrogen, renewable natural gas and renewable diesel to power light-and heavy-duty vehicles.

- **Shared Mobility** – the shared use of a vehicle, bicycle, or other mode – either individually or in combination through more seamless operation – is an innovative transportation



strategy that enables users to gain short-term mobility on an “as-needed” basis. The term *shared mobility* includes various forms of carsharing, bikesharing, ridesharing (carpooling and vanpooling), and on-demand ride services, including ride-hailing. It can also include alternative transit services, such as paratransit, shuttles, and on-demand transit services, called microtransit, which can supplement fixed-route bus and rail services. Improved connectivity between different

combinations of these modal alternatives is also a component of the shared mobility concept.

- **New Data and Analyses** – the impacts of the continuing evolution of shared mobility on key metrics such as vehicle miles of travel, transit ridership, carsharing and bikesharing rates, and private vehicle ownership must be monitored. This information will be used, where feasible, to adjust NYMTC’s forecasting tools – for such key parameters as trip-making characteristics, trip generation rates, and modal choice characteristics – to improve forecasts of travel demand as a basis for the next Plan.
- **E-commerce** – defined as the buying and selling of products and services with the aid of internet and computer or handheld devices. It involves both the ordering of products or services and their delivery to the consumer or customer. The companies and agencies that carry, send, receive, or manage

the movement of goods are developing and deploying new technologies and new processes to improve the efficiency of goods movement, reduce costs, comply with regulatory or customer-driven demands, or improve profitability. This could result in increased goods movement demand or greater concentration of that demand in certain areas.



- **Land Development** – the advent of shared mobility and e-commerce is beginning to impact land use patterns and may continue to do so in the future. Information and communication technologies, as well as vehicle technologies, could significantly influence future distribution of residential, commercial, and industrial land uses. This is particularly true given the growth of e-commerce, which is altering commercial land use at various locations in New York City's multi-state metropolitan region through siting of intermodal centers, warehouses, and distribution centers, as well as industrial properties.

## Differing Perspectives on the Future

As NYMTC develops its next Plan, a degree of caution must be exercised in anticipating the future of mobility. Despite current trends implying that continued technological, economic, and societal developments will transform how, when, and if people and goods move, other perspectives remain that must be considered when forecasting potential future scenarios, along with unresolved issues in areas such as traveler and pedestrian safety.

The continued development of shared mobility and e-commerce may be significantly more predictable in the short and medium term, given current trends and the reality that much of the enabling technology is already in place. Yet there are still risks of both over- and under-estimating forecasts related to transformational change, particularly since there is little consensus on the pace of that change among researchers, planners, technology experts, and policy makers.

## 04

## Adapting the Planning Approach



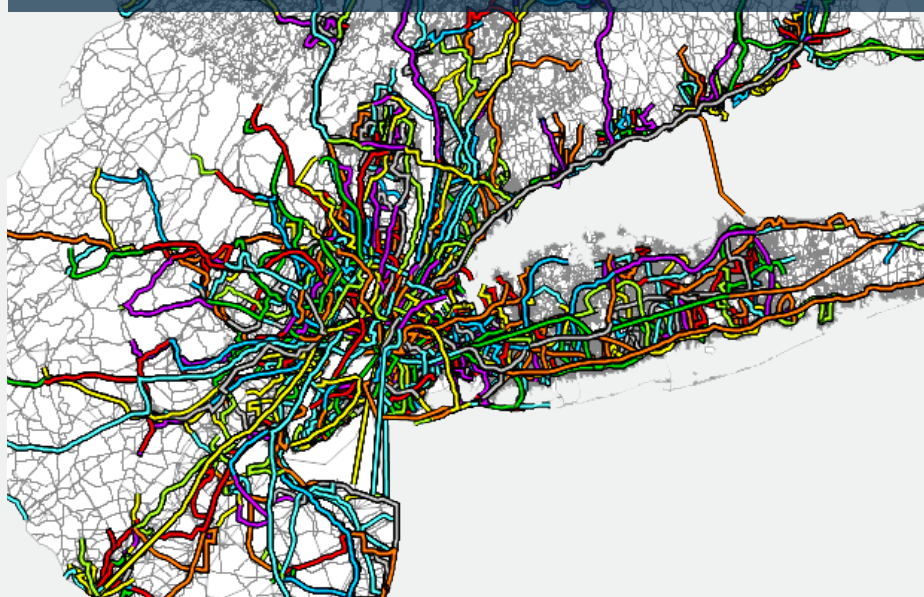
As NYMTC develops its next Plan, there are tools, techniques, and approaches that can be employed to anticipate the impacts of transformative change on the future of mobility, including the following:

**Planning for Uncertainty** - NYMTC's next Plan will need to accommodate future uncertainty while offering reasonable predictions of future change, since the level of transformation in the way people and goods will move will be difficult to forecast with certainty. Several tools and techniques can be employed considering future uncertainties, including the following, which are neither mutually exclusive nor listed in order of priority:

- Using “big data” to monitor trends and define potential future conditions. The availability of new data – crowd-sourced through social media, collected by mobile phone operators and through Global Positioning Systems, and gathered from the “Internet of Things” – will be critical to adapting NYMTC's forecasting tools and simulation models to better predict potential changes in future travel.
- Using sensitivity analyses and developing alternate future scenarios. These planning techniques alter key parameters in future forecasts to test the impact of these changes on outcomes such as travel patterns, transit ridership, goods movement, and vehicle miles of travel.
- Benchmarking and networking with similar organizations in other metropolitan regions across the country. Such collaboration will take on increased importance in providing guidance for defining uncertain futures. Greater collaboration will also assist in monitoring trends and emerging concepts.

**Upgrading Analytical Tools and Forecasting Capabilities** - The market penetration of new technologies takes time and, in many cases, requires legal, policy, behavioral, and societal adaptations. Transformational technologies that have only minor impacts in the short term may result in major impacts to land use and transportation in the long term. For example, information and communication technologies, as well as vehicle technologies, could have major long-term impacts on population, employment, and travel forecasts.

#### NEW YORK BEST PRACTICE MODEL TRANSIT NETWORK



To better predict the transportation outcomes of these changes, NYMTC's analytical tools and forecasting capabilities will need to be upgraded to account for transformational changes that are expected to impact travel demand. Travel surveys and the use of big data to measure travel activity and monitor trends will need to explore metrics specific to shared mobility, e-commerce, and socio-economic factors. This will continue to be a challenging task, and will be speculative to some degree, given the uncertainties of how current trends will sustain themselves over the long term.

**Greater Planning Integration** - Among different levels of government – local, county, regional, state, and federal – greater planning integration can enable more cohesive approaches between policy areas, planning jurisdictions, or functional areas, as well as between neighboring jurisdictions or planning areas which have shared interests in infrastructure, resources, or both. In recent years, NYMTC and its members have explored this kind of planning integration through innovative study methodologies and outreach approaches, and through greater partnering. Given future uncertainty about the scale of the mobility changes that may occur through technological, economic, and societal developments, greater planning integration between jurisdictions and policy areas will likely be needed to accommodate and shape the future of mobility.

## 05

## Related NYMTC Initiatives; Planned and Underway



NYMTC and its members are engaged in various planning studies and technology applications to both anticipate and adapt to the future of mobility, and to shape transformative change in NYMTC's planning area. A sampling of those activities is outlined below:

### Planning Studies



The Metropolitan Transportation Authority (MTA) is programming funding in NYMTC's SFY 2019-2020 Unified Planning Work Program to conduct a comprehensive study to identify emerging private sector mobility technologies, innovative services, or service providers to address the first- and last-mile station access mobility gap in suburban and urban commuter rail service areas. A resulting station access "toolkit" will be developed encompassing findings and proving a menu of access choices that best address the needs of specific station types. Municipalities could then use the toolkit when considering how to best meet the station access needs of their residents.

### THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

The Port Authority is evaluating state-of-the-art technologies to enhance the safety, reliability, and throughput of the Route 495 Exclusive Bus

Lane. The contraflow “XBL” currently handles 1,850 buses carrying 70,000 commuters to the Lincoln Tunnel and into Manhattan every weekday morning. These technologies may include collision warning and avoidance; lane-keeping; and cooperative adaptive cruise control for high-efficiency fleet operations. A relatively fixed population of buses and bus carriers use the lane, largely for commuter service, so a technology deployment could be implemented with manageable costs and potentially significant benefits. The Port Authority and its partners will conduct initial tests in a closed environment with a limited number of buses to evaluate the most promising technologies.



In early 2018, Westchester County completed a study funded through the NYMTC Work Program that reviewed examples of how transit agencies and municipalities have partnered with

Transportation Network Companies (TNCs) to address first- and last-mile connections and other gaps in the transportation network. The study examined different case studies around the country which used TNCs to serve various transportation markets.

Additionally, the *Westchester County Systems Integration Enhancement Project* is documenting current and future needs of the County’s Bee-Line System bus transit network to meet short- and long-term needs. These needs include replacement of the radio and vehicle locator systems, fleet management, operations planning functions, customer service, and data management and utilization. Once implemented, system upgrades will result in the installation of state-of-the-art technology onboard the Bee-Line System’s 325 buses that will contribute to enhanced service reliability, safety, and security. Passengers will have access to better and more accurate real-time information, as well as automatic notifications of detours and service disruptions.



To fully realize the benefits of shared mobility, Nassau County is programming funding in NYMTC’s SFY 2019-2020 Work Program to prepare and implement a *Shared Mobility Management Plan*. The Plan will review and inventory existing and emerging shared mobility services, both motorized and non-motorized, and comprehensively evaluate infrastructure compatibility and necessary improvements, hosting partnerships, economic benefits, and policy/legal challenges. The Plan will provide recommendations for capital improvements (infrastructure), funding sources, and key locations for piloting shared-mobility services within the County. The Plan will also provide a framework for evaluating new services for adaptation and implementation.



The Suffolk County Department of Economic Development and Planning's countywide Mobility Study was completed in June 2018, using funding from NYMTC's Work Program. The study included extensive route review, trip pattern analysis, and recommended strategies that considered long-term cost and route efficiencies, transit dependencies, transit priority corridors, and demand-responsive services. The *Suffolk County Mobility Study* also identified and evaluated a suite of on-demand mobility options, to complement the existing fixed-route transit network and offer an integrated, user-friendly commuter experience.

A *Mobility Implementation Plan*, which will be developed in 2019, will advance these concepts, including development of marketing and branding strategies, transit network restructuring, route rollout plans and review of Vision Zero opportunities for Suffolk County Transit. A phased implementation plan will be the final result, to establish a more accessible, inclusive, and transit-oriented Suffolk County.

## Technology Applications



The New York City *Connected Vehicle (CV) Pilot* (<https://www.cvp.nyc/>) is intended to improve the safety of travelers and pedestrians through the deployment of CV technologies as part of the City's Vision Zero initiative. In what will be the largest CV technology deployment to date, the City plans to install the CV technology in approximately 8,000 vehicles which frequent the streets of Manhattan and Brooklyn. The CV Pilot, which is sponsored by the United States Department of Transportation's Intelligent Transportation Systems Joint Program Office, seeks to reduce crash frequency and severity, manage vehicle speeds, and evaluate the benefits of deploying CV technology in a dense urban environment with frequent interactions among the participating vehicles.



The New York State Department of Transportation, in collaboration with Westchester and Rockland counties, local municipalities, the New York State Thruway Authority, and the Metropolitan Transportation Authority, is implementing phase one of Governor Cuomo's Mass Transit Task Force vision for enhanced regional transit service in the

Interstate 287/New York State Thruway corridor. The *Hudson Link* program integrates transit and mobility improvements to provide new high-quality bus service in the corridor and across the Mario M. Cuomo Bridge between Rockland and Westchester counties. The program includes implementation of a "smart corridor" along Routes 59 and 119 with technology-focused improvements, including transit signal priority and intelligent signal control. Additionally, enhanced bus stations in the corridor feature real-time bus arrival information and off-board ticket vending/fare collection.

The MTA launched the *MYmta* web application, or app, in the summer of 2018. This new app offers real-time service updates; houses bus, subway, MTA, Long Island Rail Road and MTA Metro-North Railroad schedules all in one place; provides alternative routes to customers with minimal transfers or shortest walking distances; notes which stations have elevators; and allows customers to purchase commuter rail tickets.



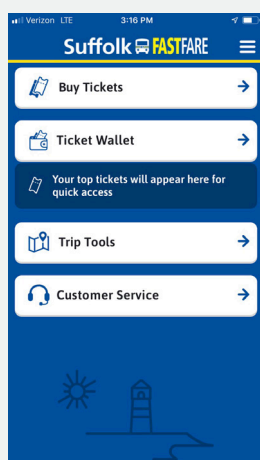
The New York City Department of City Planning is making use of "big data" through NYMTC Work Program funding to undertake travelshed mapping for employment and commute options. The project seeks to better integrate transportation and land use planning by creating an "accessibility index" across the City, highlighting one-hour travelsheds from existing and emerging employment and residential centers. Nodes for analysis will include the entire subway network, selected bus stops, selected regional rail stations and ferry stops, as well as job and population centers. The project will improve the City's understanding of neighborhood location-specific commuting patterns, as well as opportunities related to land use and transportation access.



Nassau County continues to explore innovative mobile-based transit solutions to meet the varying needs and demands of County residents and employees. Most recently, the Nassau Inter-County



Express (NICE) system launched an innovative last-mile microtransit pilot called BUZZ that was developed to help solve parking congestion at the Great Neck MTA Long Island Rail Road (LIRR) station. This low-cost, reservations-based program, which debuted in January 2019, provides service for commuters who live between Middle Neck and East Shore Roads and Grace Avenue and Franklin/Rogers Road. After a free trial period expires, the highly personalized service will be priced just below daily parking rates at \$10 for five daily rides in one direction, making it a cost effective and convenient option to driving to the LIRR and parking, especially for those communities facing a lack of commuter parking. The pilot is expected to run through March 2019.



Suffolk County's *FastFare* is a mobile ticketing application which allows Suffolk County Transit riders to purchase tickets on their smartphones. Tickets are displayed on screen as a digital watermark, which is shown to the driver when boarding the bus. Passengers using *FastFare* can pay for tickets using a credit or debit card, or via digital payment. A variety of ticket bundle options are available through the app. *Suffolk FastFare* is available for download from both the App Store and Google Play. The app was released in September 2018.

In 2018, Westchester County began taking delivery of 78 hybrid electric articulated vehicles to replace conventional diesel vehicles that had reached the end of their useful life. The entire fleet of hybrid electric buses will be received by mid-2019.



Partially funded with federal resources through the NYMTC planning process, in addition to New York State and County funding, the 60-foot articulated buses are produced by New Flyer of America, Inc., with a battery electric component supplied by BAE Systems' Power & Propulsion Division. It is anticipated that over time the clean diesel-electric buses will save the County over 850,000 gallons of fuel, while preventing 12,400 tons of greenhouse gas emissions from polluting the environment.



In 2018, one-third of Rockland County's local bus service fleet was replaced, moving the County's Transport of Rockland (TOR) bus system forward with the use of technology to enhance mobility. Funded federally through the NYMTC planning process, with New York State and local

County funding, the clean diesel Gillig buses feature Intelligent Transportation System readiness for transit signal priority (TSP), plus video surveillance cameras, mobile radio systems, automatic vehicle monitoring, location and passenger counting systems, state-of-the-art ADA access, and enhanced visibility destination signs. The TOR buses, when operating along Route 59, will be able to use State-installed TSP infrastructure to reduce the amount of time buses wait at traffic signals, improving transit reliability and efficiency.



Putnam County conducted a *Commercial Corridors Feasibility Study* to anticipate and attempt to shape commercial land use changes that are, in part, influenced by the evolution of e-commerce. Using funding through NYMTC's Work Program, the study focused on nine existing commercial corridors in the County and examined the feasibility of and made recommendations for transportation infrastructure improvements and zoning changes to, among other things, revitalize and encourage economic growth in these corridors. One of the goals of the project was to advance previously approved retail projects in these corridors, as well as the Village of Brewster transit oriented development project.



The New York State Department of Environmental Conservation's plan for investment of Volkswagen settlement funds, Clean Transportation NY, provides approximately \$127 million for investment in the deployment of electric and other lower-emission fuels and vehicle technologies to reduce the transportation system's reliance on diesel fuels. The Plan prioritizes investment in the New York City metropolitan area, which is classified as nonattainment for ozone.

## IN MEMORIUM

# William “Bill” Wheeler 1949-2018



The NYMTC family is mourning the passing of a true transportation visionary who had an enormous impact on NYMTC, both organizationally and personally. Bill Wheeler’s untimely death in October 2018 left a distinct void in the regional transportation planning community. His wide-ranging career spanned decades and touched the professional lives of many NYMTC staff members, as well as the staffs of its member agencies.

Bill’s career path intersected NYMTC and its predecessor organization—the Tri-State Regional Planning Commission – at numerous points over four decades, beginning with his time as a transportation planner with the City of Yonkers in the 1970s. At that time, Yonkers received federal funds for its planning program from

In 1983, Bill became the second NYMTC Staff Director and took the reins of the then-fledgling organization. His tenure was marked by organizational growth and innovation, as NYMTC built key relationships, technical capabilities, and a procedural foundation.

Tri-State. Bill’s next career stop was as Planning Director for the Westchester County Department of Transportation, responsible for a subregional transportation planning program again funded through Tri-State. It was in that role that Bill often represented Westchester County in the regional discussions which accompanied the dissolution of Tri-State in 1982 and the creation of NYMTC in its wake.

In 1983, Bill became the second NYMTC Staff Director and took the reins of the then-fledgling organization. His tenure was marked by organizational growth and innovation, as NYMTC built key relationships, technical capabilities, and a procedural foundation. One example of the critical regional planning work performed by NYMTC during Bill’s time as Staff Director was its technical assessment of the Interstate 287 corridor in Rockland and Westchester counties, a study that was at the forefront of more detailed planning and programmatic

investments over the next 10 years and beyond.

Bill went on to join the Metropolitan Transportation Authority (MTA) as Deputy Director of Strategic Planning in 1986. By 1992, he became the Director of Planning and Development and in 2002, the Director of Special Project Development and Planning. During his time with the MTA, Bill established a Long-Range Planning Framework, which laid the strategic groundwork for the large enhancements to the MTA's transportation network, including the Second Avenue Subway, MTA Long Island Rail Road East Side Access, the extension of the #7 subway to Hudson Yards, other important expansion projects for both the MTA Metro-North Railroad and MTA Long Island Rail Road, and Select Bus Service in New York City. He led the effort to develop the MetroCard, which enabled the MTA to eliminate two-fare zones and introduce unlimited ride passes. He was instrumental in securing federal

financing for the Fulton Street Transit Center in Lower Manhattan. Bill also guided the development of several Twenty-Year Needs Assessments for the MTA region, identifying long-term transportation and travel trends and recommending comprehensive transit strategies to address them.

As Director of Special Project Development and Planning, Bill continued to contribute to NYMTC's work to secure federal funding for MTA's expansion projects. Working closely with NYMTC's principal members and NYMTC's staff, Bill and his staff helped ensure that NYMTC met critical federal requirements and obtained federal funding to help MTA realize its long-range vision.

Bill's contributions to NYMTC over his long career were both personal and professional. He was a leader, a teacher, a mentor, a collaborator, an analyst, and a voice of common sense. His place at the NYMTC table will remain empty.





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