

MTA Capital Program 2020-2024

Rebuilding
New York's
Transportation
System



**CAPITAL
PROGRAM**

new.mta.info/2020CapitalProgram

As Proposed to the MTA Board September 25, 2019
As Proposed to the CPRB October 1, 2019



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It's Time to Re-invest in New York's Transportation System.





Hello New York,

As the new Chairman and CEO of the MTA, and – more importantly – a lifelong rider and daily customer of our system, I am pleased to present the proposed 2020-2024 MTA

Capital Program. This historic and transformational plan is the largest ever, outlining unprecedented levels of investment across all of the MTA's assets, from subways, buses and railroads to bridges and tunnels. This program represents a bold vision for what it will take to deliver the world-class transit system New York deserves.

Our proposed \$51.5 billion capital investment plus \$3.3 billion for MTA Bridges and Tunnels over the next five years is 70 percent larger than the 2015-2019 Program, addressing core system priorities that will deliver major benefits. Signal modernization on six line segments will speed up the system, providing safer, more reliable and more frequent service to over half of all subway riders. Our commitment to full accessibility begins now, with ADA accessibility projects for 70 stations which would result in serving over 60 percent of passengers. An unprecedented investment of over 1,900 subway cars and 2,400 new buses – including 500 zero-emission All-Electric Buses – will improve air quality and invest in sustainability, resulting in the last order for a non-electric bus in 2029 and an All-Electric Bus fleet by 2040. Other major projects including Phase 2 of the Second Avenue Subway and Penn Station Access will create transformative new travel options for residents of East Harlem, the Bronx, and Westchester increasing the reach, capacity and accessibility of the regional transportation system.

Delivering a transportation system worthy of the 21st century and beyond will require more than an ambitious Capital Plan. Our transit revitalization efforts will be bolstered by major initiatives to transform the MTA into a world-class organization that provides its customers with the service they deserve. The MTA's Transformation Plan, approved by the Board in July 2019, outlines a path to bring truly innovative and meaningful reform to the agency. Transformation priorities include improving overall service through business efficiencies, driving clearer lines of accountability, ending cost overruns and project delays, and reducing waste and duplication.

There's no question that we continue to face significant challenges, and we still have a great deal of work ahead as we transform the MTA into a more streamlined, efficient, and effective organization. We're taking a fresh look at how we deliver capital projects, in ways that will bring greater transparency and accountability to how projects are scoped, planned, designed, built, and managed. With these changes to internal operations, and the support of our local, State and Federal partners, we're certain that we can deliver a more modern, efficient, accessible, and reliable system that New Yorkers deserve.

A handwritten signature in dark ink that reads "Pat Foye".

Patrick J. Foye
MTA Chairman and CEO

9 million

customers rely on the MTA every
weekday

17 million

metric tons of greenhouse gas
avoided annually, making New York
the nation's most carbon-efficient
state

7,300 jobs

created in New York State for every
\$1 billion in MTA Capital investment
sourced or performed in-state

23 million

freight trucks per year use MTA
Bridges and Tunnels crossings,
supporting America's largest
regional economy by moving its
goods and materials



An Investment in the MTA Capital Program is an Investment in the Future of New York.

The MTA's transit system powers our region – and the MTA Capital Program powers our transit system. This upcoming Capital Program will modernize our network from top to bottom.

The MTA network is vital to the social and economic fabric of our region, bringing nearly 9 million people to their jobs, to school, to entertainment, to doctor's appointments—everywhere they need to go, every single day. Our transit system allows New York City to have about four times the job and population density of the next largest city and enables the most valuable real estate market in the nation. It is, quite simply, the engine that powers our \$1.4 trillion regional economy.

The maintenance and continual improvement of the transit system relies on the MTA Capital Program, a series of five-year investment plans which began in 1982. Over the past 37 years, we have invested more than \$128 billion in our system. The Program's success is evident. In almost every performance metric we track – from reliability and safety to crime and major incidents – capital investments have revitalized our transit network.

And capital investments do far more than improve transit. They are powerful job creators and catalysts for a thriving New York State economy. Based on a March 2019 analysis by Ernst & Young, the MTA's five-year capital investment strategy could generate more than \$75 billion of statewide economic activity, and create nearly 350,000 jobs throughout the State.

While capital investments have addressed repair backlogs and infrastructure needs since the 1980s, the fact of the matter is that our system is old, our region is growing more and more crowded, and investments have not kept pace with growing needs. This combination led to a sharp decline in service in 2017. Our Subway Action Plan arrested this decline, but we must invest to build on this progress.

That's one of the reasons this Capital Program is so ambitious. Through this Program, we will deliver the modern, world-class transit system that our region deserves. We will deliver state-of-the-art signals, new subway and rail cars, buses, and 70 additional accessible subway stations. We will make our system safer, more reliable, cleaner, more modern, and more customer-friendly.

Thanks to the leadership of Governor Cuomo, Speaker Heastie, and Majority Leader Stewart-Cousins, the MTA has a head start on the funding we need to successfully implement this ambitious Capital Program. As we work with our partners to fully fund this Program, we do so with an understanding that our stakeholders expect us to demonstrate that we are investing wisely.

For more than 100 years, our transit network has done so much more than serve New Yorkers' needs. It created our region as we know it. When this Capital Program is fully funded, we will have the tools we need to shape our region again – for its next 100 years.

MTA Transformation

The 2019-20 New York State Budget resulted in significant changes for the MTA, including new funding sources for the next Capital Program and a requirement to institute major reforms on how the MTA operates.

A complete reorganization is underway to determine how best to share and consolidate those common functions and develop cost efficiencies through management reforms.

A forensic audit of the Capital Program is also underway to provide a thorough examination of each agency's capital needs, as well as a review of the current Capital Program for cost overages and duplication.

New Funding Sources

This year, the NYS Legislature authorized new significant revenue sources to fund the MTA Capital Program, including:

- Central Business District Tolling Program to ease congestion
- Progressive Tax on High-End Real Estate Sales
- Elimination of Internet Tax Advantage



Across the MTA, agencies are pursuing ambitious plans to target critical needs

The MTA regularly evaluates the condition of its assets and analyzes regional transportation needs and future travel demands. These assessments support the long range capital planning process and lead to investment strategies that address safety, state of good repair and capacity needs in the next 5-Year Capital Plan.

With a focus on arresting the decline of subway and railroad performance, agencies have been proactively attacking the root causes of the system's problematic areas. The result has been dramatic improvement in on-time performance across the MTA network.

Rising to the Challenge

In the summer of 2017, Governor Andrew Cuomo declared a state of emergency, and the resulting Subway Action Plan infused more than \$800 million to stabilize the system. The initiative targets the root causes of subway delays. Work done through the Subway Action Plan includes plugging 4,000 leaks, cleaning drains along over 400 miles of track, repairing 20,000 track defects and rebuilding 200 signal stops.

In May 2018, LIRR announced plans to upgrade the 10 switches that caused 44% of switch failures in 2017, conduct inspections and upgrades on 370 track circuits that caused 36% of track-circuit failures, clear 180 miles of overgrown vegetation along the right of way, and increase the frequency of station cleaning at all 124 stations by 30%.

In October 2018, Metro-North announced plans to replace seats and floors in more than 100 coaches to revitalize its locomotive-hauled fleet, replace 1,200 power transmission poles, complete the replacement of its overhead power system, and accelerate delivery of real-time train information to displays at an additional 21 stations.

Targeted Investments Have Led to Improvements

These extraordinary measures to arrest the performance decline are paying off. Throughout the subway system, the monthly number of incidents that delay 50 or more trains dropped from 105 in January 2018 to 38 in August 2019. Over the same period, weekday on-time performance rose from 58% to 84%.

At Long Island Rail Road, on-time performance rose from 84% in January 2018 to 92% in August 2019. Over the same period, there was a 76% reduction in cancelled or terminated trains, and a 73% reduction in trains delayed by more than 15 minutes.

At Metro-North, on-time performance rose from 92% in January 2018 to 93% in August 2019. Over the same period, there was a 64% reduction in cancelled or terminated trains, and a 16% reduction in trains delayed by more than 15 minutes.

The next Capital Program will build on these achievements, ensuring that the improvements put in place will be sustainable for years to come.

A low-angle, fisheye photograph of three subway workers in a tunnel. They are wearing hard hats and high-visibility vests. The tunnel's circular structure and grid-like ceiling are visible, with light coming from the far end.

The MTA is Delivering Capital Projects Faster, Better, and More Cost-Effectively.

76 percent

fewer approvals needed to authorize
a change order

**40
percent**

more work done on the Subway
thanks to better track access

\$25 million

all projects exceeding \$25 million
require design-build

Agency-wide, the MTA has been transforming internal operations and culture to reduce costs, streamline burdensome processes, and bring greater transparency and accountability to the way capital projects are scoped, planned, designed, built, and managed.

Rebalancing risk

More design-build

By combining responsibility for both design and construction in one group, the MTA is shortening project schedules, identifying potential issues earlier, increasing accountability, and better sharing risk with contractors. This year's State budget requires any MTA capital project over \$25 million to use design-build, saving the MTA time and money.

More performance-based incentives

Linking compensation to project performance encourages efficiency. This can include additional awards for early completion of key milestones, or sharing the savings identified through value-engineering with the contractor.

Sharing risk

The MTA has begun to reduce risks that shouldn't be borne by contractors alone. This includes guaranteeing track access so that contractors do not bear the cost of cancelled work, as well as working with the contracting community to accept alternate types of financial guarantees that cost contractors less.

Reducing red tape

Faster payments

Reducing the MTA's internal payment cycle means suppliers and contractors can get paid faster, which will result in lower costs. Allowance of partial payments further reduces barriers to working with the MTA.

Shorter change order and submittal processing times

The faster change orders and submittals are processed, the faster the MTA and its contractors can get work done and adapt to changing conditions. All MTA agencies have recently reduced the time it takes to execute a change order.

Less customization and more performance-based specifications

Complicated technical specifications that demand a high degree of customization drive up construction and maintenance costs. The MTA is simplifying specifications to focus on outcomes giving suppliers and contractors greater flexibility to recommend the best solution.

Strengthening project management

Greater ability to get work done on nights and weekends

One of the greatest obstacles to accelerating capital projects is the amount of time available to perform work, given the 24/7 operation of the subway and the extended hours of the MTA's commuter railroads. The amount of work done in the subway system has now been increased by 40% by managing resources more effectively.

Empowered project leads

Empowering strong project leads who have full control over project scope, budget, and schedule provides greater accountability. With enhanced authority to veto unwarranted demands or upgrades, Project CEOs or leads are now in place for major projects across the MTA.

Informed, project-based cost forecasting

The more robust cost forecasting is, the more reliable project budgets are. By adopting value-engineering and risk analysis practices, the MTA is identifying and modeling project risks more quickly in order to minimize potential cost overruns.

New Construction and Development Organization responsible for:

- Planning – build the right projects establishing MTA-wide vision and priorities to meet regional needs
- Development – build projects the right way by maximizing use of design/build and optimizing project bundling to drive down costs.
- Delivery – build efficiently and effectively with accountable Project CEOs who are involved from preliminary concept to project close out.

Western New York & Finger Lakes Regions

Rochester
The Harris Corp.
Communications equipment vendor
West Henrietta
Alstom Signaling, Inc.
Signal systems manufacturer
Orchard Park
Curbell Plastics, Inc.
Bus supplier

Central New York & Mohawk Valley Regions

Utica
Metal Solutions
Bus supplier
Yorkville
Oriskany Manufacturing Technologies
Bus supplier
Syracuse
Polymershapes
Bus supplier

North Country & Capital Regions

Plattsburgh
Nova Bus LFS
Bus manufacturer
Plattsburgh
Bombardier Transit Corp.
Subway car manufacturer
Champlain
Elegance Coating Ltd.
Bus supplier

Mid-Hudson Region

Yonkers
Kawasaki Rail Car, Inc.
Subway and rail car manufacturer
Nanuet
Halmar International LLC
Bridge structures and stations enhancement
Elmsford
Wabtec Passenger Transit
Rail car supplier

Southern Tier Region

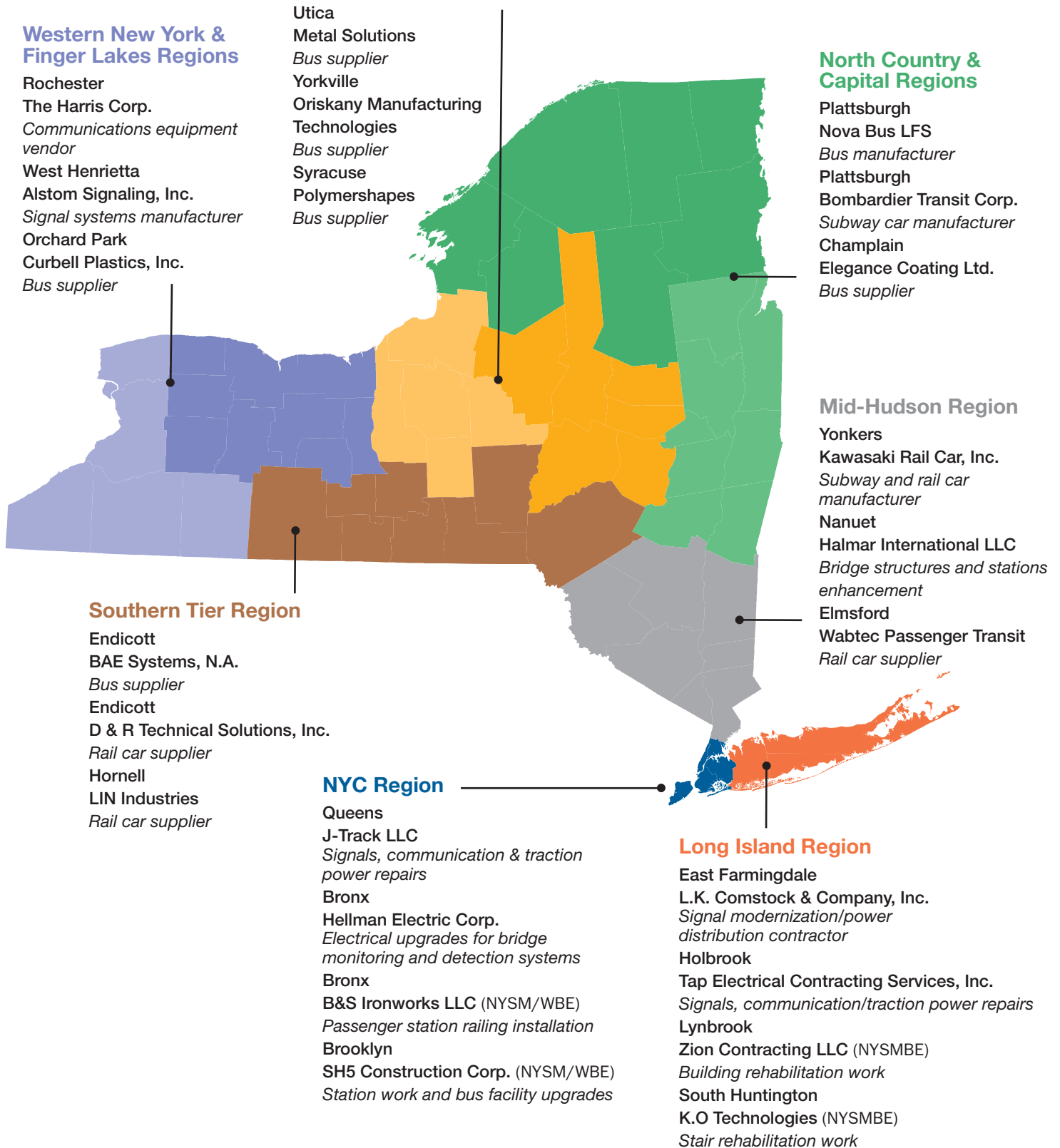
Endicott
BAE Systems, N.A.
Bus supplier
Endicott
D & R Technical Solutions, Inc.
Rail car supplier
Hornell
LIN Industries
Rail car supplier

NYC Region

Queens
J-Track LLC
Signals, communication & traction power repairs
Bronx
Hellman Electric Corp.
Electrical upgrades for bridge monitoring and detection systems
Bronx
B&S Ironworks LLC (NYSM/WBE)
Passenger station railing installation
Brooklyn
SH5 Construction Corp. (NYSM/WBE)
Station work and bus facility upgrades

Long Island Region

East Farmingdale
L.K. Comstock & Company, Inc.
Signal modernization/power distribution contractor
Holbrook
Tap Electrical Contracting Services, Inc.
Signals, communication/traction power repairs
Lynbrook
Zion Contracting LLC (NYSMBE)
Building rehabilitation work
South Huntington
K.O Technologies (NYSMBE)
Stair rehabilitation work



Our investments drive the New York economy:

The MTA's Capital Program and the jobs it creates are an integral part of our region's economy and economic growth. According to the New York Building Congress, the MTA alone accounts for about 25% of New York City's construction industry in some years. But Capital Program jobs aren't just in New York City, they're in every corner of our state, thanks to the manufacturers, suppliers, and businesses that have opened and expanded to do MTA work.

\$75 billion

estimated statewide economic activity generated by MTA's five-year Capital Program

350,000 jobs

estimated to be created over five years in every corner of New York State

89 percent

of capital investments are sourced or performed in-state

\$1 billion

of capital projects awarded to NYS certified Minority and Women-owned Business Enterprises since 2015

Investing to Improve Reliability

New York's 24/7 system puts a high premium on reliable service. It's the only way to move so many people quickly and efficiently.

To improve reliability, we must continue to focus on our network's core infrastructure, including the track, signals, switches, and thousands of components customers never even see. These projects may not be glamorous, but they are the key to moving nearly nine million people a day, safely and reliably.

Signal modernization

We will dramatically accelerate the modernization of our aging signal system. New lines will be outfitted with state-of-the-art technology. This system—which is fully in place on the 7 Line and L Line—allows us to run more trains and provide better, safer service. We will modernize six line segments in this capital plan, including the Lexington Avenue Line.

Ultra-Wideband (UWB) Signaling/Axle Counters

UWB and axle counters are emerging innovative technologies currently being tested by the MTA that have the potential to enable conversion to modernized signaling to be executed more quickly, more cheaply, and in a less intrusive manner – supporting this capital program's goal of resignaling six lines in five years.

Jamaica Station expansion

At Jamaica Station, which serves 10 of the 11 LIRR Branches, we're spending \$235 million dollars to rebuild the signals, tracks, and infrastructure. This will dramatically improve both the reliability and train speed through Jamaica, and improve what we all know as the "Jamaica Crawl."

1,900 cars

including replacement of over 1,500 aging subway cars, and increasing the fleet by 437 cars for more reliable service

2,400 buses

including replacement of over 2,200 older buses, and increasing the fleet by 186 buses for more frequent and reliable service

6 lines

modified with modernized signaling to provide greater safety and reliability

160 cars

increasing the size of the LIRR electric fleet for more frequent service including East Side Access

We are committed to environmental sustainability:

The MTA creates the most transit-rich environment in the nation, allowing for dense energy-efficient land use patterns, and making New York the state with the smallest carbon footprint. But we are not resting on our laurels. With the purchase of hundreds of new all-electric and hybrid buses, this Capital Program puts the MTA's transition to zero-emission on a fast track.



17 million

metric tons of greenhouse gas avoided annually through mass transit

\$100 million

estimated annual health cost savings from reduced harmful emissions due to Central Business District Tolling

1.6 billion

gallons of fuel consumption reduced through Open Road Tolling

10.5 lbs

GHG emissions avoided by an average MTA ride

MTA Solar

Renewable electricity production on roofs and parking lots will generate clean, emission-free power and revenues for the MTA

Building an Accessible Transit System for *All* New Yorkers

New York City's transit system has 493 stations, more than any other subway system in the world, and 5,900 buses serving more than 300 routes.

97% of New York City's population lives within a quarter mile of a bus stop, and 71% lives within a half mile of a subway station. One hundred and twenty three of these stations – serving nearly 50% of our ridership – are accessible under the Americans with Disabilities Act. We know that's not good enough, so we are making historic investments to bring our century-old system up to a state of full accessibility.

We've allocated more than \$5.2 billion toward accessibility improvements in this Capital Program, and we will make 70 additional stations ADA accessible including four that may be advanced into an earlier program. By 2029, over 50% of stations will be fully accessible. The pace of investment will continue, with the goal of achieving maximum possible system-wide accessibility by 2034.

The commuter railroads have 209 stations in New York State, of which 168 are currently accessible or under construction. The LIRR has allocated \$377 million toward station rehabilitation, renewal and stand-alone accessibility projects, which will accomplish new ADA accessibility at up to 7 additional stations. Additionally, the LIRR has programmed \$39 million systemwide for replacing and enhancing accessibility components at other stations.

Metro-North will make ADA accessibility improvements at up to 4 stations - 3 on the Harlem Line and 1 on the Hudson Line. With these investments, 93% of customers will be served by accessible stations.

43 percent

of NYCT stations, serving over 60% of riders, will be fully accessible – meaning no subway rider is more than 2 stations away from an ADA station.

93 percent

of LIRR stations will be accessible – with a long term goal of 100% accessibility in 10 years.

78 percent

of Metro-North stations serving 93% of customers will be accessible.

Exit



John Street & Broadway

E

R

W

PATH / WTC

1

EL#717X



OUT OF SERVICE



Network Expansion: Easing Congestion and Creating Growth



New York City subways and buses moved more than 1.7 billion people last year. The LIRR's 2018 ridership was nearly 90 million – the highest in nearly seven decades. Metro-North achieved its highest-ever ridership in 2017, more than 86.6 million.

The growth in ridership has strained the system. Six subway lines operate at or above passenger load capacity during the morning peak. Subway delays cost the city \$307 million annually in lost work time. And as busy as the system is today, the region is growing and changing fast.

Over the next two decades, the region served by the MTA will grow by about 1.4 million people, and more than 700,000 new jobs are projected—more than the population of the entire city of Boston. Significantly more work trips are being made today to the outer boroughs than 20 years ago, and more subway and bus commuters are traveling off-hours. In the decades to come, the region will need its transportation system to adapt to support these changes.

If we want to accommodate all of these new New Yorkers and maintain safety and reliability, future expansion projects must meet the demands of a changing region. Without them, continued population and employment growth will lead to worsening overcrowding on key subway and commuter rail lines. Insufficient coverage, particularly in outlying areas of the outer boroughs, will lead to congestion and ridership losses to private automobiles and Transportation Network Companies (TNCs). And a changing travel geography will mean missed opportunities to carry an increasing number of non-Manhattan intra-borough and interborough trips.

The MTA's large-scale capacity expansion projects focus on adding capacity to the system, expanding the reach of the network, and serving changing travel patterns throughout the region. New stations and increased service will support local land use and economic development strategies, revitalizing the region through new job opportunities, more housing and increased mobility. Additional travel options make our region more resilient and able to respond to disruptions in emergencies.

The MTA evaluates and prioritizes system and capacity expansion projects that:

Add capacity

to satisfy growing demand or relieve overcrowding

Expand the reach of the network

to connect underserved or new communities to educational and employment opportunities

Support local land-use

and economic development strategies

Serve changing travel patterns

by enabling trips to new business districts or borough to borough travel

Enhance network resiliency

by increasing travel options and redundancy in the overall transit network

Improving Safety and Customer Service Through Technology

We must continue to maximize our use of technology—both internally and for our customers—in ways that make our transit system better every day.

We want to be one of the most technologically advanced transit networks in the world – because it’s the best way to mitigate the limitations of our aging infrastructure, improve reliability, and keep our customers safe.

These innovations have helped us streamline operations, improve the daily lives of our riders, and meet the public’s expectation that government agencies today run more like a business, and less like a bureaucracy.

Positive Train Control for Railroads

Positive Train Control, or “PTC,” is a state-of-the-art system for monitoring and controlling commuter rail trains, and it will dramatically improve safety. PTC installation at both railroads will meet their federally-mandated completion date.

All-Electric Buses

Since 2018, the MTA has been operating zero-emission All-Electric Buses. In this Capital Program, we will begin the process of completely transforming our bus fleet to All-Electric operation with the purchase of 500 electric buses reducing emissions and improving sustainability.

OMNY: The New Fare Payment System

OMNY (One Metro New York) is part of an effort to modernize the MTA that will make your trips faster and more convenient. It is built with the latest payment technology and backed by the latest payment security standards. Once OMNY has been rolled out everywhere we serve, you can just tap and go, from Pleasant Plains to Poughkeepsie. We are One Metro New York.



Proposed 2020-2024 Capital Program

An investment in the MTA Capital Program is an investment in the future of New York

Agency*	(\$ in millions)
NYCT Subways	\$ 37,303
Buses	\$ 3,512
Long Island Rail Road	\$ 5,714
Metro-North Railroad	\$ 4,689
Other	\$ 254
CPRB Capital Program Total	\$ 51,472
Bridges & Tunnels**	\$ 3,327

* Includes capacity projects budgeted in MTACC

** B&T does not require CPRB approval

70 percent increase in investments

\$21 billion more capital investments over current 2015-2019 plan

Accelerated program of priority projects

Signal upgrades and accessibility projects will be advanced on a more aggressive timeline

Cost-containment and reform measures

More design-build and organizational reforms to deliver more for less



New York City Subways

The New York City Subway, including Staten Island Railway, is the busiest subway system in North America. Since 1990, it has seen ridership climb 60% to 1.7 billion customers annually. As ridership has increased, so has the strain on an aging system. Six subway lines are now operating at or over capacity. Antiquated signals, insufficient power and constraining chokepoints limit speed, reliability, and capacity. Hundreds of stations remain inaccessible for those with disabilities.

Priority Investments

Signals

Signals regulate train movements, and upgrading them to modern standards will improve service, reliability, throughput and safety. Importantly, modernized signals will allow us to run trains closer together, thereby providing the ability for more service. It will also help to eliminate traffic bottlenecks.

Subway Cars

Expanding the fleet size and installing advanced signal equipment on cars are necessary to get the benefits of re-signaling and allows us to provide more service. Additionally, replacing cars at the end of their 40-year lives sustains reliable service and provides a more comfortable environment for customers.

Stations

We're adding new elevators at 70 stations – 4 may be advanced to the 2015-2019 Program – so that customers will be no more than two stations away from an accessible station, bringing us closer to the goal of maximum possible system-wide accessibility. Repairing existing elevators and escalators and other station components ensures a safe and comfortable customer experience.

Track

Track is the highway of the transit system. Timely replacement of track and switches, the subway's fundamental service delivery assets, ensures that trains can operate at optimal speeds safely. In some areas, upgrades from bolted rail to welded rail will provide smoother rides and also improve the useful life of rails.

Structures

Concrete and steel underground and elevated structures—the bones of the subway—endure harsh service conditions year in and year out. Repairing deficient structural elements, as well as painting steel sections, preserves the long-term safety and integrity of the subway, and allows continual operation.

Power

Replacing and renewing existing traction power equipment and cabling improves the reliability of the subway, which is totally dependent on electricity. Where needed, we're adding new equipment to support future service increases enabled by signal modernization and fleet expansion.

MTA NYC Transit Subway Capital Program – \$37.3 billion total (\$32.75B Core | \$4.56B Capacity)

Category	Budget	Priority Investment Highlights	Category	Budget	Hidden Investment Highlights
Subway Cars	\$6,057m	<p>Purchase approximately 900 A-division cars on numbered lines, equipped for modernized signaling</p> <p>Purchase 1,077 new B-division cars to replace existing cars and expand the fleet on lettered lines, including Second Avenue Subway Phase 2</p>	Line Equipment	\$412m	<p>Rehabilitate up to 2 miles of tunnel lighting</p> <p>Rehabilitate up to 6 pump rooms to remove water from the system</p>
Stations	\$9,204m	<p>New elevators for ADA accessibility at 70 stations in all boroughs, including 4 that may be advanced to an earlier program</p> <p>Renewal work at up to 13 stations on 10 lines in the Bronx, Brooklyn, Manhattan and Queens</p> <p>Station circulation & access improvements and reconfiguration</p> <p>Replace up to 65 escalators and up to 78 elevators</p> <p>Component replacement and repair at stations system-wide</p>	Shops & Yards	\$563m	<p>Make priority repairs and improvements at maintenance facilities system-wide including major work at the Livonia Maintenance and Atlantic Ave Power & Cable shops</p> <p>Replace approximately 2 miles of yard track and approximately 15 yard switches</p>
Track	\$2,558m	<p>Install wider fare-gates for all ADA stations</p> <p>Rehabilitate approximately 60 miles of main-line track systemwide</p> <p>Install approximately 20 miles of continuous welded rail</p>	Service Vehicles	\$354m	Purchase heavy-duty rail and road vehicles to better support capital construction needs
Signals & Communications	\$7,119m	<p>Replace approximately 250 mainline switches</p> <p>Install state-of-the-art signals on the Fulton, Queens Blvd East, Crosstown, 63rd St., Astoria, and Lexington Avenue lines</p> <p>Modernize or modify 33 interlockings</p> <p>Install modernized signaling equipment on 1,077 B-division subway cars</p> <p>Upgrade the communications networks, including telecommunications equipment and cables, and complete installation of passenger ID cameras system-wide</p>	Misc/ Emergency	\$1,123m	<p>Repair and upgrade employee facilities, police facilities, and administrative and operations buildings</p> <p>Install fire safety systems and remediate hazardous materials at various facilities</p> <p>Progress designs, project scopes, engineering services, and management information systems</p>
Line Structures	\$2,384m	<p>Repair structural components on various elevated and subway lines</p> <p>Paint elevated structures on lines throughout the system</p> <p>Install protective netting on elevated structures</p> <p>Rehabilitate bridges on up to 3 lines</p>			
Traction Power	\$2,600m	<p>Install new power substations, circuit breaker houses (CBH), contact rail and cables to support modernized signaling</p> <p>Renew up to 6 existing substations and up to 11 circuit breaker houses (CBH) system-wide</p>			
Staten Island Railway	\$373m	<p>New elevators/ramps for ADA accessibility as part of the total investment at 70 stations</p> <p>Replace approximately 8 miles of mainline track and approximately 4 mainline switches</p> <p>Improve various right-of-way facilities</p>			

Hidden Investments

The subway depends on a wide array of facilities and equipment for maintenance, right-of-way safety, construction support, storage, and workers. We're fixing pumps, shops, fire-standpipes and many other behind-the-scenes support infrastructure to ensure that we can operate the system and deliver service safely, reliably, and efficiently.

Phase 2 – Second Avenue Subway

SAS Phase 2 will add 3 new fully accessible stations, and a connection with Metro-North. Serving 300,000 daily riders together with Phase 1, it will further relieve congestion on the 4/5/6 trains, and strengthen access to jobs and education for Harlem and East Harlem residents. Together with 2015- 2019 program funding, the 2020-2024 plan provides the entire \$6.9B project cost, shared approx. 50/50 between federal and local sources.



New York City Buses

Each work day, New York's fleet of 5,700 accessible buses—the largest bus fleet in the nation—serves more than 2 million customers on over 300 routes. With New York ranked among the world's most congested cities, each bus combats congestion and greenhouse gas emissions by carrying far more people than a car can. Redesigned routes and effective traffic enforcement measures promise to cut through congestion, but they require a larger fleet and cleaner technology to succeed.

Priority Investments

Replacement Buses

Replacing existing buses at the end of or over their 12-year useful lives will improve reliability and service efficiency and provide a more comfortable environment for customers. We're evaluating new bus designs to expand service options, streamline passenger flow, increase capacity, and improve reliability.

Electric Buses

We're accelerating our transition to a zero-emission, all-electric bus (AEB) fleet. AEBs will transform our fleet while reducing greenhouse gas emissions and improving air quality. After 2029 all our bus purchases will be electric buses.

Additional Buses

The bus fleet is being expanded based on customer input, demographic changes and travel demand analysis. As part of the redesign of the bus network, we're expanding the fleet for more frequent and more reliable service.

Improve Customer Experience

New buses will have digital signs and route and service announcements and other amenities. We're working to speed up boarding by installing tap readers as part of the new fare payment system and introducing all door boarding so buses spend less time at stops.

Bus Lane Enforcement

We're working to bring faster and more reliable bus service to routes with dedicated bus lanes by installing cameras on the front of buses. More consistent lane enforcement will help increase bus travel speeds by countering illegally standing or parked vehicles.

MTA New York City Buses Capital Program – \$3.5 billion

Category	Budget	Priority Investment Highlights	Category	Budget	Hidden Investment Highlights
NYC Transit Buses	\$1,820m	<p>Purchase a total of 1,548 new buses for local and express services throughout the network.</p> <p>New bus purchases include 475 standard and articulated all-electric buses, accelerating NYCT's transition to a zero-emission fleet.</p> <p>The fleet is being expanded to provide better connectivity and more direct service</p>	NYC Transit Depots	\$821m	<p>Reconstruct the Jamaica Depot</p> <p>Modify up to 7 depots to support all-electric buses</p> <p>Make priority repairs and improvements at bus depots and maintenance shops throughout the system</p> <p>Replace bus depot equipment, such as bus washers, lifts, and paint booths.</p> <p>Purchase equipment to support automated bus lane enforcement</p>
MTA Bus Company Buses	\$722m	<p>Purchase a total of 874 new buses for local and express services throughout the network.</p> <p>New bus purchases include 25 standard all-electric buses, commencing MTA Bus's transition to a zero-emission fleet.</p> <p>The fleet is being expanded to provide better connectivity and more direct service</p>	MTA Bus Company Depots	\$149m	<p>Modify first depot to support all-electric buses</p> <p>Make priority repairs at up to 5 depots, targeting structural elements, heating/ventilation, and electrical systems</p> <p>Replace bus depot equipment, such as bus lifts</p>

Revitalizing the Bus Network

The route network has not been holistically updated in decades. To deliver the improvements that New Yorkers want with a modern network, we're redesigning it to provide better connectivity and more direct service.

The effort includes:

- * optimizing the existing bus network by removing underutilized stops and making street design changes on select corridors in coordination with NYC DOT.
- * expanding traffic signal priority and strengthening traffic enforcement for SBS and other routes in partnership with the City of New York.
- * expanding the fleet to meet the travel needs of customers.
- * improving the convenience and quality of the customer experience with real-time information, new on-board amenities, and faster boarding through OMNY, the new fare payment system.
- * enhancing our world-class fleet with sustainable technology, design improvements, and new safety features.

The plan is a road map to building the world-class bus system New Yorkers deserve.

Hidden Investments

The facilities for maintaining the bus fleet will be improved. As the fleet size grows and All-Electric Bus (AEB) technology develops, we're making key upgrades and repairs to the systems, equipment and buildings that support it to ensure that our bus network operates safely, reliably, and efficiently.





Long Island Rail Road

The Long Island Rail Road is the largest, busiest, and oldest commuter railroad in North America, carrying 89.8 million passengers in 2018. While ridership has grown over 20% since 1990, key elements of the LIRR network have fallen behind. Many signals date from the 1950s and 1960s, and over half the power substations exceed their 35-year useful life. Sixteen LIRR stations remain inaccessible to those with disabilities. Realizing the benefit of capacity expansion projects requires a larger fleet and a range of other infrastructure improvements.

Priority Investments

Rolling Stock

LIRR needs more cars to mitigate its challenges of too many short trains and standees. In addition, fleet growth will help prepare for increased services upon completion of East Side Access and the LIRR Expansion project.

Stations

Customers' first experience with the railroad is in the stations – they need to be accessible, safe, and comfortable. LIRR will renew 14 stations, replace as many as 8 elevators and escalators, and make 7 stations ADA accessible (in addition to the 108 stations already accessible or under construction) – progress towards the railroad's goal for 100% accessibility by 2029.

Track

Maintaining track in a state of good repair and upgrading it with continuous welded rail, which removes gaps in the rail surface, increases durability and is critical to a safe, reliable and smooth-running railroad. Improvements at Jamaica Station will enhance capacity allowing more and faster trains to pass through.

Line Structures

Structurally-sound bridges, tunnels and viaducts are critical to the operation of the railroad – preventing slow speed zones and ensuring safety. In this program, 10 railroad and highway bridges, as well as one tunnel, will be replaced or rehabilitated and viaduct renewals will begin.

Signals

The signal system enforces safe spacing and speeds for trains. Better and more reliable service depends on signal components being replaced and upgraded at the end of their useful lives – a focus of LIRR's program. Additionally, a new Centralized Train Control system will improve service systemwide.

Power

The electric power system is vital to providing a reliable and robust train network. This program will focus on the replacement of 5 substations and systemwide component replacement. Electrification of the Central Branch will increase operational reliability and give flexibility to reroute services when needed.

MTA Long Island Rail Road Capital Program – \$5.7 billion (\$3.7B Core / \$2B Capacity)

Category	Budget	Priority Investment Highlights	Category	Budget	Hidden Investment Highlights
Rolling Stock	\$242m	Purchase up to 17 coaches and 12 revenue locomotives	Shops & Yards	\$203m	Begin Phase 2 of the new Mid-Suffolk electric train yard in Ronkonkoma, which will accommodate electric fleet growth for East-Side Access Component improvements at key shops and yards Improve and extend track at Port Washington Yard to increase branch capacity Rehabilitation of employee facilities at priority locations Consolidation of engineering disciplines and material storage in Bethpage to improve efficiency and space
Stations	\$910m	Install new elevators at up to 7 stations achieving 93% systemwide ADA accessibility Replace up to 5 elevators and 3 escalators Platform extensions at up to 5 stations Station rehabilitation and renewal work at up to 14 stations Replace and add ticketing machines, as well as shelter sheds Rehabilitate Penn Station platforms and utility systems	Misc.	\$231m	Upgrade security equipment and systems at stations, tunnels, substations, facilities, etc. Progress and support program development and administration
Track	\$1,018m	Annual track program work to maintain a state of good repair Install concrete ties on up to 32 track miles on 5 branches for improved longevity Reconfigure interlockings, make switch and signal improvements, and construct a new closed deck rail bridge – all part of Phase 2 of improving Jamaica capacity Contribute annually to Amtrak-coordinated state of good repair investments			
Line Structures	\$344m	Replace or rehabilitate approximately 10 railroad and highway bridges Advance restoration of navigability of the Dutch Kills by demolishing an unused bridge & designing one bridge rehabilitation Structural rehabilitation of the Atlantic Avenue Tunnel Assess structural condition of bridges and viaducts systemwide & begin viaduct renewals Paint and waterproof bridges at priority locations			
Signals & Communications	\$364m	Upgrade obsolete communications fiber optic network equipment Implement and install new customer information and communications system technology Complete renewal of Babylon Interlocking Upgrade and modernize signals at locations on two branches Normal replacement of signal components systemwide Implement & install Centralized Train Control including replacing obsolete tower operations			
Power	\$426m	Replace approximately 5 substations Electrify the Central Branch to improve service reliability and operational flexibility Renewal and replacement of components systemwide			

Hidden Investments

The LIRR relies on extensive infrastructure outside of public view to run reliable service – such as shops and yards, where trains are maintained and stored.

East Side Access (ESA) / Regional Investments

ESA will bring LIRR trains to Grand Central Terminal and East Midtown's dense business district – saving commuters up to 40 minutes per day and reducing congestion on Midtown's streets and subways. ESA is purchasing electric cars for expanded LIRR service.

LIRR Main Line Expansion

The LIRR Main Line Expansion project will add a third track to the Main Line on a 10-mile corridor from Floral Park to Hicksville, used by 40% of LIRR customers. Together with the ongoing Jamaica Capacity Improvements project, a robust reverse commute operation will be enabled – increased by 60% versus today. Using the new terminal capacity of East Side Access, the third track will also enable a 50% increase in LIRR peak service to Manhattan from Long Island and Queens.



Metro-North Railroad

With yearly ridership that has doubled since 1983, Metro-North is one of the most heavily traveled commuter railroads in the country. Today, much of Metro-North service operates at or near capacity. As demands on the system grow, major structures serving the vast majority of Metro-North customers are more than 100 years old and in need of replacement, including the Grand Central Terminal trainshed and the Park Avenue Viaduct. Many other assets are aging and in need of investment as well.

Priority Investments

Rolling Stock

Modernizing the fleet ensures more reliable service and increased passenger comfort. In this plan, Metro-North will replace train cars and locomotives that have reached the end of their useful lives – as many as 80 M-3 electric cars and 30 locomotives.

Stations

Metro-North will continue to address critical state of good repair needs at its 85 NYS stations, such as reinforcing platforms and fixing stairs and roofs. Up to 4 stations will receive ADA improvements on the Harlem and Hudson lines, ensuring the railroad continues to become more accessible for all passengers.

Track

Vitally important to the day-to-day reliability of the system is keeping tracks in a state of good repair. The cyclical replacement of track, ties, and ballast will continue in this Capital Program – ensuring customers experience a safe, smooth, and reliable ride.

Power

Power improvements are required to deliver reliable and safe service in a system near capacity with growing demands. This program will construct 2 new upper Harlem Line substations, supporting increased train capacity and reliability, and preparing for a future third track. Normal replacement of equipment, cables, and 3 substations will help preserve continued safe electric operations.

Structures

Structurally sound bridges, tunnels, and viaducts are vital to the continued operation of the system. The 1.8 mile Park Avenue Viaduct, carrying all trains into Grand Central, will begin Phase 1 of a multi-program replacement. Also, up to 5 bridges will be repaired or replaced and priority repairs will be made to 2 viaducts.

Grand Central Terminal

The trainshed of Grand Central Terminal, a 2-story, 47 platform structure hidden beneath 75 acres of Midtown, serves 4 out of 5 Metro-North passengers. This program will focus on the first phase of a multi-program replacement of this structure, in addition to updating building systems.

MTA Metro-North Railroad Capital Program – \$4.7 billion (\$3.6B Core / \$1.1B Capacity)

Category	Budget	Priority Investment Highlights	Category	Budget	Hidden Investment Highlights
Rolling Stock	\$853m	Purchase as many as 80 new electric train cars to begin replacing M-3 EMU fleet Purchase up to 30 new locomotives for East of Hudson services	Power	\$202m	Construct 2 new substations on the Harlem Line Replace 2 AC traction power substations Replace 1 mobile substation with a permanent substation Electrification of select segments of Track 1 on the Hudson Line
Stations	\$1,129m	First phase of multi-program Grand Central Terminal trainshed replacement Park Avenue Tunnel addition of 4 new emergency exits Replace 5 escalators and 1 elevator in Grand Central Terminal Renewal and repair of Grand Central Terminal systems, such as fire standpipes, utilities, and ventilation ADA Improvements on the Harlem Line at up to 3 stations ADA Improvements at Ludlow Station on the Hudson Line Station renewals on the Harlem Line in the Bronx and Lower Westchester, including platform replacements, canopy repairs, and new customer amenities Station priority repairs on the Upper Harlem and Upper Hudson Lines, including platform and stair repairs Relocate/expand Southeast parking to enable future yard expansion	Signals & Communications	\$182m	Upgrade Harmon to Poughkeepsie signal system on the Hudson Line Communications infrastructure replacement and system upgrades
			Shops & Yards	\$23m	New Haven Line yard improvements planning for existing New Haven Line service
			Misc.	\$148m	Progress and support program development and administration Implement systemwide security initiatives
Track & Structures	\$1,021m	Phase 1 of the multi-program Park Avenue Viaduct replacement Cyclical track replacement Replacement of high speed turnouts on main lines Renewal of turnouts and switches in Grand Central Terminal Rehabilitation of retaining walls, remediation of rock slopes, and drainage improvements systemwide Bridge repairs and replacements at priority locations including in Mt. Vernon West of Hudson priority repairs to the Moodna and Woodbury viaducts, as well as track and bridge improvements West of Hudson capacity expansion			

Hidden Investments

Metro-North depends on more than what customers see every day to run safely, efficiently, and reliably. We're making investments in the signal system that controls train movements and the communications networks that relay data.

Penn Station Access (PSA)

PSA will carry Metro-North New Haven Line customers directly to West Midtown, reducing travel times, while also providing critical system resiliency if Metro-North's service to Grand Central Station is ever interrupted.

The project includes:

- * building 4 new stations in the underserved neighborhoods of Co-op City, Morris Park, Parkchester/Van Nest, and Hunts Point
- * upgrading power and signal systems
- * installing new track, realigning existing track, and replacing railroad bridges to accommodate more trains



Bridges & Tunnels

MTA Bridges and Tunnels, the largest bridge and tunnel authority in the country, is central to the movement of people and freight in our region. All nine facilities are in a state of good repair; work focuses on preserving assets and maintaining the structural integrity to help reduce risk, optimize facility and operational efficiencies and improve overall financial performance. With the majority of \$1.9 billion in tolls collected annually supporting mass transit, these facilities are critical to the fiscal health of the MTA's system.

Priority Investments

Verrazzano Narrows Bridge

Approach ramps will be reconstructed while reconfiguring the non-standard left-exit Belt Parkway off ramps into a modern set of right-hand exits. The Belt Parkway will be widened between its east-bound VNB merge ramp and the Bay Parkway exit to eliminate its substandard traffic merge, reducing traffic congestion and improving motorist safety.

RFK Bridge

The next phase of work includes upgrades to support modern load criteria for trucks, meet seismic standards, and eliminate wind vulnerabilities. Design for new or widened ramps will reduce delays at specific traffic choke points at junctions with the Major Deegan and FDR drive.

Throgs Neck Bridge

Work focuses on providing fenders to protect the bridge towers and anchorages from accidental marine vessel collisions as well as marine security threats. The suspended spans meet current seismic criteria. The bridge approaches will be upgraded in phases, with immediate seismic upgrades in the near term.

Henry Hudson Bridge

As a result of investments to date, all original roadways and most of the structure itself have been replaced or modernized to meet current seismic criteria. So, work will focus on upgrading Dyckman St. Bridge substructure to address seismic needs, while also replacing substations to add power system redundancy.

Hugh L. Carey and Queens Midtown Tunnels

These facilities underwent considerable restoration following Superstorm Sandy. The current needs concern rehabilitating ventilation/service buildings at both tunnels.

Central Business District (CBD) Tolling

To support the Congestion Pricing Plan enacted as part of the New York State budget, B&T will design and build the CBD Tolling system and infrastructure.

MTA Bridges and Tunnels Capital Program – \$3.3 billion

Category	Budget	Priority Investment Highlights	Category	Budget	Hidden Investment Highlights
Verrazzano-Narrows Bridge	\$1,127m	Reconstruction of upper level approach, Phase 2 Steel repair & concrete rehabilitation Lower level main span deck replacement Facility-wide painting program	Agency-Wide	\$756m	Overhaul and replace facility monitoring and safety systems Upgrades for traffic detention, incident management, operational command, safety systems, and other agency-wide systems.
Robert F. Kennedy Bridge	\$719m	Ward's Island/Queens anchorage rehabilitations Deck rehabilitation & overlay Replace Randall's Island ramps Suspended span retrofit			
Throgs Neck Bridge	\$241m	Miscellaneous structural rehabilitation Anchorage & tower protection			
Henry Hudson Bridge	\$135m	Dyckman St. Bridge abutment replacements and substation upgrades			
Rockaway Crossings (Cross Bay and Marine Parkway Bridges)	\$139m	MP - Electrical rehabilitation (elevator) Miscellaneous steel repairs at both bridges Facility-wide painting program at the MP Rehabilitation/reconstruction of Rockaway Crossings-Design			
Bronx-Whitestone Bridge	\$111m	Bridge structural lighting, power redundancy and resiliency improvements Miscellaneous structural rehabilitation BW facility-wide painting program			
Queens Mid-town Tunnel	\$46m	Rehabilitation ventilation/service buildings			
Hugh L. Carey Tunnel	\$53m	Rehabilitation of ventilation/service buildings			

Hidden Investments

B&T's seven bridges and two tunnels rely on operations management systems to monitor traffic, safe operations and the assets themselves. Intelligent Transportation Systems investments will include new and innovative operational technologies to support these critical activities. Examples include Traffic Incident Management, Special Event Management, Road Weather Management and Traveler Information Systems. The goal is to get the most performance out of existing transportation capacity without new physical infrastructure.

CBD Tolling Program

Implementation of a first-in-the-nation CBD Tolling Program

MTA Bridges & Tunnels will develop a plan for a cordon-based tolling system for the Central Business District – defined as Manhattan south of and inclusive of 60th Street to the southern tip of Manhattan, but not including the FDR Drive and West Side Highway. The program will be established, operated and maintained by the TBTA, in close collaboration with key partners.

The CBD Tolling program is expected to reduce roadway congestion and emissions in the Central Business District, Manhattan, and New York City, allowing for increased bus speeds while providing net revenue sufficient to generate an estimated \$15 billion to support this Capital Program, after providing for implementation costs. B&T will seek to minimize the footprint of the new system while making the technology/infrastructure “fit” within the urban landscape.



Funding the Capital Program

Since 1982, we have secured over \$89 billion from our federal, state and local funding partners—in addition to investing \$55 billion of our own funds—to provide the capital resources needed to deliver the MTA Capital Program. Continuing this tradition, we are committed to delivering the proposed 2020-2024 Capital Program through provisions from a combination of local and federal resources.

New Revenue Streams

Capital from Central Business District Tolling Sources – To support the MTA Capital Program, the enacted State FY 2020 Budget establishes a Central Business District (CBD) Tolling Program. Net revenue generated from the tolling program is authorized to fund \$15 billion of the 2020-2024 Capital Program. In addition, the program will finance the cost of the associated tolling program infrastructure projects.

Capital from New Revenue Sources – To support the MTA Capital Program, the enacted State FY 2020 Budget approves a progressive tax on high-end real estate sales, and eliminates the Internet Sales Tax Advantage. These new tax revenues are expected to support \$10 billion of the 2020-2024 Capital Program.



Program Funding Plan		(\$ in millions)
Capital from Central Business District Tolling		\$ 15,000
Capital from New Revenue Sources		\$ 10,000
MTA Bonds & PAYGO		\$ 9,792
Federal Formula		\$ 7,500
State of New York		\$ 3,000
City of New York		\$ 3,000
Federal New Starts (Second Ave Subway Ph. 2)		\$ 2,905
Federal Flexible		\$ 275
CPRB Capital Program Total		\$ 51,472
Bridges & Tunnels Self-Funded		\$ 3,327

State/City of New York Capital

The proposed program assumes a total of \$6 billion in capital contributions from both the City and State of New York (\$3 billion each) to support projects in the core program.

MTA Bonds & PAYGO

The proposed program includes \$9.8 billion in MTA Bonds and PAYGO to support the 2020–2024 program of projects.

Federal Funding

The MTA's proposed 2020–2024 Capital Program is expected to coincide with the next federal transportation funding reauthorization. However, for planning purposes, the proposed program assumes federal formula funding to the MTA will remain flat at recent levels, plus escalation, for a total of \$7.8 billion.

To support the funding needs for Phase 2 of Second Avenue Subway, the proposed program assumes \$2.9 billion in potential New Starts funding. The New Starts application is in process; any potential Full Funding Grant Agreement (FFGA) approval or funding is subject to further discussion with the Federal Transit Administration.

Apportionment of CBD Tolling and New Revenue Sources

80 percent

NYCT/SIRTOA/MTA Bus Company

10 percent LIRR

10 percent MNR



MTA Capital Plan Highlights

The 2020-2024 Capital Program is:

- The MTA's largest-ever capital plan by far – 70% larger than the 2015-2019 Program – making unprecedented investments in the region
- An unprecedented investment of \$51.5 billion, including more than \$40 billion for New York City Transit – revitalizing the system and building on the successful investment of the Subway Action Plan

The Program will deliver major benefits, including:

- More frequent and reliable service on 6 line segments, including the Lexington Avenue Line, serving over 50% of riders through modernized signaling
 - 70 new ADA-accessible stations, beginning now. Stations serving over 60% of passengers will be ADA-accessible
 - Over 1,900 new subway cars, more than 2,400 new buses and hundreds of new commuter rail cars
 - Full funding for Second Avenue Subway Phase 2 and construction of four new Metro-North stations in the Bronx
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CAPITAL PROGRAM

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