

Northeast Corridor Annual Report: Operations and Infrastructure

Fiscal Year 2016

May 2017





Congress established the Northeast Corridor Commission to develop coordinated strategies for improving 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, these disparate stakeholders will achieve a level of success that far exceeds the potential reach of any individual organization.

The Commission is governed by a board 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 (DOT). The Commission also includes non-voting representatives from four freight railroads, states with connecting corridors and several commuter operators in the Region.

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Back Cover. Susquehanna River Bridge. Courtesy of Amtrak.



Contents

Letter from the Executive Director	1
Executive Summary	2
Introduction	4
Operations	6
Amtrak	11
Massachusetts Bay Transportation Authority	12
<i>CTrail</i>	13
Metro-North Railroad	14
Long Island Rail Road	15
New Jersey Transit	16
Southeastern Pennsylvania Transportation Authority	17
Maryland Area Regional Commuter	18
Virginia Railway Express	19
Infrastructure	20
Massachusetts	23
Rhode Island	24
Connecticut	25
New York	26
New Jersey	27
Pennsylvania	28
Delaware	29
Maryland	30
District of Columbia	31



Letter from the Executive Director



The Northeast Corridor (NEC) carries over 820,000 daily passengers on 2,100 trains. As the busiest rail corridor in North America, the NEC is a vital national asset, supporting economic development and job growth. However, much of its infrastructure dates back to the era between the Civil War and the New Deal. A \$38 billion state-of-good-repair backlog of assets that must be replaced means significant new investment is required to ensure that today's commuter and intercity rail services can continue to operate.

To support ongoing core investment needs, the Commission agreed in September 2015 on a Northeast Corridor Commuter and Intercity Rail Cost Allocation Policy (Cost Allocation Policy), a framework for cost sharing and increased collaboration, transparency, and accountability. States, transit agencies, and Amtrak are sharing over \$1 billion in annual operating and capital costs, as well as generating quarterly performance reports on train operations and capital program implementation.

The goal of quarterly performance reporting, which began in federal fiscal year 2016 (FY16), is to increase transparency and improve outcomes. Train operations reports have allowed Commission stakeholders to build a record of performance to identify and track trends over time, improving our understanding of the causes of delays. Capital program implementation reports have begun a process of tracking accomplishments, monitoring compliance with important stipulations of the Cost Allocation Policy, and illuminating ways in which Commission stakeholders can improve planning for and delivery of capital projects.

This NEC Annual Report, which is required by both the Cost Allocation Policy and the Fixing America's Surface Transportation (FAST) Act, culminates the quarterly performance reporting process for FY16. In addition to summarizing the past year's performance, this report articulates a number of challenges encountered in developing reports on capital program implementation and recommendations that could improve performance reporting in future years.

The level of investment shared through the Cost Allocation Policy, though critical, only barely stems further asset degradation and does not address the \$38 billion state-of-good-repair backlog. However, the Commission intends for the transparency and accountability required by the Policy framework to build confidence over time that dollars are being well spent. This confidence is critical to creating the federal-state funding partnership needed to restore the NEC to a state of good repair and to ensure the continuation of the frequent and reliable rail service that is essential to the region's international competitiveness and the nation's economic growth.

A handwritten signature in black ink, appearing to read "Mitch Warren". The signature is fluid and cursive, written over a light-colored background.

Mitch Warren
Executive Director
Northeast Corridor Commission

Executive Summary

The Northeast Corridor (NEC, or Corridor) is a 457-mile main line railroad from Washington, DC to Boston, MA, supporting over 820,000 trips each day on eight commuter railroads and Amtrak's various intercity services. A well-functioning NEC enables the United States to compete in a global business environment and its investment program sustains construction, supply, and manufacturing jobs in as many as 22 states. However, the Corridor's aging infrastructure is subject to service disruptions caused by infrastructure failures, rail traffic congestion, and other factors that already cost the economy \$500 million per year in lost productivity. A loss of all NEC services for just one day could cost the economy an estimated \$100 million.

The NEC Annual Report documents the operational performance of NEC trains and the implementation of the capital program for federal fiscal year 2016 (FY16), as well as makes recommendations for improving planning for and reporting on capital projects. The NEC Annual Report is a requirement of the Fixing America's Surface Transportation (FAST) Act and was developed in collaboration with eight states, the District of Columbia, the United States Department of Transportation, Amtrak, and eight commuter railroads. The report is focused on the NEC main line from Washington, DC to Boston, MA, and connecting corridors to Harrisburg, PA; Spuyten Duyvil, NY; and Springfield, MA.

Ridership, Service, and Performance on the NEC Commuter and Intercity Rail, FY16

Service Type	Railroad	Weekday Ridership on the NEC	Weekday Number of Trains on the NEC	FY16 Percent NEC Trains Reported Late, Annulled, or Terminated
Intercity	Amtrak	43,000	152	22.7
	MBTA	80,000	313	11.7
	CTrail	2,000	34	8.0
Commuter	MNR	127,000	297	6.9
	LIRR	230,000	457	7.9
	NJT	244,000	417	7.4
	SEPTA	58,000	356	19.1
	MARC	34,000	95	5.6
	VRE	4,000	32	11.0
Total		822,000	2,153	11.0

Note: Results cover the NEC main line and connecting corridors identified above. The results in this report do not necessarily match the statistics reported by any individual agency for their overall system because NEC trains are a subset of operations for most agencies. This report confines its analysis to regularly scheduled operating days and does not include holidays. MNR and LIRR ridership statistics are from 2015. MBTA ridership on the NEC is only an estimate at this time due to limited data availability.

Operations

The on-time performance of both commuter and intercity trains improved in FY16 over FY15. Commuter trains reported late, annulled, or terminated (LAT) decreased both overall and during peak operations in FY16, to approximately 10 percent and 12 percent, respectively. Intercity service reported a significant reduction to about 23 percent of all trains from 30 percent. Average minutes late for each service type largely remained unchanged with delayed commuter trains arriving at destination roughly 13 minutes behind schedule and delayed intercity trains arriving roughly 54 minutes behind schedule.

Analysis of train operating data suggests two broad categories of delay influence train performance:

1. **Episodic delays that are driven by the unusual circumstances of the day, such as extreme weather, infrastructure or locomotive failures, or third party on-track incidents.** Among episodic delays, occurrences and delay minutes decreased due largely to a reduction in weather-related delays. The largest increase in train delay minutes was in third-party delays (i.e., trespassers, bridge openings, or fatalities). Two-thirds of all engineering delay minutes were associated with component failures that often occur unexpectedly and, depending on time and location, can have a significant and concentrated impact. For those episodic delays, only 10 percent of days accounted for almost half of those engineering delay minutes.
2. **Systemic delays that occur every day in the course of providing train service, such as programmed maintenance, train dispatching, and passenger loading.** Most of the other engineering delay causes can be tied to programmed maintenance or improvement work. During track production season in the warmer months, delays can occur when tracks are out of service for capital asset replacement.

Infrastructure

Northeast Corridor stakeholders invested \$1.06 billion in infrastructure in FY16. These dollars were applied to the Baseline Capital Charge (BCC) Program funded through the Northeast Corridor Commuter and Intercity Rail Cost Allocation Policy (Policy) and Special Projects aimed at addressing the state-of-good-repair backlog or improving the NEC. The Policy created the BCC Program to fund the ongoing replacement of existing capital assets based on each service operators' relative usage. The BCC Program provided the bedrock of NEC capital investment in FY16. Its \$458 million expenditure replaced more than 7,800 concrete ties, 43,000 wood ties, 348,000 feet of rail, and 51,000 feet of overhead catenary infrastructure. It paid for over two million feet of track surfacing and 107,000 feet of track undercutting. Though far from the level of investment required to begin to address the \$38 billion state-of-good-repair backlog, this funding commitment among service operators provided a critical lifeline to the aging NEC.

The Policy requires that every operator's BCC is expended in its operating territory in the same federal fiscal year it is contributed based on a capital plan that demonstrates anticipated compliance with that requirement. A core challenge is that existing planning processes are a poor predictor of compliance with that requirement. This difficulty is experienced by all agencies that implement NEC capital projects, but is most acute with Amtrak. The existing Amtrak capital planning process does not budget projects by state or agency territory. Amtrak contends this level of granularity would be impractical for a variety of reasons, most significant of which is that the condition of the railroad requires much of the available funding go toward the replacement of aging assets as they fail, the nature and location of which is not easily predictable.

The Commission recommends that Amtrak, the Federal Railroad Administration, state, and commuter railroad stakeholders collaborate on a unified framework for defining, planning, and reporting on projects that, at a minimum, improves the current level of geographic specificity, supports federal grant management, and retains enough flexibility for Amtrak to manage its capital program given the condition of the Corridor and limited availability of funding. These stakeholders have initiated this process. The framework should begin by distinguishing capital projects, production programs, system projects, and capital maintenance for all BCC-eligible expenditures. Connecticut DOT and Metro-North Railroad already make similar distinctions in their programs. Starting with the FY18 Implementation Plan, all four infrastructure owners should designate each BCC-eligible investment as belonging to one of these four categories, and then plan and track progress in a manner appropriate for each category.

Introduction

The Northeast Corridor Commission

Congress established the Northeast Corridor Commission (the Commission) to develop coordinated strategies for improving 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, these disparate stakeholders will achieve a level of success that far exceeds the potential reach of any individual organization.

The Northeast Corridor

The Northeast Corridor (NEC, or Corridor) supports over 820,000 trips each day, 780,000 on eight commuter railroads and over 40,000 on Amtrak's various intercity services. The 457-mile main line railroad still includes many bridges and tunnels that date back to the period between the Civil War and the New Deal. Service disruptions caused by infrastructure failures, rail traffic congestion, and other factors already cost the economy \$500 million per year in lost productivity. Without higher levels of capital investment, those losses are likely to grow. A loss of all NEC services for just one day would cost the economy an estimated \$100 million.

The NEC Annual Report

The NEC Annual Report (the Report) is a requirement of the Fixing America's Surface Transportation (FAST) Act (49 U.S.C. §24905(b)(3)) and was developed in collaboration with eight states, the District of Columbia, the United States Department of Transportation, Amtrak, and eight commuter rail agencies.

The Report documents the operational performance of NEC trains and the implementation of the capital program for federal fiscal year 2016 (FY16). The NEC Annual Report also contains recommendations for improving planning for and reporting on capital projects.

The Report is focused on the NEC main line and connecting corridors to Harrisburg, Pennsylvania; Spuyten Duyvil, New York; and Springfield, Massachusetts. (Shown in dark blue at right.) This infrastructure supports a broader network of connecting corridors that feed additional commuter rail and Amtrak lines onto the NEC.

Northeast Corridor Capital Investment Plan: FY18-22

The NEC Annual Report has a companion document in the NEC Capital Investment Plan which has more information on individual capital projects.

The Plan documents the investments required over the next five years to reverse decades of deterioration and to modernize our shared national asset for future economic growth. The Plan combines anticipated investments with available funding with projects that could move forward if additional funding were made available considering resource and project readiness constraints.



The Plan is a requirement of the FAST Act and was developed in collaboration with eight states, the District of Columbia, the United States Department of Transportation, Amtrak, and eight commuter rail agencies.

Download a copy of the Plan at: www.nec-commission.com.



Operations

Ridership and Service

All eight Northeastern commuter railroads rely on the NEC for a significant portion of their operations. Of the approximately 1.3 million daily commuter rail trips in the Northeast Region, more than 60 percent use the NEC for a portion of their trip. Commuter agencies generate about 95 percent of average weekday trips on the NEC main line and connecting corridors. Many commuter agencies' operations utilize the NEC intensely for short segments with fifty-eight percent of weekday commuter trains operating over the NEC for a distance of ten miles or less. In contrast to the intense local use of the NEC by commuter agencies, Amtrak's intercity services traverse the entire line and represent over half of the weekly train-miles operated on the NEC. Overall service levels and ridership across operators remained relatively constant between FY15 and FY16

Ridership, Service, and Performance on the NEC Commuter and Intercity Rail, FY16

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Commuter	MNR	127,000	297	6.9
	LIRR	230,000	457	7.9
	NJT	244,000	417	7.4
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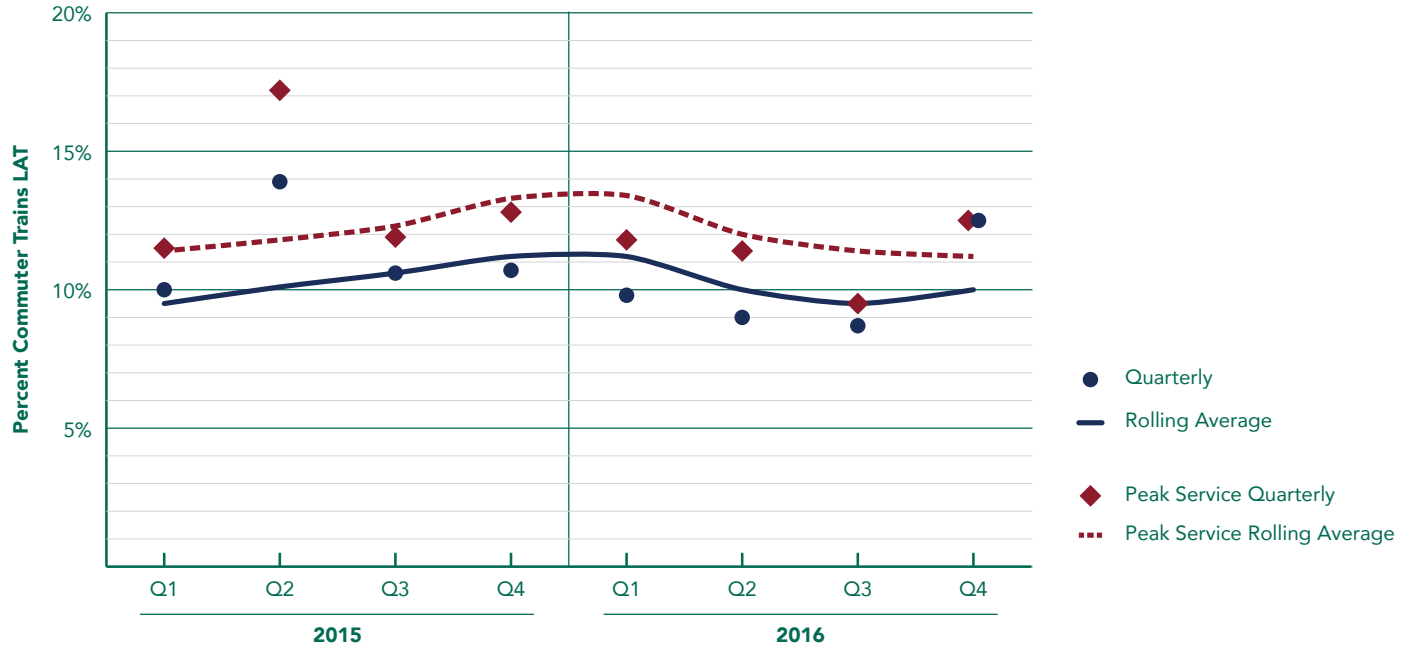
Note: Results cover the NEC main line and connecting corridors identified in the Introduction. The results in this report do not necessarily match the statistics reported by any individual agency for their overall system because NEC trains are a subset of operations for most agencies. This report confines its analysis to regularly scheduled operating days and does not include holidays. MNR and LIRR ridership statistics are from 2015. MBTA ridership on the NEC is only an estimate at this time due to limited data availability.

Performance

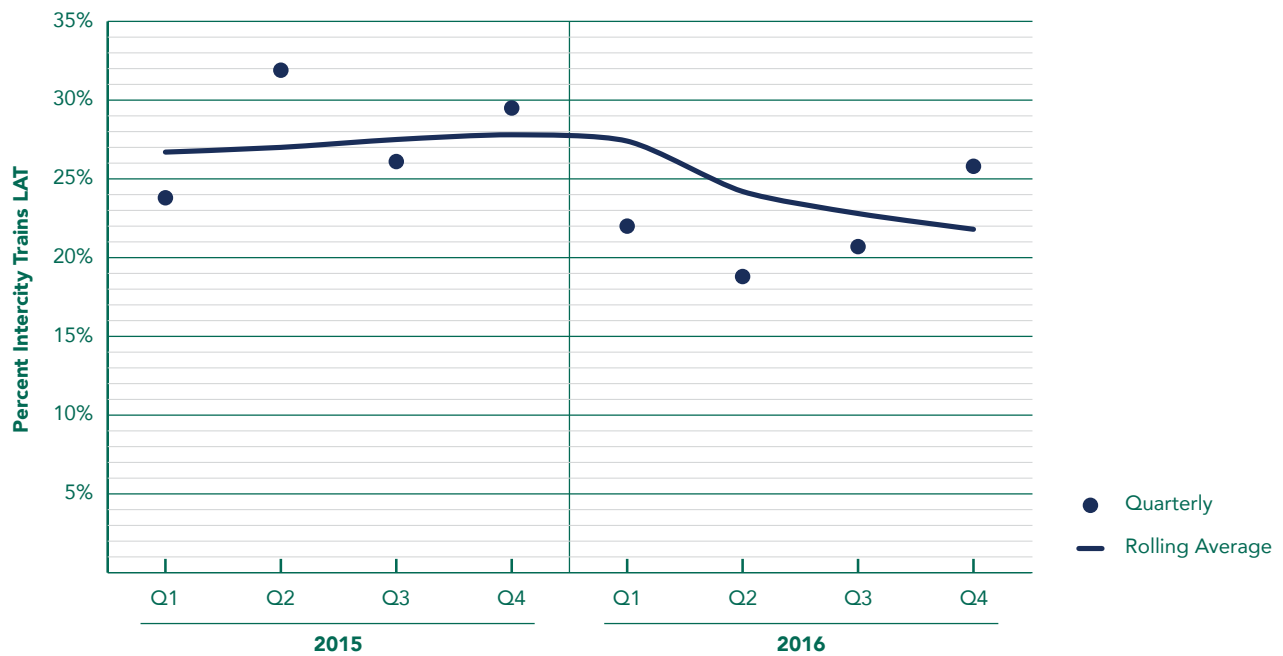
The on-time performance of both commuter and intercity trains improved in FY16 over FY15 when measuring the percent of trains reported late, annulled, or terminated (LAT). Commuter trains reported LAT decreased both overall and during peak operations in FY16, to approximately 10 percent and 12 percent, respectively. Peak-hour service is particularly important for commuter operations as most commuter services are designed to move concentrated volumes of trains and passengers during peak periods into and out of city centers for vital journey-to-work trips. Intercity service reported a significant LAT reduction, down to about 23 percent of all trains from 30 percent.

Train Performance on the NEC

Percent Commuter Trains Late, Annulled or Terminated (LAT), Quarterly Rolling Average, FY15-16



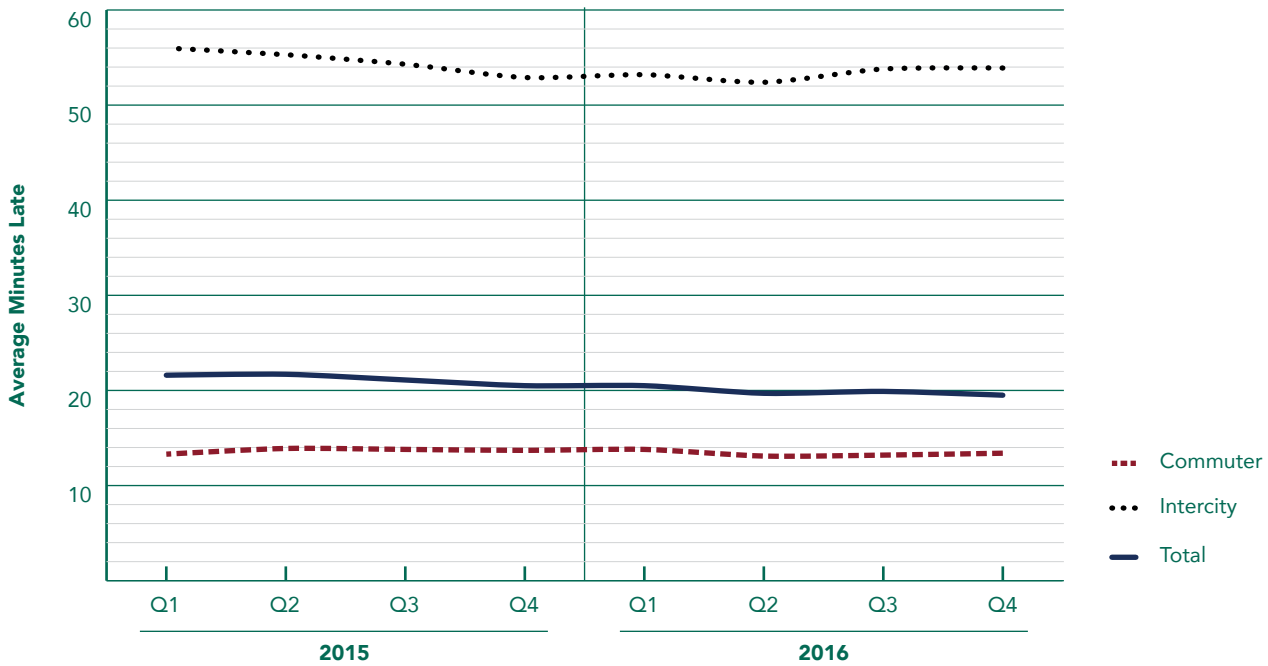
Percent Intercity Trains Late, Annulled or Terminated (LAT), Quarterly Rolling Average, FY15-16



Delay severity is defined as the average minutes late at endpoint (for all trains reported late, as determined by each operator). Average minutes late for each service type largely remained unchanged with delayed commuter trains arriving at destination roughly 13 minutes behind schedule and delayed intercity trains arriving at destination roughly 54 minutes behind schedule. Across all services, the average minutes late at destination dropped 5 percent in FY16. The decrease was primarily driven, however, by the fact that commuter trains increased from 82 percent to 85 percent of all late trains.

Delay Severity on the NEC

Average Minutes Late at Destination for Delayed Trains, Quarterly Rolling Average, FY15-16



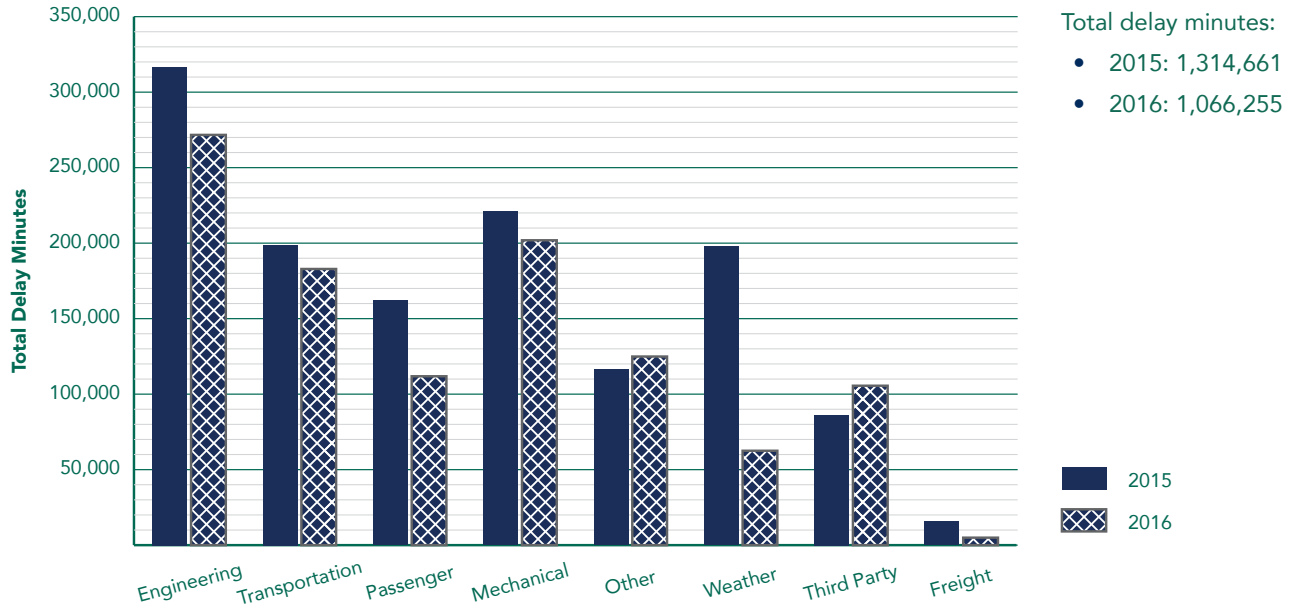
Cause of Delay

Individual railroads maintain their own classifications of delay causes. For this report, a delay cause classification protocol was developed that consolidates the many causes of delay reported by individual agencies into eight major categories. Records of 385,000 delayed trains since January 2014 were gathered for analysis, including service, train, date, location, cause, and duration. The eight major categories include:

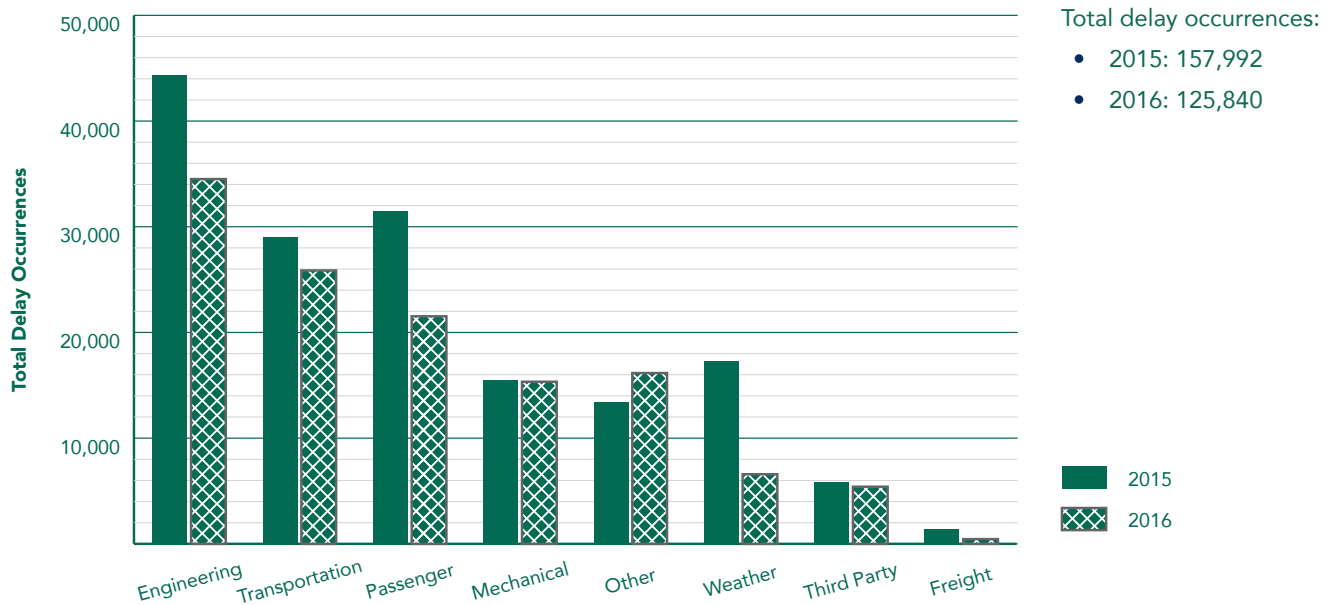
1. Engineering: Right-of-way infrastructure failure and repair, speed restrictions due to infrastructure condition or maintenance crews on adjacent tracks, and programmed maintenance or improvement projects. This encompasses all four engineering disciplines: track, communications and signals, electric traction, and structures.
2. Transportation: Train dispatching and routing, including train interference and on-board personnel including crew availability, compliance, and testing.
3. Passenger: Passenger loading; passenger behavior; holds for passenger connections; injured, ill, or disabled passengers; special events; and changes in platform loading.
4. Mechanical: Motive power failures, coach failure, disabled train ahead, cause unknown, equipment design failures, and equipment servicing.
5. Third Party: Trespassers, police action, fatalities, bridge openings, debris on tracks, utility power failures, vandalism, at-grade crossing incidents.

6. Other: No report provided, delay cause unknown or in dispute at time of report, derailment, cross departmental functions (train consist management), and human error.
7. Weather: Winter conditions, speed restrictions due to excessive cold or heat, wheel slip due to slippery rail, and weather related damage to infrastructure or equipment.
8. Freight: Delays due to freight train interference.

**Causes of Delay on the NEC
Minutes of Delay by Major Cause Category, FY15-16**



Delay Occurrences by Major Cause Category, FY15-16



Analysis of train operating data suggests two broad categories of delay influence train performance.

1. Episodic delays that are driven by the unusual circumstances of the day, such as extreme weather, infrastructure or locomotive failures, or third party on-track incidents.

Occurrences of episodic delays decreased by 20 percent from FY15 to FY16, driven largely by reduced weather-related delays. The winter of 2015 produced several successive massive snow events across the Northeast Corridor impacting train service. Only one such storm occurred in 2016. Delay minutes also decreased by 18 percent, driven by a corresponding reduction in weather-related delay minutes.

The largest increase in train delay minutes was in third-party delays. Delay minutes due to third-party incidents increased by 20 percent in FY16. Depending on location and time of day, third-party incidents can have a significant impact on train operations. Several high-impact incidents occurred in 2016 and their impacts on operations are noted in the agency profiles.

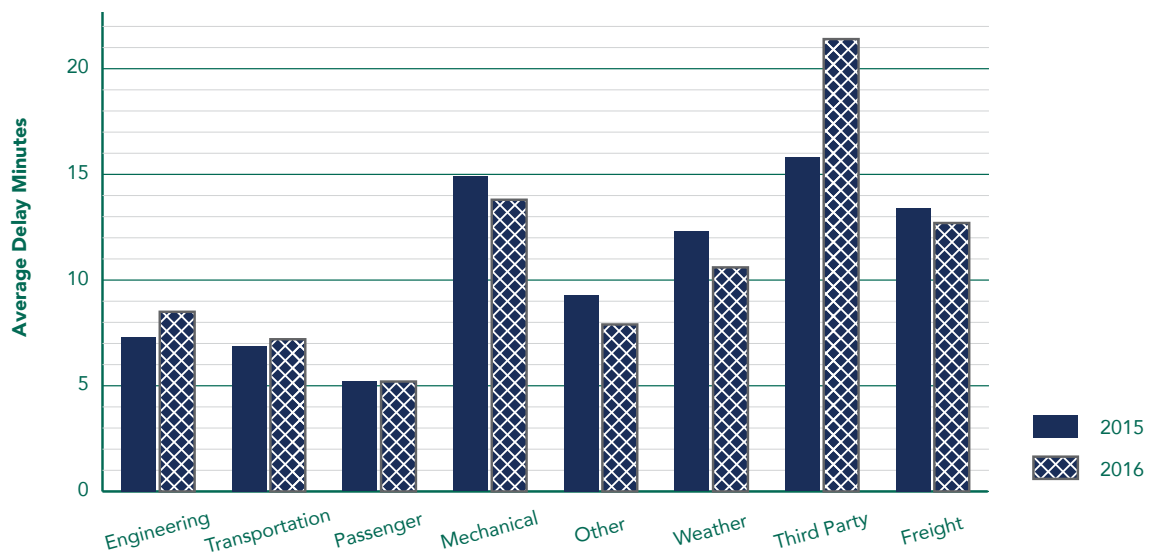
Two thirds of all engineering delay minutes are associated with component failures that often occur unexpectedly and, depending on time and location, can have a significant and concentrated impact on operating performance. For those episodic delays, only ten percent of days operated account for almost half of those delay minutes. In 2015, electric traction component failures generated the greatest clusters of delays. In FY16, communications and signals incidents were most prevalent.

2. Systemic delays that occur every day in the course of providing train service, such as programmed maintenance, train dispatching, and passenger loading.

Most of the other engineering delay causes can be tied to programmed maintenance or improvement work. During track production season in the warmer months, delays can occur when tracks are out of service for capital asset replacement. Some agencies categorize these delays as programmed maintenance while others classify them as train interference or dispatching preference.

Average minutes of delay by cause is measured to assess the impact of specific delay causes when they occur. Delays by cause is a different measure than minutes late at endpoint (which measures delay severity). This difference is because there may be multiple delay causes (plus recovery time) that contribute to the final minutes late at endpoint. Third-party delays can have a significant impact on operating performance when measuring comparative impacts of delay causes in average minutes. These events require an extended amount of time to inspect, evaluate, and clear the site of an incident.

**Causes of Delay on the NEC
Average Minutes of Delay by Major Cause Category, FY15-16**



Average Weekday on the NEC



	FY15	FY16
Trains on the NEC	151	149
Acela Express	33	33
Northeast Regional	31	29
State Supported	75	75
Long Distance	12	12
Riders on the NEC	42,000	43,000

65%

of all Amtrak trains use the NEC

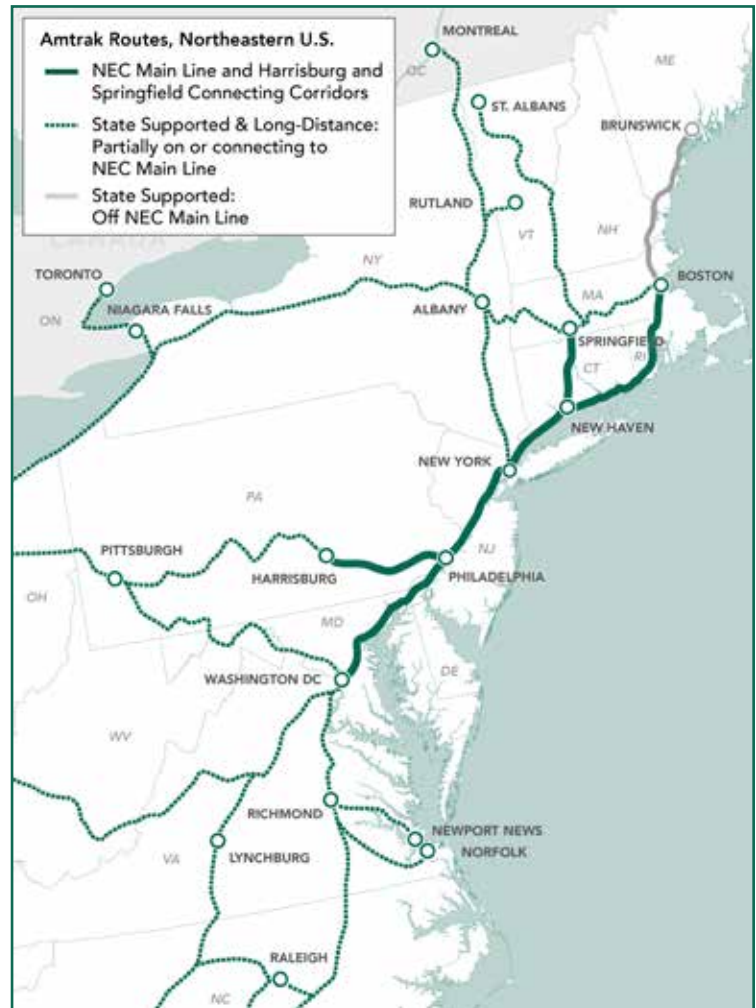


50%

of all Amtrak riders use the NEC



	FY15	FY16
FY16 Percent NEC Trains late	29.6	22.7
Acela Express	31.1	21.0
Northeast Regional	24.7	15.0
State Supported	26.8	21.3
Long Distance	50.9	49.2
Avg. Min. Per Late NEC Train	52.9	53.9
Acela Express	33.8	32.9
Northeast Regional	46.2	44.3
State Supported	48.2	46.9
Long Distance	98.7	97.1

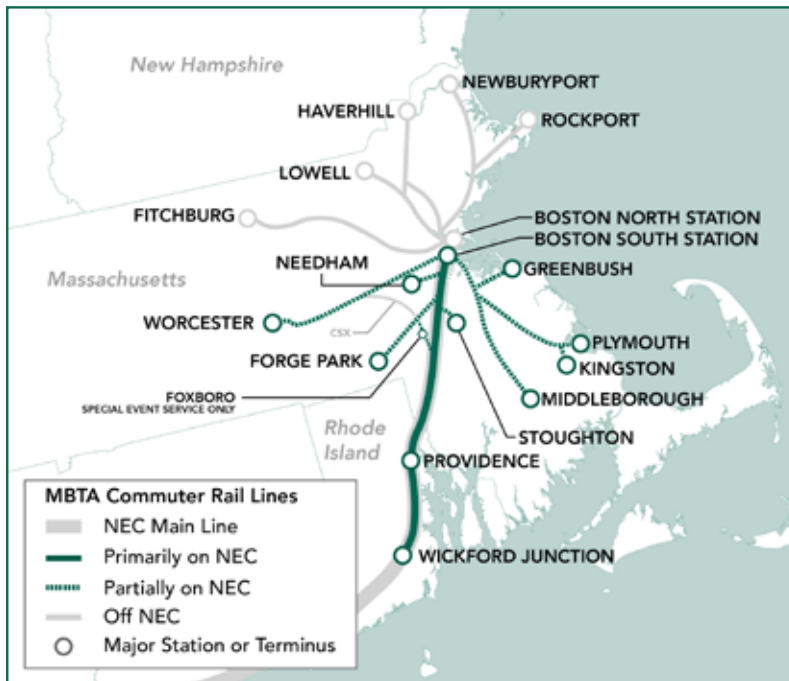


Ridership and Service

Amtrak scheduled service levels remained relatively constant in FY16. One pair of Northeast Regional trains was eliminated and its services were absorbed by a pair of long distance trains. Fewer NEC trains were suspended in 2016 due to a reduction in the impact of severe weather. On the Springfield Line, FY16 saw an increase in trains substituted by motor coaches to accommodate the major right-of-way improvement project on the Springfield Line.

Performance

Amtrak train performance on the NEC improved significantly in FY16 compared to the prior year. Northeast Regional trains improved the most, followed by Acela Express, state-supported and long-distance services. A major contributing factor to improved performance of Amtrak trains when compared to FY15 was the reduction in weather-related delays. FY15 was affected by a series of crippling snowstorms in January and February of 2015 that adversely affected train operations, whereas FY16 had only one such snowstorm. Weather was responsible for much of the reduction in delay minutes. These reductions were offset by a significant increase in third-party on-track incidents. These incidents have risen to ten percent of all Amtrak delay minutes.



Average Weekday on the NEC

	FY15	FY16
Trains on the NEC	302	313
Riders on the NEC	80,000	80,000

59%

of all MBTA Commuter Rail trains use the NEC



68%

of all MBTA Commuter Rail riders use the NEC



	FY15	FY16
FY16 Percent NEC Trains Late	16.2	11.7
Avg. Min. Per Late NEC Train	12.3	9.6

Ridership and Service

MBTA manages the provision of commuter rail services into Boston. The commuter services are divided between those serving Boston’s North Station and those serving Boston’s South Station. The services entirely on the NEC include Wickford Junction, Providence and Attleboro trains. Worcester Line trains tie in to the NEC near Back Bay Station, the Stoughton Line at Canton Junction, and the Needham Line at Forest Hills. The Franklin Line and the Old Colony lines, serving points south and east of Boston, tie in to the NEC just outside South Station.

MBTA daily trains operated increased with a May 2016 schedule change that added certain express services and improved equipment utilization.

Performance

Data is limited to compare performance in FY15 and FY16. January 2015 was an extraordinary month for MBTA services, as a series of violent winter storms crippled MBTA services. No data is available for that month, so this analysis excludes the month of January for each of the fiscal years. For the equivalent eleven-month time periods, percent trains LAT improved significantly for lines using the NEC. The improvement was distributed across both peak and off-peak/weekend services. Improvements on Attleboro Line services were tempered by more modest improvements on the Old Colony lines and setbacks in performance on the Worcester Line. Worcester Line service was heavily affected by major rehabilitation work beginning in the fall of 2015. On the NEC, the predominant failure cause was the signal system, including failures of both wayside devices and central control systems. These delays and their residual delays affected all lines and contributed to NEC-related infrastructure delay.

Average Weekday on the NEC



	FY15	FY16
Trains on the NEC	34	34
Riders on the NEC	2,000	2,000

100%

of all CTrail trains use the NEC



100%

of all CTrail riders use the NEC



	FY15	FY16
FY16 Percent NEC Trains Late	11.2	8.0
Avg. Min. Per Late NEC Train	15.1	16.3



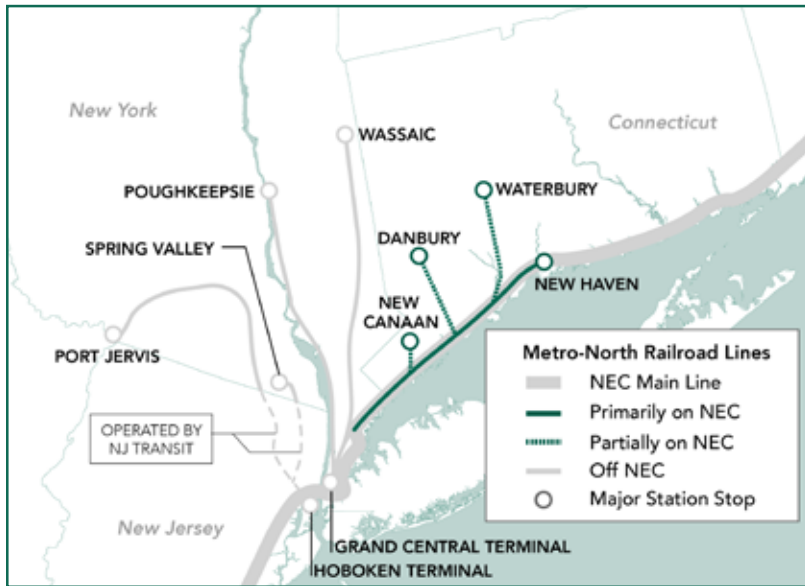
Ridership and Service

CTrail currently includes the Shore Line East (SLE) service, operated by Amtrak on behalf of the Connecticut Department of Transportation. SLE offers service from New London and Old Saybrook to New Haven and, for some trains, through services to Bridgeport and Stamford stations. SLE operates 34 trains each weekday and 22 trains each weekend day.

Performance

Most of SLE's year-over-year train performance improvement occurred on weekdays. SLE train performance varies by time of day. Only 3.4 percent of westbound morning trains were LAT, as compared to 13.7 percent of evening eastbound service. This is partially explained by a greater number of intercity trains sharing the right-of-way between New Haven and New London in the afternoon than in the morning. Notwithstanding these time-of-day differences, all services improved year over year. Reduction in weather-related delays drove the improvement, partially offset by an increase in delays associated with third-party incidents.

Metro-North Railroad (MNR)



Average Weekday on the NEC

	FY15	FY16
Trains on the NEC	294	297
Riders on the NEC	127,000	n/a

39%

of all MNR trains use the NEC



40%

of all MNR riders use the NEC



	FY15	FY16
FY16 Percent NEC Trains Late	8.7	6.9
Avg. Min. Per Late NEC Train	11.3	11.6

Ridership and Service

MNR’s New Haven Line NEC service includes trains that operate over the NEC between New Haven, Stamford, and Grand Central Terminal (GCT). MNR trains depart the NEC at New Rochelle, continuing on exclusive MNR right-of-way to Grand Central Terminal in Manhattan. The New Haven Line has three branch lines, the New Canaan Line, connecting to the NEC at Stamford, the Danbury Line connecting at South Norwalk, and the Waterbury Line, connecting at Devon. While there are certain trains that run through to GCT, most of the branch line service requires transfer to a NEC train at the connecting point. Service levels remained relatively constant with marginal changes.

Performance

MNR’s percent trains LAT decreased in FY16 although delay severity increased. Much of the performance improvement stems from the concentrated action to remedy track conditions and lift speed restrictions, which drove the reduction in engineering delay occurrences. Delays attributed to scheduling modifications were also eliminated. Other engineering incidents involving catenary, switches, signals, and signal power failures resulted in an increase in average minutes of delay. Like other railroads, MNR experienced a significant uptick in third-party related delays. Occurrences more than doubled while delay minutes tripled. While MNR’s winter-related delays decreased substantially, several summer storms resulted in episodes of fallen trees and downed catenary wire, as well as signal system failures. Certain isolated incidents that occurred off the NEC between Mott Haven Junction and Grand Central Terminal impacted MNR operating results.

Average Weekday on the NEC



	FY15	FY16
Trains on the NEC	459	457
Riders on the NEC	230,000	n/a

65%

of all LIRR trains use the NEC



81%

of all LIRR riders use the NEC



	FY15	FY16
FY16 Percent NEC Trains Late	10.2	7.9
Avg. Min. Per Late NEC Train	12.1	12.4

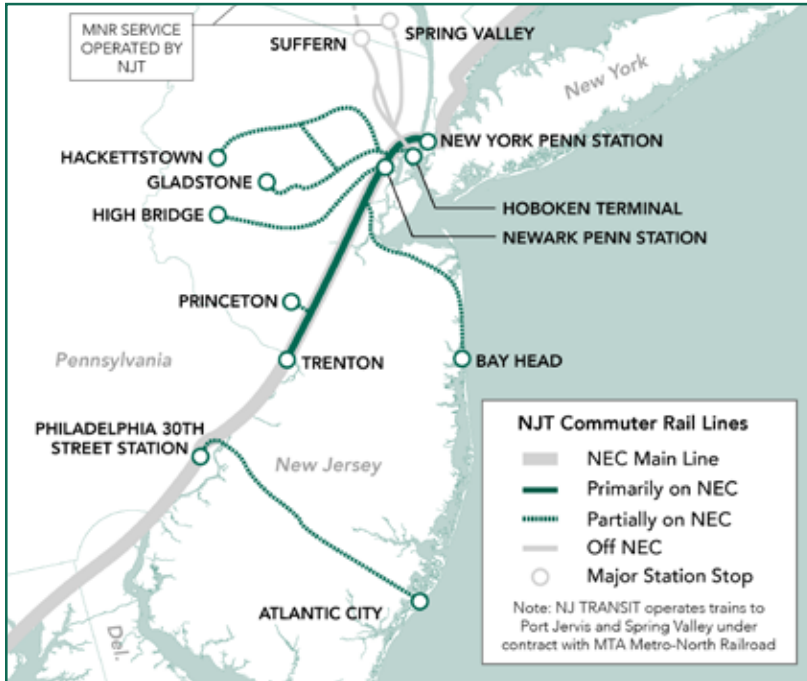


Ridership and Service

LIRR services are comprised of eleven branch lines, ten of which access the NEC between Harold Interlocking in Queens and Penn Station New York. The Port Jefferson, Ronkonkoma, and Babylon Branches converge at Jamaica Station in Queens. Some of the trains from these and other branches such as the Oyster Bay, Montauk, Long Beach, and Far Rockaway Branches, as well as trips to the City Terminal Zone (Atlantic Terminal Long Island City and Hunterspoint) require a change of trains at Jamaica Station. From Jamaica, the LIRR’s main line proceeds west where it and the Port Washington Branch join the NEC at Harold Interlocking. LIRR’s service complement remained steady year-over-year.

Performance

LIRR’s percent trains LAT decreased in FY16 with the most significant change on the Huntington, Port Washington, and Ronkonkoma Branches. Delay severity increased only slightly. Despite these broad improvements, there continued to be isolated NEC infrastructure failure incidents that resulted in clusters of delayed trains. These clusters occur because the LIRR portion of the NEC is the most intensely utilized, and an infrastructure failure at peak hour affects many trains. In FY16, the number of critical incidents declined, contributing to a significant reduction in NEC-related infrastructure delay minutes. Like other railroads, LIRR experienced a significant reduction in late trains due to winter weather conditions. Unlike other railroads, delays in occurrences attributable to third-party incidents declined. However, the resulting increase in average minutes of delay per third-party incident underscores the impact of such incidents on train performance.



Average Weekday on the NEC

	FY15	FY16
Trains on the NEC	413	417
Riders on the NEC	241,000	244,000

62%

of all NJT trains use the NEC



78%

of all NJT riders use the NEC



	FY15	FY16
FY16 Percent NEC Trains Late	8.4	7.4
Avg. Min. Per Late NEC Train	17.0	16.6

Ridership and Service

NJT’s NEC service complement includes Northeast Corridor, North Jersey Coast, Midtown Direct, Raritan Valley, and Atlantic City Line services. Service levels changed relatively little in FY16; however, further integration of dual-mode electric/diesel locomotives enabled NJT to implement new kinds of services that provide one-seat ride for electrified and non-electrified territory. Raritan Valley Direct service to New York increased and a new direct Bay Head to New York service was established. These changes and selected service increases offset marginal reductions in other services.

Performance

The reductions in NJT NEC trains reported LAT were most significant in Trenton Local and Atlantic City services, followed by Long Branch, Raritan Valley Direct, and Midtown Direct services. Trains not completed decreased significantly, with Atlantic City and Midtown Direct leading the improvement. This improvement reflects a year-over-year decrease in the impact of severe weather and unusual service disruptions. Other improved categories include engineering and mechanical with a slight increase in all other delay causes. Notwithstanding the absolute reduction in delay occurrences, engineering delays continue to be the largest share of all delay minutes, while third-party delays increased significantly. NJT service improvement was greatest in weekend and off-peak services, while peak services improved only modestly. Because of NJT’s concentrated use of the NEC between Newark and Penn Station New York, peak services are particularly susceptible to single incidents that affect many trains.



Average Weekday on the NEC



	FY15	FY16
Trains on the NEC	352	356
Riders on the NEC	60,000	58,000

49%

of all SEPTA trains use the NEC

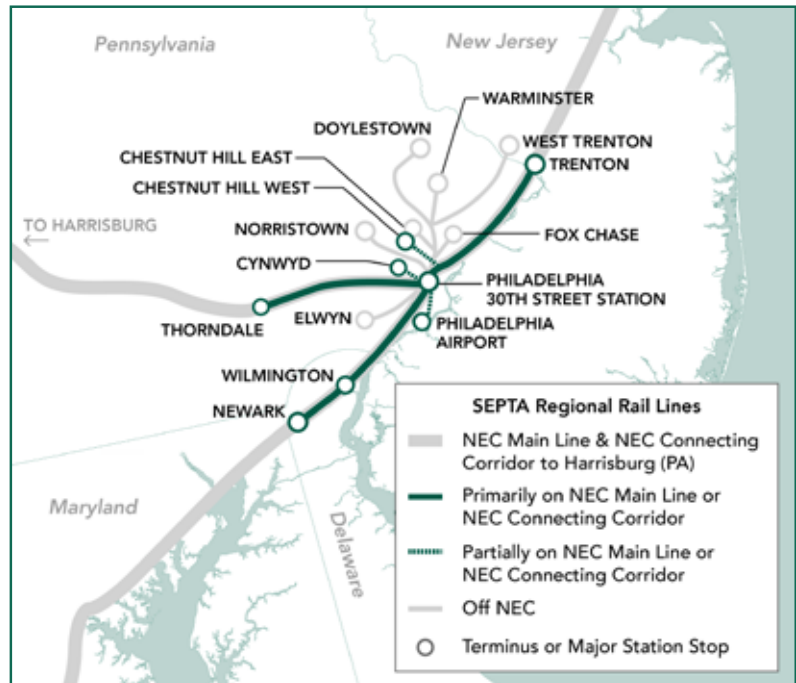


46%

of all SEPTA riders use the NEC



	FY15	FY16
FY16 Percent NEC Trains Late	16.2	19.1
Avg. Min. Per Late NEC Train	11.2	11.8



Ridership and Service

SEPTA's NEC service complement includes Wilmington, Trenton, Paoli, Airport, Chestnut Hill West, and Cynwyd Line services. Each of these services connects to a corresponding non-NEC SEPTA service when going through SEPTA's Center City Terminal Zone. Scheduled service levels changed relatively little year over year, the exception being the fourth quarter of FY16, which was affected by the necessary repair of one third of SEPTA's rail fleet.

Performance

Both FY15 and FY16 presented significant operating challenges that were unique to SEPTA. SEPTA has completed the installation of Positive Train Control (PTC) on 90 percent of its lines. The implementation of this technology has impacted train transit time and on-time performance as train schedules had to be recalibrated to match the performance characteristics of the PTC system. FY15 was also affected by concentrated interlocking and signal renewal activity on the Harrisburg Line affecting Paoli services into the first quarter of FY16 and major rehabilitation on the Airport Line. SEPTA services recovered significantly through FY16, with a best quarter performance in the third quarter of FY16 (April-June). The improvement in SEPTA performance was reversed in the fourth quarter (July-September) by the Silverliner V repair program. SEPTA adjusted its schedule to provide two thirds of the normal weekday service. As a result, peak-hour trains experienced crowding, increasing station dwell times and reducing the ability to make schedule. SEPTA implemented seven schedule changes between June and October 2016 to add back service as equipment became available, culminating in the restoration of normal weekday schedules in October 2016.

Maryland Area Regional Commuter (MARC)



Average Weekday on the NEC

	FY15	FY16
Trains on the NEC	93	95
Riders on the NEC	34,000	34,000

100%

of all MARC trains use the NEC



94%

of all MARC riders use the NEC



	FY15	FY16
FY16 Percent NEC Trains Late	8.6	5.6
Avg. Min. Per Late NEC Train	17.9	21.7

Ridership and Service

MARC train services operate over three lines, all of which at some point use the NEC. Penn Line services operate on the NEC between Perryville, Maryland and Washington Union Station. Camden Line trains operate between Baltimore Camden Station on CSX freight lines and Washington Union Station. Brunswick Line trains operate on CSX between Martinsburg, West Virginia, Frederick, Maryland and Washington Union Station. The CSX services connect to the NEC at C Interlocking just outside Union Station. MARC services were relatively constant year over year, with two daily trains added on the Penn Line.

Performance

The percentage of MARC trains LAT decreased significantly in FY16, led by the Brunswick Line, followed by Penn and Camden lines. Delay severity increased, however, particularly on the Penn and Brunswick Lines. This was primarily due to third-party incidents occurring in and around Union Station and greater duration of engineering and mechanical-related delays when they occurred. MARC service benefited from a reduction in weather-related delays. Reductions in delay minutes and occurrences occurred across all lines and all categories with the exception of third-party incidents. On the Penn Line these delays increased significantly. Train dispatching accounts for the largest percentage of train delay minutes for MARC, which encompasses the effect of commuter and intercity train interference. In MARC's case, much of the train interference occurred as a result of the extensive on-track maintenance programs taking place in Maryland.



Virginia Railway Express (VRE)

Average Weekday on the NEC



	FY15	FY16
Trains on the NEC	29	32
Riders on the NEC	4,000	4,000

100%

of all VRE trains use the NEC

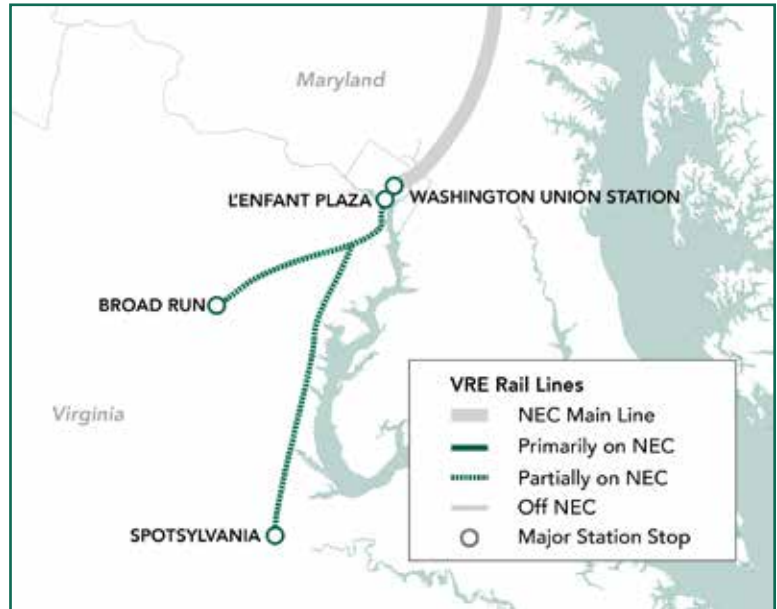


22%

of all VRE riders use the NEC



	FY15	FY16
FY16 Percent NEC Trains Late	8.2	11.0
Avg. Min. Per Late NEC Train	16.8	18.1



Ridership and Service

VRE provides weekday service from northeast Virginia to Washington Union Station via two lines, the Manassas Line, owned by the Norfolk Southern Railroad (NSR), and the Fredericksburg Line, owned by CSX. The lines converge at Alexandria and connect to Amtrak for entry into Washington Union Station. VRE added two new daily trains on the Fredericksburg Line in FY16, as well as extending service on that line south to a new station in Spotsylvania.

Performance

Trains LAT and delay severity both increased. While Manassas Line service remained relatively constant year over year, the significant change in performance, especially during the spring and summer, has been on the Fredericksburg Line. Major ROW and station improvement projects required track outages and adjacent track speed restrictions. When coupled with heat-related speed restrictions, the end result was a reduction in line capacity and an increase in late trains due to congestion. VRE's operation into Washington Union Station, like MARC and Amtrak services, are subject to disruptions in and around Union Station.

Infrastructure

Accomplishments

Northeast Corridor stakeholders invested \$1.06 billion in infrastructure in FY16. These dollars were applied to the Baseline Capital Charge (BCC) Program funded through the Northeast Corridor Commuter and Intercity Rail Cost Allocation Policy (Cost Allocation Policy, or Policy) and to Special Projects outside the BCC Program aimed at addressing the state-of-good-repair backlog or improving the NEC.

The Policy created the BCC Program to fund the ongoing replacement of existing capital assets and allocates a portion of that annual normalized replacement expenditure to each service operator based on relative usage. Each agency's annual payment obligation, or BCC, remains relatively constant while an annual NEC One-Year Implementation Plan forecasts how those payments might be applied to BCC-eligible investments.

The BCC Program provided the bedrock of NEC capital investment in FY16. Its \$458 million expenditure replaced more than 7,800 concrete ties, 43,000 wood ties, 348,000 feet of rail, and 51,000 feet of overhead catenary infrastructure. It paid for over two million feet of track surfacing and 107,000 feet of track undercutting. It replaced switches at interlockings, stabilized retaining walls, swapped aging components out of the signal system, and made repairs to century-old undergrade bridges. Though far from the level of investment required to begin to address the \$36 billion state-of-good-repair backlog, this funding commitment among service operators provided a critical lifeline to the aging NEC.

Capital Investment in NEC Infrastructure

Total Expenditures by Location and Baseline Capital Charge (BCC) Obligations by Funding Source, FY16

Location	BCC Program Expenditures	Special Project Expenditures		Total	Funding Source	BCC Obligations
		Major Backlog	Improvements			
MA	\$10,316,099	-	\$6,008,573	\$16,324,672	Amtrak	\$228,900,000
RI	\$6,978,175	-	\$22,069,341	\$29,047,516	MBTA	\$12,200,000
CT	\$95,163,840	\$29,316,748	\$212,275,196	\$336,755,784	RIDOT	\$1,500,000
NY	\$32,058,268	\$74,075,414	\$23,440,035	\$129,573,717	CTDOT	\$40,400,000
NJ	\$55,519,248	\$10,300,000	\$129,689,746	\$195,508,995	MNR	\$9,800,000
PA	\$93,462,717	-	\$39,094,431	\$132,557,148	LIRR	\$17,900,000
DE	\$37,641,897	-	\$9,308,202	\$46,950,099	NJT	\$83,800,000
MD	\$62,015,902	\$24,779,426	\$8,385,140	\$95,180,468	SEPTA	\$29,600,000
DC	\$6,073,042	-	\$8,917,993	\$14,991,035	DelDOT	\$2,000,000
Amtrak NEC Systemwide	\$58,459,864	-	-	\$58,459,864	MARC	\$13,200,000
Total	\$457,689,053	\$138,471,589	\$459,188,658	\$1,055,349,299	VRE	\$400,000
					Total	\$439,700,000

Note: BCC Program expenditures approximate state-level investment and combine BCC Segments that may have different eligible BCC funding sources. For precise boundaries, please see state profiles on the following pages.

Note: These figures are obligations according to the FY16 Cost Allocation Model. Payments by agency may vary.

Many Special Projects also advanced in FY16. However, most Special Projects aimed at addressing the state-of-good-repair backlog with design work underway or completed, such as Portal North Bridge in New Jersey and the Susquehanna River Bridge and B&P Tunnel replacement projects in Maryland, do not have funding for construction.

Challenges

The Policy requires that every operator's BCC is expended in its operating territory in the same Federal fiscal year it is contributed. The Policy then commits infrastructure owners to developing sufficient geographic specificity in capital plans to demonstrate anticipated compliance with that requirement.

The FY16 Implementation Plan collected limited data for both Special Projects and the BCC Program. That Plan only collected one-year expenditure forecasts, not multi-year project budgets. For such projects, spending of less than the FY16 forecast could mean project managers found cost efficiencies or it could mean they encountered difficulty making progress. Spending of more than the FY16 forecast could mean project managers made greater than expected progress or it could mean they are veering over budget. Available data do not provide enough information to discern the reasons for these differences. The FY17 Implementation Plan collected scope, schedule, and budget data for the full life of Special Projects so that future NEC Annual Reports will be better able to measure performance.

One-year expenditure forecasts can be more relevant for BCC-eligible investments, especially for ongoing annual programs of capital asset replacement. Most importantly, one-year expenditure forecasts are critical for projecting and tracking compliance with key provisions of the Cost Allocation Policy.

A core challenge for Northeast Corridor stakeholders is that existing planning processes are a poor predictor of the investment that actually takes place. This difficulty is experienced by all agencies that implement NEC capital projects, but it is most acute with Amtrak-implemented capital projects. This situation is problematic because Amtrak implements the majority of both Special Projects and capital asset replacement funded by Cost Allocation Policy BCCs.

The existing Amtrak capital planning process does not budget projects by state or agency territory. Amtrak contends this level of granularity would be impractical for a variety of reasons. The condition of the railroad requires much of the available funding to go toward the replacement of aging assets as they fail, the nature and location of which is not easily predictable. The railroad is vulnerable to damage during the winter season so many capital needs are not known until the spring, long after the fall budgeting process. Additionally, the dynamic nature of track outages to maintain current service and the limited overall available funding restrict the capital that can be programmed by location.

Setting aside geographic specificity, planned versus actual spending shows a weak correlation for projects within Amtrak's program. The FY16 Plan contained 274 Amtrak BCC-eligible projects of which 42 ended up with no expenditures during the fiscal year. Additionally, 66 projects which were not in the Plan had expenditures in FY16.

These variances are significant given that Amtrak manages its capital program on the basis of each Federal fiscal year. The Connecticut Department of Transportation (DOT) and Metro-North Railroad also had challenges projecting BCC-eligible expenditures for Federal fiscal year 2016, but those agencies both manage capital programs on a multi-year basis and follow different fiscal year calendars.

Variances were even more significant when comparing planned versus actual spending for operator-territory-specific forecasts of BCC-eligible expenditures Amtrak developed for Policy compliance in the FY16 Implementation Plan. States and agencies also found these forecasts of limited value because they did not include asset names, locations, scopes, schedules, or production metrics. Without higher quality information in forward-looking plans, reports will fail to measure performance effectively.

Recommendations

The Commission recommends that Amtrak, the Federal Railroad Administration, state, and commuter railroad stakeholders collaborate on a unified framework for defining, planning, and reporting on projects that, at a minimum, improves the current level of geographic specificity, supports FRA management of federal grants (and FTA, where applicable), and retains enough flexibility for Amtrak to manage its capital program given the condition of the Corridor and limited availability of funding. These stakeholders have initiated this process.

The framework should begin by distinguishing capital projects, production programs, system projects, and capital maintenance for all BCC-eligible expenditures. Connecticut DOT and Metro-North Railroad already make similar distinctions within their capital programs. Currently, all investments in Amtrak's capital program are treated in the same fashion for planning and reporting purposes. Starting with the FY18 Implementation Plan, all four infrastructure owners should designate each BCC-eligible investment as belonging to one of four categories, and then plan and track progress in a manner appropriate for each category.

1. **Capital Projects.** Time-limited investments that tackle the replacement of a named existing asset (e.g. Fair Interlocking). Owners should provide a scope, full project budget, FY18 expenditure forecast, and schedule milestones for these projects, including any milestones beyond FY18. In addition to certain BCC-eligible projects, all Special Projects should continue to have this information.
2. **Production Programs.** Ongoing asset replacement activities that have some degree of locational predictability (e.g. NEC Tie Replacement). Owners should provide budgets, forecasts of production metrics, and anticipated locations (e.g. mileposts or geographic subdivision) for these programs on an annual basis starting in FY18.
3. **System Projects.** Investments that support overall system functioning (e.g. control center upgrades) or capital program implementation (e.g. track laying equipment purchases). Owners should provide information similar to that described above for Capital Projects.
4. **Capital Maintenance.** Asset replacement activities that take place in response to infrastructure failures, weather-related events, and other occurrences that are difficult to predict (e.g. NEC Spot Tie Replacement). Owners should provide budgets for these programs on an annual basis starting in FY18.

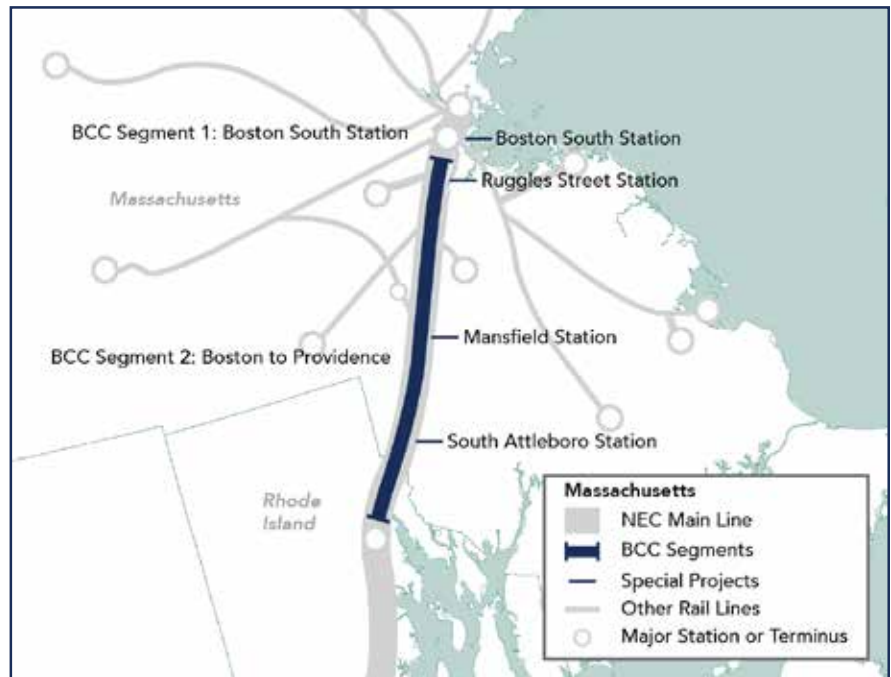
The required Mid-Term Evaluation of the Policy in 2018 may consider if owners are yet able to comply with these important recommendations when deciding if operators should be obligated to increase payments to owners from 80 percent of BCC levels to 100 percent as proposed by the Policy in federal fiscal years 2019 and 2020.



Baseline Capital Charge Program

The FY16 Baseline Capital Charge (BCC) Program forecasted \$21.2 million in capital asset replacement in Massachusetts.* Actual investment totaled \$10.3 million.

*BCC Segments 1 and 2



655

Concrete ties replaced

1,581

Wood ties replaced

7,600 ft.

Rail replaced

106

Joints eliminated

165,688 ft.

Track surfacing

946 ft.

Track undercutting

Other capital asset replacement highlights include platform lighting upgrades at Route 128 Station, signal upgrades at Forest Interlocking in Forest Hills, energy efficient switch heaters at 7 interlockings, and a variety of asset replacements in Southampton Street Yard in Boston.

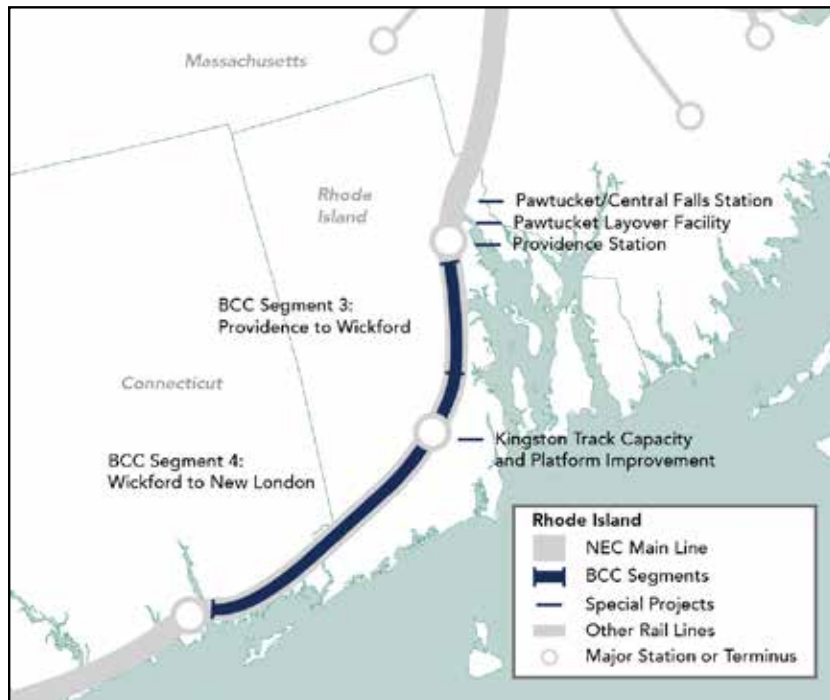
Special Projects

Planning for Boston South Station improvements was the most significant Special Project investment in FY16 in Massachusetts. Environmental review and preliminary engineering continued for terminal track and station headhouse expansion, demolition of a US Postal Service facility, and Dorchester Avenue reconstruction.

Work also progressed on improvements to three MBTA stations. A \$30 million investment in Ruggles Street Station, including a \$20 million USDOT TIGER grant, will construct an inbound platform allowing more trains to serve the station without disrupting opposing traffic by crossing tracks to the existing outbound platform. Investments will also improve station accessibility with elevator and escalator upgrades and make other repairs. This project completed final design in FY16 and will soon move into construction. As a result, this improvement will increase overall throughput along a congested section of the NEC near Boston.

Accessibility and other repairs at Mansfield Station completed design in FY16 and will enter construction. Planning for pedestrian bridge and other repairs at South Attleboro Station was initiated.

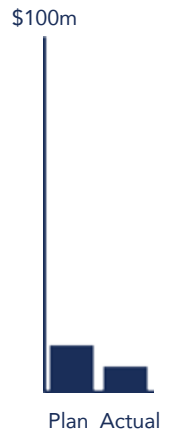
Rhode Island



Baseline Capital Charge Program

The FY16 Baseline Capital Charge (BCC) Program forecasted \$13.0 million in capital asset replacement in Rhode Island.* Actual investment totaled \$7.0 million.

*BCC Segments 3 and 4



Special Projects

Continued construction of the \$41 million Kingston Track Capacity and Platform Improvement Project was the largest Special Project investment in Rhode Island in FY16, comprising \$21.4 million worth of work on an improved station and 1.5 miles of electrified third track. The project will improve access, increase capacity, and reduce travel time when it is completed later this fiscal year. Conceptual planning for extending the third track 18 miles north to connect to another three-track segment also continued in FY16 but is not scheduled to advance beyond the feasibility analysis stage at this time.

Two projects in Pawtucket advanced in FY16, one for upgrades to an existing layover facility for MBTA trains and another for the construction of a new station. The Pawtucket/Central Falls Station Project will return commuter rail service to the city for the first time since the early 1980s in coordination with a transit-oriented development master plan. The project, which recently received a USDOT TIGER grant, completed preliminary design and environmental review in FY16 and is funded to enter design/build construction in FY17.

Preliminary design and environmental review of improvements to Providence Station also advanced in FY16, including changes to the interior layout of the station and enhancements to the area surrounding the station. Additional funding is required to advance construction of improvements.

13

Concrete ties replaced

119

Wood ties replaced

44

Joints eliminated

103,018 ft.

Track surfacing

20 ft.

Track undercutting

Other capital asset replacement highlights include upgrades to the Providence maintenance-of-way base, facade upgrades at Providence Station, and installation of fiber cable at Law, Orms, Atwells, and Malcom interlockings.



Baseline Capital Charge Program

Amtrak

The Amtrak FY16 Baseline Capital Charge (BCC) Program forecasted \$11.8 million in capital asset replacement in Connecticut.* Actual investment totaled \$11.1 million.

*BCC Segments 5 and 25



Capital asset replacement highlights include 15,966 wood ties, 1,087 feet of rail, 296,108 feet of track surfacing, culvert upgrades in Old Saybrook, and a variety of component replacements on the existing Connecticut River Bridge.

Special Projects

Significant investment occurred in Connecticut in FY16 on both the NEC main line and the connecting corridor to Hartford and Springfield. On the Connecticut DOT owned stretch of the NEC main line from New Haven to the New York state border, replacement of two major movable bridges advanced. Over \$28 million was expended on design and preliminary construction activities for the Walk Bridge Program to replace a four-track river crossing that was built in 1896. Connecticut has committed to funding construction of this project. Another \$1.3 million was spent on preliminary engineering for a replacement of Devon Bridge, another four-track crossing. However, funding has not been identified for construction of this critical project.

Connecticut DOT

The CTDOT FY16 BCC Program forecasted \$143 million in capital asset replacement in Connecticut.* Actual investment totaled \$84.1 million.

*BCC Segment 6

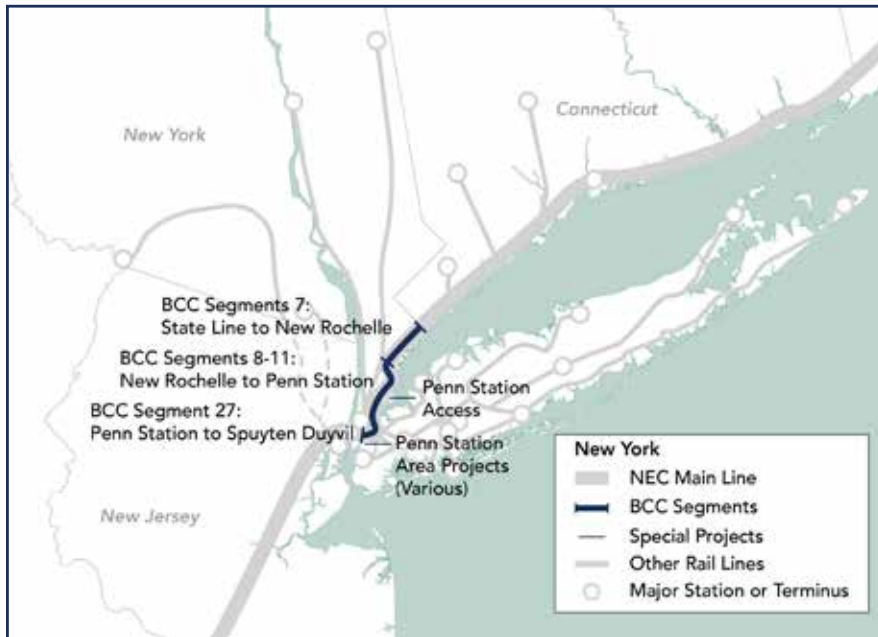


Construction continued on the New Haven-Hartford-Springfield Rail Program with \$155 million in expenditures. Phase 1-3A of this program is funded for construction, rebuilding a second track from New Haven to Hartford while rehabilitating many aging structures and systems and improving station facilities. These investments will enable the state to initiate commuter rail service on the line, scheduled to begin in 2018. Phase 3B-5, which is not funded, would restore full double track to Springfield as well.

Capital asset replacement highlights include investments in six substations, reconstruction of the Sound Beach and Tomac Avenue Bridges in Old Greenwich, and interim repairs on the Cos Cob and Devon movable bridges.

Connecticut also spent over \$10 million in station improvements for Metro-North service west of New Haven and Shore Line East service east of New Haven.

New York

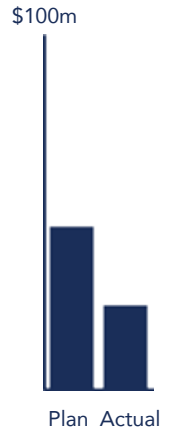


Baseline Capital Charge Program

Amtrak

The FY16 Baseline Capital Charge (BCC) Program forecasted \$40.6 million in capital asset replacement in New York.* Actual investment totaled \$23.7 million.

*BCC Segments 8-11 and 27



Special Projects

The vicinity of Penn Station was the focus of most FY16 Special Project investments in New York. The East River Tunnels that carry passengers into the station from Long Island and points north received over \$22 million in investment through the Total Track Replacement Program and around \$1 million in other assorted improvements. Construction on an improved Harold Interlocking, the busiest switch point on the NEC, continued to free up conflicts between Amtrak, LIRR, and NJ TRANSIT trains. The adjacent Sunnyside Yard received \$13 million in investment on improving facilities and preparing for new Acela trainsets. Over \$51 million was spent on the other side of Penn Station on construction of a casing to preserve right-of-way for a potential second set of tunnels under the Hudson River. Though reconstruction of Harold Interlocking is fully funded, the tunnels and Sunnyside Yard have very significant unfunded capital needs.

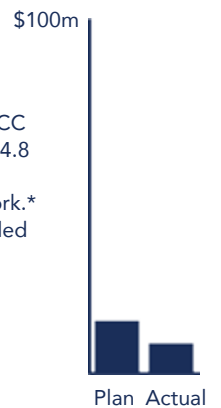
Penn Station itself received around \$1 million in exterior and interior improvements. A larger \$5.6 million investment was made in the future Moynihan Station within the Farley Post Office building across 8th Avenue from Penn Station. Planning also advanced on a Metro-North initiative called Penn Station Access which would bring some New Haven Line commuter trains into Penn Station as well as construct new commuter rail stations in the Bronx.

Capital asset replacement highlights include 6,945 feet of rail, 13,326 feet of track surfacing, 5,223 feet of track undercutting, component replacements for a frequency converter at Sunnyside Yard, and escalator, platform, HVAC, and turnout replacements at Penn Station.

MTA Metro-North

The MTA MNR FY16 BCC Program forecasted \$14.8 million in capital asset replacement in New York.* Actual investment totaled \$8.4 million.

*BCC Segment 7



Capital asset replacement highlights include design for superstructure replacement and substructure rehabilitation on the Willet Avenue Bridge in Port Chester, steel and bearing repairs on two bridges in Mamaroneck, and reconstruction of the Bridge 23 substation at Mount Vernon East.



Baseline Capital Charge Program

The FY16 Baseline Capital Charge (BCC) Program forecasted \$52.8 million in capital asset replacement in New Jersey.* Actual investment totaled \$55.5 million.

*BCC Segment 12



8,311

Concrete ties replaced

4,074

Wood ties replaced

14,756 ft.

Rail replaced

171

Joints Eliminated

344,448 ft.

Track surfacing

10,855 ft.

Track undercutting

13,708 ft.

Catenary wire replaced

Other capital asset replacement highlights include renewals of Lane, Dock, Fair, and Swift interlockings, upgrades to retaining walls at Union Interlocking, upgrades to switch heaters at Ham Interlocking, and component replacements at Dock Bridge in Newark.



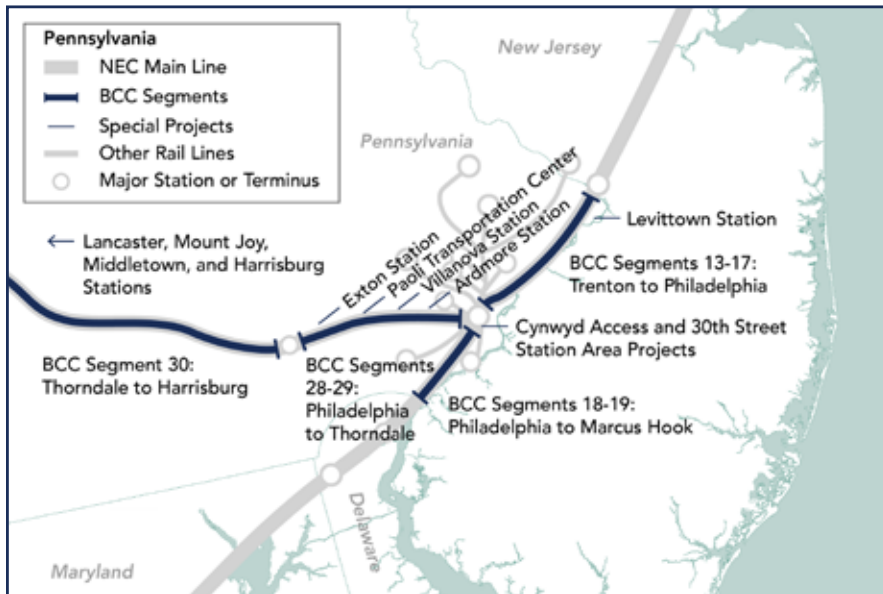
Special Projects

Special Projects in New Jersey in FY16 featured continued construction of the New Jersey High-Speed Rail Improvement Program (NJHSRIP), advancement of the Gateway Program between Newark and Penn Station New York, and investments in NJ TRANSIT stations and facilities. The \$450 million NJHSRIP is comprehensively modernizing 24 miles of railroad between Trenton and New Brunswick, improving reliability for commuter and intercity service while enabling Acela trains to reach 160 miles per hour, their highest speed anywhere on the NEC. The \$113 million expenditure in FY16 supported construction of track, signal, catenary, and bridge infrastructure, as well as a frequency converter in Metuchen. Construction is scheduled for completion in FY17.

Components of the Gateway Program to revitalize and expand infrastructure between New Jersey and New York advanced in FY16, however none are fully funded for construction. Some preliminary construction activities totaling less than \$1 million took place on the \$1.7 billion Portal North Bridge to replace the existing failure-prone asset. That project completed design in 2010 and is ready for construction, but still lacks funding. Nearly \$7.3 million was spent initiating planning, design, and environmental review for the Hudson Tunnel Project to replace the existing tunnel tubes damaged by Superstorm Sandy.

Over \$10 million was spent on design work for a series of interrelated investments aimed at improving resiliency against future weather emergencies and/or supporting the service upgrades unlocked by the NJHSRIP. These projects include County Yard, the Delco Lead Safe Haven Facility Project, the Mid Line Loop, and NJ TRANSITGRID. These projects all require additional funding for final design and construction. NJ TRANSIT invested \$6 million at Newark Penn Station to address ADA compliance as well as deteriorated platform conditions. Another roughly \$700,000 was spent advancing design for improvements at Elizabeth and New Brunswick stations, but additional funding is required for construction.

Pennsylvania



Baseline Capital Charge Program

The FY16 Baseline Capital Charge (BCC) Program forecasted \$74.4 million in capital asset replacement in Pennsylvania.* Actual investment totaled \$93.5 million.

*BCC Segments 13-17, 18-19, 28-29, and 30



Special Projects

Most Special Project work in Pennsylvania covered stations in FY16. At Philadelphia 30th Street Station, \$2.2 million worth of work advanced state-of-good-repair upgrades and a signage program. On the NEC main line, SEPTA continued to advance construction of a renewed Levittown Station. The project will make the station ADA accessible and return the station to a state of good repair, enhancing the customer experience after its scheduled opening in 2018.

On the Harrisburg Line, four station projects, three of which are shared use with Amtrak, in SEPTA territory east of Thorndale advanced, as did four Amtrak station projects west of Thorndale. The Ardmore Station Improvements project design was completed and construction will begin pending Amtrak availability. The Villanova Station Improvements project initiated construction. The Paoli Transportation Center - Phase 1 (ADA & Infrastructure) began. Exton Station Improvements construction reached 25 percent completion with \$4.4 million in construction. West of Thorndale, Mount Joy and Middletown station design work took place, as did construction at Lancaster and Harrisburg stations.

Infrastructure projects in FY16 included the Cynwyd Access Project to build a new route for SEPTA Cynwyd Line trains onto the Harrisburg Line. Work continued with \$12.1 million in construction on renewing State Interlocking in Harrisburg. Design work also progressed on the 30th Street West Catenary Replacement Project and design was completed on the 30th Street to Arsenal Signals and Right-of-Way Improvement Project.

26,711

Concrete ties replaced

4,208

Wood ties replaced

117,857 ft.

Rail replaced

230

Joints eliminated

249,643 ft.

Track surfacing

8,833 ft.

Track undercutting

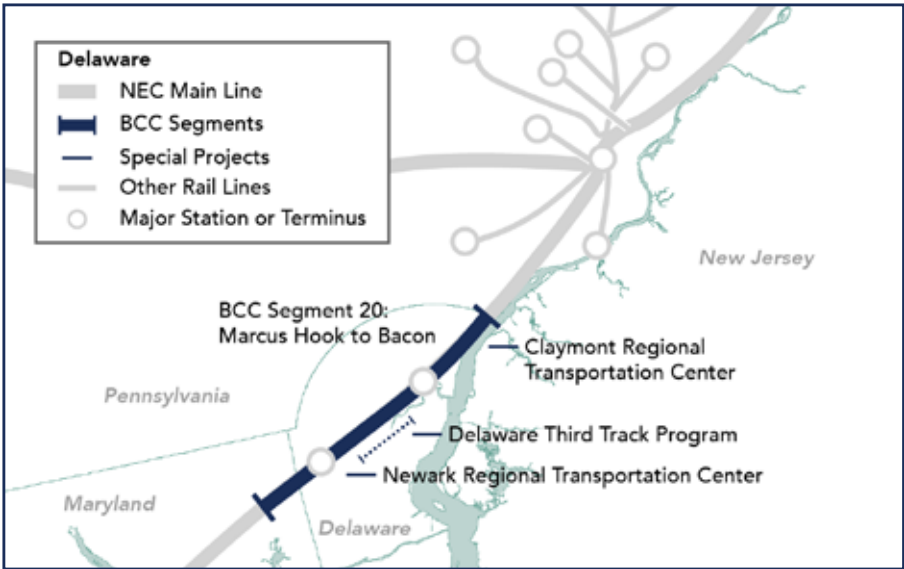
Other capital asset replacement highlights include restoration of the façade at 30th Street Station in Philadelphia, bridge work at Chamounix Road in St. David's, King of Prussia Road in Radnor, and Pine and Corson Streets in Bristol, a new air compressor at Zoo Interlocking in Philadelphia, and design for catenary structure replacement from Zoo Interlocking to Paoli.



Baseline Capital Charge Program

The FY16 Baseline Capital Charge (BCC) Program forecasted \$28.6 million in capital asset replacement in Delaware.* Actual investment totaled \$37.6 million.

*BCC Segment 20



40,845

Concrete ties replaced

5,274

Wood ties replaced

163,987 ft.

Rail replaced

168

Joints eliminated

434,271 ft.

Track surfacing

40,138 ft.

Track undercutting

5,412 ft.

Catenary wire replaced

Other capital asset replacement highlights include replacement of turnouts and switch components at a variety of interlockings, design for the replacement of the bridge over Shellpot Creek, and waterproofing and boiler replacement at Wilmington Station.

Special Projects

Three Special Projects in Delaware advanced in FY16, all of which are fully funded. Construction continued on the Delaware Third Track Program, a \$50 million investment in an additional track to allow an increase in commuter and intercity service and to improve reliability by eliminating a two-track chokepoint. Expenditures of \$6.9 million in FY16 advanced grading and the installation of ballast to support new track between Ragan Interlocking in Newport, Delaware and Mill Creek Bridge, as well as communications and signal upgrades and work on and around Mill Creek Bridge.

Two station projects advanced through design and environmental review. The \$57 million Newark Regional Transportation Center will be served by SEPTA and Amtrak and is being built to serve the redevelopment of a former industrial site into a science, technology, and research campus affiliated with the University of Delaware. A \$2.4 million FY16 expenditure in the significantly enhanced station secured a NEPA finding, completed right-of-way acquisition, and advanced design near to completion so that construction can begin in FY17.

A \$40 million Claymont Regional Transportation Center will be built a half mile north of the existing station, thanks in part to a recently awarded USDOT TIGER grant, in conjunction with a former industrial property being redeveloped into a mixed-use commercial center. The new station, which will offer improved passenger amenities and multimodal access, neared 30 percent design in FY16.

Maryland



Baseline Capital Charge Program

The FY16 Baseline Capital Charge (BCC) Program forecasted \$101.1 million in capital asset replacement in Maryland.* Actual investment totaled \$62.0 million.

*BCC Segments 21 and 22



Special Projects

Maryland has two major Special Projects in the planning and design pipeline with no funding available for construction. The \$4.5 billion B&P Tunnel Replacement Project immediately south of Baltimore Penn Station advanced with \$20.9 million worth of preliminary engineering and environmental review in FY16. The \$1.4 billion Susquehanna River Bridge Replacement Project between Havre de Grace and Perryville advanced with \$3.9 million in preliminary engineering and environmental review. Initial phases of design for both projects will end in FY17 after which no funds are available for final design or construction.

Closer to Washington, DC, Maryland and Amtrak are advancing the construction of Hanson Interlocking to replace aging Landover Interlocking with one at a superior location that will improve operational flexibility and service reliability. A \$5.3 million investment in FY16 contributed to developing a staging area and purchasing materials so that construction can begin in earnest on this fully funded project in FY17.

Plans at several Maryland stations advanced in FY16. Nearly \$1.6 million was spent on implementing a master plan for Baltimore Penn Station. Interim improvements to BWI Thurgood Marshall Airport Station completed design in FY16 and will soon enter construction. Plans advanced for a rebuilt West Baltimore Station but are now on hold pending decisions regarding the alignment of the B&P Tunnel Replacement Project. Plans for storage and maintenance facilities for MARC trains also advanced in FY16. The Martin State Airport Storage Facility is funded for construction with design nearly complete. A Northeast Maintenance Facility in Cecil County continued development but is currently on hold in part due to lack of funds.

1,516
Concrete ties replaced

9,355
Wood ties replaced

35,052 ft.
Rail replaced

255
Joints eliminated

558,384 ft.
Track surfacing

40,262 ft.
Track undercutting

32,469 ft.
Catenary wire replaced

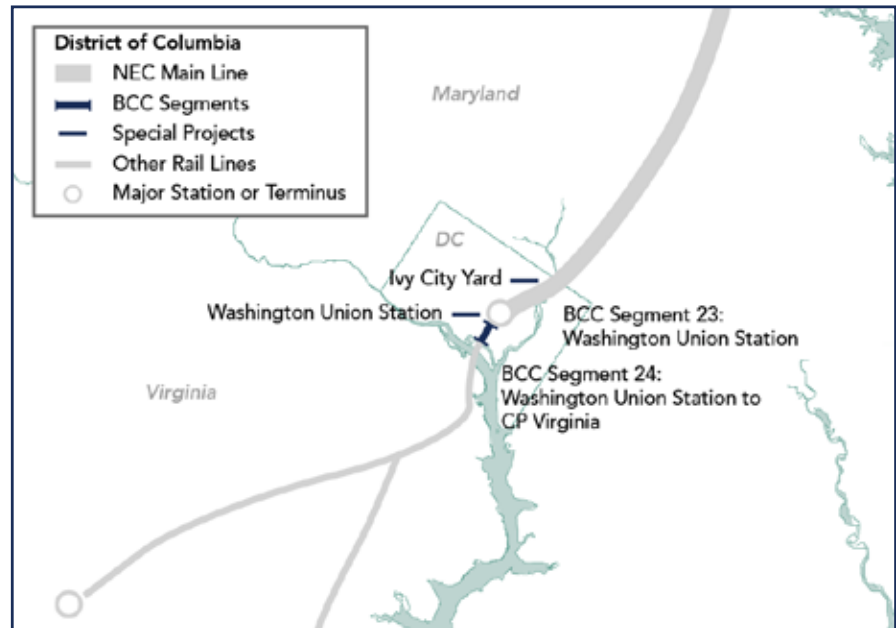
Other capital asset replacement highlights include upgrades to the Safe Harbor frequency converter and component replacements at Charles, Davis, Biddle, and River interlockings.



Baseline Capital Charge Program

The FY16 Baseline Capital Charge (BCC) Program forecasted \$1.8 million in capital asset replacement in the District of Columbia.* Actual investment totaled \$6.1 million.

*Washington Union Station and area south to Virginia Interlocking in DC



8

Concrete ties replaced

1,083

Wood ties replaced

108 ft.

Rail replaced

45

Joints eliminated

15,060 ft.

Track surfacing

730 ft.

Track undercutting

100 ft.

Catenary wire replaced

Other capital asset replacement highlights include component replacements at CP Avenue Interlocking, lighting upgrades in the First Street Tunnel, and repairs to platforms at Washington Union Station.

Special Projects

Two Special Projects continued development in Washington, DC in FY16. The Washington Union Station Second Century Plan advanced with \$7.4 million in expenditures toward an environmental impact statement for long-term improvements and expansion along with design for shorter-term improvements to the station. Some shorter-term improvements, such as the Claytor Concourse Modernization Project, are funded and set to begin construction in FY17. However, longer-term improvements, such as the doubling of train capacity and the development of air rights above the platform tracks, have significant funding needs to advance both design and construction.

Development of a master plan for Ivy City Yard received \$1.5 million of investment in FY16. The existing yard is at capacity and cannot adequately serve the new high-speed trainsets that Amtrak has ordered. While Amtrak has funding to advance some components of this work, the full \$100 million project also has significant funding needs for construction.



Front Cover: Washington Union Station
Back Cover: Susquehanna River Bridge

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