Eliminating Bottlenecks:
Speeding Up Your Ride

An MTA 2050 Report | July 2026

Metropolitan Transportation Authority

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Cover image: A new R211 B train passes an older R68 D train on the Manhattan Bridge

Letter From the Chair and CEO

Janno Lieber, Chair and Chief Executive Officer of
The Metropolitan Transportation Authority

You may not know the DeKalb Av Interlocking by name, but you've probably been affected by it—as a regular Q train rider, I certainly have. If you've ever found your train suddenly stopped on the Manhattan Bridge and heard an announcement that you are delayed because of "a train crossing in front of us," the DeKalb interlocking is likely to blame.

For many decades, more than a thousand B, D, N and Q trains have used the DeKalb Interlocking to crisscross each other as they travel to Manhattan or Brooklyn each day. It's a miracle of 20th century engineering, enabling the branching service that gives Brooklynites direct rides into Manhattan. But its highly complex system of manual switches and mechanical signals also creates delays, constrains capacity, and frustrates customers.

This report is about how we're planning to change that—at DeKalb and at other key bottlenecks throughout the entire subway system.

Over the past century-plus, engineering constraints, compromises, and a few mistakes have created bottlenecks in key locations that constrain our ability to deliver service frequently and reliably. For the past century, our teams have worked miracles to overcome them. Now, we're working on how to eliminate them.

Over the past five years that I've served as MTA Chair & CEO, the team at New York City Transit has worked tirelessly to improve subway service, with outstanding results. We've set records for on-time performance. We've added service on 15 lines. Customer satisfaction on the subway is up 15 points. And we've done this while realizing $575 million in annually recurring savings.

This operating effort has been aided by a generational capital investment led by MTA Construction & Development. Thanks to the support of Governor Hochul, funding from Congestion Pricing and the 2025-2029 Capital Plan are allowing us to reverse decades of underinvestment and deferred maintenance. The progress since 2020 has been swift. Forty-five stations have been made ADA-accessible and, just as critically, the backlog of existing elevators past their useful life has been eliminated. Fifty-six miles have been upgraded to modern signals. Nearly 20 miles of elevated structures and tunnels have been rehabilitated.

This recent progress is just the beginning. With steadily improving service and stable funding, the new MTA has the capacity to plan positively. Beyond our work addressing urgent issues or getting the system into a state of good repair, we are working to improve our infrastructure to enable better service.

This report is the first in a series leading up to our next 20-Year Needs Assessment, MTA 2050. Over the next two years, we'll be applying this principle across the entire MTA system as we pull together a data-centered vision for the next era of the greatest public transit system in the world.

Executive Summary

A local R train and an express D train depart the 36 St station in Brooklyn

A First-of-Its-Kind Systemwide Plan to Mitigate Subway Bottlenecks

The first in a series of reports evaluating the future of the MTA system, this comprehensive analysis systematically identifies and evaluates the physical bottlenecks that constrain subway service across New York City.

The New York City subway system—built over a century ago as three separate networks later stitched together—contains physical constraints that limit the frequent and reliable service that we strive to provide to riders. These constraints, known as bottlenecks, are not the result of broken equipment or unusual incidents. They are baked into the system's design: interlockings where multiple lines merge, sharp curves that force trains to slow down, terminal designs that constrain our ability to turn trains around, and legacy signals that require large safety buffers between trains.

Riders don't see these bottlenecks, but they feel the impact every day—often as a stopped train and a familiar announcement: "we are delayed due to train traffic ahead of us." When delays occur at these chokepoints, they can cascade across multiple lines, affecting riders across the city.

This report provides new details and a comprehensive analysis of the work already underway to address two of our most critical bottlenecks in the system—at the busy DeKalb Interlocking on the B D N Q R and Nostrand Junction on the 2 3 4 5.

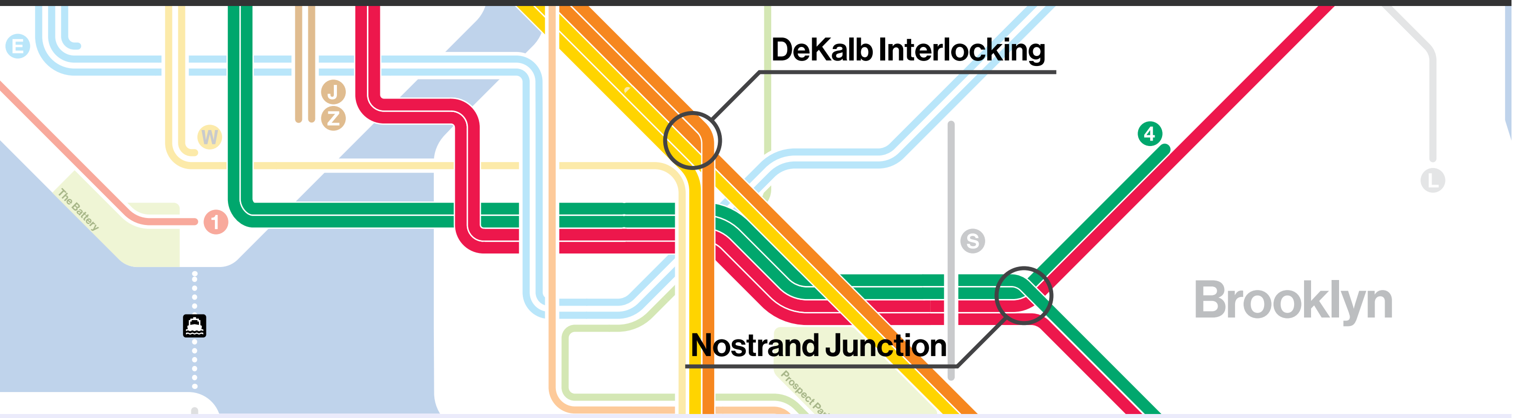
It also examines more than 70 additional bottleneck locations across the system, comparing potential improvements to find the most impactful and cost-effective investments. From this analysis, we identified 25 projects that represent the most promising candidates for capital improvements capable of meaningfully reducing delays for the system's 4.5 million daily riders.

What we found:

- Fixes range from operational changes to major capital projects. Some improvements can be made through service changes like last year's F M swap; others require more complex infrastructure upgrades.
- Signal modernization is necessary but not sufficient by itself. Communications-Based Train Control (CBTC) will improve reliability, but many bottlenecks require physical changes to track layouts, terminals, and interlockings to unlock additional gains.
- This work expands system capacity without building new lines. By untangling bottlenecks, the MTA can deliver more service from the infrastructure we already have—an efficient, cost-effective way to improve reliability.
- Additional improvements can amplify existing projects. We have identified several additional projects that can allow us to realize the full benefits of our ongoing work at Nostrand Junction and DeKalb Interlocking.

A 3 train prepares to depart New Lots Av terminal as another train waits at the next station

2025-2029 Projects Moving Forward:



DeKalb Interlocking B D N Q R:

- **The problem:** On the Brooklyn side of the Manhattan Bridge, B D and N Q trains merge, meaning small delays can ripple across all four lines.
- **The solution:** With new CBTC signals and upgrades to switches, this vital interlocking can be managed more smoothly to avoid delays.
- **Status:** In procurement, with construction award planned by the end of the year.

Nostrand Junction 2 3 4 5:

- **The problem:** In Crown Heights, the 2 3 and 4 5 trains realign, with the 2 5 heading to Flatbush and the 3 4 continuing down Eastern Parkway. Conflicts as trains switch tracks can lead to congestion and delays across the entire 2 3 4 5 lines.
- **The solution:** By adding new switches between the Franklin Av and Crown Heights-Utica Av stations, we will streamline 2 3 4 5 service through Nostrand Junction to minimize merge conflicts.
- **Status:** In design.

DeKalb Interlocking under construciton in 1911

Newly-Identified Projects:

This report identifies 25 additional promising bottleneck-eliminating projects for future consideration.

For example:

Parkchester 6:

- **The problem:** Parkchester is the terminal for half of the weekday 6 service. Trains turning around here share limited track space with trains continuing to Pelham Bay Park, creating congestion that delays all service passing through the station.
- **Recommended solution:** Reconfiguring nearby switches would allow terminating trains to wait clear of through-service, reducing conflicts and improving reliability for riders along the 6 line.

59 St to DeKalb Av D N R:

- **The problem:** At 36 St, D and N trains merge onto a shared express track that feeds directly into the DeKalb Interlocking—one of the most delay-sensitive locations in the system.
- **Recommended solution:** Targeted signal upgrades here would allow trains to safely operate closer together, improving performance even before full CBTC installation to this corridor.

How we did it:

The analysis draws on extensive operational and ridership data to identify common sources of delay across the entire subway system. Each location was reviewed for ridership impact, current performance, potential service benefits, and cost and feasibility.

What comes next:

Over the next two years, the MTA will conduct detailed feasibility and cost assessments for the 25 priority projects identified in this report. These findings will directly inform the upcoming MTA 2050 20-Year Needs Assessment and the next 5-Year Capital Plan, shaping the next generation of investments to improve reliability, reduce delays, and deliver better service for millions of riders.

MTA 2050

We have big plans for the future of the MTA. This report is the first in a series that will define the MTA's vision for 2050 and lay down a marker for where we think the greatest transit system in the world should be at the halfway mark of the 21st century.

In recent years, the MTA has made tremendous progress and transformed the way we do business to deliver better, faster, and cheaper for our riders. Under the leadership of Governor Hochul, the MTA is on more solid footing than ever, thanks to funding from the first-in-the-nation Congestion Relief Zone. Since 2020, the MTA has saved more than $4.2 billion on capital projects while increasing our pace of work dramatically.

This progress is the result of reforms and improvements throughout the entire organization—starting with better planning to pick the right projects in the first place.

Take our most recent 20-Year Needs Assessment, covering 2025–2044. In unprecedented detail, it established a new standard of how we assess the MTA's long-term capital needs. We evaluated the condition of nearly six million individual assets across the entire subway, bus, railroad, bridge, and tunnel transportation system. We rated these assets on a consistent scale across agencies and published the results in greater detail than any previous report, along with our strategic and tactical thinking on how to address challenges and move toward a state of good repair.

This planning progress led directly to the 2025-2029 MTA Capital Plan, shaping the most ambitious investment in state of good repair in MTA history. Thanks to the data analytics and strategic thinking in the 20-Year Needs Assessment, the Capital Plan was tailored to, for example, rebuild aging power substations to protect subway service, repair critical parts of the Grand Central Artery to keep Metro-North running, and replace outmoded railcars to keep Long Island Rail Road service flowing. It also helped identify the most promising expansion projects, leading to progress on the Interborough Express and 125 St Subway.

We're just getting started. In October 2028, we will be releasing our next 20-Year Needs Assessment, MTA 2050, which will provide a forward-looking vision of the capital needs, strategies and investments for the transit system. Leading up to the release of MTA 2050, we are taking the opportunity to reexamine the challenges and opportunities facing the region and consider how the transit system must evolve to meet the needs of its riders.

Each study will take a closer look at how discrete parts of the network function today, the challenges that limit their performance, investments needed to preserve and modernize existing infrastructure and opportunities available to improve how the system operates. Together, these studies will help inform future capital planning and encourage a broader conversation about investments that can unlock capacity, improve reliability, reduce travel times, strengthen connections, and deliver better service for riders across the region.

Building on work already underway, including our studies on topics such as climate resilience—and supported by expanded in-house expertise across asset management, regional planning, real estate, climate and land use, we are better positioned than ever before to evaluate investments holistically and develop strategies that maximize benefits for riders and the region.

Bottlenecks are the perfect subject to kick off this process. The bottlenecks in question have constrained service and bedeviled planners—not to mention riders—for decades. Rather than accept them as a given, this data-driven and creative report has comprehensively examined how to eliminate them—and to reduce delays and increase capacity at a fraction of the cost of a typical expansion project. This is what good long-range planning delivers.

Bottlenecks are just one of many topics that deserve this deeper level of analysis. Over time, we expect this planning series to explore a range of systemwide challenges and opportunities, such as:

- **Stations** - modernizing our century-old stations to improve passenger experience
- **Station Systems & Technology** - keeping up with technological progress to unlock new capabilities throughout the system
- **Signal Modernization** - continuing the progress upgrading our century-old signals to the new modern standard and improve service
- **Shops and Yards** - upgrading dated facilities to unlock greater productivity and better conditions for our workers
- **Sustainability and Energy** - aligning capital spending with opportunities to cut energy use and reduce greenhouse gas emissions
- **Regional Mobility** - conducting a deeper look to identify possible expansion projects that can be included in our next iteration of Comparative Evaluation

No single study will define the future of the transit system. Instead, each contributes another piece of the larger picture, helping build the knowledge, analysis, and public understanding needed to support future investment decisions. These studies will help connect decisions on infrastructure investments to the outcomes our riders care about most: fewer delays, shorter waits, greater accessibility, improved resilience, cleaner air, and a system prepared to serve the needs of the region for decades to come.

This is only the beginning. We look forward to continuing the conversation as we prepare for 2050—and beyond.

Introduction

B and Q trains traverse an interlocking prone to bottleneck delays near Prospect Park in Brooklyn

Across the subway system, the layout of our physical infrastructure creates bottlenecks that can lead to delays. This report details the work we're doing to address some of the thorniest bottlenecks in the system—and the planning we're undertaking to improve the rides of all 4.5 million daily subway riders.

Some delays are not caused by anything broken or unusual, but by the design of our infrastructure itself. We call these constraints bottlenecks. Examples include interlockings where multiple subway routes merge onto a single shared track, sharp curves in tracks, and terminals that were not designed for today's service needs.

These bottleneck delays affect reliability, creating uneven waiting times at stations and travel times on trains.

Bottlenecks also constrain the amount of service we can schedule, meaning that addressing them creates opportunities for service increases in the future.

With the right investments, we can remove persistent sources of train delays on our century-old subway system.

In the 2025-2029 Capital Program, we are taking action to address two of the system's busiest bottlenecks: Nostrand Junction on the 2 3 4 5 trains and DeKalb Av Interlocking on the B D N Q R trains.

This report presents the findings of an analysis that identifies dozens of other locations where we will study potential improvements. This work will directly inform our upcoming 20-Year Needs Assessment and future 5-Year Capital Plans.

In addition to bottlenecks, the MTA is working to address other sources of delay that affect service reliablility, including:

» **Railcar breakdowns**
Newer subway cars break down five times less than older cars, resulting in fewer delays. We're in the process of replacing over 2,700 subway cars, and rebuilding 100-year-old maintenance facilities like the 3 line's Livonia Shop to be equipped for the cars of the future.

» **Signals**
In addition to being more reliable than our old fixed-block signal system, CBTC can help keep trains spaced evenly apart. This train spacing function of CBTC was rolled out on in 2025 on the L line, where it has **reduced wait time variability by 15%**.

» **Station dwell times**
With wider doors and more room for riders to enter and exit the train, our newest R211 cars, currently in service on the A C B D G S and SIR lines, are helping **decrease dwell times at stations by up to 9%**.

» **Maintenance and Improvement Work**
Vital maintenance and improvement work frequently requires workers to access subway tracks, meaning that train service must be reduced or diverted. This is dictated by the location of interlockings. We're taking steps to **improve the scheduling of trains during diversions to minimize disruption to riders**.

How Bottlenecks Cause Delays

Construction of Nostrand Junction on the Eastern Parkway IRT line in 1917

The bottlenecks in our system are a consequence of how the subway system was built over the past 120+ years.

The New York City Subway was not built as one system. Our infrastructure was built over the course of the early 20th century by three separate, competing operators. The first subway line in New York City—running from City Hall to 145 St & Broadway—was opened in 1904 by the Interborough Rapid Transit Company (IRT). The IRT's system, which focused on Manhattan and the Bronx and makes up today's 1 2 3 4 5 6 7 trains, grew through the 1910s and 1920s. At the same time, the Brooklyn-Manhattan Transit Company (BMT) grew a separate system focused on Brooklyn. A third subway system was created in the 1930s: the city-operated Independent System (IND), which spanned Manhattan, Brooklyn, Queens and the Bronx. Each of the three systems operated its own independent service. Even in sections where the subway lines ran in parallel, no free transfers between systems were provided to riders. When the three systems were consolidated under city operation in 1940, New York ended up with a subway network that was not designed to function as a cohesive, integrated system.

Although the way New Yorkers use the subway has changed many times over the years, much of the infrastructure has not.

The junction between J and M trains at Myrtle Av, pictured here in 1950 and 2026, has been a bottleneck for decades

It's not just the history of three separate systems: when you are riding the subway today, you feel the legacies of century-old planning decisions and outdated infrastructure in the bottlenecks that constrain our ability to deliver fast, reliable and predictable service. In some parts of the system, for example, we have subway lines that contract from four tracks to two to cross the East River—remnants of planning that underestimated the level of immediate demand for travel between Manhattan and the outer boroughs.

IND and BMT signs can still be seen at 14 St on the L F M mezzanine and 4 Av-9 St on the stairs to the R platform

Another legacy of the way our system was planned which contributes to bottlenecks is heavy reliance on branching: trunk lines that split in multiple directions, allowing trains on one line to reach multiple destinations. Each of the subway's three original systems were designed with extensive branching. The effort to integrate the three systems with one another added connections between lines, increasing the amount of branching on the system. Because of branching, most subway routes share tracks with other routes for parts of their journeys. For example, R trains share tracks with N and W trains in Manhattan and M trains in Queens. This structure provides choice—riders boarding at many stations in Queens can access both 6 Av M stations and Broadway R stations without a transfer—but makes the system sensitive to delays and disruptions. This is because any delayed train doesn't just hold up trains on its own line, but on any other lines with which it's sharing the track.

A 1966 Map and Station Guide showing the 3 different systems: BMT in green, IND in red, and IRT in black

The locations where subway routes merge with and divide from one another are busy and complex.

Many of the bottlenecks we deal with today, including our top priorities in this report, are the result of branching. Delays occur when two trains traveling in the same direction arrive at a merge point at the same time.

Addressing the bottlenecks caused by branching is crucial because it will allow us to create better, more resilient subway schedules. New York City Transit writes schedules for every subway line to plan our normal service and to determine how trains operate around planned disruptions. These schedules are designed to provide enough service to comfortably move riders within constraints such as the capacity of tracks and the number of available subway cars. Alleviating the constraints of bottlenecks allows schedules to be better optimized for the riders' needs, rather than those of the infrastructure alone.

Bottlenecks affect scheduled service and magnify the impact of unplanned disruptions.

Scheduling around bottlenecks often forces us to space trains further apart and can make it difficult for us to maintain predictable wait times between trains. This limits how much service we can schedule, and how consistently we can schedule service.

On top of that, the same bottlenecks constrain our ability to reliably deliver our scheduled service, by creating unpredictable delays in normal service and reducing the subway's resilience to disruptions. At locations like Franklin Av-Medgar Evers College 2 3 4 5 or Stillwell Av D F N Q, riders frequently experience delays due to train congestion, even if there is no active service disruption. **When disruptions—such as a mechanical breakdown or a sick passenger—do occur, bottlenecks magnify the impact of that event.** As agency operations teams are working to recover service, these pinch points continue to slow trains down, prolonging and complicating the recovery to normal service.

A Manhattan-bound M train arrives at 21 St-Queensbridge after the F M swap

When we ease any of these bottlenecks, our subway schedules can be more resilient to minor disruptions, and trains are more likely to keep to their schedules. This means more predictable and reliable service for riders. Mitigating these bottlenecks also ensures that our system is well-equipped to handle future ridership growth and accompanying service increases.

The aim of this report is to review bottleneck locations that require capital improvement to untangle. Our 2025-2029 Capital Program is making historic investments in state of good repair—upgrading millions of aging and unreliable components across the subway system. As we repair our infrastructure, service will improve—but we must address the persistent operational bottlenecks that are built into the system to to improve and preserve service reliability.

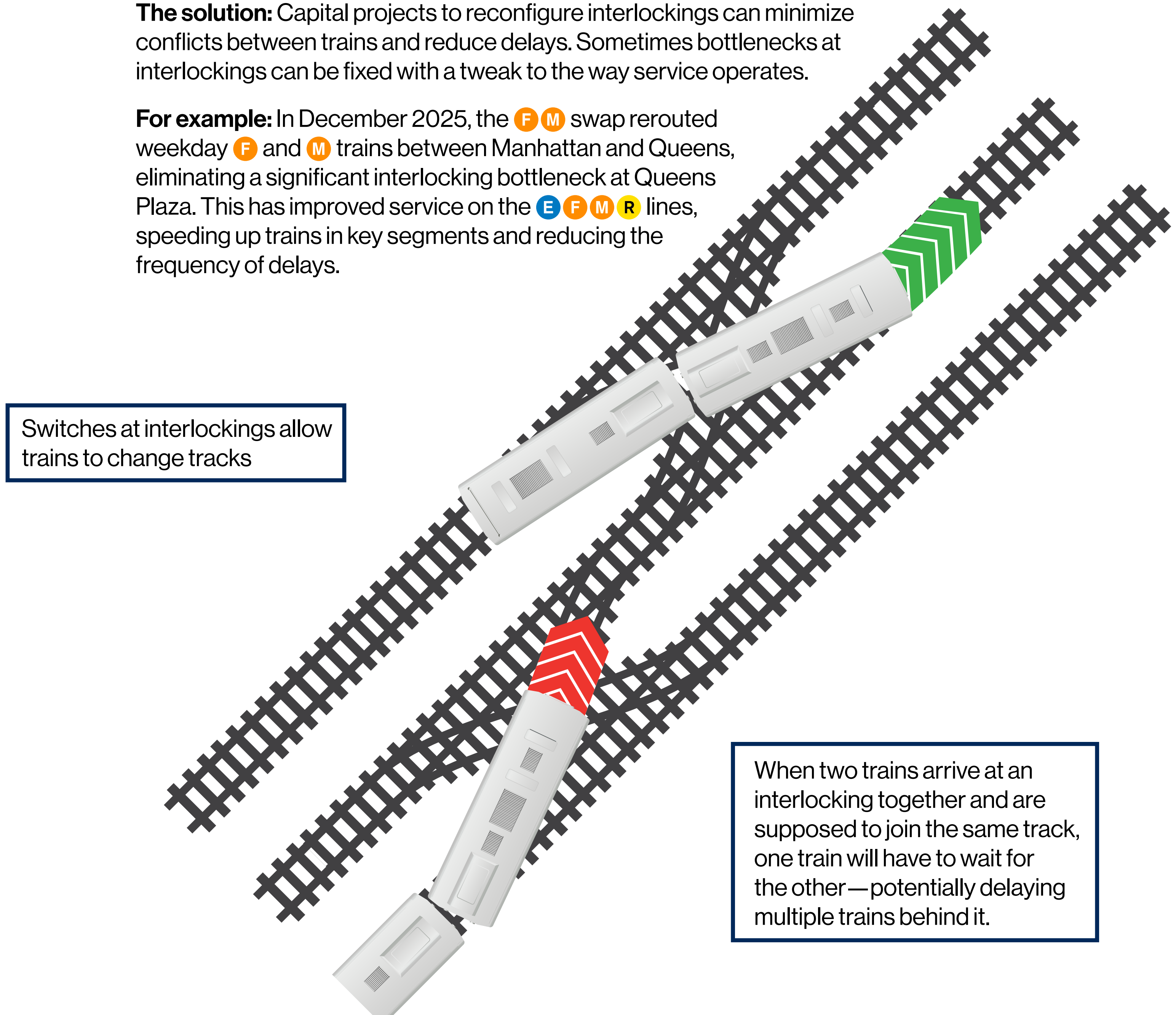
Subway bottlenecks can take numerous forms. In this report, we are focused on four types:

1. Interlockings

The bottleneck: Interlockings are locations where trains can change from one track to another and, in some cases, where multiple subway services merge onto shared tracks. Our schedules aim to provide sufficient spacing between trains at merge locations, but busy interlockings allow little margin for trains to miss their scheduled "slot" without delaying another train. When delays occur at interlockings, they can spread across the network.

The solution: Capital projects to reconfigure interlockings can minimize conflicts between trains and reduce delays. Sometimes bottlenecks at interlockings can be fixed with a tweak to the way service operates.

For example: In December 2025, the F M swap rerouted weekday F and M trains between Manhattan and Queens, eliminating a significant interlocking bottleneck at Queens Plaza. This has improved service on the E F M R lines, speeding up trains in key segments and reducing the frequency of delays.

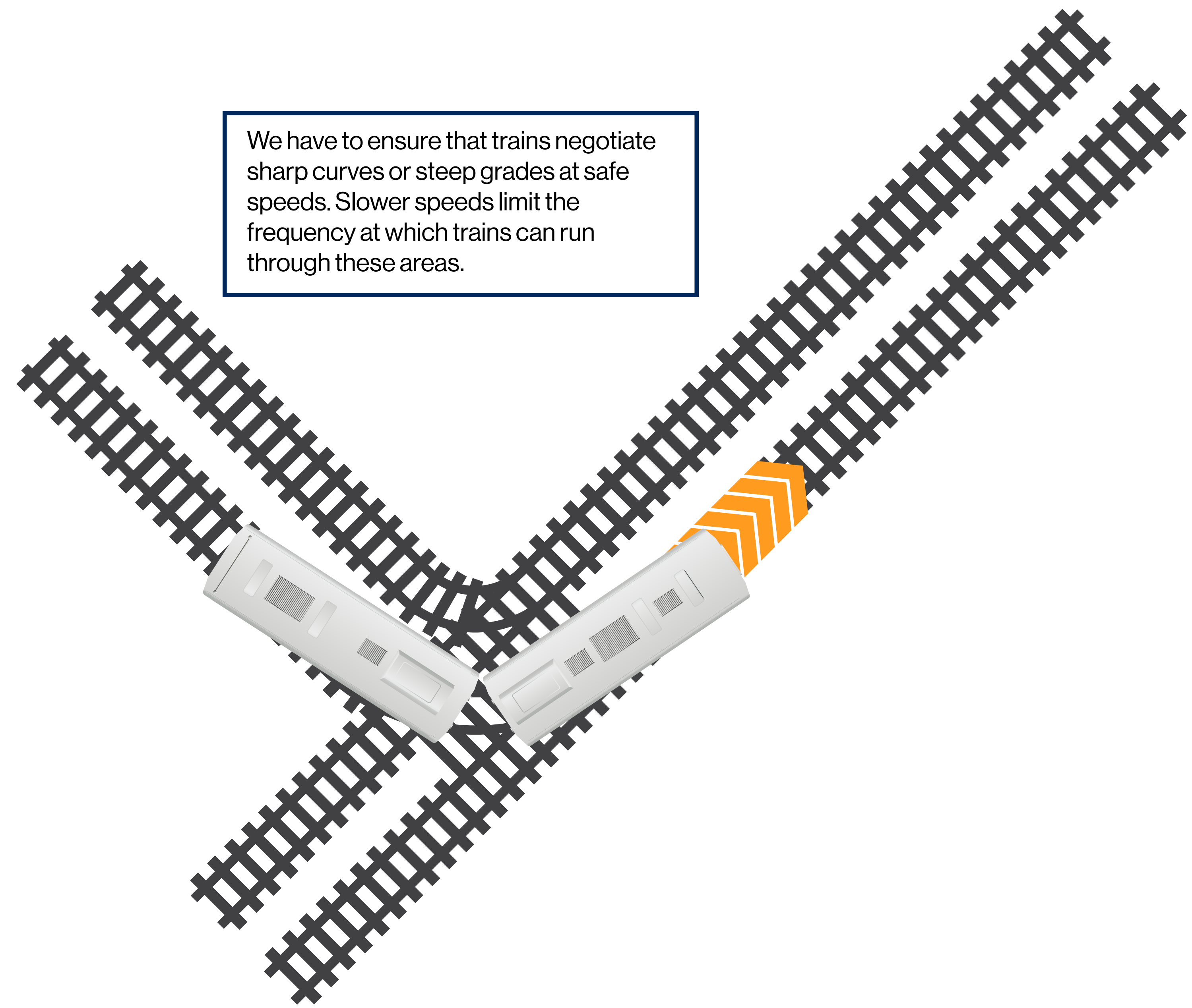


2. Track geometry

The bottleneck: Some physical characteristics of the infrastructure, such as sharp curves or steep gradients, often force us to slow trains down for safety. This lengthens riders' trips, reduces the number of trains that can pass through a section of track without causing delays, and lengthens the recovery of normal service when there are delays.

The solution: In some cases, modern CBTC signaling can help trains safely negotiate difficult track geometry at higher speeds. Capital improvements to tracks and surrounding infrastructure can ease the sharpness of switches or curves, further increasing speeds.

For example: We are planning to improve the geometry of key switches at DeKalb Interlocking, which will help B D N Q trains pass through the area more quickly.

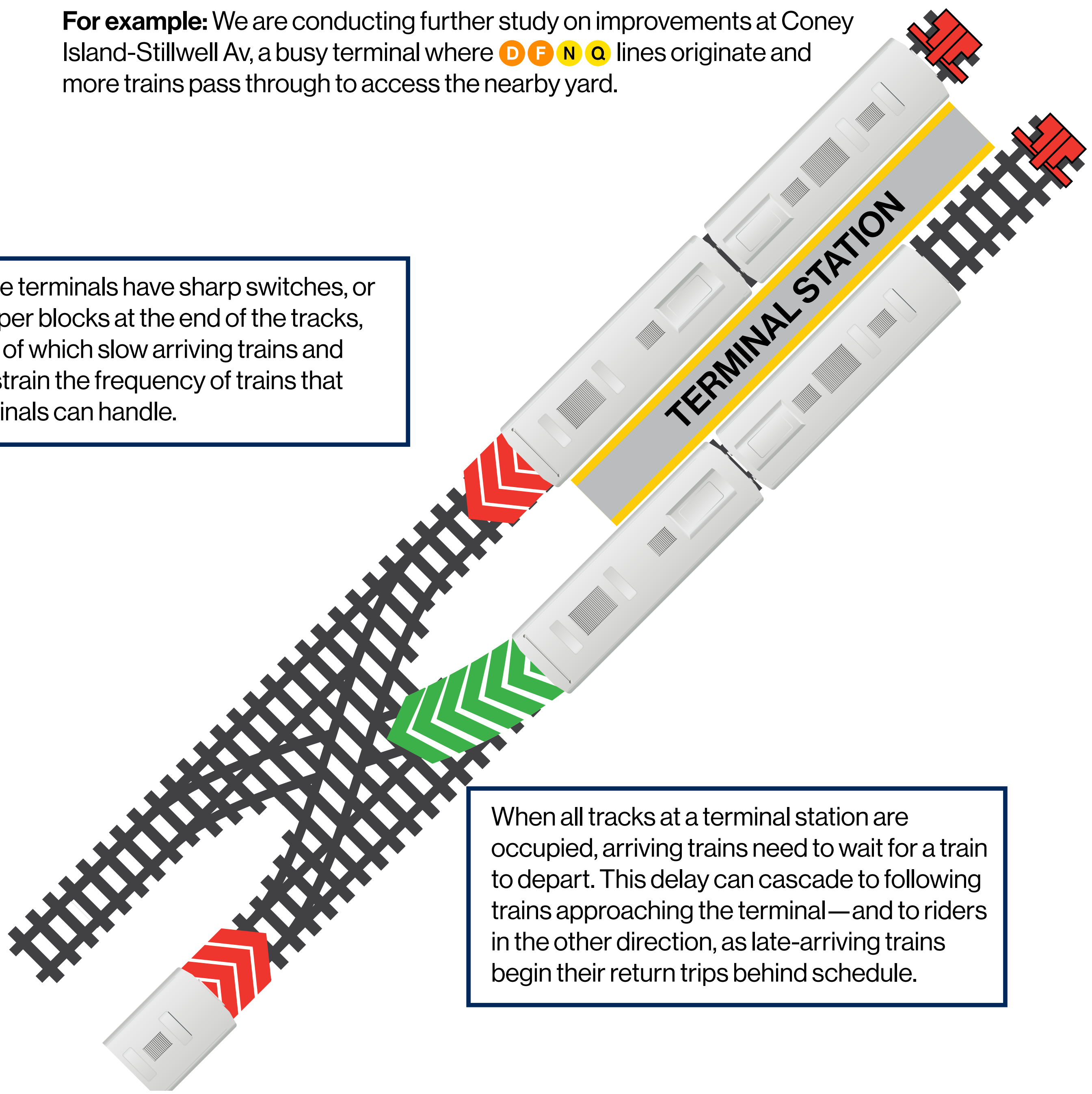


3. Terminals

The bottleneck: Terminals at the end of subway routes are where trains begin and end service. The track layout of some of our terminals forces trains to slowly enter and leave, limiting the terminal's capacity. Other terminals experience delays when trains need to access adjacent yards. By easing these constraints, we can reduce congestion around terminals and ensure that the trains leaving terminals are punctual—helping ensure riders receive reliable service.

The solution: Like interlocking bottlenecks, issues at terminals can potentially be fixed through operational changes, or with capital projects that upgrade track layouts to allow trains to enter and leave the terminal station faster.

For example: We are conducting further study on improvements at Coney Island-Stillwell Av, a busy terminal where D F N Q lines originate and more trains pass through to access the nearby yard.



Some terminals have sharp switches, or bumper blocks at the end of the tracks, both of which slow arriving trains and constrain the frequency of trains that terminals can handle.

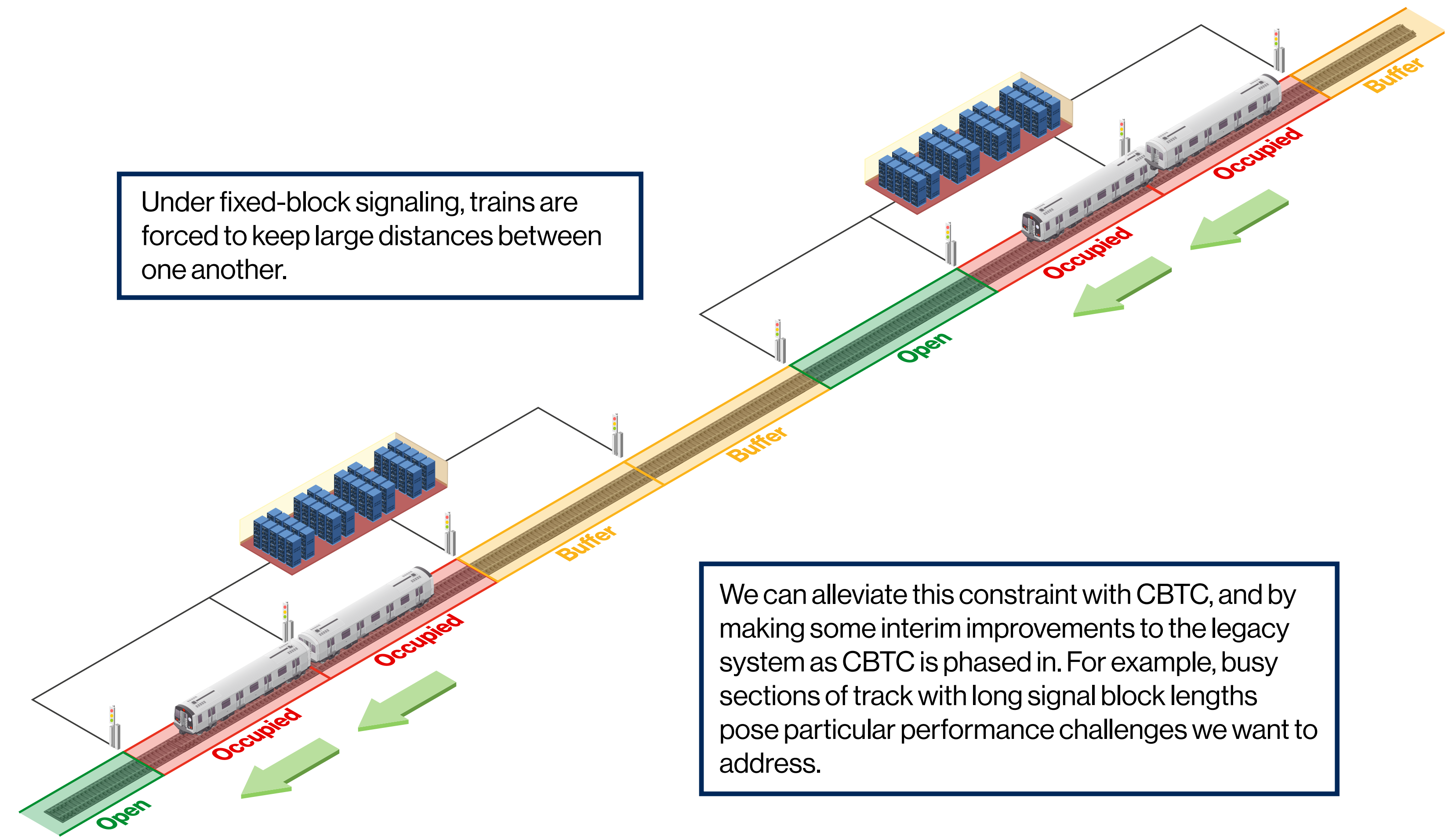
When all tracks at a terminal station are occupied, arriving trains need to wait for a train to depart. This delay can cascade to following trains approaching the terminal—and to riders in the other direction, as late-arriving trains begin their return trips behind schedule.

4. Legacy Signal Capacity

The bottleneck: Our legacy fixed-block signal system keeps service safe by enforcing speed limits and ensuring adequate separation between trains, but does so in a way that constrains capacity. The older system requires a larger buffer distance between trains, limiting the number of trains that can pass through a given area.

The solution: These limitations will be addressed as we roll out a modern CBTC system. CBTC uses wireless communication between trains and trackside infrastructure to safely run trains faster and more closely together. As we phase in CBTC, we've identified a handful of targeted investments in legacy signal equipment that add capacity to lines before they can be equipped with CBTC.

For example: We're studying improvements to the legacy signal system on lines approaching DeKalb Interlocking from the south, to help maximize the benefits of CBTC at DeKalb.



Under fixed-block signaling, trains are forced to keep large distances between one another.

We can alleviate this constraint with CBTC, and by making some interim improvements to the legacy system as CBTC is phased in. For example, busy sections of track with long signal block lengths pose particular performance challenges we want to address.

Taking Action

Across the entire subway system, we identified over 70 locations that contribute to bottleneck delays and could be improved.

Drawing on extensive data collected on subway operations and ridership, we scanned the entire subway system for common sources of train delays.

We developed an analysis framework that compares dozens of identified bottleneck locations and potential improvements. By evaluating the full range of improvements against a consistent set of criteria, we can identify the most cost-effective and strategic investments.

Though all these locations have some impact on riders' journeys, the goal of this analysis is to find impactful and cost-effective improvements that address our operational constraints and improve service for riders. Some potential improvements are targeted solutions with a smaller footprint, while others include significant investments that would fundamentally reshape our subway infrastructure. With finite resources to deliver capital projects, it is our job to prepare the highest-priority system improvements as candidate projects in future Capital Plans.

A Queens-bound 7 train navigates a sharp turn approaching Queensboro Plaza N W 7

Method

In total, we examined over 70 potential fixes to bottlenecks that prevent us from running more service or are routinely responsible for train delays.

Our analysis evaluated these projects against a common set of key criteria, including:

- **Ridership:** bottlenecks do not just impact riders at one location; the delays they cause can affect riders along the length of all subway routes.
- **Current subway performance:** bottlenecks have a multifaceted impact on the performance of the subway system. We used data to find the number of trains that take longer than their scheduled time to pass through a certain area to identify areas where infrastructure constraints frequently impact service.
- **Potential benefits:** using the data above, we estimated the impact of each improvement on key measures of subway performance, such as capacity, operational flexibility, or travel times.
- **Capital and maintenance cost:** our resources are limited, and we want to direct them to the most cost-effective and beneficial projects. For each improvement, we considered the estimated capital cost and any impact on the system's operating costs.

We have detailed data on current ridership and subway performance. This report provides a preliminary estimate of the scale of the costs and benefits for each project. Further planning and analysis is needed to provide more refined costs and benefits of each potential location, which we will be conducting in the lead-up to the 20-Year Needs Assessment.

Findings

We have identified a set of high-priority locations, where investment could deliver widespread benefits to riders. These are described in detail in the following section.

Improvements to two of our most critical bottlenecks are in progress. Upcoming signal modernization work on the 6 Av line in Manhattan will be extended to cover the busy DeKalb Interlocking on the B D N Q R, and funding to untangle the Nostrand Junction bottleneck on the 2 3 4 5 is included in the 2025-2029 Capital Plan.

We have identified a list of 25 projects that we believe to be the most promising candidates for further analysis and potential implementation. As we work toward the next 20-Year Needs Assessment, we will conduct feasibility studies on these projects to prepare the strongest projects for investment.

A longer list of potential improvements will continue to inform our long-term planning. As the needs of the system continue to evolve, and potential construction synergies emerge, we will consider these projects for further study and implementation.

Next Candidate Projects

Interlockings | Track Geometry | Terminals | Legacy Signal Capacity

Nostrand Junction 2 3 4 5 — Improvement in progress as part of the 2025-2029 Capital Plan

Potential future complements

1. **Flatbush Av-Brooklyn College** 2 5
2. **149 St-Grand Concourse** 2 4 5
3. **E 180 St to Wakefield-241 St** 2 5

DeKalb Interlocking B D N Q R — Improvement in progress as part of the 6 Av/63 St line CBTC project

Potential future complements

4. **59 St to DeKalb Av** D N R
5. **Prospect Park** B Q
6. **Coney Island-Stillwell Av** D F N Q

7. **125 St to 145 St** A C B D
8. **Parkchester** 6
9. **34 St-Herald Sq** N Q R W
10. **59 St-Columbus Circle** A C B D
11. **Essex St** J Z M
12. **Bergen St** F G
13. **125 St** 4 5 6
14. **Atlantic Av-Barclays Ctr** D N R
15. **New Lots Av** 3
16. **Grand Army Plaza** 2 3 4 5
17. **Grand Central-42 St** 4 5 6
18. **Canal St** A C
19. **Astoria-Ditmars Blvd** N W
20. **Jamaica Center-Parsons/Archer** E
21. **Myrtle Av-Broadway** J Z M
22. **14 St-Union Sq** 4 5 6
23. **Harlem-148 St** 3
24. **Myrtle-Wyckoff Avs to Canarsie-Rockaway Pkwy** L
25. **Van Cortlandt Park-242 St** 1

Improvements in Progress

A busy Manhattan-bound platform at Franklin Av-Medgar Evers College 2 3 4 5 during morning rush

In the 2025-2029 Capital Program, we are taking action on two of the system's busiest and most disruptive bottlenecks: Nostrand Junction 2 3 4 5 and DeKalb Interlocking B D N Q R.

The importance of making improvements to these two locations has been recognized for years. We are taking advantage of an upcoming CBTC project on the B D F M lines in Manhattan to also modernize DeKalb Interlocking, bringing reliability benefits to B D N Q R riders earlier than previously planned. Improving Nostrand Junction 2 3 4 5 was one of the highest-scoring projects in our most recent 20-Year Needs Assessment.

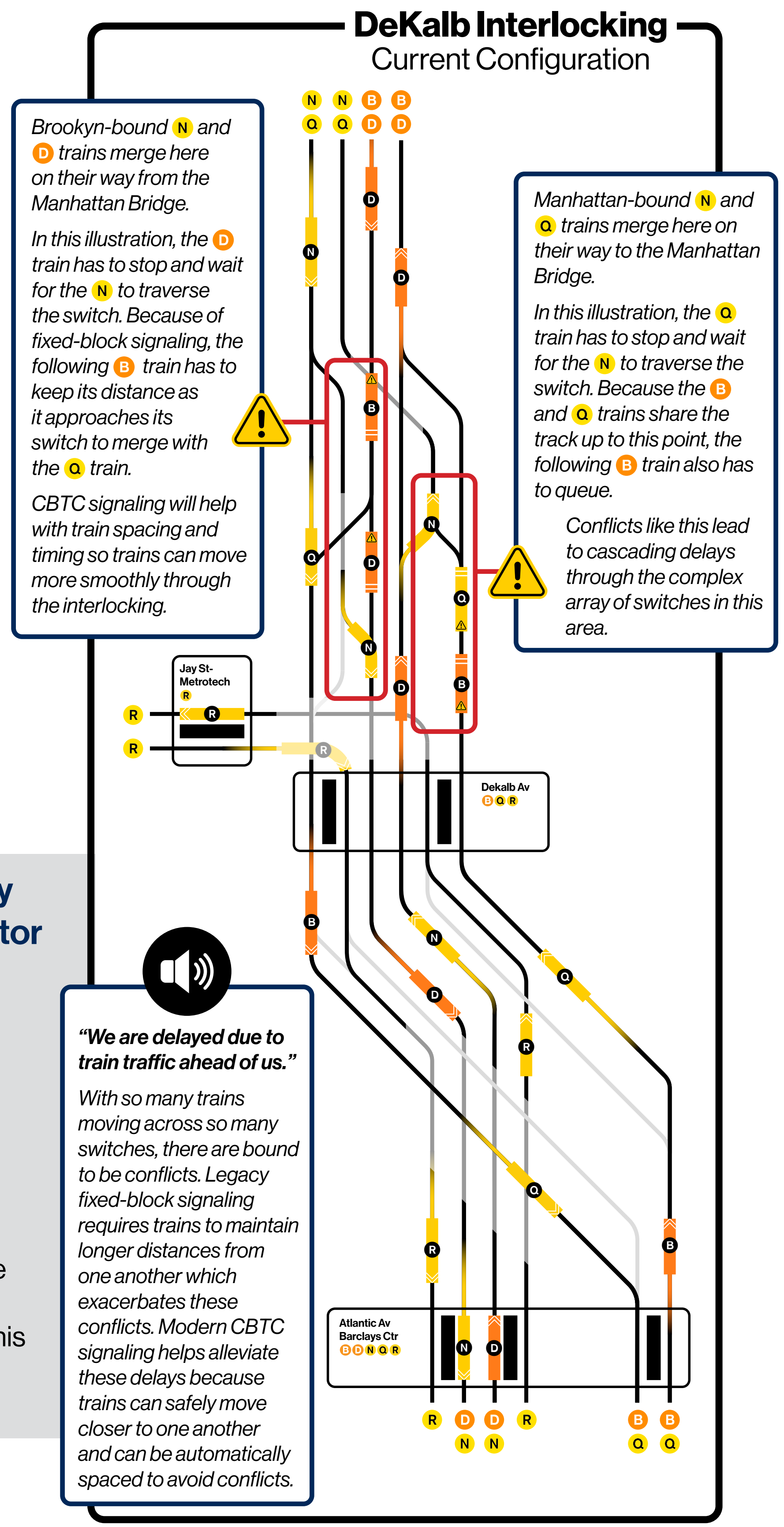
Through this analysis, we have identified several additional locations where improvements will allow us to realize the full benefits of our planned work at Nostrand Junction and DeKalb Interlocking. This is the first step in an extensive analysis of bottlenecks across the system that will inform our upcoming 20-Year Needs Assessment and our vision for the MTA in 2050.

DeKalb Interlocking

B D N Q R

At DeKalb Interlocking in Downtown Brooklyn, the B D and N Q trains merge before re-splitting into two branches—one carrying the D and N and the other carrying the B and Q. For Brooklyn riders, this means that many stations provide direct service to both the 6 Av line, via the B or D, and the Broadway line, via the N or Q. However, the need for trains to merge at DeKalb Interlocking means that trains can be delayed waiting for another train to join the track ahead.

We will be rolling out our modern CBTC signaling system to the DeKalb Interlocking, along with the B D lines from DeKalb Av all the way up to 47-50 Sts-Rockefeller Ctr in Midtown Manhattan.



DeKalb Interlocking is busy, highly complex, and a frequent contributor to delays.

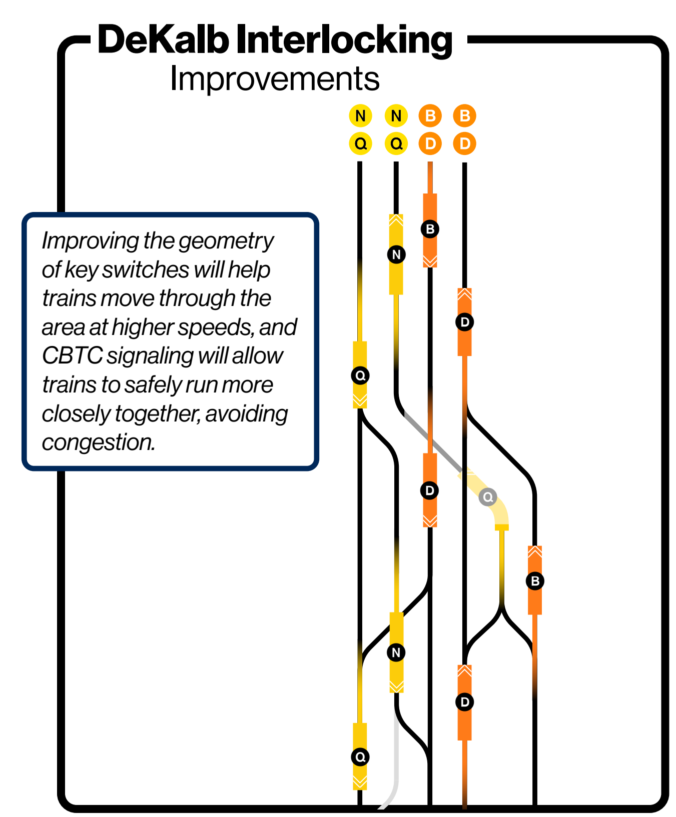
The DeKalb Interlocking safely protects the passage of over 1,600 daily trains navigating 18 switches, and one train arriving off schedule at the junction can delay many others. Adding to the problem are the limitations of our legacy signal system. This system provides tower operators, who control the interlocking, little insight that would allow them to optimally space trains and manage service through this busy area. These limitations can slow down normal service and exacerbate disruption.

CBTC control of the DeKalb Interlocking will allow trains to safely travel faster and more closely spaced through the junction, and will enable our operations teams to automatically regulate service.

We will also take advantage of the CBTC work in the area to replace key switches in the DeKalb Interlocking. New switches will allow trains traveling toward Manhattan to traverse the interlocking at higher speeds.

The speed of trains through the interlocking is a limiting factor on the number of trains that can pass through the area without delay. Working in tandem, faster switches and modern signaling will help trains flow more smoothly and more reliably through the busy DeKalb Interlocking.

Manhattan-bound Q and R trains approach DeKalb Av B Q R station



These improvements will help service stay on schedule and recover more quickly from delays.

We plan to award the contract for the installation of CBTC between DeKalb Av and 47-50 Sts-Rockefeller Ctr on the B D F M lines by the end of 2026. CBTC on the N Q R W lines in Manhattan will follow later in the 2025-29 Capital Program.

To get the greatest reliability benefits out of this investment at DeKalb Interlocking, we will also study improvements on the lines that approach DeKalb Av from the south. Before trains reach DeKalb Av on their way towards Manhattan, they encounter several other merges and pinch points that can introduce delays. When trains reach DeKalb Av already delayed, the impact can ripple across all four lines passing through and beyond.

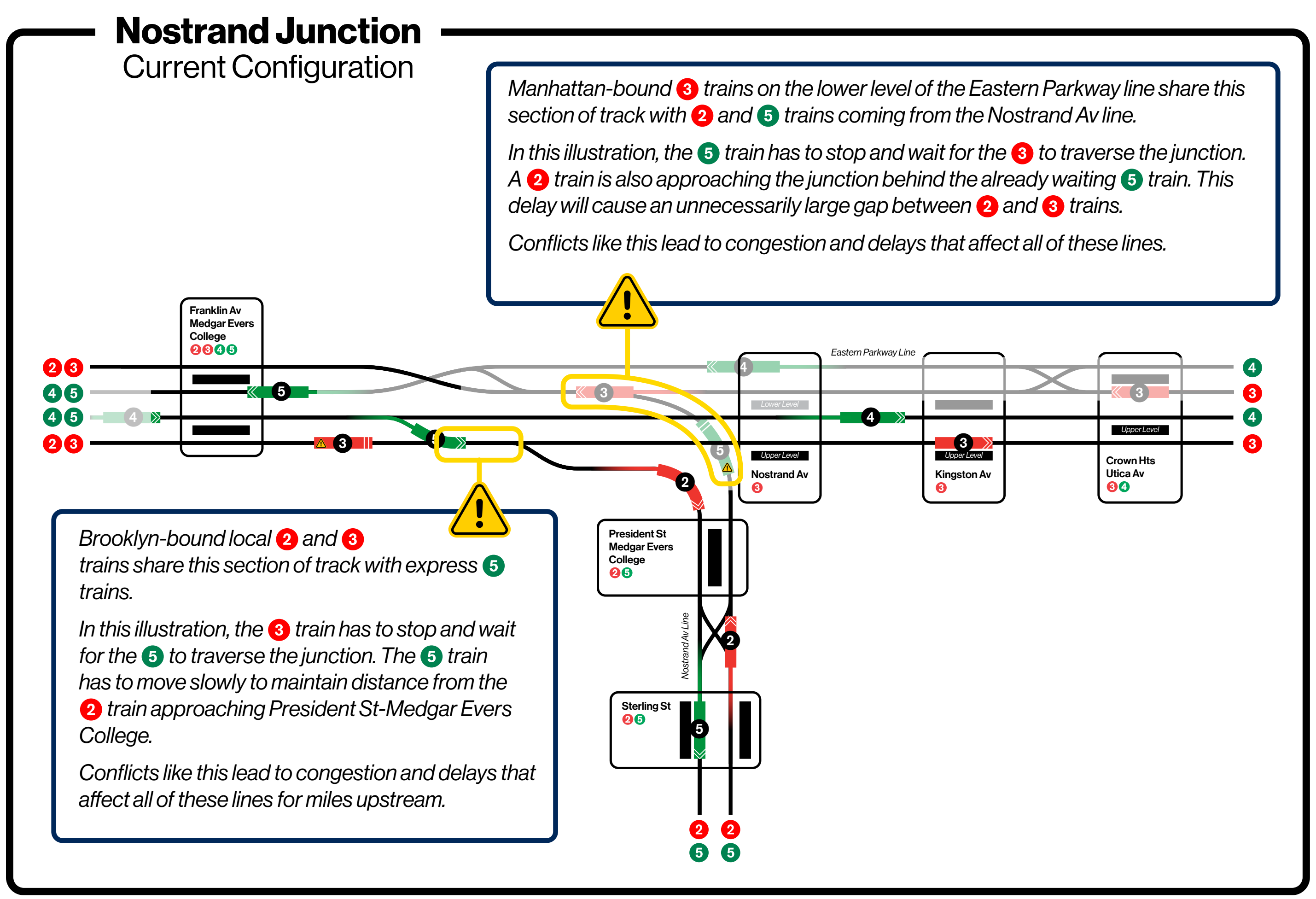
Nostrand Junction

2 3 4 5

Nostrand Junction is a busy interlocking where 2 3 4 5 trains split into two branches serving different areas of Brooklyn. The service pattern through the junction—with 2 5 trains taking one branch and 3 4 trains the other—allows riders along those corridors a one-seat ride to either the East or West Side of Manhattan. However, branching at Nostrand Junction causes congestion that results in delays on all four lines and constrains the number of trains that can be operated on these lines. **At peak hours, 2 3 4 5 service is close to the limit of trains that can be operated through Nostrand Junction.**

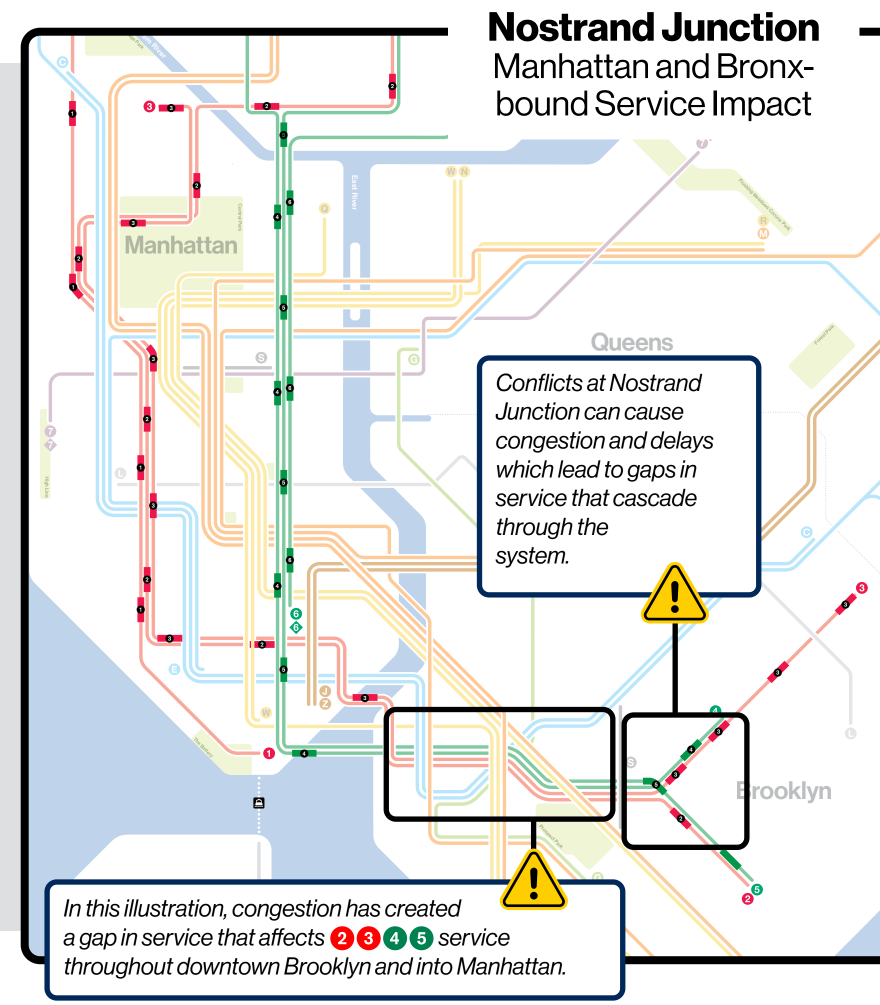
We are untangling 2 3 4 5 service at Nostrand Junction, making 2 3 4 5 trains in the area faster and improving reliability from Brooklyn to the Bronx.

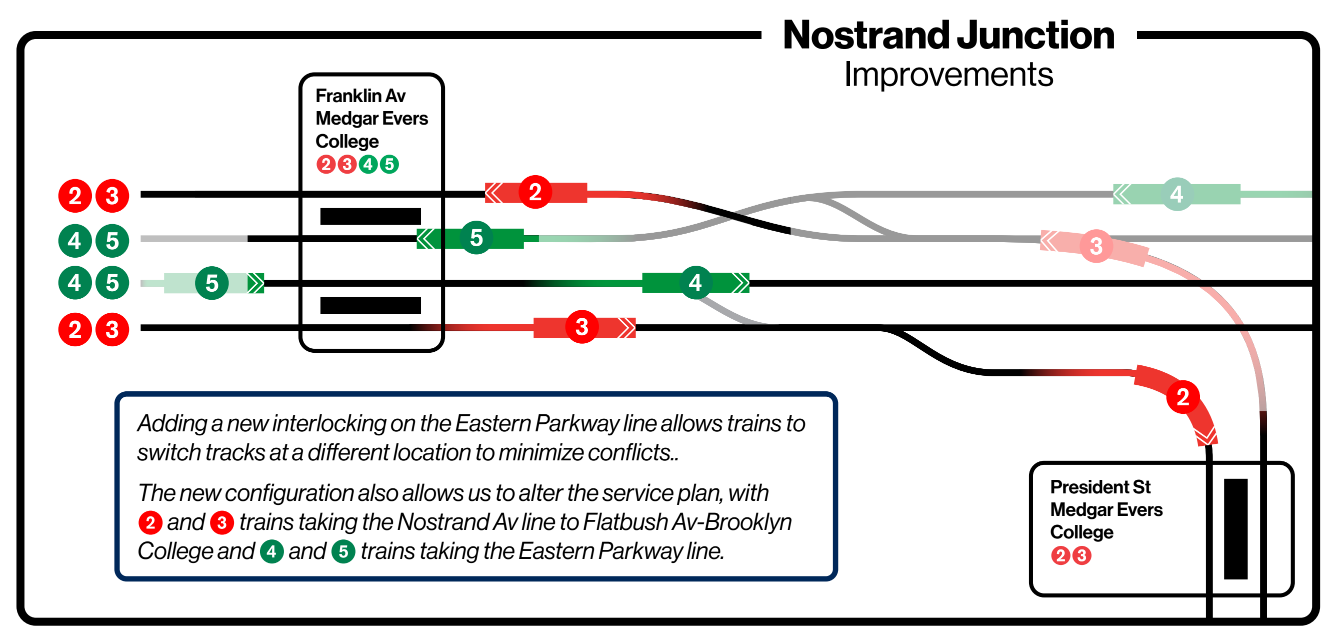
By adding new switches between the Franklin Av and Crown Hts-Utica Av stations, we will reroute 2 3 4 5 service, streamlining their paths through Nostrand Junction to minimize merge conflicts. This will reduce delays and provide 45-60 seconds of travel time savings for trains passing through the area. Reducing merge delays at Nostrand Junction will make service more resilient along all four lines, bringing benefits to up to 1.2 million daily trips.



To run more service in the future, change at Nostrand Junction is necessary.

The track layout at Nostrand Junction forces 2 3 and 5 trains to operate on the same track for about 150 feet. This configuration is called a "flat junction," and the delays caused when trains arrive at the junction together can cascade across the 2 3 4 5 lines. This has been a bottleneck for these busy lines since their construction. **Eliminating this bottleneck would bring benefits to an estimated 1.2 million daily trips along the 2 3 4 5 trains.**





Under Further Analysis

A Queens-bound 7 train navigates a sharp turn approaching Queensboro Plaza N W 7

Several of the locations that emerged as top candidates for improvement in our analysis would directly complement the improvements underway at Nostrand Av and DeKalb Av, by taking action on other sources of delay across the 2 3 4 5 and B D N Q lines. Implementing these projects would amplify the benefits to reliability that will come when we address the key locations discussed above.

Flatbush Av-Brooklyn College

2 5

At the southern end of the Nostrand Av line, Flatbush Av is the terminal for 2 and 5 service. Like Nostrand Junction, it has been identified as a bottleneck for decades. When the line was built over 100 years ago, Flatbush Av was not intended to be its permanent terminal, and it was designed with a layout that heavily constrains its capacity to handle frequent peak service on the 2 and 5 trains. Slow switches and speed limits approaching the end of the tracks cause congestion at this location.

Since the Nostrand Av line directly feeds Nostrand Junction, delays at Flatbush Av or Nostrand Junction can exacerbate congestion. We are examining options to improve the speed of trains entering the station, which will improve the capacity of the Flatbush Av terminal and make it—and adjacent Nostrand Junction—less prone to congestion.

149 St-Grand Concourse

2 5

149 St-Grand Concourse is a key junction between the 2 and 5 trains in the South Bronx. The tracks near this station allow 5 trains to swap from sharing tracks with 4 trains in Manhattan to sharing tracks with 2 trains in the Bronx—but the tracks connecting these lines have sharp switches and curves that force us to slow trains down. These slow speeds mean that train congestion is common in this area.

We are studying alternative options to raise train speeds through this area. This will ease congestion on 2 5 trains.

E 180 St to Wakefield-241 St

2 5

This section of the 2 5 trains, known as the White Plains Road line, is a common source of congestion. This line is the access point for the 239 St Yard, a large train yard that serves as a base for 2 5 trains. As evening peak hours wind down, some 2 and 5 trains return to the yard for overnight storage, cleaning, and maintenance. The combination of frequent 2 5 train service and the movement of trains to and from the yard can create heavy congestion during peak times.

We are studying alternatives that would allow us to better leverage the existing track layout in this area to ease congestion approaching the 239 St Yard and the 2 5 terminals.

59 St to DeKalb Av

D N R

At the 36 St station in Sunset Park, the D and N trains merge onto the shared express track under 4 Av before continuing north toward Manhattan. This shared track is busy during peak hours, and feeds directly into the DeKalb Interlocking, meaning that any congestion can spread to the other lines that pass through DeKalb Av.

On the express track D and N trains share between 36 St and DeKalb Av, our legacy signal system keeps trains spaced farther apart than on many other lines. This makes these tracks prone to congestion, which causes D and N trains to reach DeKalb Av late, risking conflict with B or Q trains. Adjustments to the signal system on this section of track would allow trains to safely run more closely together, adding capacity and easing congestion even before full CBTC upgrades are made to this corridor. This would also improve service during disruptions and planned reroutes that require the D, N, and R trains to share the express tracks on the 4 Av line.

Prospect Park

B Q

At Prospect Park, the B and Q lines reduce from four tracks down to two tracks, which connect the two routes to DeKalb Av. Congestion on these shared tracks can lead to greater congestion when trains arrive late to DeKalb Av.

Adjustments to the signal system on this section of track would allow trains to safely run more closely together, adding capacity and easing congestion.

Coney Island-Stillwell Av

D F N Q

The Coney Island-Stillwell Av terminal is the origin point for D F N and Q trains. It is also adjacent to the Coney Island Yard—one of the largest rapid transit yards in North America, where B D F G N Q and W trains are stored between trips. This makes Coney Island-Stillwell Av an extremely busy and complex area of the subway, and one where delays and congestion can affect several subway routes and thousands of riders.

We are examining various alternatives to improve the layout of signals and switches in and around the Coney Island-Stillwell Av terminal. These improvements would increase the capacity of the terminal, reduce the number of conflicts with trains traveling to and from the yard, and improve the reliability of all the routes that pass through this area.

Additional Priorities

Parkchester

6

The busiest station on the 6 train in the Bronx, Parkchester serves as a terminal for approximately half of weekday 6 train service. This arrangement allows us to efficiently concentrate the most service on the busiest parts of the 6 train, in the South Bronx and Manhattan. However, 6 trains turning around at Parkchester and those running to and from Pelham Bay Park share two tracks through Parkchester station. This creates congestion and delays for all trains that pass through Parkchester.

By modifying the layout of switches near Parkchester station, we can give the 6 trains that change direction at Parkchester room to wait out of the way of other 6 trains before they begin their trip back to Manhattan.

Increasing Operational Flexibility

On a system that operates 24/7, performing critical maintenance and upgrade work often requires us to divert or suspend train service so our crews can safely access the tracks. Trains can only be rerouted or change directions where switches are present. On some lines, the layout of tracks or the location of switches will force us to suspend service on a long stretch of track to perform crucial maintenance or improvement work. When train service is suspended, riders may have to use a shuttle bus or find alternate routes. This can add significant travel time to journeys and can impose added costs to our operation.

Though these inflexible track layouts do not always affect regular service, they mean that disruptions—planned or unplanned—have widespread impacts. Parts of our system with inflexible layouts include lines with two tracks with long gaps between switches. We are studying potential improvements to these segments that would increase operational flexibility and decrease impact to riders during disruptions.

In addition to these priorities, we will seek further opportunities to ease bottlenecks and reduce delays.

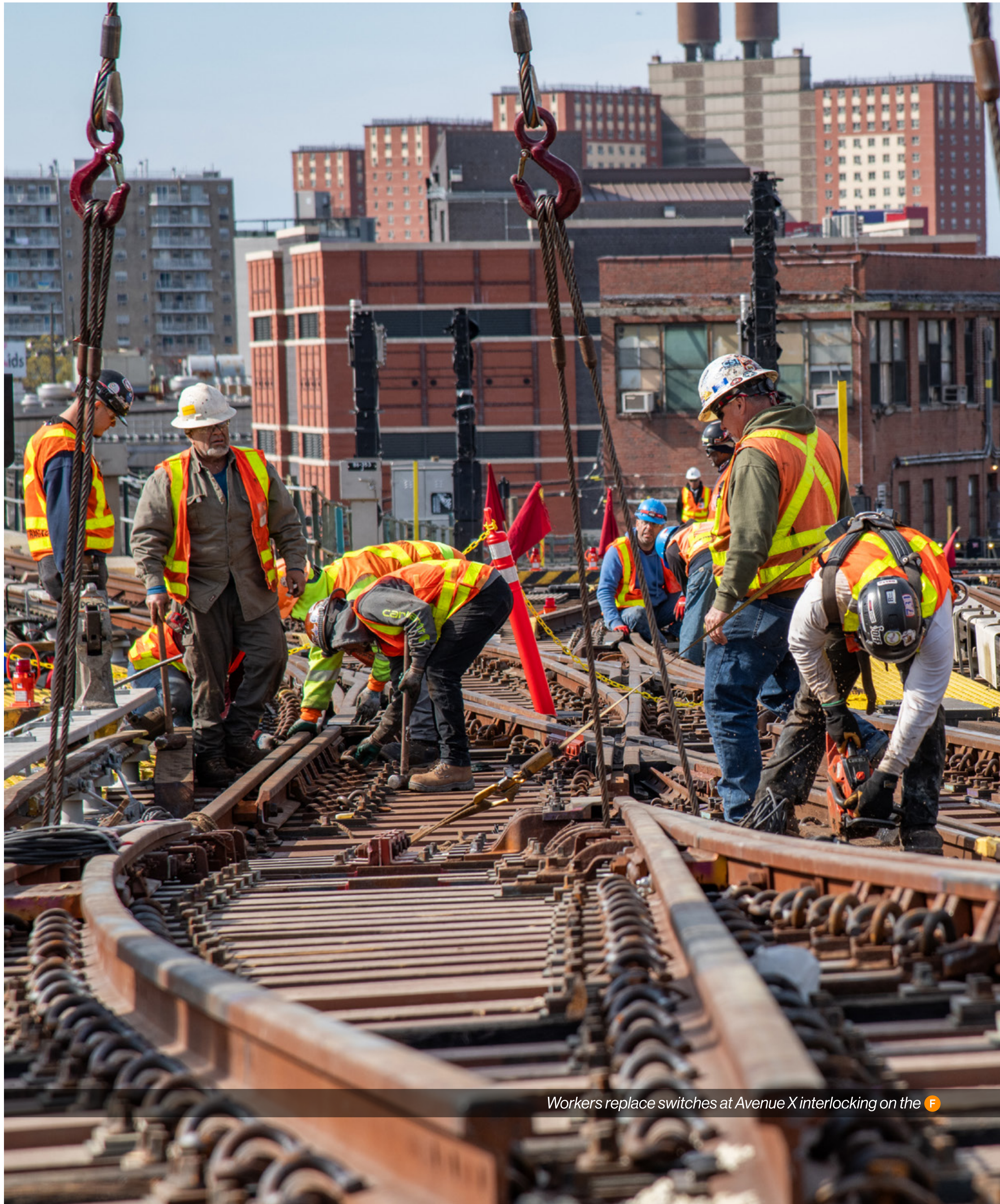
For the rest of our top 25 projects, as well as the wider list we identified, we will be conducting further planning and analysis to determine the feasibility of improvements and locate potential synergies with other capital projects—so we have projects ready to advance as funding permits.

Next Steps

This report is part of a larger effort to prepare for our next 20-Year Needs Assessment, which identifies key needs in advance of each 5-Year Capital Plan. As we put together the upcoming needs assessment and next Capital Plan, we will consider improvements at key bottleneck locations for inclusion.

In 2025-2029, improvements at DeKalb Interlocking and Nostrand Junction are moving ahead. We will award the contract for installation of CBTC on the 6 Av line, including DeKalb Interlocking, later this year. We are conducting further pre-design work for Nostrand Junction that will lead us toward a final design for improvements.

As we look toward the next 20-Year Needs Assessment, we will conduct detailed analysis on the most promising potential improvements identified in this report—preparing us to advance a further round of bottleneck improvements in future Capital Plans.



Workers replace switches at Avenue X interlocking on the F

Appendix:
Subway Project Summary Table

The table below presents the list of bottleneck locations included in this initial screen and the key metrics we used to identify the candidate projects being advanced to further study.

Many bottleneck problems are felt most during peak hours—when subway ridership and frequency is highest. These locations are listed in the first section. However, some issues relate specifically to service patterns during one part of the day or on weekends. Improvements at these locations are generally aimed at increasing our operational flexibility, in ways that would allow us to reduce the impact to riders during planned reroutes. These are listed in the second section. To identify riders most affected by each bottleneck, ridership numbers for each location differ based on the most affected period.

Peak period ridership looks at AM peak (7 AM-10 AM) and/or PM peak (4 PM-7 PM) hours, and counts riders along the full length of the lines that pass through the listed location, not just those riding through the named location. Weekend ridership looks at 24-hour period on Saturday. This means that ridership values should not be compared across time periods. All ridership data counts *unlinked* trips, meaning that totals may differ from typical ridership reporting, where transfers between lines are removed to create *linked* trips. As we conduct further study, we will continue to refine data to obtain a precise picture of the ridership affected by each bottleneck and potential mitigation.

Legend

Next Candidate Projects	**2**	**Medium**	**High**
Other Study Locations	**4**	**High**	**Low**

Area Impact on Train Trips

This metric measures the number of trains that take more than three minutes over their scheduled time to traverse a given bottleneck area on an average weekday.

1	10 or fewer trains
2	11-20 trains
3	21-30 trains
4	31-40 trains
5	>40 trains

Capacity Gain and **Capital Cost** metrics do not yet correspond to a specific number but a general quantitative comparison across all study locations.

AM + PM Peak

Location	Lines Affected	Category	Bottleneck Description	Line Ridership During Affected Period	Affected Period	Area Impact On Train Trips	Capacity Gain	Capital Cost
Sutter Av-Rutland Rd	3	Interlocking	Limited operational flexibility	160,000	AM+PM Peak	1	Low	**Medium**
New Lots Av	3	Terminal	Limited terminal capacity	115,000	AM+PM Peak	1	High	**Medium**
Burnside Av	4	Interlocking	Limited terminal capacity and operational flexibility	190,000	AM+PM Peak	1	Low	**Medium**
Hunts Point Av	6	Interlocking, Geometry	Sharp curves constrain train speeds	275,000	AM+PM Peak	2	Low	**Medium**
Pelham Bay Park	6	Terminal	Limited terminal capacity due to sharp curves and slow train speeds	275,000	AM+PM Peak	2	High	**Medium**
Parkchester	6	Terminal	Limited terminal capacity	275,000	AM+PM Peak	3	High	**Medium**
135 St	2 3	Interlocking	Limited operational flexibility	440,000	AM+PM Peak	1	Low	**Medium**
Unionport Yard	5	Geometry	Track layout in complex interlocking constrains 5 train speeds	165,000	AM+PM Peak	1	Low	**Medium**

Location	Lines Affected	Category	Problem Statement for Report		Line Ridership During Affected Period	Affected Period	Area Impact On Train Trips	Capacity Gain	Capital Cost
149 St-Grand Concourse	2 4 5	Geometry	Sharp switches constrain train speeds at busy merge point		520,000	AM+PM Peak	2	High	Medium
E 180 St to 3 Av-149 St	2 5	Geometry, Signal, Interlocking	Sharp curves, legacy signal capacity issues, and limited operational flexibility		330,000	AM+PM Peak	1	Medium	Medium
E 180 St to Wakefield-241 St	2 5	Interlocking, Terminal	Congestion near terminals and 239 St Yard delays northbound evening peak trains		165,000	PM Peak	3	High	Medium
Flatbush Av-Brooklyn College	2 5	Terminal	Limited terminal capacity		330,000	AM+PM Peak	5	High	High
138 St-Grand Concourse	4 5	Geometry	Sharp switches constrain train speeds		265,000	AM+PM Peak	1	High	Medium
Bowling Green	4 5	Geometry	Sharp curves constrain train speeds		355,000	AM+PM Peak	1	Low	Medium
Brooklyn Bridge	4 5 6	Geometry	Sharp switches constrain train speeds		630,000	AM+PM Peak	1	Low	Medium
14 St-Union Sq	4 5 6	Geometry	Sharp curves along the platform slow trains and require the use of gap fillers, which extend station dwell times		630,000	AM+PM Peak	2	High	High
110 St	6	Interlocking	Limited operational flexibility		275,000	AM+PM Peak	1	Low	Medium
125 St	4 5 6	Interlocking	Complex track layout and sharp switches constrain train speeds and capacity		630,000	AM+PM Peak	2	Medium	Medium
Grand Central-42 St	4 5 6	Interlocking	Track layout constrains train speeds and capacity		630,000	AM+PM Peak	1	High	Medium
Franklin Av to Atlantic Av	2 3 4 5	Geometry	Sharp curves constrain train speeds		605,000	AM+PM Peak	1	High	Medium
Nostrand Jct	2 3 4 5	Interlocking	Busy merge point and flat junction constrains capacity and reliability on 2 3 4 and 5 trains		635,000	AM+PM Peak	5	High	Medium
Broad Channel	A S	Terminal	Congestion on A and S trains, limited terminal capacity for S trains		215,000	AM+PM Peak	1	High	Medium
Canal St	A C	Geometry	Sharp switches and slow speeds contribute to A C bottleneck between Manhattan and Brooklyn		345,000	AM+PM Peak	3	High	Medium
59 St-Columbus Circle	A C B D	Signal	Legacy signal system reduces capacity and exacerbates congestion		610,000	AM+PM Peak	1	High	Low
Howard Beach-JFK Airport	A	Geometry	Sharp curves constrain train speeds		215,000	AM+PM Peak	1	Low	Medium
DeKalb Av	B D N Q R	Interlocking, Signal	Complex junction with sharp switches and frequent delays		555,000	AM+PM Peak	5	High	Medium
Prospect Park	B Q	Signal	Legacy signal system reduces capacity at a merge point		295,000	AM+PM Peak	2	High	Low

Location	Lines Affected	Category	Problem Statement for Report		Line Ridership During Affected Period	Affected Period	Area Impact On Train Trips	Capacity Gain	Capital Cost
W 4 St	C E F M	Geometry	Sharp switches constrain train speeds		750,000	AM+PM Peak	2	Low	Medium
9 Av	D	Geometry	Sharp curves constrain train speeds		145,000	AM+PM Peak	2	Low	Medium
Bay Pkwy	D	Interlocking	Limited operational flexibility		145,000	AM+PM Peak	1	Medium	Medium
Bedford Park Blvd to Norwood-205 St	D	Terminal	Limited terminal capacity		265,000	AM+PM Peak	2	High	Low
Coney Island-Stillwell Av	D F N Q	Interlocking, Signal	Complex interlocking, legacy signaling, and proximity to large yard results in congestion, delays, and capacity constraints		710,000	AM+PM Peak	5	High	Medium
World Trade Center	E	Terminal	Limited terminal capacity		205,000	AM+PM Peak	2	High	Medium
Jamaica Center	E	Terminal	Limited terminal capacity		290,000	AM+PM Peak	2	High	Medium
Bergen St	F G	Geometry	Slow switches constrain train speeds		395,000	AM+PM Peak	1	High	Medium
Chambers St	J Z	Interlocking	Track layout and slow switches constrain train speeds		85,000	AM+PM Peak	1	Low	Medium
Essex St	J Z M	Geometry, Signal, Interlocking	Track layout, slow switches, and legacy signals constrain train speeds and capacity		210,000	AM+PM Peak	1	High	Medium
E 105 St	L	Interlocking	Congestion caused by conflicts between revenue trains and trains traveling to/from yard		180,000	AM+PM Peak	2	Medium	Medium
8 Av	L	Terminal	Limited terminal capacity due to slow train speeds		180,000	AM+PM Peak	2	High	High
34 St-Herald Sq	N Q R W	Interlocking	Busy merge point with slow switches and limited operational flexibility		295,000	AM+PM Peak	1	High	Medium
Ditmars Blvd	N W	Terminal	Limited terminal capacity due to slow train speeds		130,000	AM+PM Peak	2	High	High
215 St to 242 St	1	Terminal	Limited operational flexbility and terminal capacity		130,000	PM Peak	1	Medium	High
Myrtle Av	J Z M	Interlocking, Signal	Busy merge point with slow switches and legacy signal capacity constraints		110,000	PM Peak	2	High	Medium
Myrtle-Wyckoff Avs to Canarsie-Rockaway Pkwy	L	Terminal	Limited capacity for additional trains on the L between Myrtle-Wyckoff Avs and Canarsie		95,000	PM Peak	1	High	High

Weekend 24-hour

Location	Lines Affected	Category	Problem Statement for Report		Line Ridership During Affected Period	Affected Period	Area Impact On Train Trips	Capacity Gain	Capital Cost
145 St to 125 St	A C D	Signal	Legacy signal system reduces capacity and exacerbates congestion		505,000	Weekend 24-hr	1	High	Low
145 St	A C	Interlocking	Limited operational flexibility		515,000	Weekend 24-hr	1	Low	Medium
161 St	D	Interlocking	Limited operational flexibility		250,000	Weekend 24-hr	1	Low	Medium
34 St-Penn Station	A C E	Interlocking	Limited operational flexibility		280,000	Weekend 24-hr	1	Low	Medium
39 Av	N	Interlocking	Limited operational flexibility		255,000	Weekend 24-hr	1	Low	Medium
59 St	4 5 6	Interlocking	Limited operational flexibility		720,000	Weekend 24-hr	1	Low	Medium
59 St to DeKalb Av	D N R	Signal	Legacy signal system reduces capacity and exacerbates congestion		505,000	Weekend 24-hr	5	High	Low
62 St	D	Interlocking	Limited operational flexibility		250,000	Weekend 24-hr	1	Low	Medium
7 Av	Q	Interlocking	Limited operational flexibility		280,000	Weekend 24-hr	1	Low	Medium
86 St	4 5 6	Interlocking	Limited operational flexibility		720,000	Weekend 24-hr	1	Low	Medium
Atlantic Av	D N R	Interlocking	Slow switches limit train speeds during diversions		505,000	Weekend 24-hr	1	Medium	Medium
Bergen St to Nassau Av	G	Interlocking	Limited operational flexibility		150,000	Weekend 24-hr	1	Low	Medium
Broadway-Lafayette St	D	Interlocking	Limited operational flexibility		250,000	Weekend 24-hr	1	Low	Medium
Chambers St and 14 St	1 2 3	Interlocking	Limited operational flexibility		805,000	Weekend 24-hr	1	Low	Medium
Forest Hills-71 Av	E F	Interlocking	Limited operational flexibility		215,000	Weekend 24-hr	1	Low	Medium
Harlem-148 St	3	Interlocking	Limited terminal capacity and congestion caused by track layout approaching yard		160,000	Weekend 24-hr	2	Medium	High

Location	Lines Affected	Category	Problem Statement for Report		Line Ridership During Affected Period	Affected Period	Area Impact On Train Trips	Capacity Gain	Capital Cost
Hoyt St	2 3 4 5	Interlocking	Limited operational flexibility		440,000	Weekend 24-hr	1	Low	**Medium**
Hoyt-Schermerhorn Sts	A C	Interlocking	Limited operational flexibility		510,000	Weekend 24-hr	1	Low	**Medium**
Kings Highway	Q	Signal	Legacy signal system exacerbates congestion		280,000	Weekend 24-hr	**2**	**Medium**	Low
Livonia Av	L	Interlocking	Limited operational flexibility		310,000	Weekend 24-hr	1	Low	**Medium**
Lorimer St to Myrtle-Wyckoff Avs	L	Interlocking	Limited operational flexibility		310,000	Weekend 24-hr	1	Low	**Medium**
Myrtle-Wyckoff Avs	M	Interlocking	Limited operational flexibility		35,000	Weekend 24-hr	1	Low	**Medium**
Nevins Street	2 3 4 5	Interlocking	Limited operational flexibility		825,000	Weekend 24-hr	1	Low	**Medium**
Newkirk Plaza	Q	Interlocking	Limited operational flexibility		280,000	Weekend 24-hr	1	Low	**Medium**
Prince St	N Q R	Geometry	Slow switches limit train speeds		255,000	Weekend 24-hr	1	Low	**Medium**
Times Sq-42 St	1 2 3	Interlocking	Limited operational flexibility		805,000	Weekend 24-hr	1	Low	**Medium**
Woodhaven Blvd	J	Interlocking	Limited operational flexibility		120,000	Weekend 24-hr	1	Low	**Medium**

MTA 2050

MTA 2050 is a series of focused planning studies that will help shape the next 20-Year Needs Assessment, planned for October 2028, and define a forward-looking vision for the transit system at the middle of the century.

Each study examines how a distinct part of the network functions today, the challenges limiting its performance, and opportunities to preserve and modernize infrastructure or improve operations. Together, the studies will build the knowledge needed to unlock capacity, improve reliability, reduce travel times, strengthen connections, and deliver better service across the region.

Learn more at future.mta.info