

# NEC Capital Investment Plan

## Fiscal Years 2023-2027

October 2022





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## Fiscal Years 2023-2027



A plan by the  
Northeast Corridor Commission

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*In partnership with:*

Massachusetts Department of Transportation (MassDOT)

Massachusetts Bay Transportation Authority (MBTA)

Rhode Island Department of Transportation (RIDOT)

Connecticut Department of Transportation (CTDOT)/CTrail

Metropolitan Transportation Authority (MTA)

MTA Metro-North Railroad (Metro-North)

MTA Long Island Rail Road (LIRR)

New Jersey Transit (NJ TRANSIT)

Southeastern Pennsylvania Transportation Authority (SEPTA)

Pennsylvania Department of Transportation (PennDOT)

Delaware Department of Transportation (DelDOT)

Maryland Department of Transportation (MDOT) Maryland Transit Administration (MTA) / Maryland Area Regional Commuter (MARC)

District Department of Transportation (DDOT)

Virginia Railway Express (VRE)

Amtrak

U.S. Department of Transportation (USDOT)



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# Letter from the Co-Chairs

The Northeast Corridor Commission is pleased to submit our FY23-FY27 NEC Capital Investment Plan (CIP). This plan comes at the beginning of an exciting new era for the Northeast Corridor. After over half a century of underinvestment and uncertainty, the enactment of the Infrastructure Investment and Jobs Act (IIJA) last November provides the guaranteed funding needed to address long-neglected infrastructure needs and begin to restore the Corridor to a state-of-good-repair.

Thanks to the leadership of President Biden and a bipartisan majority in Congress, we stand on the cusp of generational investments in the Northeast Corridor. Fortunately, approval of the IIJA came on the heels of the Commission's July 2021 release of CONNECT NEC 2035 (C35)—a 15-year action plan for the corridor that provides a road map of how the owners and operators will invest this new funding. The CIP includes updates to C35, and the Commission will soon begin work on C37, the next iteration of the 15-year plan for the corridor.

IIJA provides transformational investment into the nation's passenger rail system. Large infusions of funding into multiple USDOT grant programs, as well as a revamp of the Federal Railroad Administration's Federal-State Partnership for Intercity Passenger Rail Grant Program, will allow Amtrak and its NEC state partners to advance programs and projects that increase safety, efficiency, and reliability along the corridor. While IIJA funding is not sufficient to advance the full 15-year plan, these new funds will support implementation of key projects that advance C35's long-term vision for a modern and resilient railroad in a state of good repair with safer, more reliable, and more frequent service; connections to new markets; and reduced travel times between communities.

There will no doubt be significant challenges as Amtrak and other project sponsors ramp up their abilities to advance projects, hire workforce, deal with supply chain issues, and plan the track outages necessary to advance this work. We look forward to working together and remain committed to being good stewards of the federal, state, and local dollars that are invested in NEC projects. We are excited about the future that IIJA funding will bring to the corridor.

Amit Bose  
Administrator, Federal Railroad Administration  
Co-Chair, Northeast Corridor Commission

Kevin S. Corbett  
President and CEO, NJ TRANSIT  
Co-Chair, Northeast Corridor Commission

The Northeast Corridor consists of four right-of-way infrastructure owners (Amtrak, MBTA, CTDOT, and NY MTA Metro-North Railroad) and multiple station owners and service providers.



- NEC Main Line
- NEC Connecting Corridor
- Intercity Rail
- Commuter Rail





# Introduction

The Northeast Corridor—both the NEC main line from Boston, MA to Washington, DC and connecting corridors to Harrisburg, PA; Spuyten Duyvil, NY; and Springfield, MA—hosts the passenger rail operations of eight commuter railroads, Amtrak’s intercity services, and six freight railroad services. The NEC, long the nation’s busiest passenger railroad, has been a cornerstone of the region’s development and continues to be a driver of its economic success. There were over 800,000 daily trips on the NEC in 2019—775,000 on commuter rail and 45,000 on Amtrak’s intercity services.

The 457-mile main line still includes many bridges and tunnels that date back to the period between the Civil War and the New Deal. The NEC’s state-of-good-repair (SOGR) backlog must be addressed to prevent further impacts to service reliability, which can jeopardize the economic well-being of the Northeast region and the entire nation. Fortunately, the historic Infrastructure Investment and Jobs Act (IIJA) includes tens of billions of dollars for rail and transit investments and requires the Federal Railroad Administration to develop an NEC Project Inventory to fund a predictable pipeline of NEC infrastructure investment.

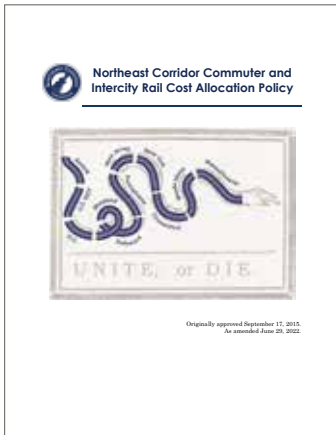
While the coronavirus pandemic dramatically reduced all travel and created economic uncertainty, Amtrak and commuter agencies were able to survive thanks to emergency federal support, and in some cases capital plan adjustments and responsiveness to changing service demands. The FY21 NEC Annual Report documented that service levels and ridership have increased since their lows in March 2020, and the Northeast Corridor Commission expects rail travel to rebound and continue to be a critical mode of travel for many people, including those without access to a car. Capital investment can both ensure the future viability of this service and contribute to the continued recovery from the pandemic’s economic challenges.

# Background

## The NEC Commission

The Northeast Corridor Commission was authorized by Congress in 2008 (49 U.S.C. § 24905) to develop coordinated strategies to improve the Northeast’s core rail network in recognition of the inherent challenges of planning, financing, and implementing major infrastructure improvements that cross multiple jurisdictions. The expectation is that by coming together to take collective responsibility for the NEC, Commission member agencies will achieve a level of success that far exceeds the potential reach of any individual organization.

The Commission is comprised of one member from each of the NEC states (Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, and Maryland) and the District of Columbia; four members from Amtrak; and five members from the U.S. Department of Transportation. The Commission also includes non-voting representatives from four freight railroads, states with connecting corridors, and several commuter operators in the region.



## The NEC Commuter and Intercity Rail Cost Allocation Policy

The NEC Commuter and Intercity Rail Cost Allocation Policy was adopted by the Commission in September 2015 and renewed in October 2020. The Policy outlines a partnership built on three pillars: (1) operator cost sharing; (2) transparency, collaboration, and accountability; and (3) federal partnership.

The key components of the transparency, collaboration, and accountability pillar include NEC planning and reporting processes to develop and update the 15-year CONNECT NEC Program and the five-year Capital Investment Plan (CIP). These processes are intended to enhance coordination on service goals, associated capital investments, and the resources required to implement them. CONNECT NEC identifies long-term service objectives and associated capital investments over the next 15 years, while the annual CIP demonstrates how the Commission and its member agencies plan to advance CONNECT NEC in the near-term.

The Policy also requires the first federal fiscal year of the CIP to be an implementation plan constrained by available funding and resources. The implementation plan is a valuable tool for collaboration, transparency, and accountability among Commission member agencies. The first year of the CIP, as agreed to and approved by the Commission, serves as the baseline for infrastructure delivery reporting and is summarized each year in the NEC Annual Report. Infrastructure delivery reporting is meant to establish a uniform understanding of capital activities and support greater accountability between all parties.

**Figure 1. NEC Commission Plans and Reports**



**Capital Investment Plan**

**Annual Report**

A 15-year plan with the long-term vision for a modern and resilient railroad with safe, reliable, and more frequent service; connections to new markets; and reduced travel times between communities.

A five-year plan that integrates NEC agencies' planned infrastructure investment detail. Year One of the CIP serves as an implementation plan and the baseline for infrastructure delivery reporting.

A report that documents the operational performance of NEC trains and the delivery of Year One of the CIP.



**Above:** NEC Commission members and staff announce CONNECT NEC 2035 at a July 2021 press conference in Moynihan Train Hall (NY).

## CONNECT NEC & FY23-27 Capital Investment Plan

Project scopes, schedules, and budgets identified in the updated CONNECT NEC 2035 (C35) analysis were used as inputs for the FY23-27 CIP (see page 7). The FY23-27 CIP additionally publishes detailed project-level information—including anticipated scopes of work and upcoming project milestones that were submitted and vetted by Commission member agencies—for projects that could occur in the next five years according to the C35 sequencing process. Most of the CIP remains fiscally unconstrained as new funding through IIJA has yet to be awarded. However, the first year of the CIP is fiscally constrained and serves as an implementation plan and baseline for reporting.

Commission member agencies are expected to continue advancing project-level planning and any new project information, some of which was captured through the CIP development process, will in turn feed the next round of CONNECT NEC (C37). Additionally, the Commission plans to continue to use, refine, and improve its CONNECT NEC project delivery tool to incorporate significant additional workforce and equipment resources and to refine program sequencing based on anticipated levels of funding and updated project readiness, among other improvements.

# CONNECT NEC 2035: From Plan to Implementation

The Commission released the first installment of the CONNECT NEC Program in July 2021 (CONNECT NEC 2035 [C35]), which was guided by the long-term vision set in the Federal Railroad Administration's 2017 NEC FUTURE plan. CONNECT NEC identifies long-term service objectives and associated capital investments to develop a detailed and efficient sequencing of infrastructure investments over 15 years to keep travelers moving, while addressing critical state-of-good-repair needs. When fully implemented, C35 will expand network functionality and services, resulting in faster, more frequent, and more reliable service.

## Benefits of a Renewed NEC and Thriving Northeast



**Improve Mobility and Connections.** Reduce travel time by up to 30 minutes between New York and Washington; and New York and Boston.



**Combat Climate Change.** Invest in improvements that will have a positive impact on the environment through the reduction of greenhouse gas emissions and more resilient infrastructure.



**Create Economic Opportunity.** Generate skilled jobs in the Northeast and across the U.S. in industries providing materials and equipment.



**Support Desirable Cities & Communities.** Provide reliable, frequent access to support and sustain transit-oriented development.

## Updating CONNECT NEC 2035

The historic infrastructure law provides unprecedented levels of funding directed at passenger rail. NEC projects expect to benefit from IJA's advance appropriations (see *NEC Funding Sources* on page 11 for more information). C35 determined a funding need across the corridor and was fiscally and workforce unconstrained; however, the Commission subsequently updated C35 to plan for the newly available federal dollars based on the latest project information available and further understanding of resource and workforce constraints. These results will inform the Federal Railroad Administration's development of the NEC Project Inventory for the revamped Federal-State Partnership program.

The updated C35 delivery analysis reviewed project readiness; workforce requirements; a feasible resource ramp-up; and potential IJA funding opportunities. While this includes some workforce constraints, more analysis is needed to better understand how workforce availability will affect the work that can be done. As with the original C35 plan, the delivery analysis reviewed agency service plans to maximize the productivity and efficiency of track outages and to minimize service impacts to passengers. The detail for active projects in this FY23-27 CIP reflect the results from the updated C35 delivery analysis. The full list of CONNECT NEC projects covering the 15-year timeframe can also be found in the *Project Information Appendix*. The Commission will update the full CONNECT NEC Program every two years, starting with CONNECT NEC 2037 (C37) in 2023.

## Challenges to Implementation

Successful implementation of the CONNECT NEC Program requires NEC right-of-way infrastructure owners and project sponsors to quickly ramp up their workforces and other resources to sustain an aggressive program for the next 15 years and to be accountable for the delivery of capital projects. Commission member agencies recognize the challenges and barriers to implementation, which could include potential workforce shortages; the coordination among projects for the efficient use of track outages while minimizing and service impacts; potential issues with right-of-way equipment procurement and the materials supply chain; the rising cost of inflation; and the need for close interagency coordination.

# FY23-27 Capital Investment Plan

## Overview

Commission member agencies plan to undertake ambitious investment in the NEC over the next five years to advance the service objectives laid out in C35 and address NEC state-of-good-repair needs. Agencies could spend \$45.5 billion between FY23 and FY27, ramping up significantly from current levels of spending, to advance projects and programs according to C35 project delivery sequencing. These target investment levels, while ambitious, are lower than the investment levels noted in the C35 plan released in June 2021 since agencies are transitioning from a fully unconstrained plan to an updated plan to invest newly available IIJA funding. Nevertheless, agencies would be able to advance key projects in every region, lay the groundwork to complete all major backlog projects in the next fifteen years, and complete a portion of the C35 capital renewal program.

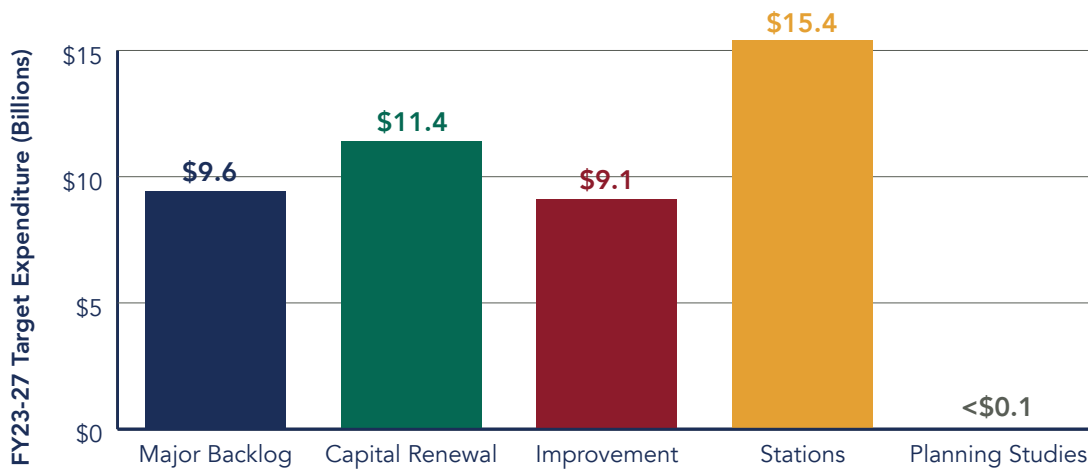
Traditionally NEC agencies annually piece together limited federal, Amtrak, state, commuter agency, and/or local funding sources to maintain a safe railroad and advance select improvement projects. For the current authorization period, IIJA will provide predictable, multi-year funding to many planned investments described in the FY23-27 CIP. The funds put in place by the law, though not yet awarded, will eventually give agencies the certainty to advance planning and design, hire a larger workforce, buy equipment, and enter into major construction contracts for some investments. While the IIJA funding is substantial, it does not cover the funding needs of all NEC investments. Future reauthorizations, annual appropriations to the Federal-State Partnership for Intercity Passenger Rail Program, and Amtrak's NEC account are still needed to support NEC projects.

Investment types, as summarized on page 9 and found in the Project Appendix for each investment, were developed for planning purposes and have been used historically in NEC Commission plans and reports to illustrate at a high level the type of work occurring or needed on the NEC. The categories inherently overlap, and scopes do not fall cleanly into a single investment type. For example, most projects, regardless of investment type, include some elements of capital renewal and improve on existing infrastructure, and some major backlog projects include new capacity and other improvement components.

Across all agencies in FY23-27, the largest sum of planned expenditures (34% of all target expenditures during that period) is on stations investments, as shown in Figure 2. Among the other investment types, capital renewal investments represent 25%, major backlog projects represent 21% and improvement projects represent 20% of planned expenditures.

Expenditures are split between pre-construction activities (i.e. planning, project development, and in some cases final design) and construction activities, which may include final design. Collectively known as the project lifecycle, activities conducted in these phases determine the project’s overall schedule and eligibility for additional funding.

**Figure 2. FY23-27 Target Expenditure by Investment Type (Billions)**



### Capital Definitions

The FY23-27 CIP uses the following new investment categories aligned with the direction set by the FRA’s Notice of Approach for its NEC Project Inventory (released June 2022). Projects may include improvement and capital renewal components regardless of project type.

- **Major Backlog:** Projects necessary for achieving a state of good repair, but not undertaken on a routine basis.
- **Capital Renewal:** Routine repair and replacement of basic infrastructure.
- **Improvement:** Replacement of existing assets with markedly superior ones or introduction of new assets.
- **Stations:** Projects to repair, replace, modernize, or improve an existing station, occurring primarily within the boundaries of the station property, or projects to construct an expanded, new, or replacement station.
- **Planning Studies:** Projects that include only planning activities and have no associated construction in current form.

Capital investments fall into the two categories listed below.

- **Programs:** Investments that are typically cyclical in nature, may include both planned and reactive work, and sometimes cross multiple locations, such as Amtrak’s Production Wood Tie/ Timber Replacement Program and MTA Metro-North’s Track Program.
- **Projects:** Investments that typically focus on one location or asset with a discrete start and end date, such as Amtrak’s Hanson Interlocking and MBTA’s Boston South Station Expansion.



**Above:** Local, state, and federal officials—including the U.S. Secretary of Transportation and Commission members representing New Jersey, Amtrak, and USDOT—participate at an August 2022 groundbreaking for the new Portal North Bridge (NJ).

## Infrastructure Investment and Jobs Act

Enactment of IIJA in November 2021 allows for historic levels of investment in the NEC and means decades of deferred NEC investments can now move forward. Through IIJA, many of the federal funding sources described below received an increase in their annual authorization amount along with an additional amount of guaranteed appropriations for FY22-FY26. NEC Commission members continue to explore how to combine different sources of this new funding to maximize federal assistance and are committed to working with the U.S. Department of Transportation to be good stewards of these new dollars to make the much-needed investments in the NEC.



## NEC Funding Sources

### From IIJA Advance Appropriations and Annual Appropriations

#### Federal-State Partnership for Intercity Passenger Rail Program (the Partnership Program)

The revamped FRA Partnership Program will offer competitive grants to fund investments that reduce the state-of-good-repair backlog, improve performance, or expand or establish new intercity passenger rail service. IIJA directs the FRA to publish an NEC Project Inventory to create a predictable project pipeline of investments on the NEC.

#### Other Federal Discretionary Grants and Loans

NEC infrastructure investment is an eligible activity under a variety of federal competitive grant and loan programs to which agencies may apply for funding:

- FRA Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program
- FTA Sec. 5309 Capital Investment Grants
- USDOT Rebuilding American Infrastructure with Sustainability and Equity (RAISE) program (formerly known as the TIGER or BUILD program)
- USDOT National Infrastructure Project Assistance (Mega)
- FRA Railroad Rehabilitation & Improvement Financing (RRIF) Program

#### Amtrak's NEC and National Network Accounts

As part of its annual legislative and grant request to Congress, Amtrak requests funding for the NEC and National Network accounts. Amounts for the NEC account are provided by Congress and invested in NEC infrastructure and other NEC needs like rolling stock, while a portion of funding for the National Network account are invested in the NEC's connecting corridors. Northeast Corridor Grants to the National Railroad Passenger Corporation can be also used as local match to the Partnership Program.

#### Federal Formula-Based Sources

FTA formula-based grant programs are allocated to geographic areas and, ultimately, transit agencies or providers. States and transit agencies can decide to spend some of their allocation on NEC projects or as a means of sourcing their Baseline Capital Charge (BCC) payments. In addition, states may flex some FHWA funds to transit and rail projects.

### From Other Sources

#### Baseline Capital Charge (BCC)

Commitment by all passenger railroads operating on the NEC to contribute funding toward NEC capital renewal needs based on a consistent formula agreed to in the Cost Allocation Policy.

#### State, Commuter Agency, and Local Sources

Each NEC state and transit agency has its own revenue sources that fund transportation investments including NEC projects, local matches for federal grants, or as a means of sourcing their BCC payments.

#### Amtrak's NEC Operating Surplus

When Amtrak's NEC services generate an operating surplus, Amtrak reinvests these funds back into corridor infrastructure and other NEC needs like rolling stock. This funding is in part supported by operating payments made by other operators through the Policy.



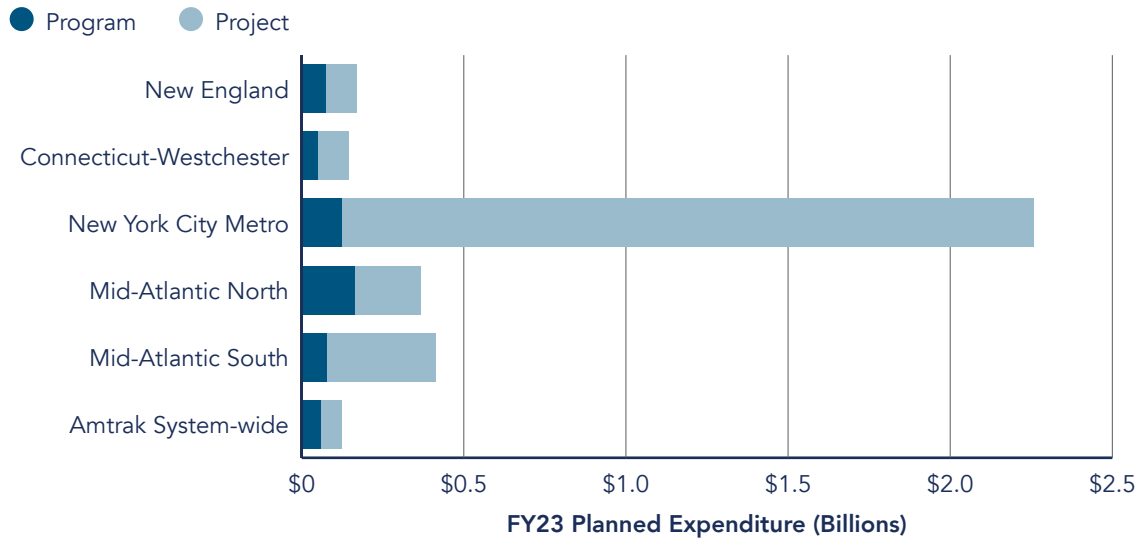
**Above left:** Amtrak workforces prepare the North River Tunnel benchwall for new concrete to be poured as a part of ongoing interim reliability improvements (NJ/NY). **Above right:** Track and signal upgrades at Tower 1 and Cove Interlockings will address reliability and resiliency issues near Boston South Station (MA).

## One-Year Information

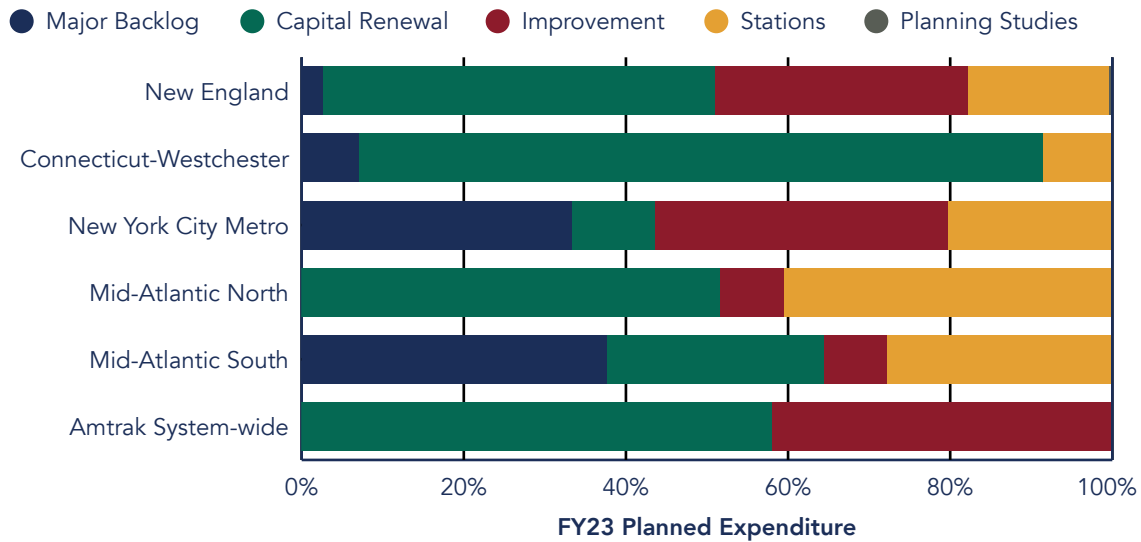
**This CIP serves as the baseline for capital plan reporting, against which the annual report will measure progress in FY23.** Of the total \$3.5 billion planned expenditure in FY23, approximately \$0.6 billion is on programs and \$2.9 billion is on projects, as shown in Figure 3. These planned investments are funded through a variety of sources including baseline capital charges (see *Project Information Appendix* for more details); discretionary federal grants and FTA formula funds; Amtrak’s annual and other appropriations and revenue; and state, local, and/or commuter agency sources.

FY22 planned expenditure was \$2.9 billion. The majority of the planned expenditure for FY23 can be attributed to large investments such as Portal North Bridge, New York Penn Station LIRR Concourse, Harold Interlocking, Gateway: Hudson Tunnel Project, and New York Penn Station Reconstruction. These large projects are pulling from a mix of federal, state, and local funding sources. Figure 4 depicts the planned expenditures across all regions by investment type.

**Figure 3. FY23 Planned Expenditure by Region and Classification (Billions)**



**Figure 4. FY23 Planned Expenditure by Region and Investment Type**



# One-Year Plan Highlights

## 4 Mid-Atlantic North

- **Coatesville Station Improvements:** Construction of the south right-of-way infrastructure including new platform, retaining wall, and station tower
- **Philadelphia 30th Street District Plan:** Completing design work and beginning renovations for immediate and long-term improvements to the passenger station and rail facilities.
- **Wilmington Delaware Vertical Transportation Program:** Completing construction to install a new stairway from concourse to platform.
- **Southwest Connection Improvement Program:** Complete the rebuilding of right-of-way infrastructure and systems between 30th St Station and Phil Interlocking.

## 5 Mid-Atlantic South

- **B&P Tunnel Replacement Program:** Continuing program management updates, advancing final design, and beginning construction on Warwick Bridge.
- **Next Generation Acela Infrastructure Upgrades: New Carrollton Station and Baltimore Penn Station:** Continuing construction on foundations for platforms, catenary poles, and other infrastructure to upgrade both stations.
- **Washington Union Station:** Completing construction on the Subbasement Structure, continuing development for Long Term Station Expansion, and completing construction of the new through-running Track 22 platform.
- **Martin State Airport Station Accessibility Improvements:** Complete engineering design for new high-level platforms at the station.

## 6 Amtrak System-wide

- **Engineering Advanced Technology Track Inspection Program:** Construct and test a new track geometry measuring system for use throughout the corridor.
- **Next Generation Acela Infrastructure Upgrades: Safety Mitigation, Tier III Waiver Gates, and Ride Quality Improvement:** Completing the design, testing, and installation of the new Acela fleet hardware.



Above: MTA recently opened a section of its Penn Station Concourse project, which is widening the 33rd Street concourse from 30 feet to 57 feet and raising the ceilings to 18 feet.





## 2 Connecticut-Westchester (New Haven Line)

- **Devon Bridge Replacement:** Completing the preliminary engineering phase to replace the functionally obsolete Devon Bridge.
- **New Haven Line Network Infrastructure Upgrade:** Continuing the design phase to upgrade communications network infrastructure.
- **Saugatuck River Bridge Replacement:** Continuing the development phase to replace the aging Saugatuck River Bridge and improve reliability.

## 3 New York City Metro

- **Penn Station Access:** Beginning construction on Leggett Interlocking, bridges, stations, and power substations.
- **New York Penn Station Reconstruction:** Beginning design to improve safety and modernize existing Penn Station
- **New York Penn Station LIRR Concourse:** Completing construction to renew and replace passenger facilities in the LIRR Concourse.
- **Gateway: Hudson Tunnel Project:** Continuing final design and commencing construction to build a new, two-track tunnel and to modernize the existing tubes.
- **Gateway: New York Penn Station Expansion:** Beginning design to add new tracks and enable additional service capacity.

## 1 New England

- **Fitter Interlocking:** Progressing towards construction completion of a new interlocking to minimize operational disruption and improve NEC reliability.
- **Providence Station Improvements:** Continuing station renovations to better serve passengers and improve connections to other modes.
- **Pawcatuck River Bridge Deck Replacement:** Finishing design approval and commencing construction to replace the bridge deck.
- **Ruggles Street Station Accessibility Improvements (Phase 2):** Begin construction on bringing this station to a state-of-good-repair.



Above: Fitter Interlocking, located in Clinton, CT, is a new, wired universal interlocking that would improve reliability for Shore Line East trains.



**Above left:** The Walk Bridge Program includes various components, including track upgrades and a new interlocking on the New Haven Line (CT). **Above right:** Near-term state-of-good-repair projects are advancing at Baltimore Penn Station, while designs are underway for future redevelopment (MD).

## Five-Year Information

The five-year plan information in the CIP reflects current projections, based on C35 analysis, of what could be accomplished on the NEC in FY23-27 assuming sufficient funding and resources (e.g., better understanding of workforce capacity at NEC agencies and in the private sector).

Target expenditures across all agencies for the five-year period detailed in this CIP total \$45.5 billion. Target five-year expenditures are lower in this plan compared to the target expenditures of \$49.3 billion of the FY22-26 CIP, as the Commission undertook the update of the C35 analysis to better consider resource and funding availability.

**Figure 5. NEC Planned and Target Expenditures: One-, Five-, and Fifteen-Years (Billions)**

Type	One-Year Planned Expenditure (FY23)	Five-Year Target Expenditure (FY23-27)	Fifteen-Year Target Expenditure (FY23-36)
Major Backlog	\$0.9	\$9.6	\$30.5
Capital Renewal	\$0.8	\$11.4	\$36.9
Improvement	\$1.0	\$9.1	\$17.4
Stations	\$0.8	\$15.4	\$35.6
Planning Studies	\$0.0	\$0.0	\$0.0
<b>Total Spend</b>	<b>\$3.5</b>	<b>\$45.5</b>	<b>\$120.4</b>

**Note:** One-year planned expenditures are based on agency-submitted data. Target expenditures are based on agency-submitted data where available and the updated C35 delivery analysis. Projects may include improvement and capital renewal components regardless of investment type.

## Significant Pre-Construction Activity to Occur in the FY23-27 Window

IIJA creates a new funding landscape that will support a significant ramp up of infrastructure investment in the Northeast Corridor. This includes not only several NEC investments that are now able to begin construction, but also a large number of investments in the CIP that are in the pre-construction phase.

Most of the work in the next few years will ramp up at the offices of NEC operators, project sponsors, and the broader transportation and construction industries that support the development of projects. This historic level of funding will begin with critical pre-construction activities that build a pipeline of investments funded for construction, including planning, project development, and final design.

The following investments are among those expected to transition from pre-construction to construction activity in the FY23-27 period:

- **Gateway: Hudson Tunnel Project.** Pre-construction activities include property acquisition activities in New York and New Jersey; completion of final design package for Tonnetle Avenue Bridge; progression of final design of tunnel systems; risk assessment; advancing design work.
- **Gateway: Portal South Bridge.** Pre-construction activities include refining concept planning and completing preliminary engineering.
- **New York Penn Station Reconstruction.** Pre-construction activities include advancing NEPA and preliminary engineering; continuing preliminary design; deciding on construction procurement strategy.
- **B&P Tunnel Replacement Program.** Pre-construction activities include planning and program management, design, and property acquisition.
- **Susquehanna River Bridge Replacement Program.** Pre-construction activities include progressing to final design.

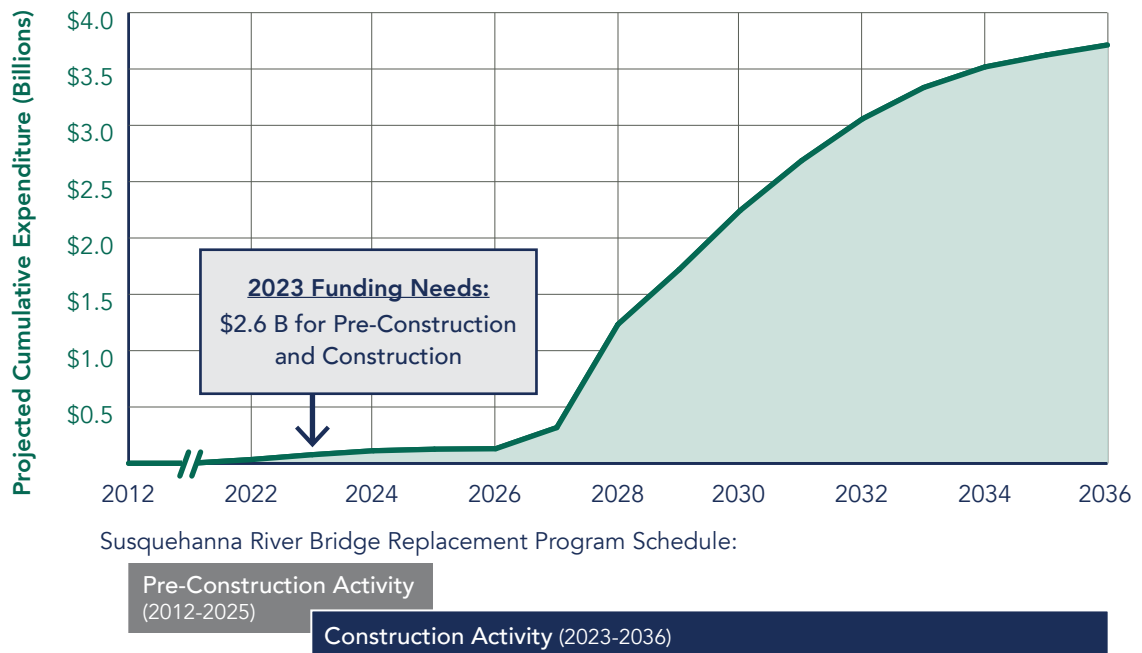
Major investments that are advancing pre-construction activities but do not have construction spending between FY23-27 include:

- Boston South Station Expansion
- Gateway: Secaucus Station and Loop Tracks
- Devon Bridge Replacement
- Washington Union Station: Long Term Station Expansion
- Hartford Station Relocation

## Projected Funding Need vs. Spend

Projected expenditures for investments in the first five years may not match funding requested for that same period of time. This is especially true of major backlog projects, which are among the highest-cost projects but have the bulk of construction activities planned after FY27. Like any third party contracts, these projects typically require full funding to be in place at the start of construction in order to award large multi-year construction contracts. This is demonstrated by the Susquehanna River Bridge Replacement Program example shown in Figure 6. If all projects were fully obligated to complete the phases of work scheduled to begin in the next five years, the funding need from federal, state, and local funding sources is \$71.9 billion, which is higher than the targeted spending.

**Figure 6. Susquehanna River Bridge Replacement Program Funding Needs, Projected Cumulative Expenditure (Billions) and Schedule**



**Note:** Projected expenditures by year after FY2027 are based on the C35 updated delivery analysis.





**Above:** Amtrak's new Acela crosses the Susquehanna River (MD) on its first 2020 test trip to Washington Union Station (DC)

### **Future Plan-Over-Plan Comparisons**

The Commission and its member agencies are entering a new era of capital planning with the investment of IIJA funding and the implementation of C35. IIJA funds are an important first step to providing relief from the historic lack of predictable funding streams, which made it difficult for project sponsors to advance major projects and achieve consistency in their year-over-year capital plans.

The major influx of public funds underscores the Commission's work around transparency, collaboration, and accountability—particularly on tracking changes to the plan as a whole and individual project plans at various lifecycle stages. Future comparisons of CIP budget and schedule changes over time may help the Commission and its member agencies to identify issue patterns that delay progress and lead to better implementation of capital plans.

## Addressing the NEC State-of-Good-Repair Backlog

A state of good repair (SOGR) means assets are within their useful life or are in a condition to perform as designed. The SOGR backlog refers to the population of assets, both large bridges and tunnels (major backlog) and basic infrastructure, on the NEC that are no longer in this condition. An asset's useful life can vary from a few years to many decades, after which it should be replaced. Some assets can operate safely beyond their useful life, though they can become more expensive to maintain and more vulnerable to failures that cause service disruptions.

The C35 project delivery analysis created a roadmap to vastly reduce the SOGR backlog over 15 years. The updated C35 delivery analysis reflected in this CIP continues to vastly reduce the backlog, but at a slower rate than estimated in the original C35 due to workforce constraints.

### Major Backlog

These large bridge and tunnel replacement or rehabilitation projects will eliminate a significant portion of the SOGR backlog for many generations. The cost of addressing major backlog asset SOGR is based on the total project cost of the associated replacement or rehabilitation projects and is currently estimated at \$41.8 billion.

Total project cost estimates may fluctuate between plans for a number of reasons. Costs become more certain as projects advance through the design project lifecycle stage. Additionally, as projects move through early conceptual planning phases, the scope of the project can change, which accordingly affects the cost. For instance, project sponsors added improvement components, which changes some of these project scopes to take advantage of newly available federal funding and more efficient project delivery. Costs have also increased significantly over the past year due to inflation and the rising cost of labor and materials. The table below reflects major backlog costs, which are escalated to account for inflation.

**Figure 7. Estimated Cost of Addressing Major Backlog SOGR, FY23-36 (Billions)**

Major Backlog Projects		\$41.8
CT	Connecticut River Bridge Replacement Project	\$1.1
	Devon Bridge Replacement	\$3.1
	Saugatuck River Bridge Replacement	\$0.6
	Walk Bridge Replacement	\$1.1
	Cos Cob Bridge Replacement	\$2.0
NY	Pelham Bay Bridge Replacement Project	\$0.7
	East River Tunnel Rehabilitation Project	\$1.6
NJ	Gateway: Hudson Tunnel Project	\$16.1
	Gateway: Portal North Bridge	\$2.2
	Gateway: Sawtooth Bridges Replacement	\$2.0
	Gateway: Highline Renewal and State of Good Repair	\$0.4
	Gateway: Highline Renewal and State of Good Repair: Dock Bridge	\$0.2
MD	Susquehanna River Bridge Replacement Program	\$2.7
	Bush River Bridge Replacement Program	\$0.7
	Gunpowder River Bridge Replacement Program	\$1.3
	Baltimore & Potomac Tunnel Replacement Program	\$6.0

**Note:** Dollar figures represent each project's escalated total cost, either submitted by agencies or estimated for the updated C35 analysis. Project cost and schedule details can be found in the *Project Information Appendix*.

## Basic Infrastructure Assets

The Commission continues to measure capital needs for basic infrastructure SOGR using updated asset data and unit costs and accounting for both assets already in the backlog and assets that will enter the backlog, based on an analysis that factors in asset age and condition (where available) and the track outage needs associated with capital renewal investment. The updated C35 delivery analysis also proposes major investment in basic infrastructure capital renewal to reduce that backlog and will make meaningful progress towards bringing all assets to a state of good repair.

The new \$36.9 billion figure reflects overall projected basic infrastructure capital renewal spending for FY23 through FY36 for both capital renewal projects and programmatic capital renewal. This investment will not bring the corridor to full SOGR but reflects what can realistically be accomplished through 2036 given workforce and track outage constraints. Programmatic capital renewal spending (\$33.3 billion) is more aligned with historic capital renewal spending in the near term as compared to C35, allowing workforce to ramp up more gradually. This gradual ramp up means less basic infrastructure SOGR will be addressed in the next fifteen years as compared to C35.

A significant portion of the basic infrastructure costs will be funded by the Cost Allocation Policy’s Baseline Capital Charges (BCCs). This roughly \$1 billion annual funding level, referred to as normalized replacement, is the amount agencies would spend every year to keep the NEC in SOGR. Investment above that level would reduce the backlog and bring annual investment needs beyond 2036 closer to normalized replacement levels.

But it is important to remember that basic infrastructure assets will age beyond their useful life in 2036 and every year beyond that, making annual basic infrastructure capital renewal investments the job of every generation.

**Figure 8. Estimated Cost of Addressing Basic Infrastructure SOGR, FY23-36 (Billions)**

<b>Basic Infrastructure Asset Replacements by Discipline</b>		<b>\$36.9</b>
Projects		\$3.6
Programs		\$33.3
Track		\$7.0
Communication & Signals		\$6.7
Electric Traction		\$7.3
Structures		\$12.0
Other		\$0.3

**Note:** Programmatic basic infrastructure asset replacement costs reflect the updated C35 analysis, which estimated the cost of replacing most assets that reach or exceed 95% of their projected useful life during the next fifteen years. Force account protection and supervision costs are divided proportionally between the disciplines. Capital renewal project costs are based on cost and schedules submitted by agencies. Capital renewal project details can be found in the Project Information Appendix.

The Commission has several efforts underway that will help refine the SOGR backlog estimate—including its asset assessment update, which will refresh the normalized replacement values for right-of-way basic infrastructure assets, and the CONNECT NEC Program. In addition, the Commission plans to report on its progress in assessing and eliminating the NEC SOGR backlog in future NEC Annual Reports.

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