



New York Metropolitan Transportation Council

# Plan 2040

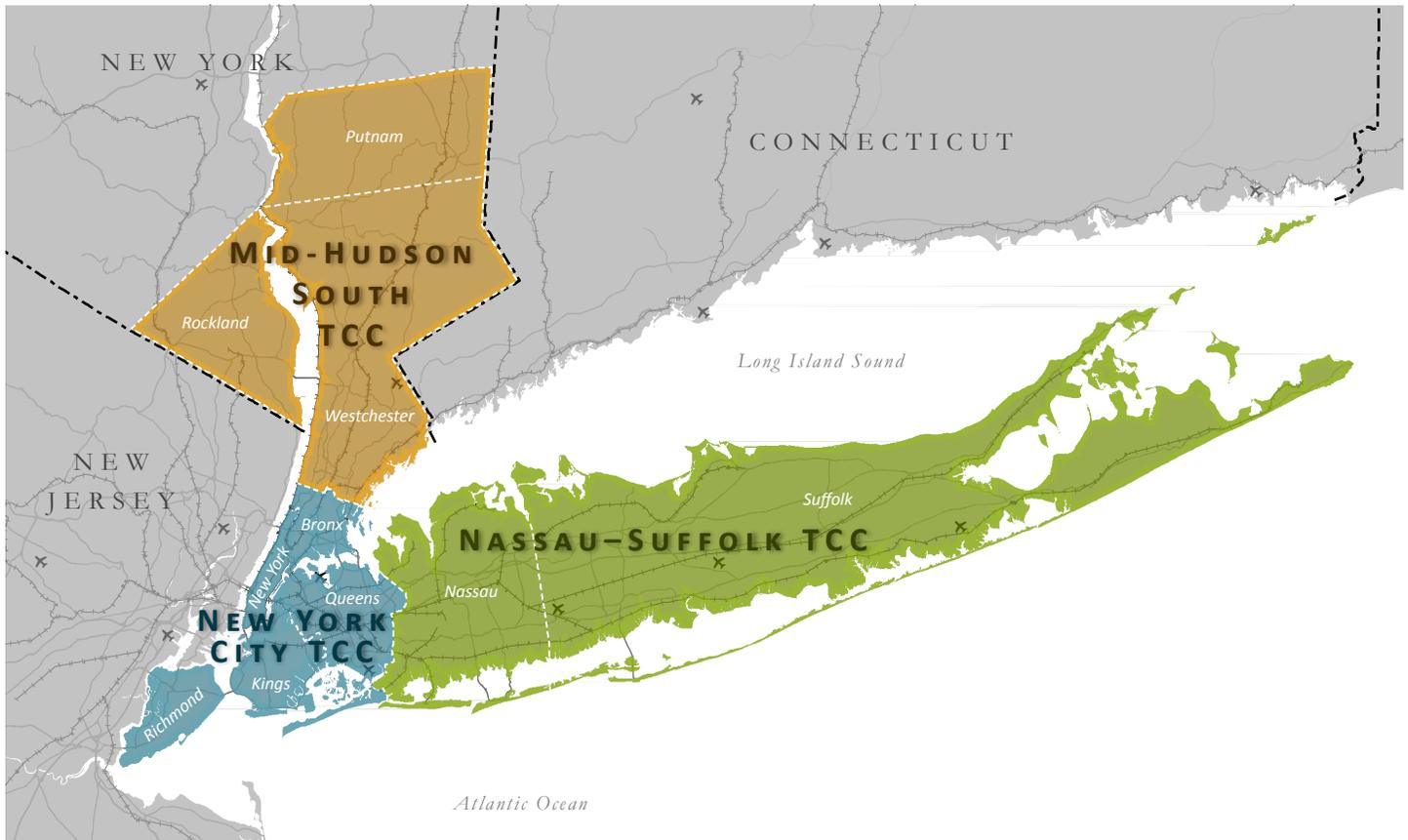
Regional Transportation Plan  
A Shared Vision for a Sustainable Region



**EXECUTIVE SUMMARY**

ADOPTED ON SEPTEMBER 4, 2013 >>>>

# EXECUTIVE SUMMARY



*Plan 2040* was developed by member agencies and communities across the 10-county NYMTC Planning Area. This area is organized into three subregions called Transportation Coordinating Committees (TCC).

## NYMTC OVERVIEW

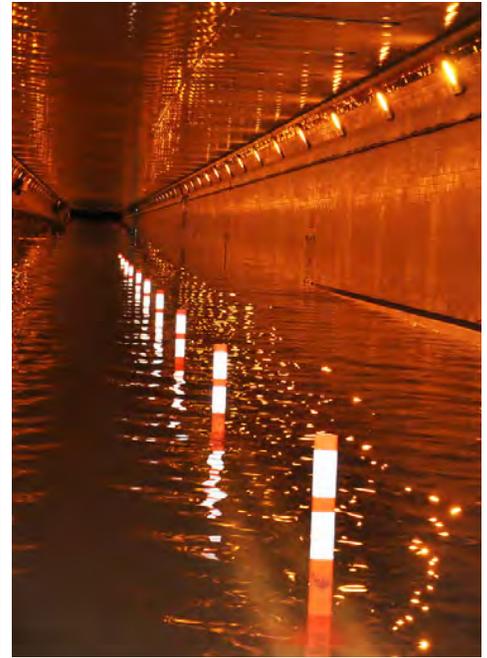
The New York Metropolitan Transportation Council (NYMTC) is the Metropolitan Planning Organization for New York City, Long Island and the lower Hudson Valley. It provides a collaborative forum to address transportation-related issues, develop a long-range transportation plan (among other federally-mandated products), and make decisions on the use of federal transportation funds.

The Council consists of nine voting members and seven advisory members. The voting members are: County Executives of Nassau, Putnam, Rockland, Suffolk and Westchester counties; Chief Executive Officer of the Metropolitan Transportation Authority (MTA); Direc-

tor of the New York City Department of City Planning (NYCDCP); Commissioner of the New York City Department of Transportation (NYCDOT); and Commissioner of the New York State Department of Transportation (NYS-DOT). The non-voting members are: Executive Director of the Port Authority of New York & New Jersey (PANYNJ); Commissioner of the New York State Department of Environmental Conservation (NYSDEC); Executive Director of New Jersey Transit (NJT); Executive Director of the New Jersey Transportation Planning Authority (NJTPA); Division Administrator of the Federal Highway Administration (FHWA); Regional Administrator of the Federal Transit Ad-

ministration (FTA); and Regional Administrator of the U.S. Environmental Protection Agency (USEPA).

In recognition of the size and diversity of the region NYMTC is comprised of three geographical Transportation Coordination Committees (TCCs), one each in New York City, on Long Island and in the Lower Hudson Valley (the Mid-Hudson South TCC is also referred to as the Lower Hudson Valley). These TCCs serve as subregional planning forums that respond to local needs and recommend transportation priorities to the Council as a whole (see *Plan 2040: Chapter 1* for more details on NYMTC).



Clockwise from top: rendering of the Tappan Zee Bridge at night; flooding from Hurricane Sandy in the Brooklyn-Battery Tunnel; bicyclist on the Williamsburg Bridge; cargo ship at port facilities at Howland Hook, Staten Island.

## PLAN 2040

The key to understanding, developing, and implementing the regional transportation plan is sustainability. It is the crucial element in how we plan for the future and where we invest. *Plan 2040: A Shared Vision for Sustainable Growth*, the New York Metropolitan Transportation Council (NYMTC)'s Regional Transportation Plan, is the 25-year, long-term plan for investing and building sustainable growth in our region and transportation network. All indicators suggest that the region will continue to grow in population by 13 percent, from 12.6 million in 2015 to 14.3 million in 2040. This includes a senior population aged 65 and above that will represent an increasingly larger share of the overall population: this group grew by 7.4 percent from 2000 to 2010. Employment is also projected to grow, reaching 8.9 million in 2040, an increase of 23 percent (see Figure 1 and Figure 2).

On a daily basis, the region's transportation network currently supports approximately 3.2 million bus riders, 6.3 million rail rapid transit passengers, 110,000 ferry riders, 143,000 airline passengers, and over 200 million vehicle miles driven each day on the region's roads. With the anticipated growth, the existing transportation network must be improved, integrated, and properly maintained. The financial security of the transportation system is critical to the economic health and future growth of the region (see *Plan 2040: Chapter 2* for more details on forecasting and trends).

*Plan 2040* shows how NYMTC member agencies will help sustain and encourage the region's economic growth through system preservation and expansions of the transportation network.

*Plan 2040* highlights the need for developing sustainable transportation and land use projects, supporting the equitable development of regional growth, and outlines how NYMTC intends to accomplish this through the Shared Vision without compromising future generations to meet their needs.

Figure 1: Socio-economic Indicators for the NYMTC Planning Area, 2015 to 2040. Source: NYMTC.

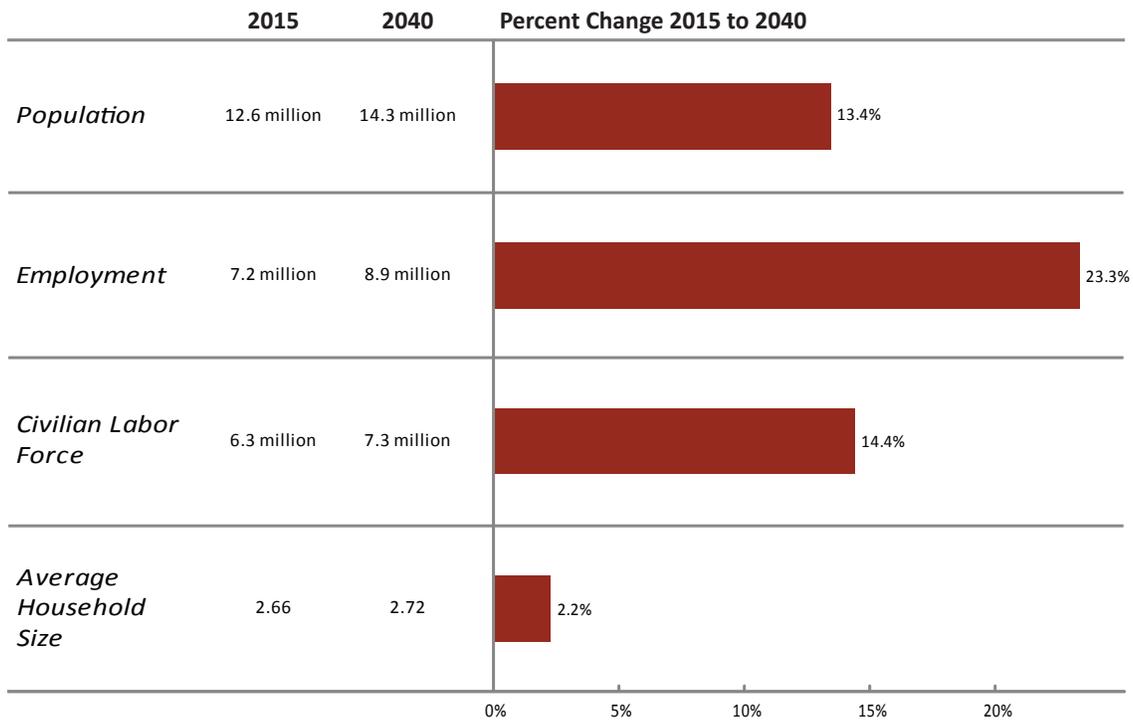
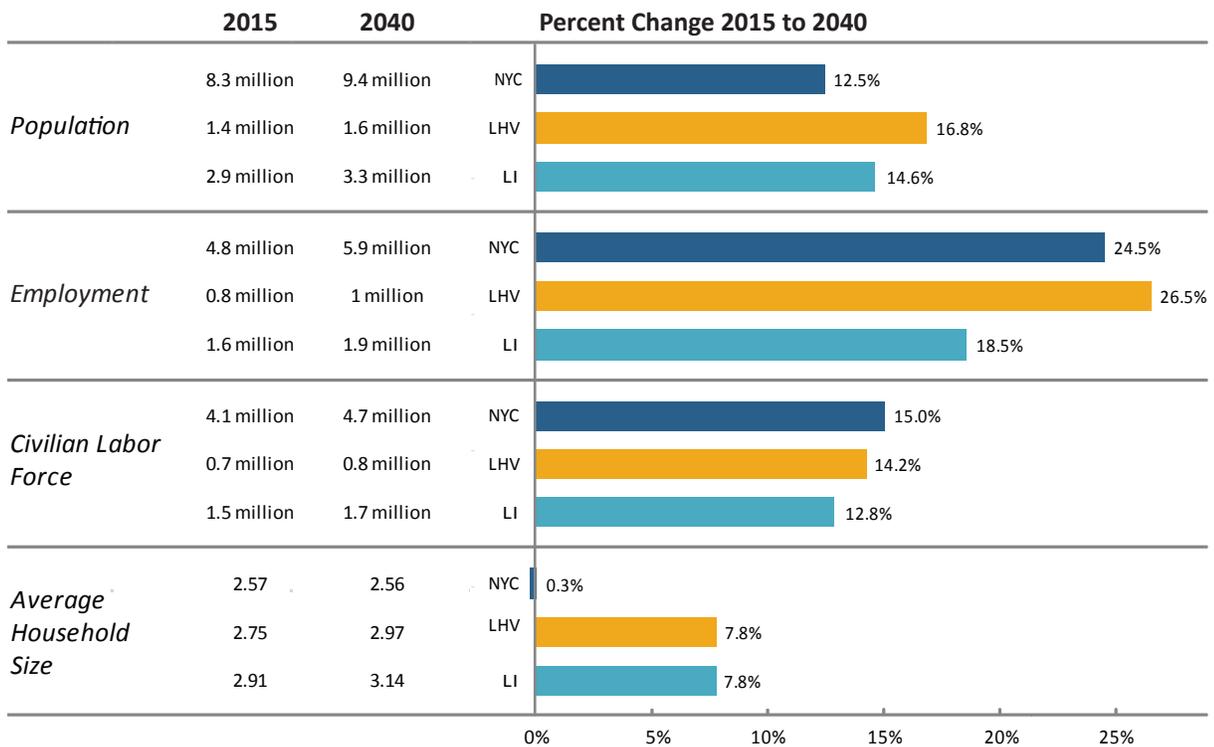


Figure 2: Socio-economic Indicators for the NYMTC Planning Area by TCC, 2015 to 2040.



Note: Due to rounding of the numbers, the percentages may not equal total. Source: NYMTC.

## THE SHARED VISION

*Plan 2040* is built around the shared vision of the members which recognizes the critical linkages and interrelationships between the regional transportation system, land use, and the economy. This shared vision includes *shared goals with outcomes and near-term actions, shared land use designations, and strategic regional transportation investments* (Figure 3). In developing the shared vision NYMTC members recognize that challenges lie ahead in planning and making transportation investment decisions given prevailing economic, financial, environmental and other uncertainties.

The shared land use designations identify locations where transportation resources can attract residents and businesses while providing efficient, sustainable and cost-effective mobility options. Understanding that land use decisions are typically made at the local level, these shared land use designations are also meant to include and capture the impacts of members' local planning activities (see Map 1 and Map 2 in *Plan 2040: Chapter 1* for these centers, corridors, and areas).

The third element of the shared vision is the strategic transportation initiatives and investments. These initiatives and investments are critical to the enhance-

ment and sustainable growth of the regional transportation system and in many ways address many of the challenges of our growing region. They occur at various time-periods over the duration of *Plan 2040*. The initiatives and investments listed on the following map and charts (and further described in *Plan 2040: Chapter 5: System Improvements and Actions*) are transportation investments that are critical to support the sustainable growth outlined in *Plan 2040*. These projects focus on actions planned to preserve, enhance, and grow the transportation system. These actions are divided into four categories:

*Category A* - Planning Initiatives

*Category B* - Project Planning and/or Environmental Assessments for Vision Projects

*Category C* - Programmed Improvement Projects Over the Next Five Years

*Category D* - Programmed Improvement Projects Beyond the Next Five Years.

Figure 3: The Shared Vision

### Shared Goals

*Enhance the regional environment  
Improve the regional economy  
Improve the regional quality of life  
Provide a convenient and flexible transportation system within the region  
Enhance the safety and security of the transportation system  
Build the case for obtaining resources to implement regional investments  
Improve the resiliency of the regional transportation system*

### Shared Land Use Designations

*The second element of the Shared Vision is the shared land use designations which identify locations where transportation resources can attract residents and businesses while providing efficient, sustainable and cost-effective mobility options. Understanding that land use decisions are typically made at the local level these shared land use designations are also meant to include and capture the impacts of members' local planning activities.*

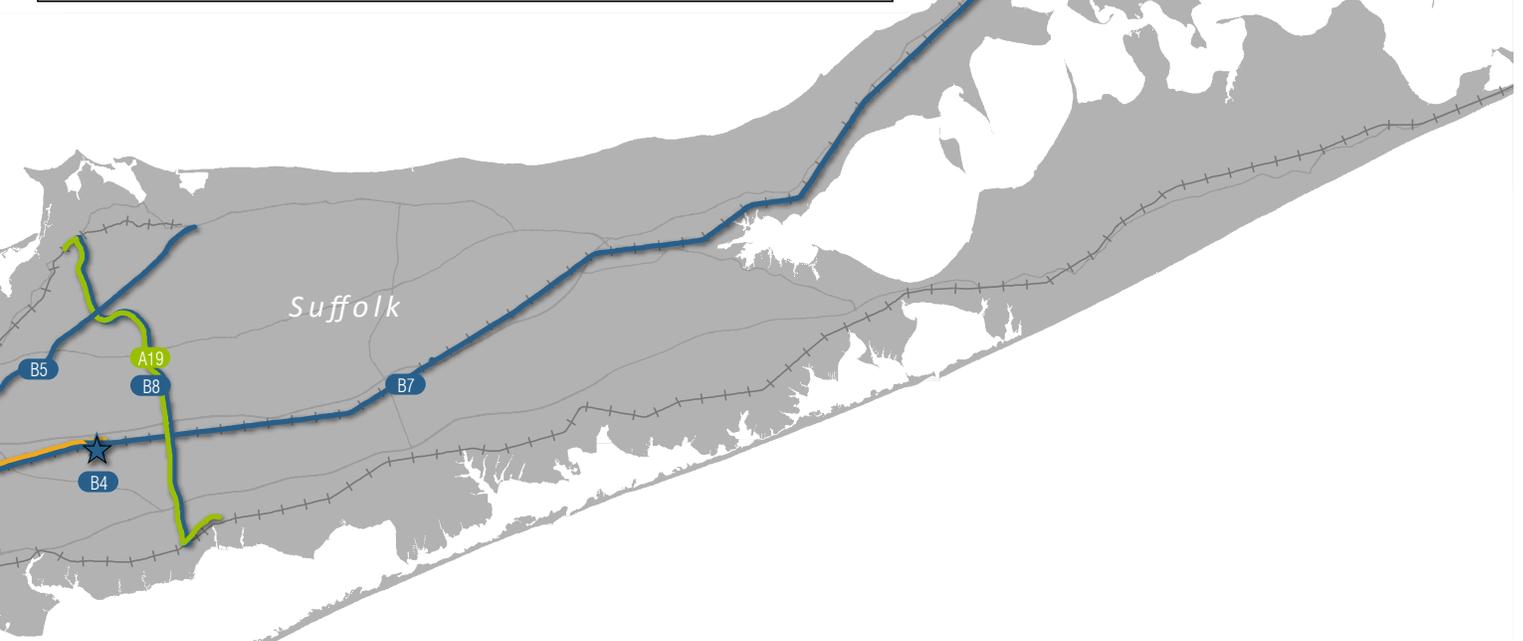
### Strategic Transportation Initiatives and Investments

*The third element of the Shared Vision is the strategic transportation initiatives and investments. These initiatives and investments are critical to the preservation, enhancement and sustainable growth of the regional transportation system and, in many ways, address the challenges in our region. They occur at various time-periods, short-term and long-term, through the duration of Plan 2040.*

# STRATEGIC TRANSPORTATION INITIATIVES AND INVESTMENTS



## New York City Detail



### Near Term Actions

- Category A: Planning initiatives
- Category B: Project planning or environmental assessments for vision projects
- Category C: Programmed improvement projects over the next five years
- Category D: Programmed improvement projects beyond the next five years

Labels for each mappable project correspond to their number listed in the charts on the following pages.

## NEAR TERM ACTIONS CATEGORY A: PLANNING INITIATIVES

#	Area	Activity or Project	Related Goal	Timeframe
A1	All	Evaluate and enhance demand management programs	Enhance the regional environment	2014-2018
A2	All	Evaluate and enhance mobile source emissions reduction programs	Enhance the regional environment	2014-2018
A3	All	Inventory greenhouse gas emissions	Enhance the regional environment	2014-2018
A4	All	Plan for expanded road pricing	Enhance the regional environment	2014-2018
A5	All	Continue planning for multi-modal access to ports and airports	Improve the regional economy	2014-2018
A6	All	Continue planning for multi-modal goods movement and distribution improvements	Improve the regional economy	2014-2018
A7	All	Advance the recommendations of the New York-Connecticut Sustainable Communities Initiative	Improve the regional quality of life	through 2023
A8	All	Continue local capacity-building through community planning workshops	Improve the regional quality of life	annually
A9	All	Continue planning for transportation sector clean fuels expansion	Improve the regional quality of life	2014-2018
A10	All	Planning for ferry service enhancements and station access improvements	Provide a convenient, flexible, and resilient transportation system within the region	through 2023
A11	All	New York-New Jersey-Connecticut Transportation Vulnerability Assessment and Adaptation Analysis	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
A12	All	New cooperative partnerships with multiple government agencies when responding to disasters	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
A13	All	New partnerships through the Federal Disaster Recovery Framework for recovery for disasters	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
A14	All	Develop comprehensive access to safety-related data	Enhance the safety and security of the transportation system	2014-2018
A15	All	Develop a regional approach to safety-related data analysis	Enhance the safety and security of the transportation system	2014-2018
A16	All	Develop operating procedures for safety and security considerations	Enhance the safety and security of the transportation system	2014-2018
A17	All	Enhance Safe Routes to School and Safe Streets for Seniors programs	Enhance the safety and security of the transportation system	2014-2018
A18	All	Reach consensus on other alternative funding sources to be used individually and corporately	Build the case for obtaining resources to implement regional investments	2014-2018
A19*	LI	Suffolk County Connect LI Bus Rapid Transit Feasibility Study	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018

LI = Long Island; LHV = Lower Hudson Valley; NYC = New York City; All = NYMTC Planning Area

\* = only one Category A project (A19) is shown on the Strategic Transportation Initiatives and Investments Map.

## NEAR TERM ACTIONS CATEGORY B: PROJECT PLANNING OR ENVIRONMENTAL ASSESSMENTS FOR VISION PROJECTS

#	Area	Activity or Project	Related Goal	Timeframe
B1*	All	Cross Harbor goods movement improvements; America's Marine Highway System recommendations	Enhance the regional economy	2014-2018
B2	LI	Long Island Motor Parkway Trail	Improve the regional quality of life	2014-2018
B3	LI	Nassau Hub Preliminary Regional Study Area transportation improvements	Improve the regional quality of life	2014-2018
B4	LI	Suffolk County Connect LI - Wyandanch Rising, Heartland, Ronkonkoma Hub transit-oriented development	Improve the regional quality of life	2014-2018
B5	LI	NY 347 corridor reconstruction	Improve the regional quality of life	2014-2018
B6	LI	Sagtikos Parkway truck bypass	Improve the regional quality of life	2014-2018
B7	LI	MTA LIRR Mainline Corridor Planning	Improve the regional quality of life	post-2018
B8	LI	Suffolk County Connect LI: Route 110, Sagtikos / Sunken Meadow Parkways, and CR 97 transit improvements	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B9	LHV	I-684 capacity improvements	Improve the regional quality of life	2014-2018
B10	LHV	Southeast MTA MNR Station - parking and pedestrian improvements	Improve the regional quality of life	2014-2018
B11	LHV	I-287 Corridor transit enhancements	Improve the regional quality of life	2014-2018
B12	LHV	Tarrytown-Port Chester local transit improvements	Improve the regional quality of life	2014-2018
B13	LHV	Southern Westchester East-West Corridor transit improvements	Improve the regional quality of life	2014-2018
B14	LHV	Central Avenue Bus Rapid Transit	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B15	LHV	Cross County Parkway - Saw Mill River Parkway interchange	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B16	LHV	Port Jervis Line improvements	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B17	NYC	Moynihan Station Phase II	Improve the regional economy	2014-2018
B18	NYC	Brooklyn and East River waterfront greenways	Improve the regional quality of life	2014-2018
B19	NYC	No. 7 Subway Tenth Avenue Station	Improve the regional quality of life	post-2018
B20	NYC	Staten Island North Shore transit improvements	Improve the regional quality of life	2014-2018

Category B projects continue on the next page.

B21	NYC	Bruckner-Sheridan Interchange	Improve the regional quality of life	2014-2018
B22	NYC	East River crossings and Hudson River crossings bus / HOV capacity	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B23	NYC	Cross Bronx Expressway improvements	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B24*	NYC	Additional New York City Select Bus Service routes	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B25	NYC	Long Island Expressway (Queens) HOV / Active Transportation Demand Management	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B26	NYC	Staten Island Ferry terminals and vessels	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B27	NYC	Kew Gardens (Queens) interchange	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B28	NYC	Trans-Hudson Bus System Improvements	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B29*	NYC	MTA NYCT Queens Communications-Based Train Control	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B30*	NYC	MTA NYCT vehicle fleet, depot and station expansion; sustainability investments	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
B31	NYC & LHV	CSX River Line second track and Amtrak Gateway project	Improve the regional economy	2014-2018
B32	NYC & LHV	North-East Corridor and Empire Corridor inter-city passenger and freight rail improvements	Improve the regional economy	2014-2018
B33	NYC & LHV	Hudson River Valley Greenway Link	Improve the regional quality of life	2014-2018
B34	NYC & LHV	MTA Metro-North Railroad Penn Station Access	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018

LI = Long Island; LHV = Lower Hudson Valley; NYC = New York City; All = NYMTC Planning Area

\* = Category B projects that **are not shown** on the Strategic Transportation Initiatives and Investments Map.

## NEAR TERM ACTIONS CATEGORY C: PROGRAMMED IMPROVEMENT PROJECTS OVER THE NEXT FIVE YEARS

#	Area	Activity or Project	Related Goal	Timeframe
C1*	All	Advance programmed transit improvements and enhancements in the 2014-2018 TIP	Enhance the regional environment; Improve the regional economy	2014-2018
C2*	All	Advance programmed mobility and traffic improvement projects in the 2014-2018 TIP	Enhance the regional environment; Improve the regional economy	2014-2018
C3*	All	Advance programmed pedestrian-bicycle projects in the 2014-2018 TIP	Improve the regional quality of life	2014-2018
C4*	All	Advance congestion-related improvements and enhancements in the 2014-2018 TIP	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
C5*	All	Advance preservation-related and SOGR-related projects in the 2014-2018 TIP	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
C6*	All	Advance resiliency-related improvements to the existing system in the 2014-2018 TIP, including Hurricane Sandy recovery projects as appropriate	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
C7*	All	Advance safety improvements and enhancements in the 2014-2018 TIP	Enhance the safety and security of the transportation system	2014-2018
C8	LI	MTA LIRR Ronkonkoma Branch second track	Enhance the regional environment	2014-2018
C9*	LI	Nassau County Coastal Evacuation Routes project	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
C10	LHV	Tappan Zee Hudson River Crossing project	Provide a convenient, flexible, and resilient transportation system within the region	2014-2017
C11	LHV	CSX West Shore River Line Safety and Quiet Zone	Improve the regional quality of life	2014-2018
C12	LHV	Central Avenue transit signal priority	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018
C13	LI & NYC	MTA LIRR East Side Access	Enhance the regional environment	2014-2018
C14	NYC	St. George's Terminal ramp reconstruction	Enhance the regional environment	2014-2018
C15	NYC	East River Bridges Hazard Mitigation project	Enhance the safety and security of the transportation system	2014-2018
C16	NYC	Manhattan Bridge cables and suspenders; and seismic retrofit	Enhance the safety and security of the transportation system	2014-2018
C17	NYC	Ed Koch Queensboro Bridge seismic retrofit	Enhance the safety and security of the transportation system	2014-2018
C18	NYC	Bayonne Bridge clearance project	Improve the regional economy	2014-2018
C19	NYC	Goethals Bridge replacement	Provide a convenient, flexible, and resilient transportation system within the region	2014-2018

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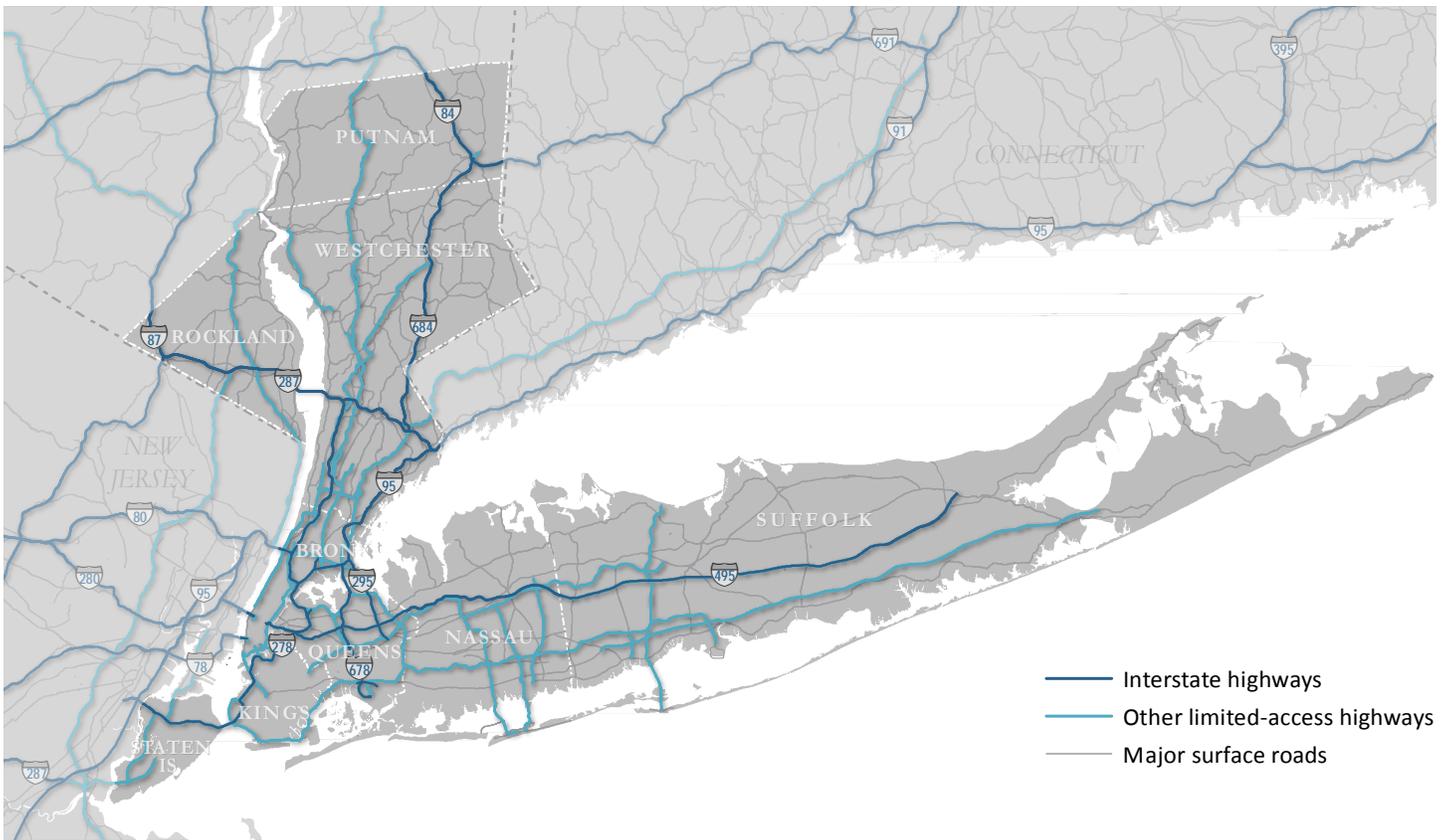
\* = Category C projects that **are not shown** on the Strategic Transportation Initiatives and Investments Map.

## NEAR TERM ACTIONS CATEGORY D: PROGRAMMED IMPROVEMENT PROJECTS BEYOND THE NEXT FIVE YEARS

#	Area	Activity or Project	Related Goal	Timeframe
D1*	All	Advance Bus Rapid Transit and managed-use lane projects as part of a regional system	Enhance the regional economy	through 2023
D2*	All	Advance the Plan 2040 Pedestrian-Bicycle Element	Improve the regional quality of life	through 2023
D3*	All	Continue application of Complete Streets policies	Improve the regional quality of life	through 2023
D4*	All	Pursue agreed upon funding sources	Build the case for obtaining resources to implement regional investments	through 2023
D5	NYC	Select Bus Service routes	Enhance the regional environment	through 2023
D6	NYC	MTA NYCT Second Avenue Subway phases 2-4	Enhance the regional environment	post 2018
D7*	NYC	Expand Park Smart, Commercial Paid Parking, Delivery Windows and other approaches to address congestion	Enhance the regional environment; Improve the regional economy	through 2023
D8	NYC	Moynihan Station Phase I and PATH system modernization	Enhance the regional economy	through 2023
D9	NYC	Complete reconstruction of Belt Parkway Bridges	Improve the regional economy	through 2023
D10*	NYC	Promote and expand DeliverEase	Improve the regional quality of life	through 2023
D11	NYC	Kosciuszko Bridge replacement	Provide a convenient, flexible, and resilient transportation system within the region	through 2023
D12	NYC	East 153rd Street Bridge replacement	Provide a convenient, flexible, and resilient transportation system within the region	through 2023
D13	NYC	City Island Bridge replacement	Provide a convenient, flexible, and resilient transportation system within the region	through 2023
D14	NYC	Shore Road Bridge rehabilitation	Provide a convenient, flexible, and resilient transportation system within the region	through 2023
D15	NYC	Riker's Island Bridge reconstruction	Provide a convenient, flexible, and resilient transportation system within the region	through 2023
D16	NYC	Bronx River Parkway Bridge replacement	Provide a convenient, flexible, and resilient transportation system within the region	through 2023
D17	NYC	Cross Bronx Expressway Bridge rehabilitation	Provide a convenient, flexible, and resilient transportation system within the region	through 2023
D18	NYC	Brooklyn Queens Expressway - Grand Central Parkway interchange	Provide a convenient, flexible, and resilient transportation system within the region	through 2023
D19	NYC	Rehabilitation of Belt Parkway bridges	Provide a convenient, flexible, and resilient transportation system within the region	through 2023
D20	NYC	Major Deegan Expressway deck replacement	Provide a convenient, flexible, and resilient transportation system within the region	through 2023
D21	NYC	Van Wyck Expressway bridges	Provide a convenient, flexible, and resilient transportation system within the region	through 2023

LI = Long Island; LHV = Lower Hudson Valley; NYC = New York City; All = NYMTC Planning Area

\* = Category D projects that **are not shown** on the Strategic Transportation Initiatives and Investments Map.



## ***The Multi-Modal Transportation System***

The New York City metropolitan area has one of the oldest, most complex and highly utilized multi-modal transportation networks in the world. Over the decades there has been substantial investment in this system which serves as the backbone of the region’s dynamic economy. On a typical weekday, the region’s multimodal transportation network handles millions of passenger trips and thousands of tons of freight shipments. The public transportation mode share is much higher than in other regions of the United States. The multi-modal transportation system includes:

- Nearly 480 route miles of commuter rail and 225 route miles of subway tracks in passenger service, plus hundreds of miles of local, express, commuter, and intercity bus routes and an aerial tramway;
- An extensive network of passenger

hubs, such as bus terminals, subway transfer facilities, ferry landings, and train stations where people transfer between modes of transport, including one of the most successful rail-to-airport links in the country;

- More than 1,100 miles of bicycle facilities, ranging from shared-use bike trails to on-road bike lanes, in addition to pedestrian sidewalks, trails, and paths;
- More than 50,000 lane miles of roads and highways, including more than 30 major bridges crossing navigable waterways (there are over 3200 bridges of all types in the region), four major underwater vehicular tunnels, and special lanes for high occupancy vehicles and buses;
- Four commercial service airports, plus general aviation and heliport facilities;
- Major deepwater seaport facilities owned and operated by a mix of public and private sector entities; an extensive network of marine cargo

support infrastructure and services;

- An extensive network of inland waterways supporting barge and ferry services;
- More than 400 route miles of freight rail, some of which is shared with commuter rail services;
- A widespread network of freight hubs, including rail transfer facilities, rail yards, and truck-oriented warehouse and distribution centers;
- Support infrastructure like rail yards and highway maintenance facilities, highway rest areas, parking lots and garages, bus depots and transit storage yards, bicycle parking areas, toll plazas, signage, signals, electronics, and other equipment.

The NYMTC region also plays a major role in the national rail, road, air, and waterborne networks (see *Plan 2040: Chapter 3* for more details on the transportation network and system).

## MAJOR CHALLENGES

Given the growth forecasts and the extensive multi-modal transportation system, the NYMTC planning area will be faced with tremendous challenges over the duration of *Plan 2040*. Some of these challenges are: mobility and congestion issues related to roadways, public transit, and freight; safety and quality of life issues for people; environmental issues related to air quality, climate change and resiliency; and availability of transportation funding. We must be prepared to meet these challenges to avoid exacerbating existing and future problems.

In terms of roadway congestion the associated 2013 Congestion Management Process Status Report, issued in conjunction with *Plan 2040*, analyses specific performance measures, and identifies areas of congestion and strategies to address congestion in the NYMTC planning area.

### *Mobility of People and Freight*

Both roadway and transit travel are projected to increase between 2014 and 2040. Model results show that daily roadway vehicle miles of travel (VMT) would increase by 12 percent and daily automobile trips by 10 percent (Figure 4). Transit trips are projected to increase by 20 percent over the same period. These increases represent growing demands on the very large and relatively old regional transportation system. Additionally, with the aging baby boomer generation, currently aged 49 to 67 years, there would be greater need of alternative transportation modes, be it traditional public transit or demand-responsive transit services. An aging population will also require more specialized pedestrian facilities.

With regards to goods movement, the NYMTC planning area will also be faced with several key challenges in maintain-

ing and preserving the multi-modal freight transportation system and in achieving operations efficiency. These include: constrained capacity; sub-optimal physical condition of some network components; vulnerability of the network to climate change; limited access to parts of the network; and lack of strategic redundancy. Nearly 399 million tons and through freight moved over the NYMTC planning area's transportation network in 2007. Thirty percent of this traffic was inbound, 23 percent was outbound, 19 percent was intraregional, and 28 percent was through traffic. By 2040, inbound, outbound, intraregional and through freight is expected to increase by 48 percent (592 million tons). Thirty-four percent of this traffic is expected to be inbound, 21 percent outbound, 16 percent intraregional, and 29 percent through traffic (see *Plan 2040: Chapter 2* for more information on mobility and freight).

Figure 4: Travel Indicators for the NYMTC Planning Area, 2014 to 2040. Source: NYMTC.

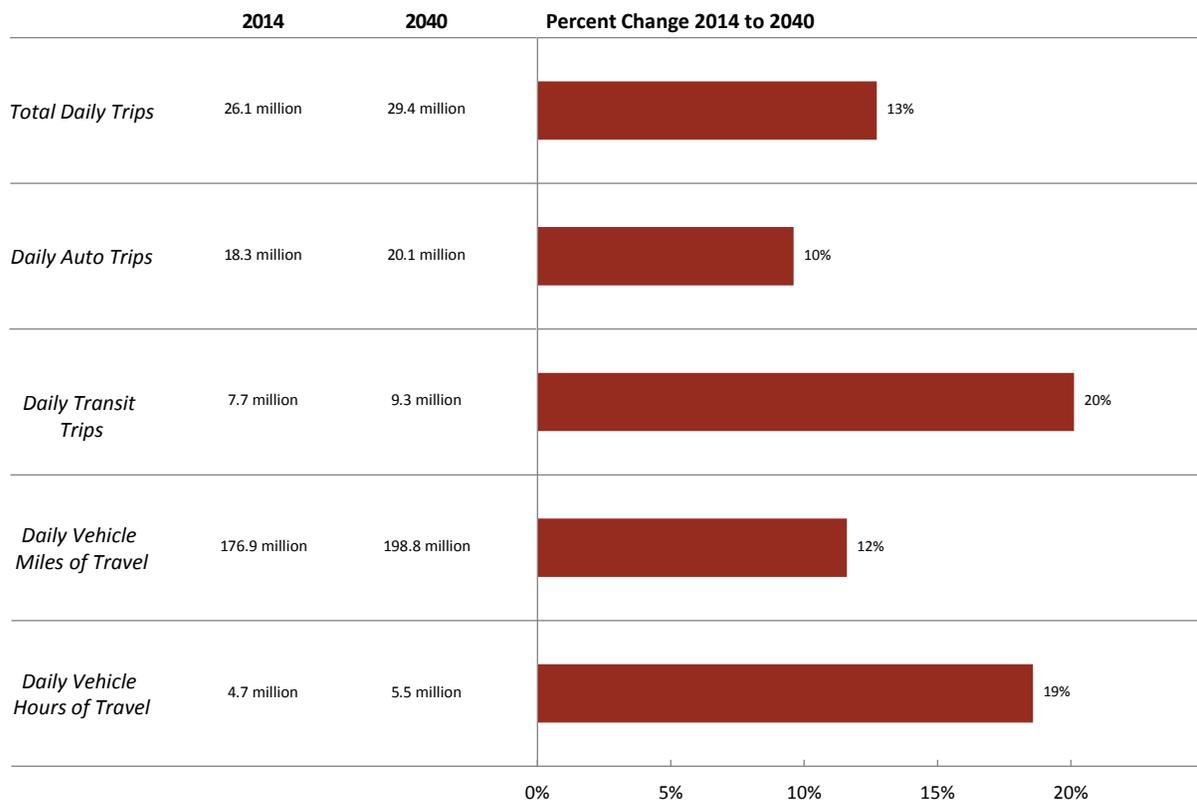
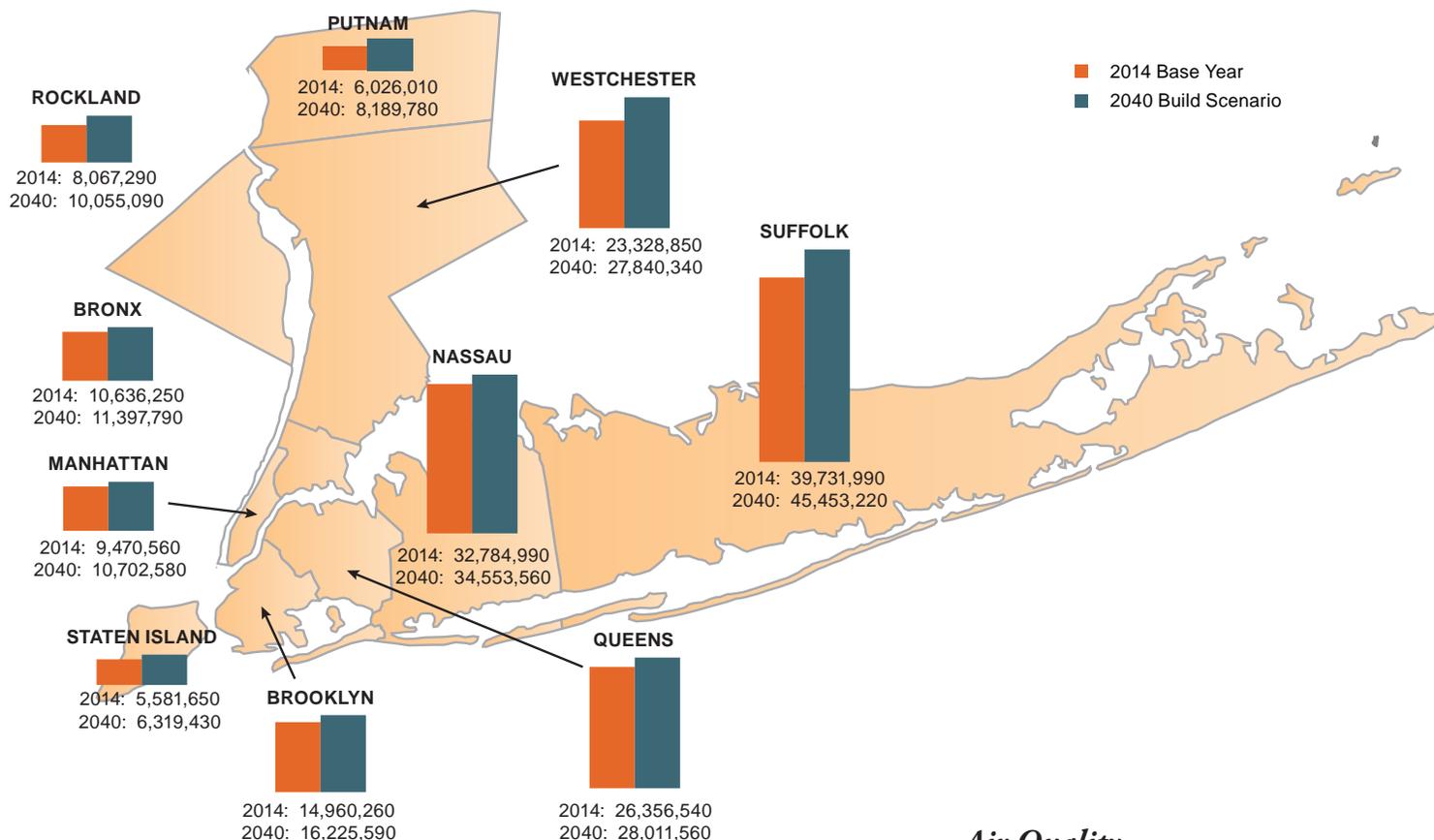


Figure 5: NYMTC Planning Area Daily Vehicle Miles Traveled by County. Note: 2040 Build Scenario – scenario where the impacts of future (2040) socio-economic & demographic forecasts and fiscally-constrained transportation projects are considered in the modeling process.



### Safety

Safety is a key measure of the quality of the region’s extensive transportation system and quality of life. While over the years the roadways have become generally safer for motorists, however, pedestrian and bicycle fatalities combined represent a large percentage of traffic fatalities in the NYMTC planning area: close to 50 percent in 2011. The success of a more sustainable transportation system is dependent on addressing safety deficiencies in all modes of transportation.

### Resiliency

The NYMTC planning area has experienced the direct and destructive effects of many extreme weather conditions, including most recently Hurricane Sandy. The regional transportation system is vulnerable to these climate risks and extreme weather events which are projected to continue and intensify in the future. They have also highlighted the urgent need to strengthen the ability of the roadways, bridges, and transit systems to better withstand flooding, heat waves and severe storms. Improving resiliency to these threats will be paramount during the *Plan 2040* period.

### Air Quality

The Clean Air Act Amendments of 1990 (CAAA) requires the USEPA to establish National ambient Air Quality Standards (NAAQS) for various pollutants. Areas where air quality monitoring shows a violation of the NAAQS are designated “non-Attainment.” The NYMTC planning area is a “non-attainment” area for eight hour ozone variable organic compounds (VOC) and nitrous oxides (NOx); maintenance area for carbon monoxide (CO); and coarse particulate matter (PM10) in New York County only. Through the transportation conformity process the MPO has to continuously ensure that transportation projects will not (a) cause or contribute to any new violation of the NAAQS; (b) increase the severity or frequency of any NAAQS violation or (c) delay timely attainment of the NAAQS or any required interim emissions reductions or other milestones in any area.



Clockwise from top: building the Second Avenue subway; transformed public plaza and pedestrian space in Times Square; a new section of Brooklyn Bridge Park; Suffolk County's Bus Rapid Transit.

## *Financial*

One of the most critical challenges facing NYMTC and *Plan 2040* will be funding. The operating and maintenance and capital needs of the massive and relatively old transportation system are great, and available resources to fund these needs have been shrinking. Highway and bridge construction costs have grown significantly as have rail operating costs. In terms of implementation costs, 91 percent of the costs in *Plan 2040* will be for system preservation. Overall, reasonably expected revenues are projected to cover 81-91 percent of the total projected costs of *Plan 2040*. The lack of adequate funding could impact the regional transportation system's ability to grow the economy, provide efficient and sustainable mobility choices, and improve residents' quality of life. Currently, there are many uncertainties related to the availability of federal funding, which forms the core of revenues for funding transportation projects in the NYMTC planning area.

## ADDRESSING THE CHALLENGES

Developing a long-range transportation plan to address the challenges facing the NYMTC planning area through 2040 was a difficult and complex undertaking. It was necessary to perform a careful analysis of the regional transportation system – all modes, making projections for system preservation, enhancement and growth; develop projections for the growth of the region; analyze transportation system operations and management efforts that will assist in making the system more efficient; and make projections for resources that would be needed to implement this RTP. This was all done giving due consideration to other federal requirements for the development of a long-range transportation plan including environmental justice and Title VI considerations; consideration of environmental mitigation and natural and historic resource conservation; and consideration of specialized transportation (human services transportation).

Members worked closely together and the Council full engaged members of the public and other stakeholders to assist in the process of developing *Plan 2040* (see Chapter 6 for more details).

### *Investments and Actions*

*Plan 2040* contains a number of strategic improvements to the multi-modal transportation system that will ensure system preservation, enhance the system, and help it to grow. These improvements and actions respond to the shared vision of the Council in addressing some of the challenges that lie ahead, including all of those mentioned above.

Since system preservation is a top priority for NYMTC it is estimated that over \$161 billion will be spent on the transit system and \$105 on the roadway system. System preservation includes projects related to lifecycle replacement, refur-

bishment, rehabilitation, reconditioning and reconstruction of transportation system components. As such many of the system operations and management projects – Intelligent Transportation Systems (ITS) and Transportation Demand Management (TDM) which will further enhance mobility, are included in these projections (see *Plan 2040: Chapter 4* for more details). Over \$26 billion will be spent on enhancement projects that will help to close critical gaps in the transportation network, improve mobility and access, provide strategic expansion to the system and foster growth. There are many other projects, proposals, and studies included in *Plan 2040*, when implemented in the future will help to overcome many of the planning area's transportation challenges (see *Plan 2040: Chapter 5* for more details).

The transportation system also has to be adequately operated and maintained. It is anticipated that over \$395 billion will be spent on operating and maintaining the regional transportation system through 2040. Of this amount approximately 92 percent will be spent on the transit systems.

The investments and actions proposed in *Plan 2040* are expected to result in benefits to the NYMTC planning area and regional transportation system with regards to mobility, the environment, accessibility, sustainability, safety, economic activity, and environmental justice, among others (see *Plan 2040: Appendices* for details on: Environmental Justice - *Appendix 2*; Environmental Mitigation - *Appendix 5*; Coordinated Public Transit and Human Services - *Appendix 6*).

## **Safety**

Recognizing the need to make the transportation system safer for residents and all users, NYMTC members approved

a new goal with outcomes for *Plan 2040*: Enhance the Safety and Security of the Transportation System. Some of the transportation safety efforts that NYMTC's member agencies are undertaking include: focusing on a data-driven approach to safety planning; using Complete Streets principles in roadway design; prioritizing pedestrian and bicycle safety efforts (see *Plan 2040: Appendix 2 - Pedestrians and Bicycles* for details) through initiatives like Safe Routes to School, Safe Streets for Seniors, and Road Safety Audits. It is anticipated that this emphasis on safety will help to improve safety for all users of the regional transportation system. In the first five years of the RTP over \$622 million will be spent on safety improvements (see *Plan 2040: Chapter 4* for safety-related information).

## **Mobility**

NYMTC members have collaboratively identified major regional and local projects and other strategic investments that will expand regional transportation capacity and improve the efficiency, accessibility, integration, and sustainability of existing transportation facilities. The strategic investments and initiatives outlined in *Plan 2040* are focused on preserving the transportation system, enhancing the capacity and accessibility of the system, expanding the reach and integration of the system, and each is important to the shared vision of sustainable regional growth. Some of these projects include new transit lines and stations like the Second Avenue Subway from 125th Street to the Financial District in Lower Manhattan and the MTA Long Island Rail Road East Side Access project that will increase capacity into Manhattan's Central Business District from Long Island.

Many major projects focus on bridges in

the NYMTC planning area like the Tappan Zee Hudson River Crossing bridge replacement between Rockland and Westchester counties and the Bayonne Bridge Navigational Clearance project that will improve freight and cargo shipments. NYCDOT and NYCT, Suffolk County through CONNECT LONG ISLAND, and Westchester County are expanding Bus Rapid Transit routes that will improve speed and reliability of bus service. On Long Island, the MTA LIRR is undertaking Main Line Corridor Planning to improve performance on that line.

Over the duration of *Plan 2040*, NYMTC's member agencies will be investing over \$292 billion dollars on projects that will preserve and improve the transportation system and lead to improved mobility for people and freight in the region.

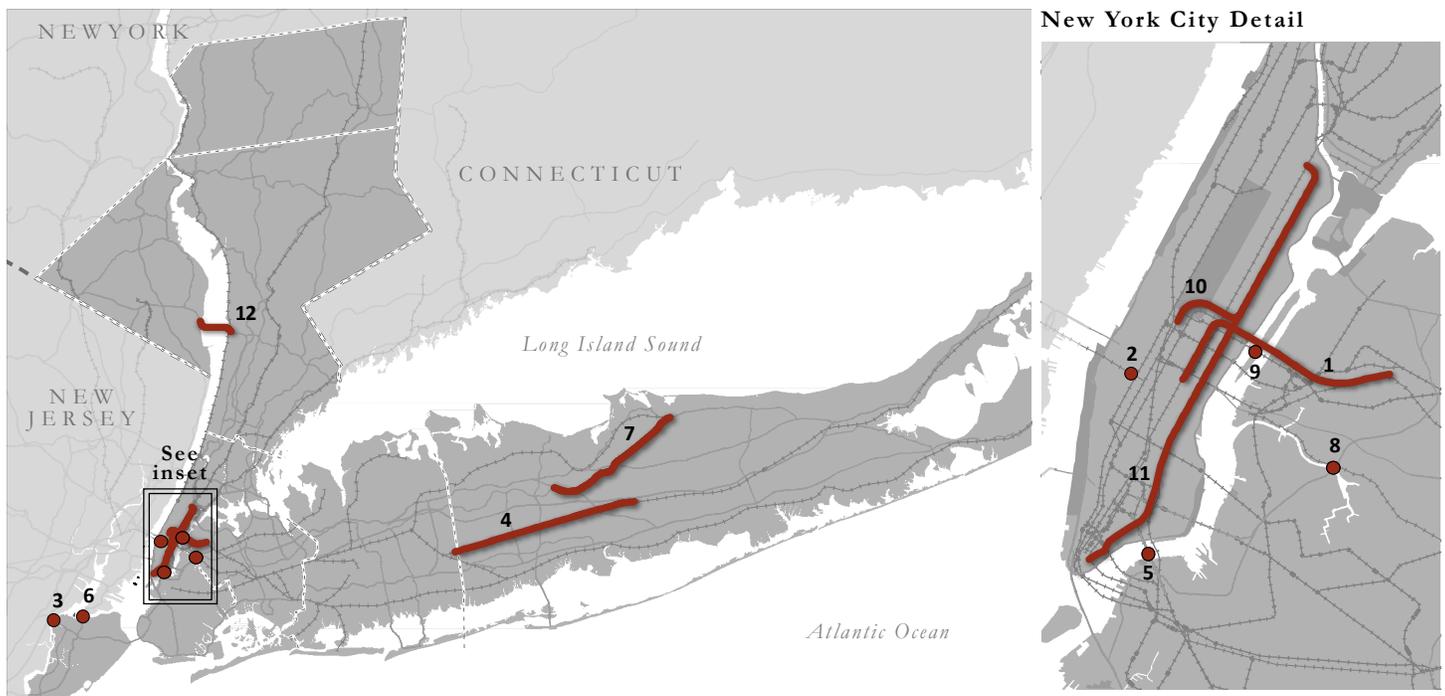
## **Improving Resiliency**

Another new goal approved by NYMTC members for *Plan 2040* is "Improve the Resiliency of the Regional Transportation System." NYMTC members will continue to plan for improving the resiliency of the transportation system so that it could better resist disruptions to services and facilities and also recover from these disruptions as quickly as possible whenever they occur. Among the near-term actions proposed are: planning and implementation of resiliency related actions; creating new cooperative partnerships with multiple government agencies when responding to disasters; and pursuing new partnerships through the Federal Disaster Recovery Framework for recovery from disasters.

One project related to improving resiliency is the New York-New Jersey-Connecticut Transportation Vulnerability Assessment and Adaptation Analysis.

## System Enhancements - estimated costs in billions year of expenditure dollars

Map #	Plan #/PIN #	Category/Item	Pre 2014	Total \$ programmed	Fund source	2014-2018	2019-2023	2024-2028	2029-2033	2034-2038	2039-2040	COMMENTS
	<b>Minor Projects</b>			\$ 2.728	Reasonably expected	\$ 1.306	\$ 1.422					
					Project-specific	\$ -	\$ -					
	<b>Major Projects (Itemized)</b>											
1	PIN: G609/01/AA 09	MTA LIRR East Side Access Project	\$ 1.002	\$ 1.020	Reasonably expected	\$ 0.172						Project-specific funding to include agency capital funding (\$424M) and federal discretionary (\$424M)
					Project-specific	\$ 0.848						
2	PIN: X82266	Moynihan Station Phase 1	\$ 0.016	\$ 0.067	Reasonably expected	\$ 0.067						
					Project-specific	\$ -						
3	PIN: X77047	Goethals Bridge Replacement		\$ 1.500	Reasonably expected	\$ -						Project-specific funding to include public-private partnership (\$1B) and federal credit (\$500M)
					Project-specific	\$ 1.500						
4	PIN: L603/04/ TX 03	MTA LIRR Ronkonkoma Branch 2nd Track	\$ 0.009	\$ 0.129	Reasonably expected	\$ 0.129						
					Project-specific	\$ -						
5	PIN: X76416; PLAN: NYCMB247C	Manhattan Bridge Cables & Suspenders		\$ 0.388	Reasonably expected	\$ 0.085	\$ 0.303					
					Project-specific	\$ -	\$ -					
6	PIN: X09629	Bayonne Bridge Clearance Project		\$ 1.000	Reasonably expected	\$ -						Project-specific funding is agency capital funding
					Project-specific	\$ 1.000						
7	PIN: 005418, 005409, OT2155, 005410, OT2156, 005412, OT2493, 005411, OT2305; PLAN: NSSC646C; NSSC647C; NSSC649C; NSSC650C	NY Route 347 Safety, Mobility and Environmental Improvements	\$ 0.152	\$ 0.855	Reasonably expected	\$ 0.049	\$ 0.204	\$ 0.326	\$ 0.275			
					Project-specific	\$ -	\$ -					
8	PHASE 2 PIN: X72977; PLAN: NYCMB569C; NYCMB571C	Kosciuszko Bridge Replacement Project	\$ 0.686	\$ 0.290	Reasonably expected	\$ 0.290						
					Project-specific	\$ -						
9	PIN: X77283; PLAN: NYCQ1686C	Ed Koch Queensboro Bridge Seismic Retrofit		\$ 0.150	Reasonably expected	\$ 0.125	\$ 0.025					
					Project-specific	\$ -	\$ -					
10	PIN: G610-01AA	MTA NYCT Second Ave Subway Phase 1	\$ 1.126	\$ 0.804	Reasonably expected	\$ -						
					Project-specific	\$ 0.804						
11	PLAN: NYCM2013V	MTA NYCT Second Ave Subway Phase 2-4		\$ 12.776	Reasonably expected	\$ -	\$ -	\$ -	\$ -	\$ -		Project-specific funding to include agency capital funding (\$6.39B) and federal discretionary (\$6.39B)
					Project-specific	\$ 1.836	\$ 1.836	\$ 2.480	\$ 4.416	\$ 2.208		
12	PIN: 8TZ101; PLAN: MHSMC1590C	Tappan Zee Hudson River Crossing Project	\$ 1.200	\$ 3.900	Reasonably expected	\$ -						Project-specific funding to include agency bonding (\$2.7B) and federal credit (\$1.2B)
					Project-specific	\$ 3.900						
N/A		Transportation Demand Management		\$ 0.286	Reasonably expected	\$ 0.036	\$ 0.050	\$ 0.050	\$ 0.050	\$ 0.050	\$ 0.050	
					Project-specific	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N/A	PLAN: NYCMB584C	Bus Rapid Transit Routes in New York City		\$ 0.180	Reasonably expected		\$ 0.180					
					Project-specific		\$ -					
	<b>TOTALS</b>		<b>\$ 4.190</b>	<b>\$ 26.073</b>	<b>Reasonably expected</b>	<b>\$ 2.259</b>	<b>\$ 2.184</b>	<b>\$ 0.376</b>	<b>\$ 0.325</b>	<b>\$ 0.050</b>	<b>\$ 0.050</b>	
					<b>Project-specific</b>	<b>\$ 9.888</b>	<b>\$ 1.836</b>	<b>\$ 2.480</b>	<b>\$ 4.416</b>	<b>\$ 2.208</b>	<b>\$ -</b>	



This project is part of the planning for resiliency brought into focus by recent extreme weather events and is being funded by FHWA. The project partners are: four MPOs - North Jersey Transportation Planning Authority; New York Metropolitan Transportation Council; South Western Regional Planning Agency; Greater Bridgeport Regional Council and three State DOTs - New York, New Jersey and Connecticut. The goals of this project are to: assess the impacts of October 2012's Hurricane Sandy (and to some extent Hurricane Irene, Tropical Storm Lee, and the Halloween Nor'easter in 2011) on transportation assets; identify adaptation strategies to in-

crease the resilience of those assets to the impacts of extreme weather events and the possible future impacts of climate change; and perform a gap analysis for the region, consolidate data sources and information, and identify critical areas and transportation assets generally.

Governor Cuomo convened the NYS 2100 Commission in response to recent severe weather events and the group was tasked with examining and evaluating key vulnerabilities in the State's infrastructure and to recommend actions to strengthen and improve the resilience of those systems.

### Air Quality Targets

Plan 2040 meets all of the criteria pollutant emissions budgets set by the USEPA as shown in the examples below. These examples show the two precursors for Ozone - NO<sub>x</sub> and Volatile Organic Compounds (VOC) - and that between 2025-2040 (Figure 6 and Figure 7), the NYMTC planning area will be below the budgets set for them (please refer to the Air Quality Conformity Determination for full details).

Figure 6: Nine-County NO<sub>x</sub> Emissions - tons per day

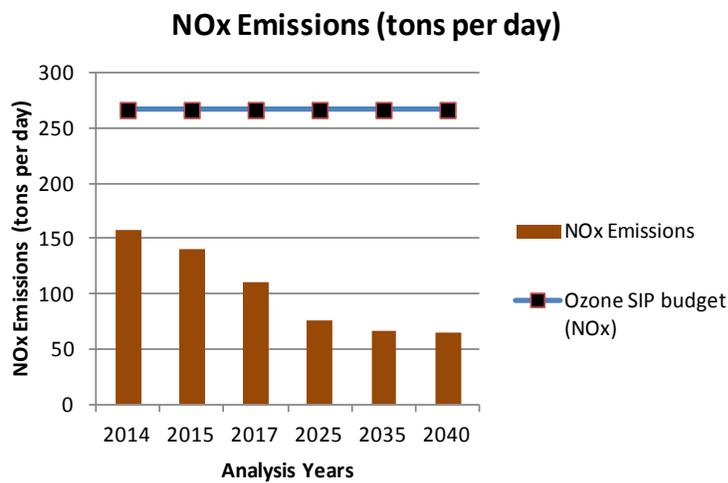
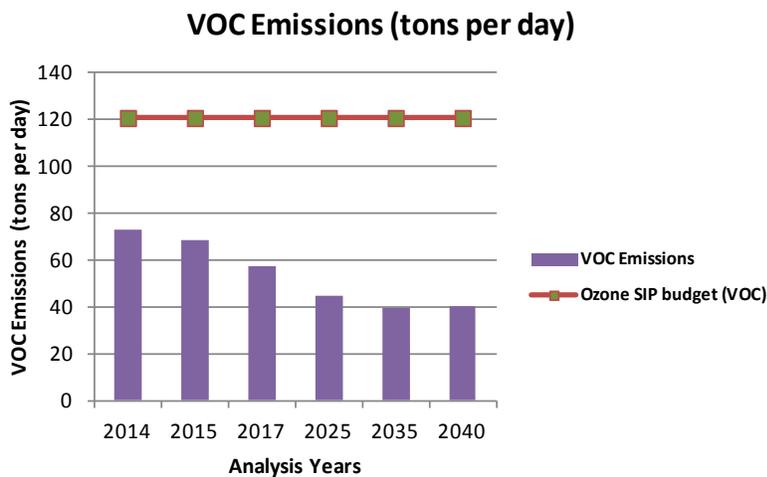


Figure 7: Nine-County VOC Mobile Source Emissions - tons per day

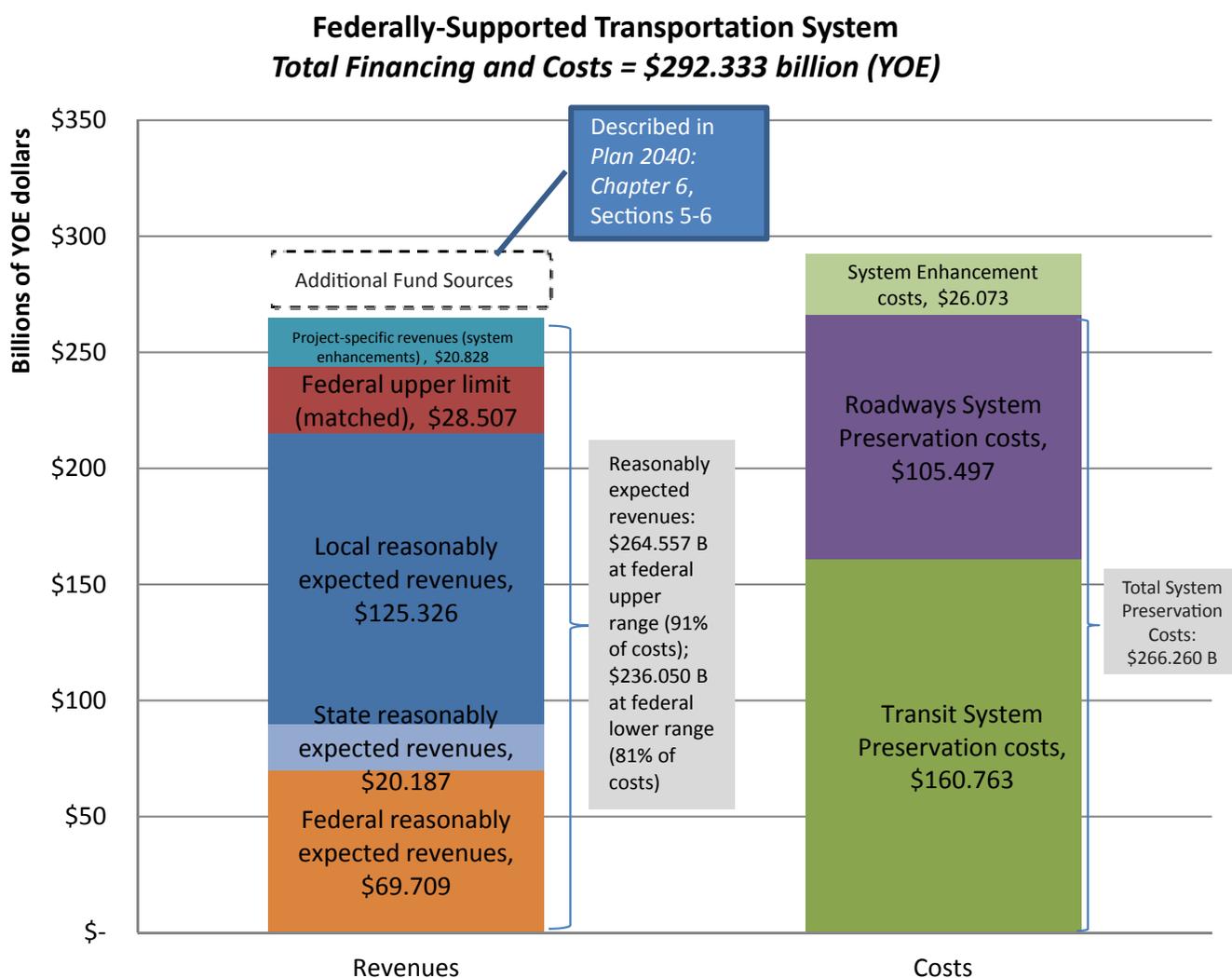


## The Financial Plan

*Plan 2040* is required to include a financial plan that demonstrates how the adopted RTP will be implemented and be fiscally-constrained. The financial plan included in *Plan 2040* addresses these requirements, identifying the needs (costs) of the transportation system and available resources to fund these needs. The core resources continue to be federal, state and local funds. However additional funding will be required to ensure the full implementation of the RTP and region wide strategies have been proposed such as travel-based surcharges and other forms of governmental assistance. These

will be fully defined in the near-term, but will be implemented over the longer-term of *Plan 2040*. In terms of operations and maintenance costs (\$395 billion YOE), it is anticipated that they will be adequately covered by a combination of federal, state and local resources. Figure 8 below shows the implementation costs, expected revenue and additional financing strategies for system preservation and system enhancements (see *Plan 2040: Chapter 6* for details on the financial plan and *Appendix 10* for financial support analysis.

Figure 8: Plan 2040 Revenue and Costs





Clockwise from top: NYMTC *Plan 2040* public workshops/open houses in September and October of 2012 in Brooklyn; Staten Island; the Town of Carmel in Putnam County; White Plains in Westchester County.

## PUBLIC PARTICIPATION

Throughout the development of *Plan 2040*, NYMTC staff and member agencies met with various groups and hosted public workshops and planning sessions in each of its constituent counties. NYMTC organized ten open houses between September 12 and October 17, 2012 in each of the ten counties within the NYMTC planning area. Each open house consisted of two sessions at each location, which enabled numerous stakeholders to attend. Anticipating the current trend of virtual presence, NYMTC also launched an interactive website MindMixer (<http://ideas.nymtc-rtp.org/>), to engage diverse groups of people throughout the planning area. The website served as a platform that allowed visitors to submit original ideas and suggestions as well as interactively comment on thoughts raised by others in the MindMixer community. Through this platform, members of the public were also able to submit comments using Pinterest, Facebook, and Twitter. MindMixer kiosks were part of the open-houses de-

scribed above. An analysis of the traffic on this interactive website indicated that NYMTC was able to engage a varied cross-section and a greater number of residents than during the previous effort to update the RTP.

The required 30-day public comment period for the draft *Plan 2040* began on June 17 and ended on July 18, 2013. A supplementary public comment period was held during the period August 12-21 to accommodate changes that were made to the draft Plan during the 30-day comment period.

## THE FUTURE

*Plan 2040* seeks to chart a realistic and achievable course for a sustainable regional transportation system that will be the foundation of growth and development in the region. Investing over \$292 billion over the next 25 years to preserve and enhance the transportation system will improve the quality of life for residents. However, acquisition of additional funding will be required to ensure the full implementation of *Plan 2040*, which includes the realization of the strategic transportation initiatives and investments, and implementation of new longer-term and unconstrained strategies and improvements.