

# Northeast Corridor Annual Report: Operations and Infrastructure

Fiscal Year 2020

March 2021





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. 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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← Elevator



# Letter from the Executive Director



The Northeast Corridor is a vital transportation asset that supports the Northeast as a diverse, resilient, and globally competitive region. Amtrak's and the commuter railroads' employees and riders persevered through enormous challenges during federal fiscal year 2020 due to a public health crisis and related economic uncertainty. The onset and spread of the coronavirus pandemic tested our collective endurance and resiliency in the face of unprecedented shifts in how we live, work, learn, and play.

The Northeast Corridor Annual Report focuses on how operators and project sponsors continued to provide service and invest in infrastructure in FY20. But we also acknowledge the riders along the NEC during this past year. While ridership declined as much as 95% at the height of stay-at-home orders last April, an average of 52,000 weekday NEC trips still occurred. These essential trips likely included travel made by health care professionals, social workers, small business owners, and essential government employees, among others—all of whom put their trust in the NEC operating agencies to provide safe, healthy, and reliable transportation. The cooperative effort between riders and operating agencies were a lifeline for the region and helped the northeastern United States address this public health crisis and move towards recovery.

NEC Commission member agencies, despite all of the challenges in FY20, pushed hard to meet the needs of our region. Train service mostly returned shortly after a severe decline in ridership to ensure that customers were able to get to where they needed to go. Train performance improved, demonstrating the NEC's potential operational efficiency when it is not pushing its capacity limits. And investments in capital programs and projects increased, though plan adherence remains a challenge and the Commission continues to focus on improving planning and coordination among project sponsors.

Our members are committed to providing vital transportation services and continue to seek opportunities to advance smart investments to rebuild the NEC's aging infrastructure. While the coronavirus relief packages provided critical, near-term federal support that helped stabilize the NEC and its operating agencies, the pandemic's impacts are still being felt today in FY21 and will continue into the future. Still, the Commission is committed to the long-term growth and reliability of NEC commuter and intercity services. This includes advancing a detailed 15-year plan for the corridor called CONNECT NEC 2035. The Commission looks forward to working with Congress and the Biden Administration to rebuild, improve, and modernize the corridor.

Mitch Warren  
Executive Director  
Northeast Corridor Commission

# Executive Summary

**The Northeast Corridor, despite extraordinary challenges, continues to serve the most densely populated region of the United States.**

The Northeast Corridor hosted over 800,000 average daily trips prior to the start of fiscal year 2020. The coronavirus pandemic, however, presented the nation's busiest rail corridor with extraordinary challenges starting in March 2020 when the region's public health experts and elected officials began limiting discretionary travel to curb the spread of the virus. NEC agencies persevered in the face of unprecedented ridership declines to not only provide transportation services, but also ensure the safety of their customers and their own front-line workers.

## Operations

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**The pandemic caused ridership to plummet, while NEC operators reduced service but maintained transportation for essential activities.**

NEC service and ridership significantly declined in March 2020. Nearly all commuter rail trips—the largest generator of trips on the NEC—ceased within a matter of days in the region. The NEC reached its lowest ridership level in April 2020 with only 52,000 average weekday trips. Service levels did not decline as drastically as ridership, as Amtrak and commuter railroads continued to provide service to support essential and front-line workers. FY20 concluded with NEC service having somewhat returned, but ridership remaining at historic lows.

**Train performance improved in FY20 primarily because of reduced service and ridership, but infrastructure failures are still a concern.**

Fewer NEC intercity and commuter trains were late, annulled, or terminated in FY20. Delays declined sharply in March 2020 and slowly rose starting in June 2020 as service levels increased and passengers returned. Storms with high winds caused significant disruptions on the corridor. The most disruptive weather event was Hurricane Isaias in August 2020 that affected train service for five days in the states of New York, New Jersey, and Pennsylvania.

Infrastructure, mechanical, and transportation are consistently the top three causes of delay and are most directly related to the operation of the railroad. The stability of the top three delay categories suggests that while train performance can improve with reduced service, capital investments that ensure reliable service for passengers remain critically important especially as service levels resume and/or increase.



## Infrastructure

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### **NEC agencies invested nearly \$1.4 billion in infrastructure in FY20.**

Collective infrastructure investment on the NEC grew to \$1.4 billion in FY20 despite numerous and significant challenges posed by the pandemic. NEC agencies invested \$662.1 million in capital renewal of basic infrastructure—85% of which was funded by Baseline Capital Charges paid to right-of-way infrastructure owners for their territories—and \$702.9 million in special projects. Track investments continued to grow in FY20. NEC project sponsors also advanced enabling work to begin construction on several major backlog projects and targeted existing bottlenecks through interlocking and signal improvements on the NEC main and branch lines.

### **Adherence to plan improved slightly in FY20, but was similar to FY19.**

The Commission began conducting plan adherence analyses in FY19. The pandemic has presented both challenges and opportunities regarding capital investment, making its overall impact on FY20 plan adherence difficult to summarize. NEC agencies spent \$1.4 billion out of a planned \$1.8 billion in FY20. Agencies spent more on capital investment in FY20 than in FY19, however the percent of plan spent was approximately the same in both years. Percent of plan spent for capital renewal investments was higher than for special projects (82% vs. 73%, respectively), also similar to FY19.

### **Progress in eliminating the state-of-good-repair backlog.**

The Commission recently approved its second Cost Allocation Policy, which includes a new requirement for the Annual Report to measure and report on progress against the state-of-good-repair backlog. The Commission will use an asset-based approach to measure progress year-over-year as owners replace aging assets and other assets fall out of a state of good repair.

## Recommendations

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NEC Commission member agencies contend with a range of challenges as they work to operate, maintain, and invest in the nation's busiest passenger rail corridor. The pandemic caused conditions on the ground to change day-by-day, which underscored the importance of continuing to improve planning and coordination among NEC agencies—a unifying theme of the three recommendations included in the FY19 NEC Annual Report.

This year's report reissues the FY19 recommendations in recognition that work remains in these areas, noting progress and intended next steps. This report includes one new recommendation regarding CONNECT NEC 2035 (C35), the Commission's long-term plan for implementing the first phase of NEC FUTURE which the Commission anticipates voting on later in 2021. In leading up to the completion of the C35 plan, Commission member agencies should proactively identify opportunities to ensure that each agency is well-positioned to rise to the challenge of C35 implementation.

# 1. Introduction

The Northeast Corridor, despite extraordinary challenges, continues to serve the most densely populated region of the United States.

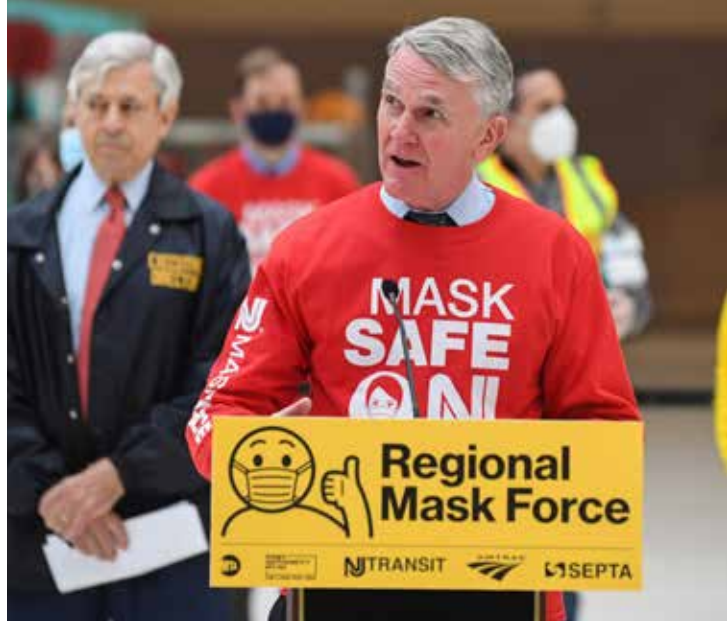
The Northeast Corridor hosted over 800,000 average daily trips prior to the start of fiscal year 2020. The coronavirus pandemic, however, presented the nation's busiest rail corridor with extraordinary challenges starting in March 2020 when the region's public health experts and elected officials began limiting discretionary travel to curb the spread of the virus. NEC agencies persevered in the face of unprecedented ridership declines to not only provide transportation services, but also ensure the safety of their customers and their own front-line workers.

NEC operators implemented all-new cleaning and sanitizing practices, including several collaborations with research institutions to explore best practices in reducing the risk of transmission on public transportation. New York MTA, NJ TRANSIT, Amtrak, and others used new technologies to show customer-crowding information when purchasing tickets and boarding trains. Agencies came together and announced a Regional Mask Force in early FY21 to distribute and encourage the use of face coverings while traveling. Front-line employees worked locally to gather, transport, and distribute food to their most vulnerable residents. The NEC, as always, will play an important role in the recovery and resiliency of the region.

NEC right-of-way infrastructure owners and operators simultaneously faced a devastating reality of losing employees to COVID-19, deep revenue losses from historically low ridership, and uncertainty of state and local budgets. Executive leadership contended with the grim realities of considering layoffs, while staffs worked quickly to adjust train schedules and to safely conduct work on capital projects despite the crisis. While Amtrak and commuter rail agencies received







**Opposite page:** NY MTA's "Heroes Moving Heroes" campaign acknowledges and celebrates their employees that are providing transportation services so other essential workers can be where they're needed most. **This page, above left:** Physical distancing protocols were implemented at stations across the northeast, like at New Haven Union Station in Connecticut. **Above right:** Northeast Corridor Commission Co-Chair Kevin Corbett of NJ TRANSIT speaks at the launch of the Regional Mask Force. This cross-agency collaboration between NY MTA, the Port Authority of New York & New Jersey, NJ Transit, Amtrak, and SEPTA aims to encourage the use of face coverings on passenger rail services.

federal support to temporarily stabilize the industry, continued federal support is needed as the pandemic and its deleterious impacts are expected to continue into FY21 and beyond.

FY20 demonstrated that the NEC rail system remains a vital transportation asset that continues to connect people with one another and support the Northeast as a resilient and globally competitive region. As the nation recovers from the coronavirus pandemic, capital investment in the NEC will play an important role in creating jobs and spurring economic growth in the region and beyond.

## Background

### The Northeast Corridor

The Northeast Corridor—both the NEC main line from Boston to Washington 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 457-mile main line still includes many bridges and tunnels that date back to the period between the Civil War and the New Deal. Located in the most densely populated region of the United States, the NEC is a vital transportation asset connecting hubs of government, commerce, arts, and learning.

## The Northeast Corridor Commission

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.

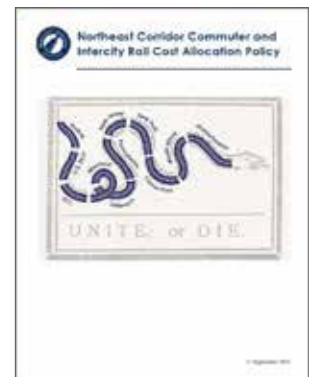
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The Commission is governed by a board comprised of one member from each of the NEC states (Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, and Maryland) and the District of Columbia; four members from Amtrak; and five members from the U.S. Department of Transportation. The Commission also includes non-voting representatives from 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 initially adopted by the Commission in September 2015. The Policy outlines a partnership built on three pillars:

- **Operator Cost Sharing:** Through its cost-sharing methods, including the NEC Cost Allocation Model, the Commission ensures that each operator covers costs associated with its NEC passenger rail service and supports reliable and predictable funding streams for basic maintenance and renewal of NEC infrastructure;
- **Transparency, Collaboration, and Accountability:** Through its NEC-wide capital plans and reports, including the NEC Annual Report, the Commission ensures that NEC stakeholders are sharing data and information with one another and the public that were not routinely shared prior to the Policy; and
- **Federal Partnership:** Through a strong federal partnership that aims to provide predictable and consistent funding for the NEC and harmonize federal requirements, the Commission believes it can overcome decades of under-investment, address the growing state-of-good-repair backlog, and position the corridor for future growth.



The Northeast Corridor—both the NEC main line from Boston, MA to Washington, DC and the branch lines connecting to Harrisburg, PA; Springfield, MA; and Spuyten Duyvil—hosts the passenger rail operations of eight commuter railroads and Amtrak's intercity services.

The 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 Commission Plans and Reports

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### The NEC Annual Report

The **NEC Annual Report** is a key component of the Policy and required by the most recent federal transportation law, the Fixing America's Surface Transportation Act (49 U.S.C. §24904(a)(1)). The NEC Annual Report summarizes corridor activity during the prior federal fiscal year, including train operations and performance, ridership and service trends, capital program delivery, and progress in assessing and eliminating the NEC state-of-good-repair backlog. The Annual Report may also include recommendations on these subjects, as appropriate.

### Other NEC Plans and Reports

- The **NEC Capital Investment Plan** integrates NEC infrastructure investments planned by each NEC owner and operator over a five-year period into a single planning document. Year One of the CIP (previously the One-Year Implementation Plan) serves as the baseline to measure capital investment progress through quarterly Capital Program Delivery Reports and the NEC Annual Report.
- **CONNECT NEC 2035** is the first phase of the NEC FUTURE vision and will present the case for sustained investment in the NEC by identifying long-term service objectives and the capital investments required to achieve those objectives over a 15-year period. CONNECT NEC 2035 will be published by fall 2021.





A unified blueprint for sequencing all capital investments required to advance our shared long-term vision for the future of the NEC.

### Capital Investment Plan

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

### Annual Report

A report that documents the operational performance of NEC trains, the delivery of Year One of the CIP, and contains recommendations for improvement.

## 2. Operations

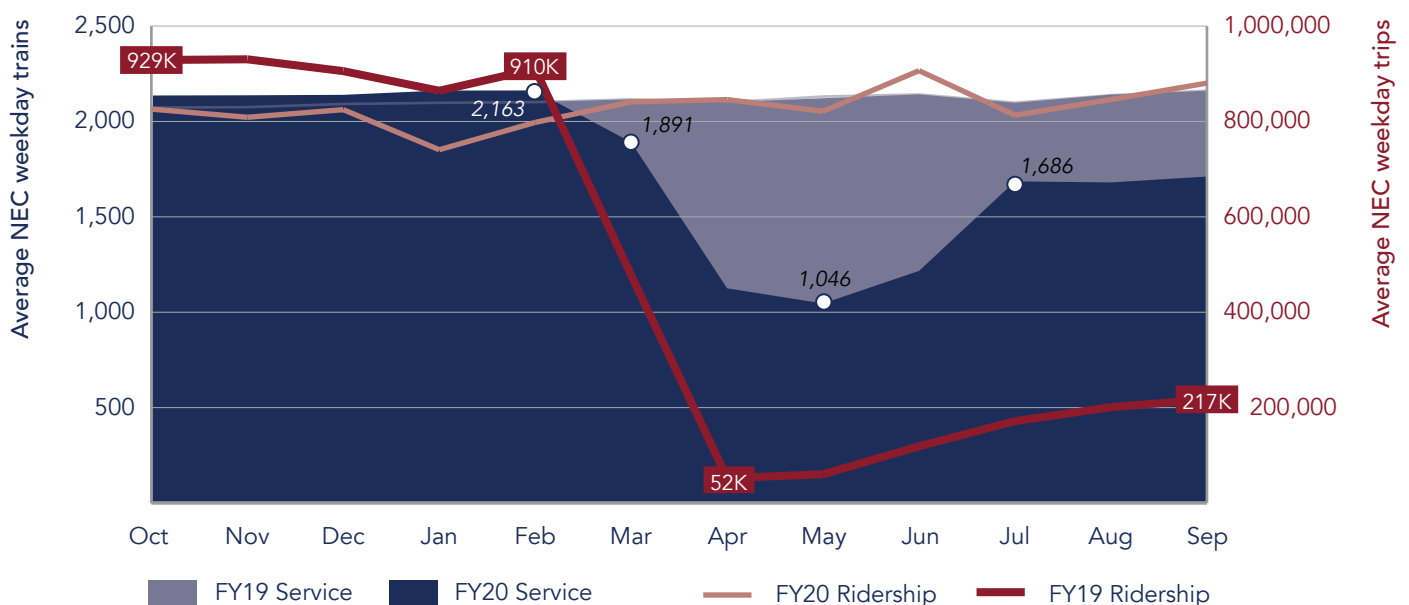
This section summarizes NEC operations during federal fiscal year 2020 using available data for service and ridership, train performance, and major incidents. Analyzing NEC operations, including trends over time, helps track how well the corridor serves its customers and also helps agencies identify ways to improve service.

### Service and Ridership

FY20 began with strong service and ridership levels on the NEC.

NEC operators experienced historically high ridership coupled with a slight increase in service in FY20 prior to the coronavirus pandemic. There were 2,137 average weekday trains and 929,000 average weekday trips—intercity and commuter rail—on the NEC when the fiscal year began in October 2020. Trips on Amtrak’s NEC services increased by 4% in the first quarter of FY20 as compared to the same period in FY19. Commuter rail operators also reported growth in ridership. Notably, CTrail trips grew 18% in the first quarter of FY20 when compared to the same period of the prior year. These trends suggest that, without the pandemic, the NEC would have had very strong, if not record-setting, ridership in FY20.

Figure 2-1. Average NEC weekday trains and trips by month, FY19-20



## The pandemic caused ridership to plummet, while NEC operators reduced service but maintained transportation for essential activities.

NEC service and ridership significantly declined in March 2020 when the pandemic began affecting the northeast United States and stay-at-home orders were issued to curb the spread of the virus. Nearly all commuter rail trips—the largest generator of trips on the NEC—ceased within a matter of days in the region. The NEC reached its lowest ridership level in April 2020 with only 52,000 average weekday trips, a 95% decrease from trips taken in April 2019.

NEC operators adjusted their schedules and reduced service levels to respond to public health orders issued by state, county, and local elected officials. The NEC reached its lowest service level in May 2020 with only 1,046 average weekday trains, a 51% decrease from May 2019. Service levels did not decline as drastically as ridership, as Amtrak and commuter railroads continued to provide service to support essential and front-line workers who rely on the corridor to commute.

Figure 2-2. Average NEC weekday trains and trips by operator, FY20

Operator	Average Weekday NEC Trains					Average Weekday NEC Trips				
	Q1	Q2	Q3	Q4	FY20 Average	Q1	Q2	Q3	Q4	FY20 Average
Amtrak	132	116	49	72	92	53,100	36,012	2,163	7,829	24,776
MBTA	308	285	180	274	262	69,441	58,813	14,195	18,767	40,304
CTrail	60	56	26	27	42	2,177	1,638	88	216	1,030
MNR	289	295	142	178	226	117,868	88,430	10,260	23,507	60,016
LIRR	462	473	368	444	437	335,288	280,268	28,957	88,955	183,367
NJ TRANSIT	402	384	242	375	351	244,666	205,238	21,529	43,560	128,748
SEPTA	355	338	72	214	245	65,924	53,249	2,811	10,588	33,143
MARC	97	91	37	89	78	29,082	25,693	1,296	2,946	14,754
VRE	32	30	16	17	24	4,028	3,544	146	287	2,001
<b>Total</b>	<b>2,137</b>	<b>2,066</b>	<b>1,132</b>	<b>1,692</b>	<b>1,757</b>	<b>921,574</b>	<b>752,885</b>	<b>81,445</b>	<b>196,656</b>	<b>488,140</b>

Figure 2-3. Percent of pre-pandemic weekday level of service, mid-May 2020

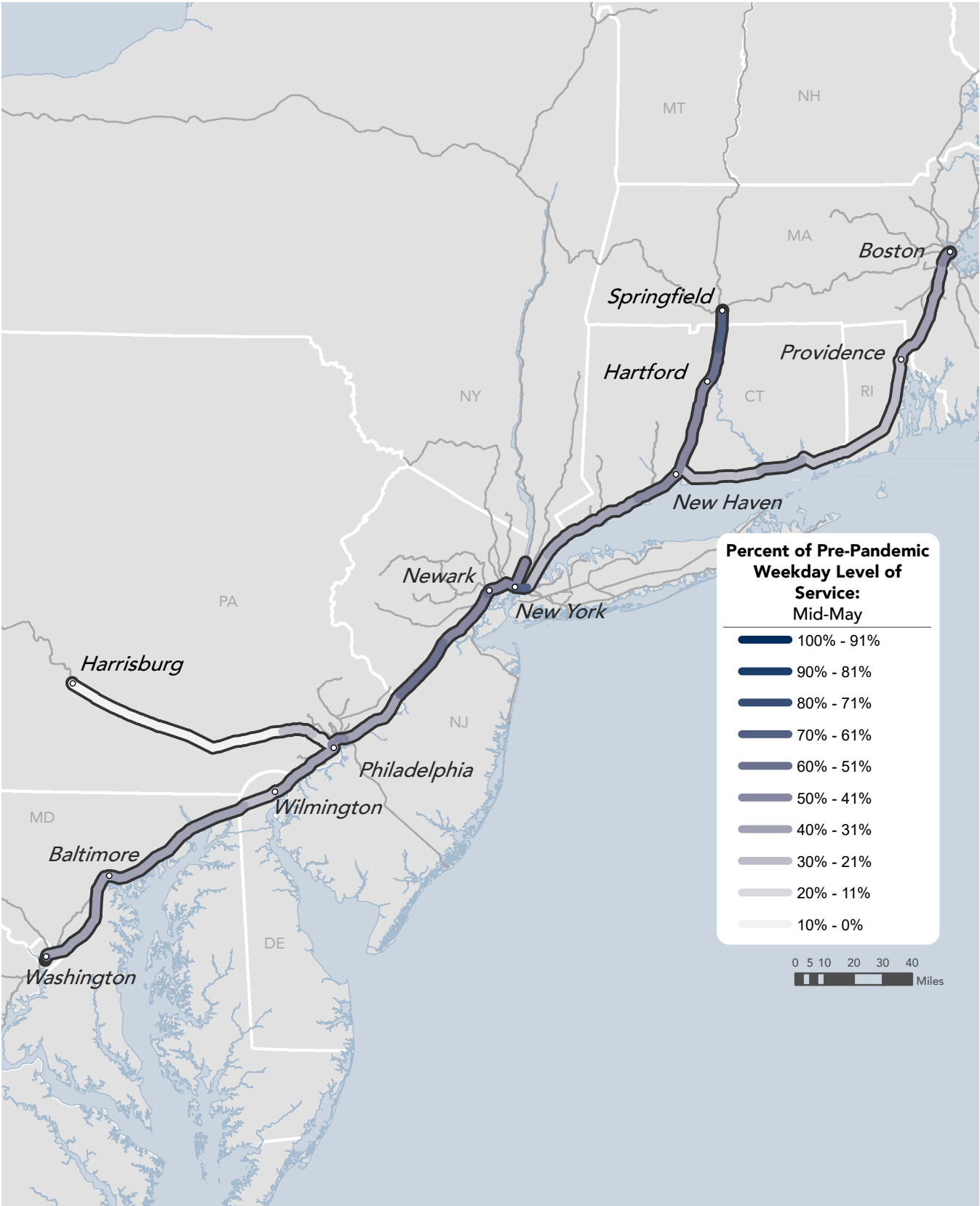
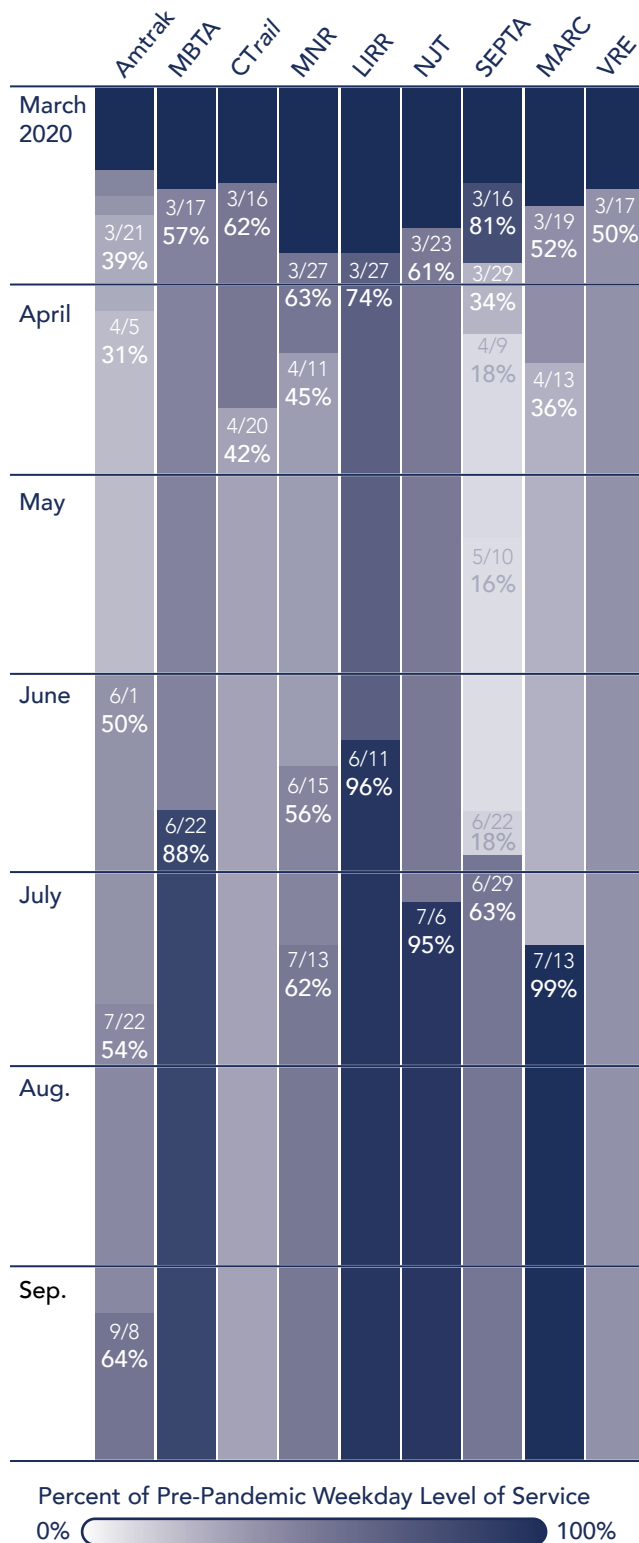




Figure 2-4. Percent of pre-pandemic weekday level of service by operator and month



NEC operators' responses to the pandemic varied in the magnitude and timing of decreased service levels. Amtrak began reducing service in late January and notably canceled its high-speed Acela services from late-March through June 1. VRE, which offers primarily a peak-only service, indefinitely switched in mid-March to its special schedule normally reserved for inclement weather and holidays. Commuter railroads like Metro-North Railroad, Long Island Rail Road, and NJ TRANSIT maintained high levels of service until late-March when their respective governors signed executive orders that directed limited use of public transportation for essential travel. Still, Long Island Rail Road's ridership remained as one of the most stable of all NEC operators during FY20.

### Recovery for service and ridership will be slow, but can be bolstered by continued federal support.

FY20 concluded on September 30, 2020 with NEC service having somewhat returned, but ridership remaining at historic lows. NEC ridership levels are expected to remain significantly below pre-pandemic levels until daily commuters and business travelers return to their job sites and personal travel is no longer subject to significant pandemic-related restrictions.

Associated losses in ticket revenue have been devastating to every NEC operator's finances. NEC operators are hopeful steady ridership recovery will continue in FY21. However, emergency relief funding provided by the federal government has been and will continue to be critical for providing near-term transportation for essential workers and for avoiding long-term service cuts that could prevent more typical travel patterns from returning.

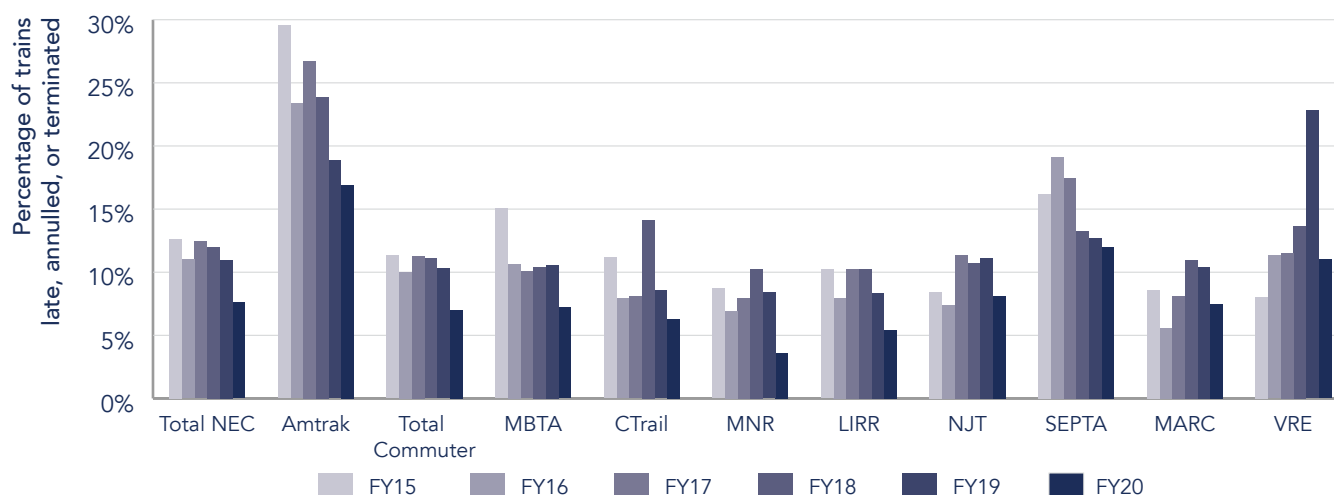
## Train Performance

Train performance improved in FY20 primarily because of reduced service and ridership.

Fewer NEC intercity and commuter trains<sup>1</sup> were late, annulled, or terminated in FY20 (7.6%), an improvement from FY19 (11.0%). Even the first half of FY20 before the pandemic showed relatively high performance with only 8.9% of trains late, annulled or terminated. However, from March 15 through September 30, 2020—a period where service levels averaged 64% of pre-pandemic levels—train performance showed dramatic improvement with only 5.4% of trains late, annulled, or terminated.

Metro-North Railroad showed the largest improvement in train performance while operating fewer trains. Amtrak's improvements in punctuality of long-distance trains on the NEC offset increases in percent trains late for certain state-supported services. VRE overcame performance issues associated with positive train control implementation it experienced in FY19 while improvements from MARC, NJ TRANSIT, Long Island Rail Road, and SEPTA were tempered by programmed outages and major incidents.

Figure 2-5. Percent trains late, annulled, or terminated by operator, FY15-20

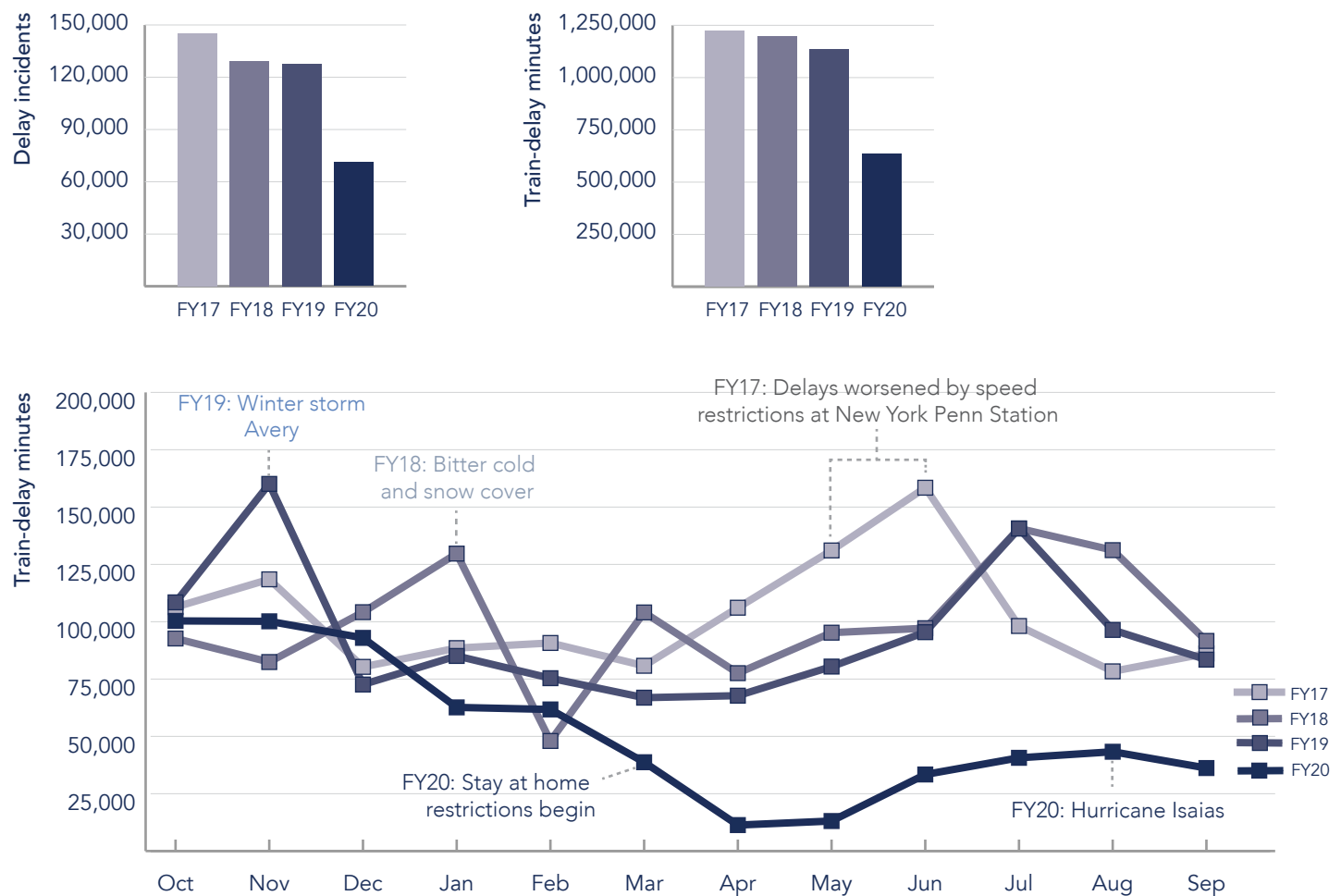


<sup>1</sup>This section includes available FY20 train performance data from all nine NEC operators. SEPTA, however, experienced a malware attack in August 2020 and was not able to provide fourth quarter (i.e., July 1, 2020 - September 30, 2020) train performance data in time for publication of this report. Annual train performance figures include data from SEPTA's first three quarters and a full fiscal year for the other eight NEC operators.

## Fewer delays occurred in FY20, but infrastructure failures are still a concern.

Train delays on the NEC—by both total number of delay incidents and by total train-delay minutes—have been decreasing since FY17. There were 71,000 delay incidents and 635,000 train-delay minutes in FY20, a 44% decrease from FY19 for both categories. The northeastern United States experienced a mild winter in FY20, which contributed to fewer delays prior to the onset of the pandemic. Delays declined sharply with the start of the pandemic in March 2020 and slowly rose starting in June 2020 as service levels increased and passengers returned.

Figure 2-6. Delays on the NEC, FY17-20



## NEC Commission cause of delay categories

Individual railroads maintain their own classification of delay causes. The Commission gathers, consolidates, and analyzes causes of delay from all NEC railroads to create a consistent framework that allows for a corridor-wide analysis. Under this approach, the Commission utilizes eight cause-of-delay categories defined below:

- **Infrastructure:** Failure of track, communications and signals, electric traction and structure assets; planned maintenance; and speed restrictions.
- **Mechanical:** Locomotive failure; coach failure; and disabled train ahead.
- **Transportation:** Train dispatching and routing; train interference; and crew availability.
- **Weather:** Precipitation; wind; excessive cold or heat; slippery rail; and weather-related infrastructure failures.
- **Third-Party:** Trespassers; police action; bridge openings; debris on tracks; and utility failure.
- **Passenger:** Passenger loading time; passenger behavior or injury; and holding for connections.
- **Other:** No report provided; delay cause unknown; and human error.
- **Freight:** Freight train interference.

From these corridor-wide summary codes, the combined corridor-wide database establishes a clear line-of-sight back to the record provided by each operator. Taken together, these records can assist stakeholders in understanding the root causes of delays and take steps to reduce the occurrence and /or mitigate the impact of the delays.

Figure 2-7. Rank of train-delay minutes by category, FY15-20

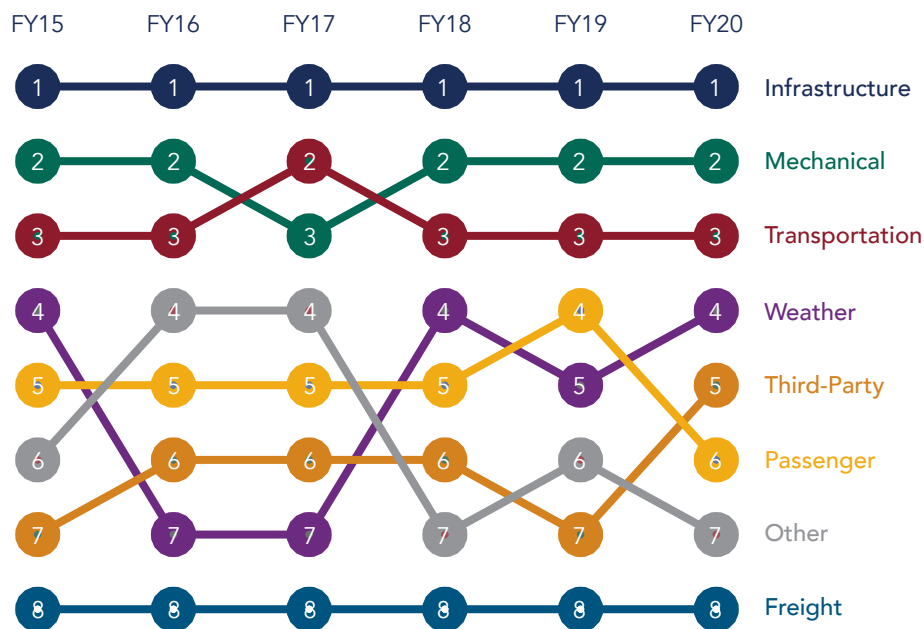
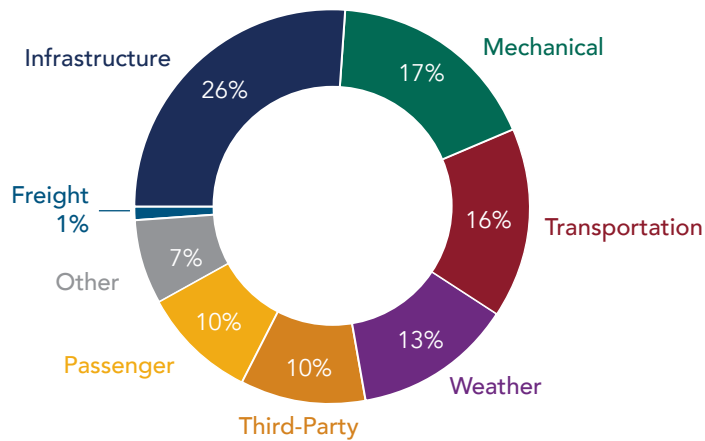


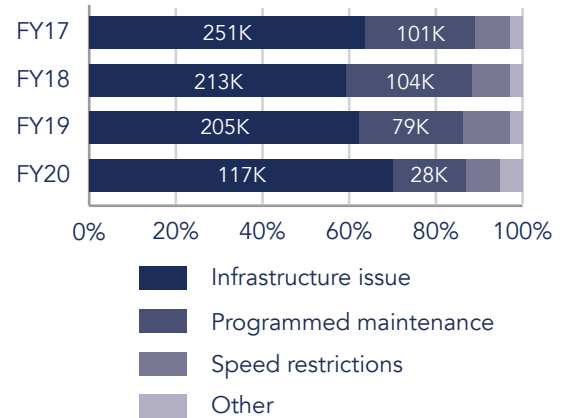


Figure 2-8. Train-delay minutes by cause

Train-delay minutes by cause, FY20



Infrastructure-related delay minutes, FY17-20



Infrastructure, mechanical, and transportation are consistently the top three causes of delay and are most directly related to the operation of the railroad. A quarter of train-delay minutes in FY20 are attributed to infrastructure-related causes, followed by mechanical and transportation. The stability of the top three delay categories suggests that while train performance can improve with reduced service, capital investments that ensure reliable service for passengers remain critically important especially as service levels resume and/or increase.

Infrastructure failures remained the largest cause of delay within the infrastructure delay category (70% in FY20). Programmed maintenance was responsible for fewer delays than in past years (17% in FY20, compared to 24% in FY19), likely because the reduced service levels provided additional opportunities for maintenance activities to occur.

Delays attributed to weather grew slightly from 9.5% in FY19 to 13% in FY20. Although a mild winter helped contribute to improved train performance during the first quarter of the year, storms with high winds caused significant disruptions on the corridor. Storms with wind gusts over 50 miles per hour occurred more frequently in FY20—28% higher than the previous five-year average. The most disruptive weather event was Hurricane Isaias in August 2020 that affected train service for five days in the states of New York, New Jersey, and Pennsylvania.

Figure 2-9. Train-delay minutes per 10,000 miles of service operated

Cause Category	Pre-Pandemic Average (FY14Q1-FY20Q2)	Pandemic Months (FY20Q3-4)	Percent change
Infrastructure	100	49	-51%
Mechanical	62	28	-55%
Transportation	57	23	-60%
Passenger	40	9	-76%
Weather	37	39	4%
Third Party	31	16	-48%
Freight	3	3	0%
Other	35	12	-65%
<b>Total train-delay minutes per 10,000 miles of service operated</b>	<b>364</b>	<b>179</b>	<b>-51%</b>

Changes in train-delay minutes are typically a reliable indicator for understanding the cause behind changes in service reliability. The pandemic-related reductions in service, however, complicate direct comparisons with previous years. Operating fewer trains inherently causes fewer delays—a change that is unrelated to reliability. Train-delay minutes viewed proportionally to train miles operated, however, allows for comparisons of reliability before and during the pandemic.

Train-delay minutes per train mile during the pandemic were 51% below the average experienced across the years leading up to the pandemic. The freight and weather delay categories, notably, were not meaningfully affected by the pandemic. Passenger-related delays experienced the most sizable change—with a decline of 76%. Fewer passengers means fewer delays for passenger loading, heavy travel, or disruptive passengers. The 50% to 60% decrease in delay minutes attributed to the infrastructure, mechanical, and transportation delay categories suggests that when fewer trains are utilizing the railroad, fewer collateral delays occur because of congestion.



**Above:** MTA Metro-North Railroad crews worked for several days in August 2020 to remove trees that fell across the New Haven Line tracks because of rain and high winds from Hurricane Isaias. The hurricane disrupted NEC service across three states.

## Major Incidents

### Weather-related major incidents persisted despite the pandemic.

Major incidents are single events that generate multiple train delays. These incidents typically shut down operations over a stretch of the NEC and require an extended period of time to resolve. Major incidents are identified by analyzing train performance data and cross-referencing that data with daily operation reports from NEC operators.<sup>2</sup>

There were only 31 major incidents in FY20, as compared to 85 and 58 major incidents in FY19 and FY18, respectively. Of the 31 major incidents in FY20, 12 (or 38%) were weather-related. However, from April through September 2020 during the pandemic, five of the six major incidents were weather-related. Third-party incidents were the next prevalent source of major incidents, with eight total (or 25%), all occurring between October 2019 through March 2020.

#### FY20 Weather-Related Major Incidents

- Oct 17: Bomb cyclone in MA
- Oct 17: Catenary failure due to downed trees in PA
- Oct 31: Signal power failure caused by high winds in NY
- Nov 1: Catenary failure caused by high winds in PA
- Nov 2: Wheel slip in PA
- Dec 17: Signal system failure caused by snowstorm in NY
- Jan 21: Signal system failure caused by weather in MA
- Jun 3: Catenary failure caused by derecho in PA
- Jun 3: Signal power failure caused by derecho in PA
- Jul 22: Catenary failure caused by severe storms in MD
- Aug 4-8: Hurricane Isaias along the NEC
- Sep 10: Track failure caused by heavy rain in MD

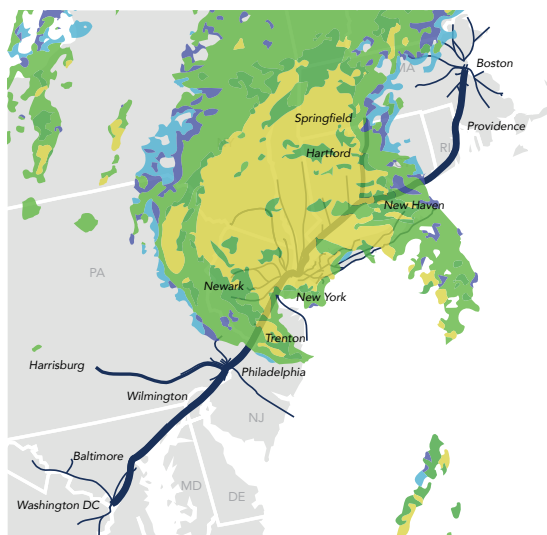
<sup>2</sup>Commission staff uses a threshold of 5,000 total train-delay minutes or 1,500 train-delay minutes caused by infrastructure to identify days which may have had major incidents that disrupted service. Commission staff then reviews daily operations reports on those days to uncover any major incidents that affected train performance and ties those incidents back to train delay records to quantify their impact.

There were fewer major incidents in FY20 because reduced service translated into fewer delay events on the corridor. With fewer trains operating, there are both fewer trains with the potential to be directly affected by incidents and less congestion or more capacity available for trains to navigate around trouble spots. The criteria for major incidents are occasions generating at least 5,000 train-delay minutes or 1,500 train-delay minutes directly related to infrastructure. A storm in June 2020, for example, caused damage to the corridor along both the Harrisburg Line and the main line between Philadelphia, PA and Trenton, NJ. During this time, those stretches of the railroad had only 53% of normal train volume due to reductions in service. Although the storm affected 57 trains, over 200 trains with many as 100 annulments might have occurred had full service levels been in effect.

**Figure 2-10. Notable FY20 major incidents**

A complete list of major incidents is available in the Appendix starting on page 46.

### August 4, 2020: Hurricane Isaias



Hurricane Isaias made landfall in North Carolina then raced up the east coast causing a massive service disruption for all NEC operators. The hurricane downed trees on the corridor and caused power outages. As the storm approached New York, it began picking up speed causing severe damage across New Jersey, New York, and Connecticut.

NJ TRANSIT and LIRR experienced the most delays on hurricane days due to issues on- and off-corridor. After the storm, infrastructure owners began to clear and repair the railroad, but conditions did not return to normal for many days. MNR-owned territory was the most affected portion of the corridor. On the day following the storm, MNR was unable to support operations because of the extent of the damage—causing a total of 942 trains to be annulled over five days while the railroad was repaired from storm damage.

**Total trains affected: 1,235    Total train-delay minutes: 9,305**



### February 3, 2020: Catenary Power Failure at "A" Interlocking at New York Penn Station



A faulty flood gate break caused widespread power issues at "A" Interlocking, which routes trains that enter New York Penn Station from the North River Tunnels under the Hudson River. This issue delayed 152 trains throughout the afternoon peak and into the evening.

Trains initially reported momentary power outages and electrical arcing which caused the South Tube of the North River Tunnels to be deenergized. Attempts to restore the power to the South Tube led to power issues across both tunnels, so trains single tracked in the North Tube for the remainder of the evening.

Simultaneously, Bergen Interlocking experienced a signal system failure that slowed rescue diesel engines that were attempting to retrieve stranded trains in the deenergized tunnel. Due to the reduced throughput, numerous trains were delayed and passengers reported commute times upwards of four hours.

Total trains affected: 152

Total train-delay minutes: 5,128

### February 6, 2020: Third-Party Security at Baltimore Penn Station



Amtrak Police Department was called to remove a disorderly passenger aboard an Amtrak train approaching Baltimore Penn Station. While being removed from the train, the passenger claimed to have an explosive in their luggage.

The train's passengers were unloaded and trains were not allowed to pass the station for two and a half hours until a bomb squad could investigate and clear the train.

Total trains affected: 44

Total train-delay minutes: 4,053



## Spotlight on the Baltimore & Potomac Tunnel

### Reduced service created opportunities for accelerated construction through longer, continuous track outages.

The Baltimore & Potomac Tunnel is a 1.4 mile, two-track tunnel located west of Baltimore Penn Station that was completed in 1873. Its aging components require constant monitoring and maintenance. Many components, such as its trackbed, require replacement in the short term, even though the entire tunnel is to be replaced in the long term. However, before the pandemic, as many as 55 MARC and 72 Amtrak trains traveled through the tunnel during the average weekday. These train volumes typically limit the amount of time tracks can be removed from service for replacement.

The Commission's FY20 NEC One-Year Implementation Plan, approved before the pandemic in October 2019, included an Amtrak plan to replace 960 feet of specialized trackbed in the tunnel, consisting of block ties and rail set in a concrete slab along portions where it was most deteriorated. This planned work assumed normal service on the corridor and would utilize 55-hour weekend outages to minimize disruptions to MARC and Amtrak customers while Track 2 was taken out of service.

Service in 2020, however, was vastly reduced due to the pandemic. Amtrak Engineering adapted its plans. By August, 53 MARC and 32 Amtrak trains per day were utilizing the tunnel. Fewer trains and passengers on the corridor meant that Amtrak had an opportunity to shift from 55-hour weekend outages to continuous, 118-hour weekday outages with only minor disruptions for customers.

The use of continuous outages gave crews longer blocks of time to conduct the work, which maximized daily production rates and shortened the overall schedule of work. The specialized work in the tunnel requires three different crews to remove old assets and install the new trackbed. The longer outages created an opportunity for the three teams to work in tandem, rather than sequentially as is the case under 55-hour weekend outages.

#### The critical need to advance and fund a replacement for B&P Tunnel

The replacement of the specialized trackbed within the Baltimore & Potomac Tunnel is critical maintenance work to allow continued use of the existing tunnel; however, it is not a long-term solution for the corridor. The tunnel opened 148 years ago and is beyond its useful life. Even with these near-term investments, the tunnel requires constant monitoring and preventive maintenance due to its age and deteriorating condition.

Amtrak is advancing design and property acquisition for a replacement tunnel. A 2019 Federal-State Partnership for State of Good Repair Program grant will support some enabling components, such as track work between Winans and Bridge interlockings. Amtrak has also committed its own limited funds to reach 60% design of the new tunnel within the next five years. However, these funding commitments are only life support for the project. Amtrak would be able to build all enabling components, complete final design and right-of-way acquisition, and begin construction of the replacement tunnel in the next five years if funding was secured.





**Opposite page:** Track availability on the NEC can limit the windows of opportunity for owners to access and undertake maintenance activities at specific locations. **This page, above:** The Baltimore & Potomac Tunnel is a 1.4 mile, two-track tunnel located west of Baltimore Penn Station and is comprised of three separate tunnels: the John Street Tunnel, the Wilson Street Tunnel, and the Gilmor Street Tunnel.

# 960

TOTAL LINEAR FEET  
PLANNED AS OF OCTOBER 2019

This approach saved costs on weekend overtime pay. It also reduced the number of individual outages, limiting the time and costs for crews entering the tunnel, setting up, cleaning up, and leaving the tunnel so that service can return.

# 3,500+

TOTAL LINEAR FEET  
COMPLETED BY SEPTEMBER 2020

By the end of FY20, Amtrak Engineering replaced over 3,500 feet of the tunnel’s most deteriorated trackbed—more than 3.5 times its original plan for the year—over two phases of the work. A third phase was underway at the start of FY21.

The replacement of a portion of the B&P Tunnel’s specialized trackbed is just one example of how NEC owners and operators worked together to advance key projects during a time of reduced train volumes. Other capital projects, such as switch installations and SEPTA’s Southwest Connection Improvement Project in Philadelphia, made significant progress due to reduced service. SEPTA combined two planned outages for the Southwest Connection Improvement Project into one larger, continuous outage, resulting in significant cost savings related to crew remobilization and flagging staff needed to ensure safety during construction.

Agencies will continue to look for other such opportunities while service levels remain below those before the pandemic. Squeezing maximum productivity out of coordinated track outages is also central to the Commission’s long-term plan under development called CONNECT NEC 2035. This effort is sequencing 15 years of capital renewal and special projects in a way that minimizes service disruptions to customers while Commission members bring down the state-of-good-repair backlog and build a foundation for service growth.



# 3. Infrastructure

The Commission approved its FY20 One-Year Implementation Plan in October 2019, which identifies each agency's capital investments planned for the upcoming federal fiscal year based on available funding. This section summarizes the capital investments made by NEC owners and operators during federal fiscal year 2020, including notable progress and accomplishments and adherence to plan.

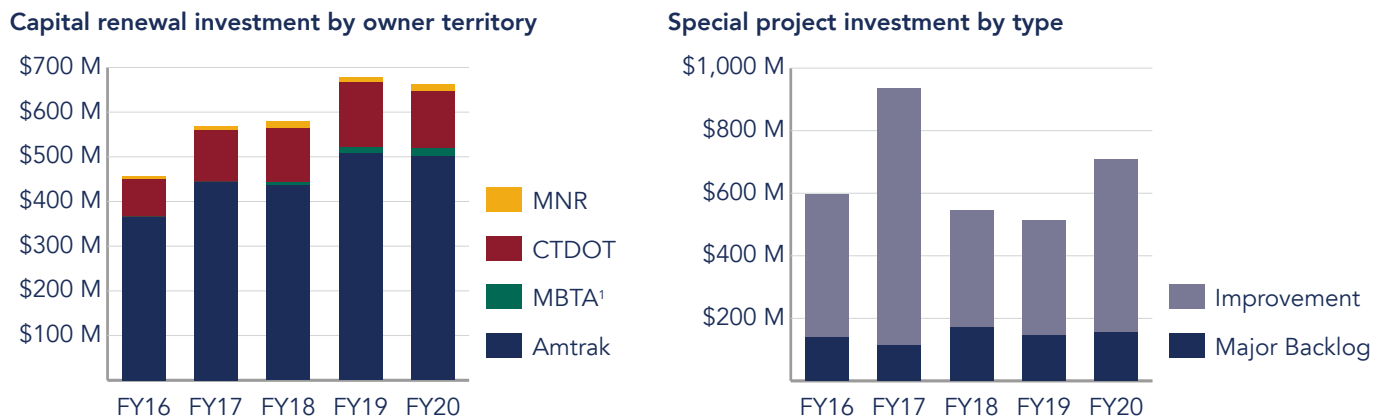
## NEC agencies invested nearly \$1.4 billion in infrastructure in FY20, above FY19 levels.

### Types of capital investment

1. **Capital renewal of basic infrastructure** includes the routine repair or replacement of existing basic infrastructure assets to keep the NEC safe for train operations. Capital renewal is managed by the NEC right-of-way infrastructure owners and funded largely by Baseline Capital Charges, as discussed on page 6.
2. **Special projects** include "major backlog projects" which represent the complete overhaul or replacement of major bridges and tunnels and "improvement projects" aimed at created new infrastructure above and beyond existing assets or replacing existing assets with markedly superior ones. While some special project components may be funded with BCCs, special projects as a whole are typically not BCC-eligible and are funded through a combination of state, local, federal, and Amtrak sources.

The coronavirus pandemic's effect on capital investment is complex compared to the more easily measured and understood impacts of the pandemic on NEC service and ridership levels. Collective infrastructure investment on the NEC grew from \$1.2 billion in FY19 to \$1.4 billion in FY20 despite numerous and significant challenges posed by the pandemic including workforce reductions, front-line worker quarantines, implementation of new rules and safety protocols, and budget tightening and reprioritization. NEC agencies invested \$662.1 million in capital renewal of basic infrastructure and \$702.9 million in special projects in FY20 (49% and 51% of total spending, respectively). Total capital renewal spending in FY20 was comparable to FY19 while special project spending was significantly higher (~\$190 million) than FY19.

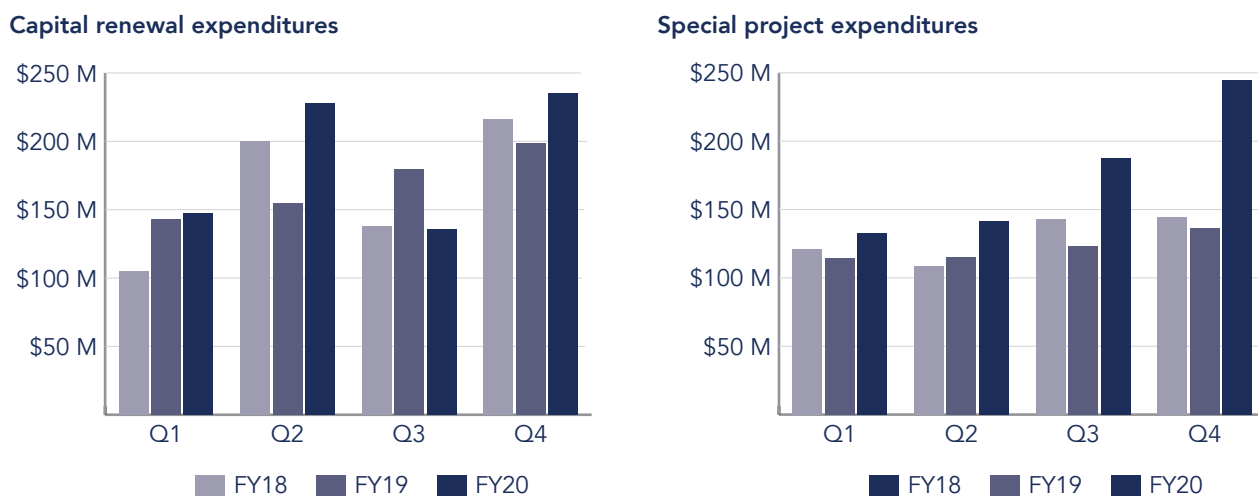
Figure 3-1. Total capital expenditure, FY16-20



**Figure note:** (1) For capital renewal, MBTA assumed the role of right-of-way owner beginning in FY18. Prior to FY18, Amtrak maintained MBTA territory.

Capital renewal spending in FY20 exceeded spending during all quarters in FY18 and FY19 except for the third quarter (i.e., April through June). Special project expenditures increased steadily throughout FY20 at levels above FY18 and FY19; still by the end of FY20, stakeholders reported deferring or delaying project milestones for nearly half of special projects. Stakeholders reported that the pandemic directly impacted the planned activities of about one-third of all special projects. For example, Susquehanna River Bridge, which was scheduled to achieve 60% design in FY20, was deferred to FY21 at the end of March due to pandemic-related funding concerns. Similarly, South Attleboro Station project site in Massachusetts was temporarily shut down in April due to the pandemic, contributing to overall schedule delays.

Figure 3-2. Quarterly capital investment, FY18-20



## FY20 Progress and Accomplishments

NEC agencies continued to make notable progress on critical investments despite the fact that the pandemic altered capital investment plans and resource deployment strategies throughout the second half of FY20. Some agencies accomplished more work than initially expected by taking advantage of increased track time availability and lower service levels (see spotlight on page 22). In other cases, funding challenges and uncertainty associated with the pandemic pushed back procurement timelines and project planning that will reverberate in the FY21 capital program and beyond.

### Capital renewal

Of the \$662.1 million invested in capital renewal in FY20, \$560.5 million (or 85%) was funded by Baseline Capital Charges (BCCs) paid to right-of-way infrastructure owners for their territories (see Figure 3-4). Per the NEC Cost Allocation Policy, as discussed on page 6, each operator contributes a BCC, which is calculated annually through the NEC Cost Allocation Model and based on relative use of NEC infrastructure. Approximately \$102.3 million of the total investment in capital renewal (or 15%) was funded by Amtrak and Connecticut DOT using other available funds beyond BCCs. MBTA and MTA Metro-North Railroad invested in their territory at levels lower than their FY20 BCC obligations.

Figure 3-3. Basic infrastructure assets

**Communications and signals** control the movement of trains along tracks and between tracks at interlockings. The signal network on the NEC is among the most outdated of all assets as communications technology has rapidly developed in recent decades. Many replacement parts for the current system are not available.

**Electric traction** systems draw power from the regional electric grid and distribute it to trains through a complex system of frequency converters, transmission lines, substation facilities, and overhead catenary lines. Many such assets that date back to the 1930s limit train speeds and are a frequent source of infrastructure failures and service disruptions.

**Structures** carry the railroad over or under rivers, streams, roadways, and other obstacles, in addition to buildings necessary to support railroad operations. Regular maintenance is required to maintain safe operating conditions and extend the useful life of assets. Hundreds of such assets are now over a century old and require complete replacement.

**Track** physically supports the movement of trains, including rail, concrete or wooden ties, a trackbed of ballast, and sublayers designed to ensure proper drainage and prevent shifting of the railroad. Regular maintenance of such infrastructure is required to maintain safe operating conditions, prevent damage to train equipment, and promote comfortable ride quality.

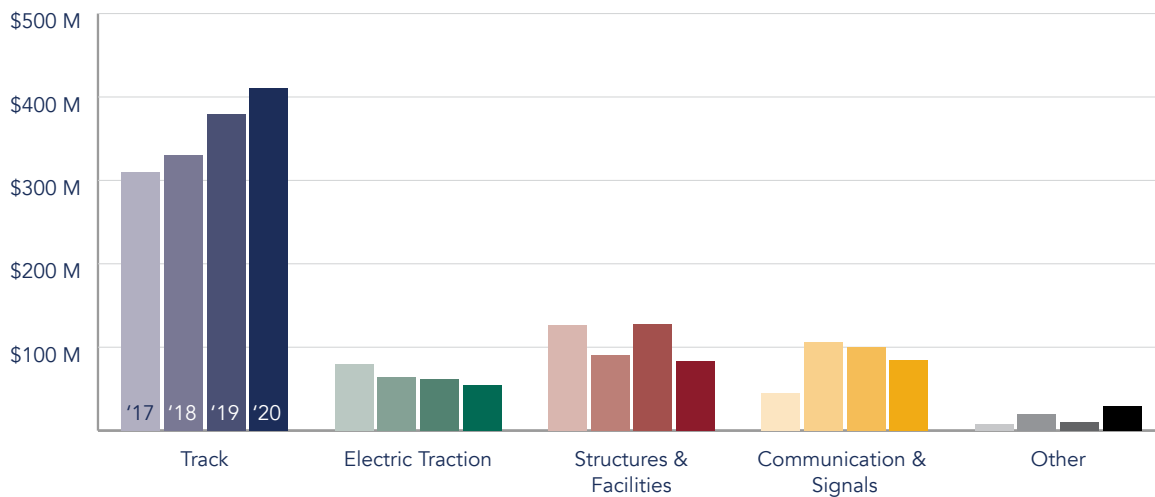


Figure 3-4. BCC obligation and capital renewal expenditure by RoW owner territory, FY20

	FY20 BCC obligation	FY20 total capital renewal expenditure	FY20 BCC expenditure	FY20 above or below BCC expenditure
Amtrak-owned territory <sup>1</sup>	\$460.4 M	\$500.6 M	\$460.4 M	+\$40.2 M
MBTA-owned territory <sup>2</sup>	\$27.6 M	\$20.0 M	\$20.0 M	-\$7.6 M
CTDOT-owned territory	\$64.6 M	\$126.7 M	\$64.6 M	+\$62.1 M
MNR-owned territory	\$15.6 M	\$15.5 M	\$15.5 M	-\$0.1 M
<b>Total capital renewal</b>	<b>\$568.2 M</b>	<b>\$662.8 M</b>	<b>\$560.5 M</b>	

**Table notes:** (1) The FY20 BCC obligation for Amtrak-owned territory reflects the NJ TRANSIT-Amtrak BCC variance approved by the Commission in August 2019. (2) Per agreement by MBTA and Amtrak, unspent FY18 and FY19 BCCs in MBTA-owned territory will be used as the local match for the Federal-State Partnership for State of Good Repair Grant obtained by MBTA for Tower 1 Interlocking.

Figure 3-5. Capital renewal expenditure by asset type, FY17-20



Track investments, which have steadily grown over the last four years, continued to grow in FY20. However, investment in structures and facilities, communication and signals, and electric traction declined in FY20 as compared to FY19. According to Amtrak, the overall leveling of capital renewal spending between FY19 and FY20 can be attributed to pandemic-related drop in revenue and funding concerns, direct impacts of COVID-19 on its workforce, and breakdowns of aging equipment that are scheduled to be replaced over the next several years.

## Special projects

NEC project sponsors invested over \$703 million in FY20 to advance special projects. Accomplishments, submitted by project coordinating agencies and highlighted on the following page, included completing two projects to increase capacity on the corridor, advancing enabling work to begin construction on several major backlog projects, and targeting existing bottlenecks through interlocking and signal improvements on the NEC main and branch lines.

# FY20 NEC Infrastructure Accomplishments

# Capital renewal

★ Special project

## Communications & signals infrastructure renewal improves reliability

- 5 MBTA installed over 8,000 feet of upgraded power, express, and communication cabling near Forest Hill, MA.
- 6 CTDOT invested in Phase 1 of the Signal System Replacement project which will improve the reliability of the signal system between Cos Cob and Norwalk. Additional work was completed to upgrade network infrastructure between Greenwich and Stamford, CT.
- 7 Amtrak continued infrastructure upgrades at New York Penn Station including LED signal upgrades at nine locations. Amtrak's investment in interlocking upgrade and renewal improves service reliability on trains as they switch between tracks, including a \$3.7 million investment to upgrade the communication and signal systems at Q Interlocking in Queens, NY.

## Electric traction investments help prevent service disruptions and improve reliability

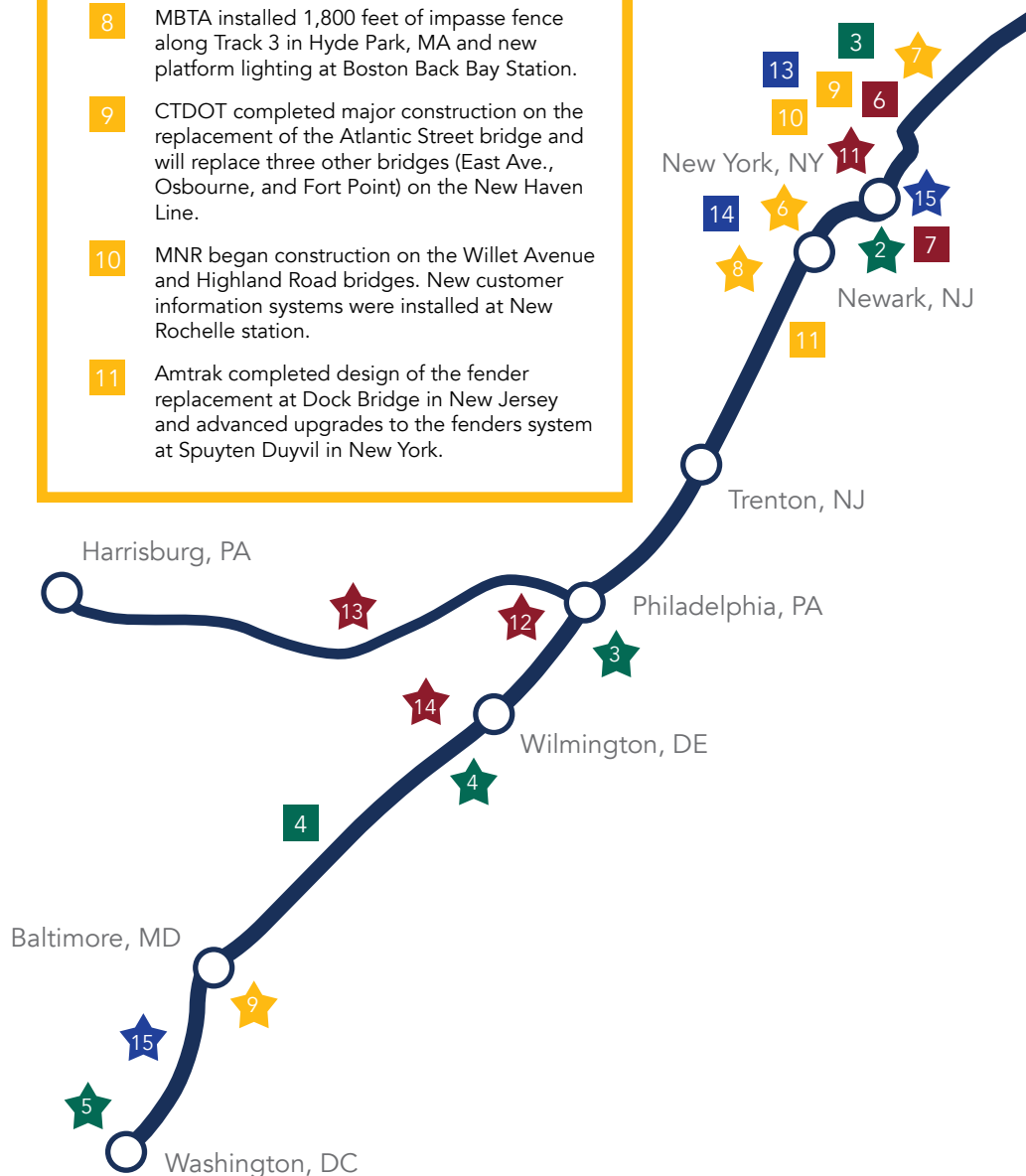
- 12 CTDOT installed new constant-tension catenary on the New Haven Line. Six substations were replaced and additional substation repairs will continue into FY21.
- 13 MNR continued design for the replacements of substations 128 and 178.
- 14 Amtrak renewed the overhead catenary system on Tracks 1 and 5 at New York Penn Station, improving the reliability of the power systems for Amtrak and NJ TRANSIT. Amtrak also installed 13 breakers, four switch heater power substations, and 15 air break switches.

## Capital renewal investments in **track** far outweigh other disciplines in FY20

- 1 MBTA replaced two crossovers at Transfer Interlocking near Route 128 Station in Massachusetts, improving reliability and enabling intercity and express trains to pass local trains.
- 2 CTDOT completed the installation of approximately 11,300 ties near Stamford and Norwalk and surfacing between Bridgeport and New Haven and between Cos Cob and Norwalk.
- 3 MNR procured new maintenance equipment to support future improvements on the New Haven Line.
- 4 Amtrak completed 121,483 feet of undercutting in the Mid-Atlantic and New England regions and replaced 16,250 concrete ties using its track laying system in Delaware, Pennsylvania, and Maryland.

## Investments in **structures and facilities** help maintain safe operating conditions

- 8 MBTA installed 1,800 feet of impasse fence along Track 3 in Hyde Park, MA and new platform lighting at Boston Back Bay Station.
- 9 CTDOT completed major construction on the replacement of the Atlantic Street bridge and will replace three other bridges (East Ave., Osbourne, and Fort Point) on the New Haven Line.
- 10 MNR began construction on the Willet Avenue and Highland Road bridges. New customer information systems were installed at New Rochelle station.
- 11 Amtrak completed design of the fender replacement at Dock Bridge in New Jersey and advanced upgrades to the fenders system at Spuyten Duyvil in New York.





## Station improvements continued in FY20

- 1 RIDOT continued work on the new **Pawtucket/Central Falls Station**, which will be served by MBTA's Providence Line. The station is scheduled to open in 2022.
- 2 The new **Moynihan Train Hall** neared completion at the end of FY20 and opened to customers in January 2021. The train hall expands New York Penn Station into the historic James A. Farley Post Office and provides additional space and access points for Amtrak and LIRR customers. NJT, Amtrak, and MTA continued master plan work for the reconstruction of existing Penn Station and kicked off planning work for Penn Expansion (part of Gateway).
- 3 Amtrak, with SEPTA and NJ TRANSIT, began design activities for the **Philadelphia 30th Street Station District Plan Implementation**, which includes transformative multimodal connections and passenger amenities.
- 4 DelDOT continued construction at **Claymont and Newark Regional Transportation Centers** in Delaware. Both are expected to be completed in FY21.
- 5 Amtrak began rehabilitation of **Track 22 at Washington Union Station**, a through-running track that will provide additional train capacity for Amtrak and VRE service.

## Agencies continued to advance major backlog projects

- 6 Despite schedule delays due to the pandemic, Amtrak reached 60% design for both **Connecticut River Bridge** and **East River Tunnel Replacement Projects**.
- 7 CTDOT advanced construction of enabling projects and final design activities for the **Walk Bridge Program**, which will replace the 120-year old Walk Bridge in Norwalk, CT and reduce potential major service disruptions on the NEC. CTDOT also advanced preliminary engineering for the **Devon Bridge Replacement** project, another of the aging, functionally obsolete bridges on the New Haven Line.
- 8 NJ TRANSIT, Amtrak, and Gateway Program partners continued to prepare project agreements and secure contractors to begin construction of **Portal North Bridge**, which will be the first Gateway Program project to enter construction. **Sawtooth Bridge Replacement Project**, also part of the Gateway Program, obtained an environmental determination of "Finding of No Significant Impact."
- 9 Amtrak advanced enabling projects, continued design, and engaged with external stakeholders on the **Baltimore & Potomac Tunnel Replacement project**.

## Agencies made investments to restore and improve right-of-way infrastructure

- 10 MBTA advanced coordination with Amtrak to begin state-of-good-repair work at **Tower 1 Interlocking**, which will provide operational flexibility for trains converging in and out of Boston South Station.
- 11 Amtrak completed the final punch list and close out of the **New Jersey High Speed Rail Improvement Program**, which upgraded the right-of-way between New Brunswick and Trenton, NJ.
- 12 SEPTA completed design for the **30th Street West Catenary Replacement** project and will begin construction in FY21.
- 13 Amtrak and PennDOT advanced upgrades to **bidirectional signaling** on the Harrisburg Line between Park and Paoli Interlockings. Bidirectional signaling will improve reliability on Amtrak's Keystone and SEPTA's Paoli-Thorndale services.
- 14 DelDOT completed the **Delaware Third Track Program**, which was placed into service in September 2020. The newly restored third track eliminated a two-track bottleneck and will improve reliability for Amtrak and SEPTA services in Delaware.

## Amtrak also prepared for the next generation of Acela

- 15 Amtrak continued work on several projects related the launch of their **next generation of Acela trainsets**, which underwent testing throughout FY20. Investments continued on **ride quality** and **safety mitigation** improvements along the right-of-way, in addition to maintenance facilities at **Ivy City (DC)**, **Sunnyside (NY)**, and **Southampton (MA)**.

## Delivering the NEC One-Year Implementation Plan

### Adherence to plan improved slightly in FY20, but was similar to FY19.

NEC agencies spent \$1.4 billion out of a planned \$1.8 billion in FY20. Agencies spent more on capital investment in FY20 than in FY19, however the percent of plan spent was approximately the same in both years (76% in FY19 and 77% in FY20). Percent of plan spent for capital renewal investments was higher than for special projects (82% vs. 73%, respectively), also similar to FY19.

The Commission began conducting plan adherence analyses in FY19. The pandemic has presented both challenges and opportunities regarding capital investment, making its overall impact on FY20 plan adherence difficult to summarize. The pandemic has also made it difficult to draw conclusions about whether plan adherence is improving year-over-year. Funding uncertainty and COVID-19 infections among work crews are two core pandemic-related issues that made plan adherence more difficult than usual.

Figure 3-5. Summary of FY19 and FY20 plan vs. actuals

	FY19 Planned Expenditure	FY19 Actual Expenditure	Percent of Plan Spent	FY20 Planned Expenditure <sup>1</sup>	FY20 Actual Expenditure	Percent of Plan Spent
Capital renewal	\$761.6 M	\$678.2 M	89%	\$811.4 M	\$662.8 M	82%
Special projects	\$810.8 M	\$514.7 M	63%	\$967.7 M	\$702.2 M	73%
Total	\$1,572.4 M	\$1,192.9 M	76%	\$1,779.1 M	\$1,365.0 M	77%

**Table Notes:** (1) FY20 planned expenditure for capital renewal and special projects differs from the plan because Tower 1 Interlocking project was reclassified as capital renewal.

### Measuring Plan Adherence

The Commission acknowledges the dynamic and complex nature of the corridor and the responsibility of all owners and operators to maintain a safe and reliable railroad. As such, 100% plan adherence is not expected and adjustments to plan are reasonable. For this report, plan adherence is measured as expenditures that fall within 20% of the planned expenditure approved in the FY20 One-Year Implementation Plan.

However, using expenditures alone to measure plan adherence can be imperfect. Measuring progress and plan adherence using multiple factors in addition to expenditure, such as units, locations, or schedules, would present a more holistic view of annual capital investment. Nevertheless, fiscal year expenditure remains the best tool to measure progress at this time due to NEC planning and reporting data limitations. It is expected that future Annual Reports will include multiple measurements of plan adherence as the Commission continues to improve its planning and reporting processes each year (see Recommendations on page 41).

## Capital renewal adherence to plan

**Overall percent of plan spent.** Amtrak and MTA Metro-North Railroad spent 84% and 88% of the total planned expenditure for their respective territories. Connecticut DOT and MBTA spent 62% and 79% of the total planned expenditure for their territories. In FY19, three of the four RoW owners (Amtrak, MNR, and CTDOT) spent within 20% of plan.

Figure 3-6. Capital renewal investment by right-of-way owner, FY20 plan vs. actual

	Miles of RoW owned <sup>1</sup>	FY20 Planned Expenditure	FY20 Actual Expenditure	Percent of Plan Spent
Amtrak	697.8	\$593.0 M	\$500.6 M	84%
MBTA	37.9	\$32.5 M	\$20.0 M	62%
CTDOT	46.2	\$168.2 M	\$126.7 M	75%
MNR	9.8	\$17.6 M	\$15.5 M	88%
<b>Total</b>	<b>791.7</b>	<b>\$811.4 M</b>	<b>\$662.8 M</b>	<b>82%</b>

**Table Notes:** (1) RoW miles owned is approximate and includes the NEC main line and connecting corridors.

**Capital renewal programs versus projects.** RoW owners' capital renewal plans include two types of investments: (1) programs which are typically cyclical in nature, may include both planned and reactive work, and sometimes cross multiple locations; and (2) stand-alone projects which typically focus on one location or asset with a discrete start and end date. Example programs include Amtrak's Production High Speed Surfacing Program and CTDOT's New Haven Line Track Program (C Program). Example projects include Amtrak's Q Interlocking C&S Equipment Replacement Project and MBTA's Route 128 Escalator and Elevator Project.

Programs and projects have different management and planning requirements which may lead to variation in plan adherence. However, FY20 plan adherence across all RoW owner territories for projects and programs was similar (83% and 79% respectively). This finding is in contrast to FY19 when plan adherence for capital renewal projects was notably lower than plan adherence for capital renewal programs.

Figure 3-7. Capital renewal projects and programs plan adherence, all RoW owners, FY20

	Total number in FY20 Plan	FY20 Planned Expenditure	FY20 Actual Expenditure	Percent of Plan Spent
Programs	413	\$553.1 M	\$458.9 M	83%
Projects	88	\$258.3 M	\$203.9 M	79%
<b>Total</b>	<b>501</b>	<b>\$811.4 M</b>	<b>\$662.8 M</b>	<b>82%</b>

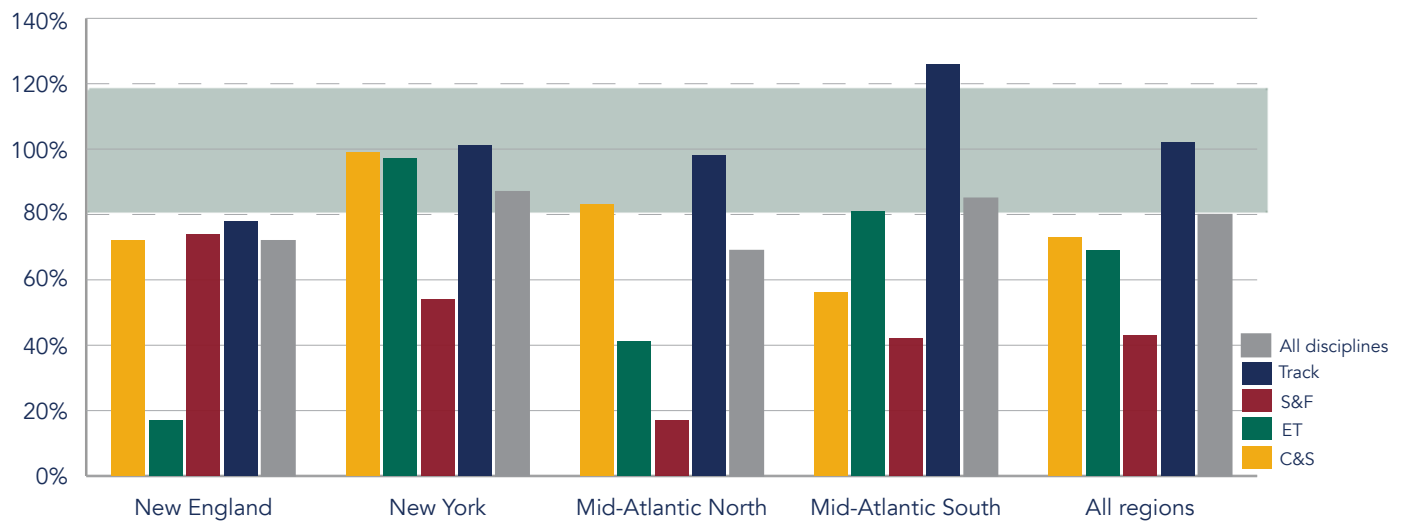


**Regionally-managed versus system-wide capital renewal programs.** Amtrak restructured its engineering portfolio in FY20 into regionally-managed and system-wide projects and programs.<sup>3</sup> Amtrak’s total spending on system-wide production programs (e.g., undercutting and concrete tie replacement) came very close to its FY20 plan at 94%, which is similar to FY19 when Amtrak spent 96% of its plan for continuous maintenance production programs.

Amtrak’s regionally-managed programs—when analyzed across all regions and Engineering disciplines—spent 80% of plan. On a regional level, both New Jersey-New York and Mid-Atlantic South regions were within 20% of plan across all disciplines (87% and 85% respectively). Only one Engineering discipline—track—fell within 20% of plan on average across all regions, yet given the magnitude of Amtrak’s track portfolio, plan adherence for this discipline brought the average across all disciplines within 20% of plan (as seen in the gray bar in Figure 3-8).

These results are consistent with the fact that production programs, such as the track-laying system (TLS), tend to include more planned work and are less nimble compared to regionally-managed programs that include more reactive work like spot undercutting and spot surfacing.

Figure 3-8. Amtrak regionally-managed programs plan adherence, FY20



RoW owners paused or deferred some capital renewal work in the early days of the pandemic due to funding uncertainties. These sudden and necessary changes to plan impacted overall plan adherence for capital renewal. Amtrak deliberately prioritized work which impacts safety and reliability of the railroad. Additionally, Amtrak prioritized shared-benefit work in locations where its commuter partners also operate.

<sup>3</sup> See FY20 NEC One-Year Implementation Plan for information regarding Amtrak Engineering’s organizational structure for project and program management.

### Baseline Capital Charge Segments

NEC right-of-way infrastructure owners invest operators' BCCs within their respective service territories. The NEC, therefore, is divided into 31 BCC segments generally defined as points on the NEC where the mix of owners and/or operators changes. Each segment then has a distinct set of operators whose BCCs may be applied to capital renewal investments.

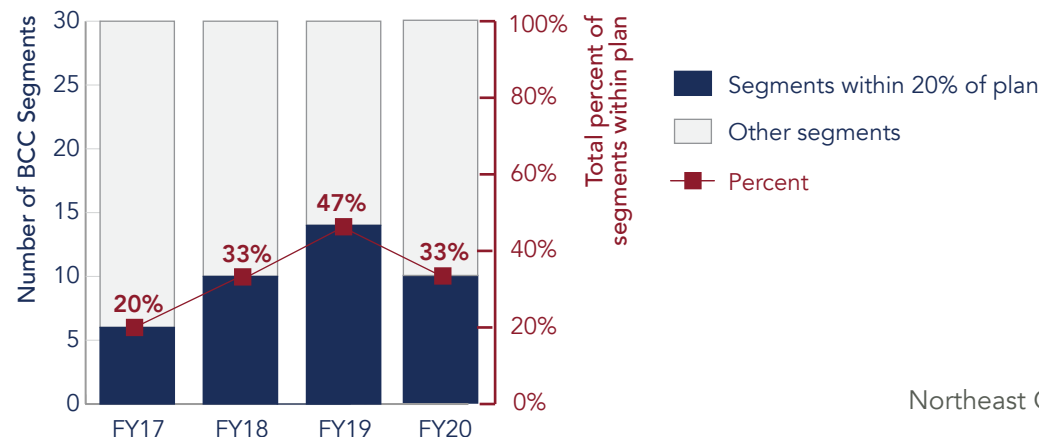
BCC Segment	Owner	BCC Segment	Owner
1. Boston South Station to MA/RI State Line	MBTA	16. Shore to Girard	Amtrak
2. MA/RI State Line to Providence	Amtrak	17. Girard to Philadelphia 30th Street	Amtrak
3. Providence to Wickford Junction	Amtrak	18. Philadelphia 30th Street to Arsenal	Amtrak
4. Wickford Junction to New London	Amtrak	19. Arsenal to Marcus Hook	Amtrak
5. New London to New Haven	Amtrak	20. Marcus Hook to Bacon	Amtrak
6. New Haven to CT/NY State Line	CTDOT	21. Bacon to Perryville	Amtrak
7. CT/NY State Line to New Rochelle	MNR	22. Perryville to WAS	Amtrak
8. New Rochelle to Harold	Amtrak	23. Washington Union Terminal	Amtrak
9. Harold to F Interlocking	Amtrak	24. WAS to CP Virginia	Amtrak
10. F Interlocking to Penn Station New York	Amtrak	25. Springfield to New Haven	Amtrak
11. Penn Terminal	Amtrak	26. Poughkeepsie - Spuyten Duyvil*	MNR
12. Penn Station New York to Trenton	Amtrak	27. Spuyten Duyvil to Penn Station New York	Amtrak
13. Trenton to Morris	Amtrak	28. Penn to 36th Street	Amtrak
14. Morris to Holmes	Amtrak	29. 36th Street to Thorndale	Amtrak
15. Holmes to Shore	Amtrak	30. Thorndale to Harrisburg	Amtrak
		31. Amtrak System-wide	Amtrak

\*Segment 26 is exempt from the plan

**Capital renewal spending by geography.** A geographic analysis of plan adherence shows that owners adhered to planned expenditures by location less in FY20 than in FY19. NEC RoW owners are required to demonstrate each year their ability to spend an operator's BCC in that operator's territory. Therefore the NEC is split into BCC segments, each with a distinct set of operators (as described above) and the One-Year Plan includes an associated fiscal year planned expenditure by segment. RoW owners spent within 20% of the BCC segment-level planned expenditure in nine out of 30 segments in FY20 versus in 14 out of 30 segments in FY19. The FY20 results are on par with FY18 when owners met this threshold in ten segments.

COVID-19 outbreaks caused RoW owners to periodically pull their workforce out of certain geographic locations. Crews, in some cases, were safely redirected to other locations on the NEC. These adjustments may have contributed to the overall decline in plan adherence by BCC segment.

Figure 3-9. Capital renewal plan adherence by BCC Segment, FY17-20



## Special projects adherence to plan

NEC project sponsors spent approximately 73% of the total planned FY20 special projects expenditure, an improvement over FY19 (63%) but still not within 20% of plan. By agency, only CTDOT and MNR spent within 20% of their respective planned expenditure, while some agencies, including VRE and Maryland DOT, spent less than 10% of their planned expenditure.

Figure 3-10. Special projects plan vs. actual by project sponsor, FY20

	Number of special projects in plan	FY20 Planned Expenditure	FY20 Actual Expenditure	Percent of Plan Spent
<b>Amtrak</b>	32	\$299.3 M	\$175.3 M	59%
<b>Connecticut DOT</b>	8	\$179.5 M	\$182.2 M	102%
<b>Delaware DOT</b>	3	\$37.0 M	\$26.6 M	72%
<b>Maryland DOT/ MD MTA</b>	1	\$8.5 M	\$0.7 M	9%
<b>MBTA</b>	3	\$15.8 M	\$10.5 M	67%
<b>NY MTA</b>	5	\$319.0 M	\$250.3 M	78%
MTA Construction & Development	1	TBD	\$42.9 M	N/A
MTA Long Island Rail Road	3	\$287.0 M	\$178.5 M	62%
MTA Metro-North Railroad	1	\$32.0 M	\$28.9 M	90%
<b>NJ TRANSIT</b>	9	\$45.5 M	\$28.5 M	63%
<b>Pennsylvania DOT</b>	6	\$10.9 M	\$7.9 M	72%
<b>Rhode Island DOT</b>	3	\$17.8 M	\$5.5 M	31%
<b>SEPTA</b>	5	\$20.5 M	\$14.1 M	69%
<b>VRE</b>	1	\$14.0 M	\$0.3 M	2%
<b>Total</b>	<b>76</b>	<b>\$967.7 M</b>	<b>\$702.2 M</b>	<b>73%</b>

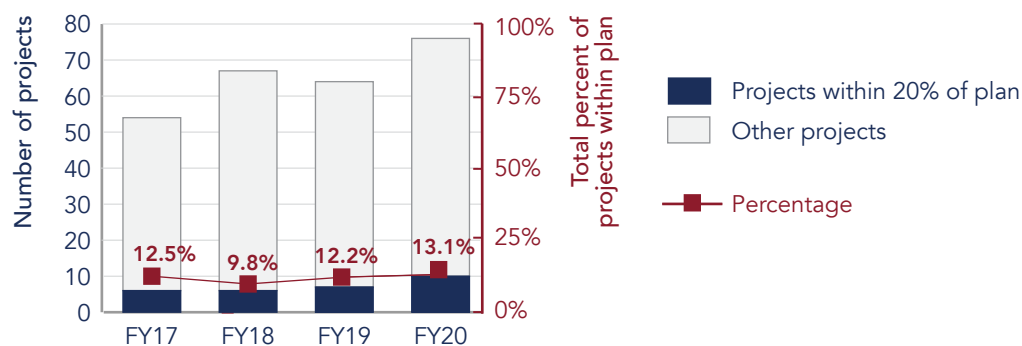
Percent of plan spent at the agency level can be greatly skewed by only one or two projects when an agency manages fewer projects on the NEC. Figure 3-11 on page 35 highlights special projects with the highest dollar-value variances in FY20 across all agencies. All special project explanations of variance can be found in the Appendix starting on page 56.

Figure 3-11. Highlighted special projects explanations of variance, FY20

Project Name	Project Sponsor	FY20 Planned Expenditure	FY20 Actual Expenditure	Submitted explanation of variance
<b>Penn Station New York: Long Island Rail Road Projects<sup>1</sup></b>	MTA Long Island Rail Road	\$213.0 M	\$165.7 M	Completion of elevator and escalator refurbishment was extended to November 30, 2020 due to additional change order works and pandemic-related reasons.
<b>River-to-River Rail Resiliency Projects (R4)</b>	MTA Long Island Rail Road	\$40.0 M	\$0.2 M	Time extension needed to resolve issues between LIRR and Amtrak on the site access agreement at the Queens site of the project.
<b>East River Tunnel: Right of Way Infrastructure Improvements</b>	MTA Long Island Rail Road	\$34.0 M	\$12.6 M	Funds not expended due to Amtrak cancellation of East River Tunnel outages.
<b>Gateway: Hudson Tunnel Project</b>	Amtrak	\$31.7 M	\$11.6 M	Hudson Tunnel Project PE signoff and NEPA continued in its hold by FRA through most of the FY, pushing anticipated ROD to FY21. As a result, risk analysis and geotechnical work is ongoing. Start of Hudson Yards Concrete Casing early work was delayed due to ongoing negotiations with site owners.
<b>Gateway: Portal North Bridge</b>	NJT / Amtrak	\$29.0 M	\$10.3 M	The project's scope, schedule, budget and financial plan remain under review by the FTA, FRA and Amtrak as well as NJ TRANSIT. Any variations in either of the above items are directly attributable to these ongoing review activities.
<b>New Carrollton Station: Acela 21</b>	Amtrak	\$17.7 M	\$0.6 M	Schedule of entire project is behind due to adjacency of new platform to WMATA tracks/property. This issue has now been resolved as Amtrak entered into an agreement with WMATA. WMATA has reviewed the design documents and provided comments. The designer has addressed WMATA's concerns thus far as we look to complete WMATA review. Budget Variance is also high on overall project due to delay in schedule and required reprogramming, as previously documented. Project has been moving forward with design milestones updated and new expected schedule.
<b>Washington Union Station: Claytor Concourse Modernization Program</b>	Amtrak	\$17.3 M	\$1.5 M	The completion of the electric workshop has been delayed due to contractor performance issues. The concourse project is experiencing a major schedule delay due to USRC assuming project delivery responsibility because of station ownership and governance issues at the beginning of FY20; no major advancements occurred in FY20.
<b>Baltimore Penn Station: Infrastructure Improvements</b>	Amtrak	\$16.0 M	\$0.4 M	Total FY20 expenditure was \$371,603 against a plan of \$6,620,795. This lower expenditure was due to some delays in getting to solicitation and construction. Our original \$6 million plan for FY20 included several months of construction work. Design changes and other constructability review items delayed the start of solicitation and the solicitation process was extended by a large number of RFIs that required responses and several rounds of site visits that were requested by the bidders.
<b>VRE Midday Storage Facility</b>	VRE	\$14 M	\$0.3 M	Delayed initiation of final design due to ongoing agreement negotiations to be resolved in early 2021.
<b>Claymont Regional Transportation Center</b>	Delaware DOT	\$24 M	\$10.9 M	Due to unforeseen drainage and track elevation issues raised by Amtrak, work in the Amtrak right of way could not start until the issues were resolved and final design drawings are approved. Most issues have been resolved and the submission and final approval of project drawings and specifications are expected to be received in Q1 and Q2 of FY21.

**Table Notes:** (1) Starting in FY21, MTA investments in Penn Station were brought under three projects: Penn Station New York: Reconstruction Master Plan; Gateway: Penn Station Expansion; and Penn Station New York: Long Island Rail Road Projects.

Figure 3-12. Special project-level plan adherence, FY17-20



Special project-level plan adherence improved slightly in FY20 as compared to FY17-19 with NEC project sponsors spending within 20% of plan for ten out of 76 special projects, or 13.1%. Despite this slight improvement, project-level plan adherence continues to be a challenge.

The variance explanations provided by project sponsors for each special project highlight noted that plan adherence was impacted by numerous and varied factors. The pandemic reportedly impacted at least one-third of special projects. Specifically, project sponsors reported deferring design work for major projects in FY20 due to funding uncertainties and temporary cessations of contracted work.



FY20 data suggests that projects which are fully funded beyond the current fiscal year may have better adherence to plan. Specifically, eight out of the 10 special projects which spent within 20% of plan (as seen in Figure 3-12 and highlighted in Figure 3-13) are considered by project sponsors to be “fully funded” or “fully programmed” beyond the current fiscal year. Only two projects which spent within 20% of plan are considered “partially funded” beyond the current fiscal year. This finding suggests that a dedicated funding stream for NEC projects would enable better near-term planning (and therefore better plan adherence) and more efficient project delivery.

**Figure 3-13. Special projects plan vs. actual by project sponsor, FY20**

The projects below are the ten projects which FY20 actual expenditure was within 20% of plan.

Project Name	Project Sponsor	FY20 Planned Expenditure	FY20 Actual Expenditure	Percent of Plan Spent	Funding Status <sup>1</sup> beyond FY20
East River Tunnel Rehabilitation	Amtrak	\$5.8 M	\$5.6 M	88%	Partially funded
Hanson Interlocking	Amtrak	\$10.4 M	\$10.3 M	99%	Fully funded
Moynihan Station Phase 2	Amtrak	\$69.6 M	\$66.4 M	95%	Fully funded
New Jersey High Speed Rail Improvement Program	Amtrak	\$4.7 M	\$4.1 M	88%	Fully funded
Veltri Interlocking	Amtrak	\$1.6 M	\$1.4 M	88%	Fully funded
Walk Bridge Program	CTDOT	\$125.0 M	\$120.0 M	96%	Fully programmed
SLE Station Improvements	CTDOT	\$12.0 M	\$11.5 M	95%	Fully programmed
Delaware Third Track	DelDOT	\$7.2 M	\$7.5 M	105%	Fully funded
Penn Station Access	MNR	\$32.0 M	\$29.0 M	90%	Fully funded
Elizabeth Station Improvements	NJT	\$10.0 M	\$9.9 M	99%	Partially funded

**Table notes:** (1) Funding status is based on submissions to the FY21-25 Capital Investment Plan, some of which were based on pre-pandemic agency plans. CTDOT's funding is programmed, not committed.

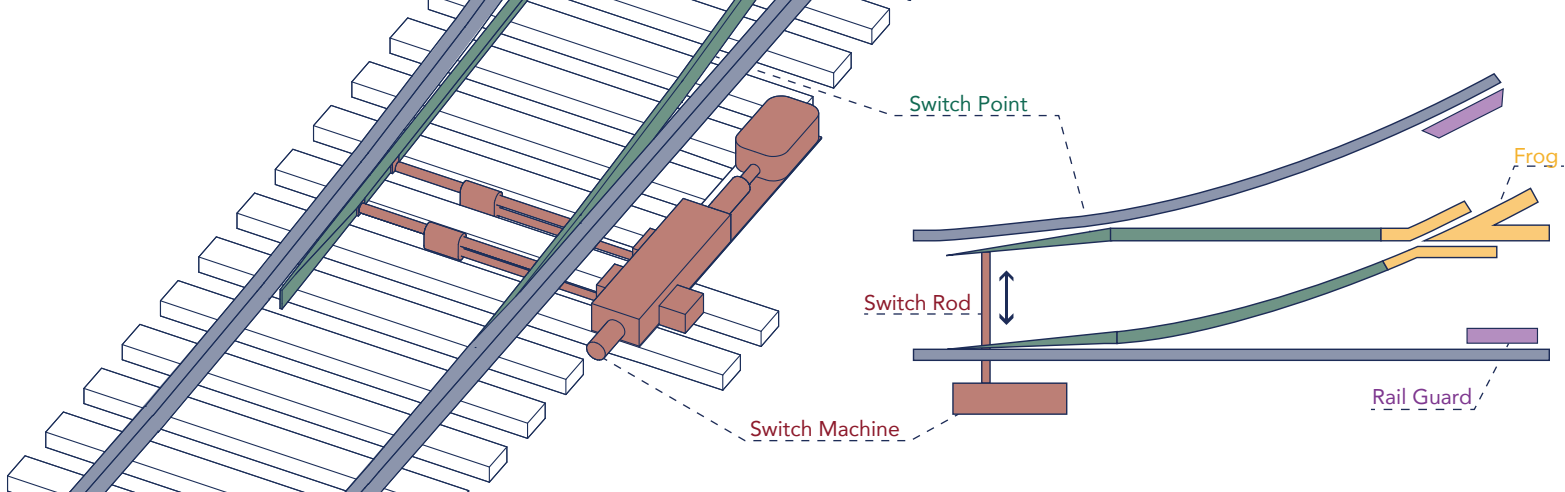
### ***Progress in Eliminating the State-of-Good-Repair Backlog***

The NEC state-of-good-repair (SOGR) backlog refers to the population of infrastructure assets on the NEC that are beyond their useful life. 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 become more expensive to maintain and more vulnerable to failures that cause service disruptions.

The NEC Commission publishes the NEC SOGR backlog estimate in each Capital Investment Plan as a way to articulate the scale of the backlog problem to its stakeholders and Congress. The most recent CIP estimated the backlog to be approximately \$42 billion based on unit costs of basic infrastructure assets and major backlog total project costs.

The Commission approved its Cost Allocation Policy in October 2020 for a second five-year term and included a new requirement to measure and report on progress against the SOGR backlog in each NEC Annual Report. The current approach to measuring the backlog, as described above, does not allow for year-over-year measurement of progress due to fluctuating project costs, inflation, and an inability to fully parse out improvement components from some major backlog project scopes. The SOGR backlog estimate figure under the current approach would continue to rise year-over-year even as work progresses because of the inability to accurately compare costs over time.

The Commission is beginning to update its backlog estimate as directed by this new Policy provision. The new estimate will be published in future Commission plans and reports and will involve two parts. First, the Commission will estimate the SOGR backlog for select asset classes as a count or percent of assets not in a state of good repair using data provided by right-of-way infrastructure owners and reviewed by all member agencies. This asset-based approach will allow the Commission to measure progress year-over-year as owners replace aging assets and other assets fall out of a state of good repair. Second, the Commission will provide an updated, more refined estimate of the cost of bringing the Corridor to a state of good repair based on the cost estimation practices being developed as part of the CONNECT NEC 2035 program.



## Spotlight on Switch Machines

### Basic infrastructure assets are a crucial component of the state-of-good-repair backlog.

At least one switch machine on the Northeast Corridor fails each day.

Media reports on the NEC state-of-good-repair backlog most often focus on the numerous 100-plus-year-old major bridges and tunnels on the corridor that need to be replaced. However, thousands of smaller assets on the NEC are beyond their useful life and, when they fail, can create their own serious service disruptions.

There are roughly 2,400 switch machines on the NEC, mostly located at interlockings. An interlocking is a collection of signals and switches (sometimes also referred to as turnouts or crossovers) at a location that controls the movement of trains from one track to another. The machines that power the switches are vital components of a functioning interlocking. Modern switch machines on the NEC use electric motors to push switches between tracks; older pneumatic machines use compressed air to push switches. Pneumatic switch machines are generally considered to be an obsolete technology because they require more maintenance, except in and around New York Penn Station where their quicker switching speeds are required to move the high volume of peak-hour trains through the station.

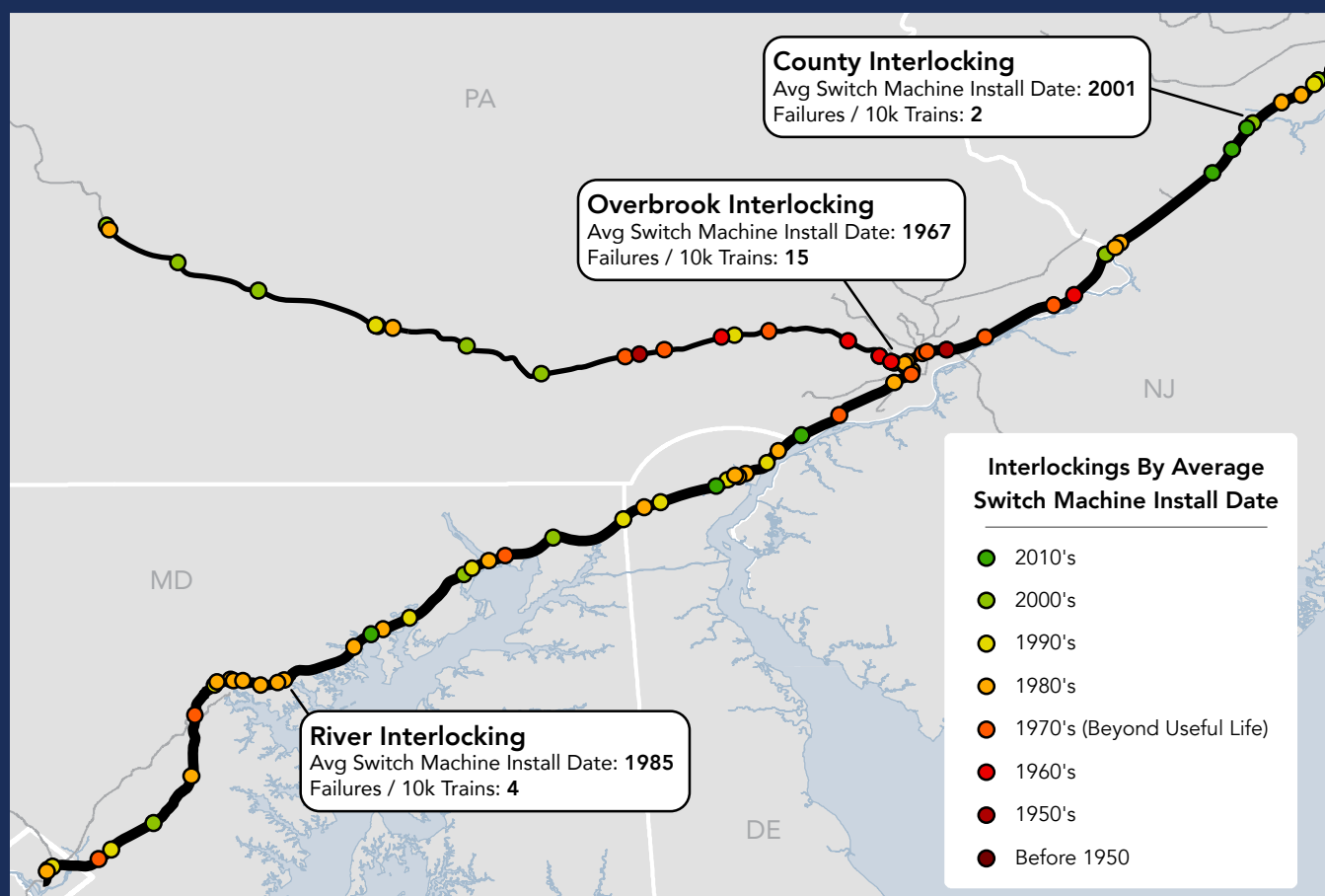
Switch failures accounted for nearly 20% of the total train-delay minutes due to infrastructure issues in FY20. Nearly a quarter of switch machines on Amtrak-owned portions of the NEC are beyond their useful life of 40 years. Some assets can operate safely beyond their useful life, though they become more expensive to maintain and more vulnerable to failures that cause service disruptions. When a switch machine fails, a portion of the interlocking becomes inoperable until a maintainer arrives on site to diagnose and correct the failure. These failures can cause varying levels of passenger delay based on the location of the switch and the time of day. A July 2019 switch failure at Ragan Interlocking in Wilmington, DE, for example, required crews to establish local control to repair the switch's remote-control circuits to the train dispatching center. This incident lasted over 3 hours during the afternoon peak and affected 22 trains, causing a total of 1,230 train-delay minutes.

The Northeast Corridor Improvement Program (NECIP) began in 1976 and funded the upgrade or replacement of many switch machines between New Rochelle, NY and New York Penn Station and between Wilmington, DE and Washington, DC. Those investments plus others since bring the average age of switch machines in these areas to about 25 years old. NECIP did not target the Philadelphia area, however, where today some switch machines date to before 1950 and the average age is 41 years old. Switch machines where Amtrak and SEPTA operate together fail at higher rates than elsewhere on the NEC and have become costly to maintain.

In recognition of this discrepancy, Amtrak has been targeting switch machine renewals in Pennsylvania, spending more in Pennsylvania in FY20 (\$1.8 million) than all other locations on the NEC combined (\$0.5 million). However, this overall replacement rate is still below what is needed to bring these assets into a state of good repair. Even the relatively newer switch machines installed during NECIP are starting to age beyond their useful life of 40 years.

Tackling the replacement of basic infrastructure assets like switch machines is a core component of the Commission's long-term plan under development called CONNECT NEC 2035. This effort is evaluating the age and condition of every asset on the NEC to sequence 15 years of capital renewal and special projects in a way that minimizes service disruptions to customers while Commission members bring down the state-of-good-repair backlog and build a foundation for service growth.

Figure 3-14. Interlockings by average switch machine install date



## 4. Recommendations

The FY20 NEC Annual Report is the fourth Annual Report published by the Northeast Corridor Commission. The Commission, as instructed by federal statute, uses these reports to articulate challenges and offer recommendations for improvement to NEC stakeholders.

NEC Commission member agencies, as described in prior NEC Annual Reports and in the Commission's Cost Allocation Policy, contend with a range of challenges as they work to operate, maintain, and invest in the nation's busiest passenger rail corridor. New challenges emerged with the onset of the coronavirus pandemic, not only related to public health and safety but also exacerbating long-standing challenges regarding agency revenues and funding. The pandemic caused conditions on the ground to change day-by-day, which underscored the importance of continuing to improve planning and coordination among NEC agencies—a key area of focus for the Commission since its establishment in 2011 and the unifying theme of the three recommendations included in the FY19 NEC Annual Report.

NEC right-of-way infrastructure owners and operators made progress over the past year on the FY19 recommendations even as many priorities shifted in response to the pandemic. This year's report reissues the FY19 recommendations in recognition that work remains in these areas, noting FY20 progress and intended next steps for FY21.

This report includes one new recommendation regarding CONNECT NEC 2035 (C35), the Commission's long-term plan for implementing the first phase of NEC FUTURE which the Commission anticipates voting on later in 2021. The C35 plan aims to provide a blueprint for sequencing all capital projects constructed or in development through 2035 to maximize the productivity of resources and track outages. Successfully implementing this shared vision for the corridor will require an unprecedented level of cooperation and coordination among NEC agencies, and for some, it may also require additional resources and modified business practices.

In leading up to the completion of the C35 plan, Commission member agencies should proactively identify opportunities to ensure that each agency is well-positioned to rise to the challenge of C35 implementation. Such efforts could include determining appropriate project and program management roles and responsibilities; growing required workforce resources; and reviewing and updating internal plans, practices, and decision-making processes.



Figure 4-1. Prior recommendations, progress, and anticipated actions

Status (year issued)	Recommendation	Progress/Actions (during past fiscal year)	Anticipated Actions (during this fiscal year)
In progress (2019)	<p><b>Continue to improve capital planning and reporting by:</b></p> <ul style="list-style-type: none"> <li>• Strengthening quality assurance/quality control processes for planning and reporting data</li> <li>• Providing a two-year geographically specific forecast for capital renewal investments</li> <li>• Applying realistic multi-year funding assumptions to projects and programs</li> <li>• Improving coordination to proactively identify issues and vet assumptions in plan data, particularly for special projects</li> </ul>	<ul style="list-style-type: none"> <li>• Commission clarified data submission requirements for NEC plans/reports in the Cost Allocation Policy and its data collection templates</li> <li>• Amtrak established multi-departmental team to implement near-term reporting system upgrades and identify longer-term project management system/software solution</li> <li>• NECC staff utilized new tool (Microsoft BI) to facilitate more collaborative and dynamic stakeholder review of plan data</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure next five-year plan (FY22-26 CIP) supports and aligns with CONNECT NEC 2035</li> <li>• Develop two-year geographically specific forecast for capital renewal investments (Amtrak)</li> <li>• Refine categorization of projects' funding "available" and "needed" in FY22-26 CIP and ensure consistent application of multi-year funding assumptions</li> <li>• Develop an issues process for NEC reports to promote collaboration and timely exchange of information</li> </ul>
In progress (2019)	<p><b>Reduce customer impacts by improving track outage scheduling, coordination, and efficiency by:</b></p> <ul style="list-style-type: none"> <li>• Expanding the track outage planning and coordination process beyond the NY region, as needed</li> <li>• Ensuring business practices allow more work to be completed simultaneously during planned outages and avoid geographically repetitive outages</li> <li>• Identifying opportunities to remove or reduce administrative barriers related to equipment purchases, including the Buy America waiver process</li> </ul>	<ul style="list-style-type: none"> <li>• Commission advanced work on CONNECT NEC 2035, including preliminary analyses for program delivery strategies that: <ul style="list-style-type: none"> <li>• Ensure effective utilization of planned track outages;</li> <li>• Minimize geographically repetitive outages; and</li> <li>• Rely on new analysis tools that be used to plan and adjust track outages, as needed</li> </ul> </li> <li>• Amtrak established process for sharing production data, which can inform Commission analyses on impacts of outages on train performance and outage productivity</li> <li>• FRA granted Amtrak an exemption from its Buy America requirement for new NEC equipment, including a tunnel crane and track laying machine</li> </ul>	<ul style="list-style-type: none"> <li>• Initiate discussions about enhanced track outage coordination processes</li> <li>• Work with Amtrak and MNR to establish process for sharing speed restrictions data on a routine basis</li> <li>• Assess additional potential uses of track outage data. Enlist all asset owners in data-sharing initiative</li> </ul>

Figure 4-1 continued on the following page &gt;&gt;&gt;

Status (year issued)	Recommendation	Progress/Actions (during past fiscal year)	Anticipated Actions (during this fiscal year)
In progress (2019)	<p>Improve ability to identify and measure passenger impact of recurring infrastructure failures to inform capital plans by:</p> <ul style="list-style-type: none"> <li>Determining what additional, more precise infrastructure failure data are available to incorporate into Commission analyses</li> <li>Establishing a process to review and confirm the root causes of incidents with right-of-way owners</li> <li>Establishing a process for measuring the impact of infrastructure failures across all NEC operators and their passengers</li> </ul>	<ul style="list-style-type: none"> <li>Amtrak established process for sharing infrastructure failure data—such as date/time, root cause, and remedial actions—to inform Commission analyses of recurring failures</li> <li>Commission developed a process for measuring impact of infrastructure failures on passengers based on consistent levels of ridership</li> </ul>	<ul style="list-style-type: none"> <li>Develop a process for measuring impact of infrastructure failures on passengers that can reflect/accommodate ridership fluctuations (such as those resulting from the pandemic)</li> <li>Assess additional potential uses of infrastructure failure data</li> <li>Enlist all asset owners in data-sharing initiative</li> </ul>

Figure 4-2. New recommendation, progress, and potential actions

Status (year issued)	Recommendation	Progress/Actions (during past fiscal year)	Upcoming Actions (during this fiscal year)
In progress (2020)	<p>Commission member agencies can help support successful implementation of CONNECT NEC 2035 by:</p> <ul style="list-style-type: none"> <li>Reviewing and updating, as needed, internal plans, practices, and processes to ensure alignment with C35</li> <li>Ensuring staff roles and responsibilities for C35 implementation and program monitoring are clearly defined</li> <li>Determining whether any new resources (staff, data, systems, processes, etc.) are needed to support C35 implementation</li> </ul>	<ul style="list-style-type: none"> <li>Commission identified Program Management Plans as a potential tool that can be used to demonstrate agencies' readiness to advance their C35 projects/programs</li> </ul>	<ul style="list-style-type: none"> <li>Develop template for agencies' Program Management Plans</li> <li>Assist agencies in identifying and/or addressing resource gaps and process limitations</li> </ul>



**Attleboro Line**  
BCC Segment 1

**New Haven Line**  
BCC Segments 6-7

**New England**  
BCC Segments 2-5, 25

**New York - New Jersey**  
BCC Segments 8-13, 27

**Mid-Atlantic North**  
BCC Segments 14-20, 28-30

**Amtrak System-wide**  
BCC Segment 31

**Mid-Atlantic South**  
BCC Segments 21-24

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# Appendix: Operations Summary

## Major Incidents

Major incidents are single events that can generate multiple train delays. Major incidents on the NEC were identified by analyzing daily train performance data and cross-referencing that data with the contents of NEC operators' rail operations and incident reports. This approach may not capture all significant events in FY20 because it identifies major incidents based on service impacts, which are dependent on the location and time of day of the incident, not necessarily the severity or significance of the event.

Figure A-1. Major incidents by date, FY20

	Date, start time, and duration	Incident type	Location and description	Total trains affected	Total train-delay minutes
<b>Quarter 1 (19 major incidents)</b>				<b>1,045</b>	<b>26,150</b>
1	10/1/2019 10:20 AM 17 hours 40 mins	Catenary Failure	<b>Location:</b> Canton Junction, Canton, MA  <b>Description:</b> Catenary wires were reported down by a passing freight train. The wires were found on top of the last car of the train. One of the two tracks remained out of service until the next day.	34	1,311
2	10/11/2019 6:45 AM 6 hours 57 mins	Trespasser Incident	<b>Location:</b> Millburn Station (Off Corridor), Millburn, NJ  <b>Description:</b> A person was killed by a passing train near the Millburn Station. Trains on the Morris & Essex Line and Gladstone Branch were delayed by as much as 2 hours in the AM Peak.	34	1,880
3	10/17/2019 Day-long	Weather - Storm	<b>Location:</b> MBTA Service Area, Boston, MA  <b>Description:</b> A bomb cyclone hit Massachusetts overnight and caused damage that disrupted service the following day. The morning commute experienced delays due to several storm-related issues, including dozens of downed trees, extensive flooding in certain areas, damage to trains, and local power outages.	59	1,034
4	10/17/2019 3:32 PM 11 hours 39 mins	Catenary Failure	<b>Location:</b> Daylesford Station, Paoli, PA  <b>Description:</b> A tree fell on the utility power line adjacent to Daylesford Station. The downed tree fouled a track and the utility power wires became tangled in the catenary.	38	1,044
5	10/31/2019 6:38 PM 14 hours 54 mins	Signal Power Failure	<b>Location:</b> CP 212 and CP 274, New Rochelle, NY  <b>Description:</b> A storm with high winds over the evening of Halloween brought trees down onto the signal transmission wires. The tree was not discovered until the following day. There was intermittent signal power loss between CP 212 and CP 274 until the wires were fixed.	142	3,303
6	11/1/2019 12:55 AM 11 hours 13 mins	Catenary and Signal Power Failure	<b>Location:</b> CP 230 to CP 274, Riverside to New Haven, CT  <b>Description:</b> The overnight storm knocked out signal power between CP 230 and CP 274. Power was quickly restored between CP230 and CP266, but the remaining track was without signal power for the rest of the morning. Switches were lined for straight movement and significant adjustments were made to train schedules, including cancellations and bussing, to make up for the reduced throughput. Before the AM peak, a passing train reported a downed tree in the catenary further limiting the capacity.	73	1,287
7	11/1/2019 7:30 PM 7 hours	Trespasser Incident	<b>Location:</b> Westbrook Station, Westbrook, CT  <b>Description:</b> A person was struck by a passing train near Westbrook Station. Amtrak and Shore Line East trains were delayed through early the next day.	24	711

Major NEC incidents by date, FY20 continued on the next page >>



	Date, start time, and duration	Incident type	Location and description	Total trains affected	Total train-delay minutes
8	11/1/2019 Day-long	Catenary Failure	<b>Location:</b> Strafford, PA  <b>Description:</b> A storm with high winds the previous night brought down trees across SEPTA's service area. At the end of the AM peak, power was lost on track 4 between Bryn Mawr and Frazer. A tree was found in the catenary of track 2, 3, and 4 at Strafford; the remaining track powered off to allow for the tree's removal. Service was suspended on the Harrisburg line until 2 PM when the first track was opened. Tracks were slowly restored to service one at a time with the last track reopening at 10 PM.	81	2,159
9	11/2/2019 Day-long	Wheel Slip	<b>Location:</b> SEPTA Service Area, Philadelphia, PA  <b>Description:</b> Numerous instances of wheel slip were reported on across SEPTA's service area.	42	719
10	11/4/2019 4:24 PM 36 mins	Mechanical Failure	<b>Location:</b> New York Penn Station, New York, NY  <b>Description:</b> An NJT train lost power just before entering the North River Tunnel from New York Penn station. Trains were delayed up to 30 minutes as the train was being removed.	67	1,510
11	11/7/2019 9:35 AM 2 hours 30 mins	Trespasser Strike	<b>Location:</b> Bridesburg Station, Philadelphia, PA  <b>Description:</b> A person was struck by a passing train between Shore and Holmes Interlockings. A hold was placed on tracks 1 and 2 which limited the progress of Amtrak and SEPTA trains and halted NJT's Atlantic City Line.	23	443
12	11/13/2019 12:30 PM 11 hours 30 mins	Trespasser Strike	<b>Location:</b> South Orange Station and Newark Penn Station, NJ  <b>Description:</b> Amtrak and NJT were experienced two fatal incidents. Around 1 PM a person was struck near the South Orange station effecting NJT's Morris & Essex and Gladstone lines. At 5 PM a person was struck east of Newark, delaying all trains out of New York Penn Station.	103	2,515
13	11/18/2019 6:25 PM 5 hours 17 mins	Trespasser Strike	<b>Location:</b> Mt. Vernon East Station, Mount Vernon, NY  <b>Description:</b> A person was struck by a passing MNR train. The incident occurred just off corridor at MNR's Mt. Vernon East station. Trains on MNR's New Haven line were delayed.	60	1,627
14	12/5/2019 11:11 AM 14 hours 57 mins	Fatality	<b>Location:</b> Gate Interlocking, Long Island, NY  <b>Description:</b> A railroad employee was killed due to coming in contact with an energized power line. A power hold was placed on the Hellgate line while the situation was being investigated. Diesel engines were used to shuttle trains through the area.	13	1,336
15	12/9/2019 5:50 PM 7 hours 12 mins	Switch Failure	<b>Location:</b> Swift interlocking, Newark, NJ  <b>Description:</b> The No.52 switch at Swift became stuck in the center position at the start of the PM peak. The C&S staff could not easily resolve the issue, so the switch was fixed in the normal position until the peak period was over.	59	1,302
16	12/17/2019 7:50 AM 42 mins	Bridge Failure	<b>Location:</b> Portal Bridge, Secaucus, NJ  <b>Description:</b> The rail lock indicator on the west end of Portal Bridge failed to operate due to a loose proximity sensor.	31	722
17	12/17/2019 9:00 AM 15 mins	Disabled Train	<b>Location:</b> South Tube, North River Tunnel, NY/NJ  <b>Description:</b> A NJT train was receiving insufficient power and came to a stop in the South tube of the North River Tunnel during the AM peak. After a few moments the train was able to proceed into New York Penn Station but the momentary back up delay many trains.	45	929
18	12/17/2019 3:27 PM 4 hours 3 mins	Signal System Failure	<b>Location:</b> CP 212 to CP 229, New Rochelle, NY  <b>Description:</b> During a snowstorm signal power was lost on all tracks during between CP 212 and CP 223 due to a downed tree on the transmission line. Power was temporarily swapped in from another source allowing for trains to proceed. Trains were delayed up to 60 minutes or annulled. Signal power was inconsistent throughout the peak period and eventually a transformer near the downed tree caught fire. The situation could not be resolved until 7:30PM.	66	1,063
19	12/19/2019 10:15 AM 4 hours 45 mins	Catenary Failure	<b>Location:</b> West of Paoli Interlocking, Paoli, PA  <b>Description:</b> A messenger wire was down west of Paoli fouling one of the tracks. Multiple switches simultaneously failed at Paoli causing additional delays as traffic was routed around the outage.	51	1,255

Major NEC incidents by date, FY20 continued on the next page &gt;&gt;

	Date, start time, and duration	Incident type	Location and description	Total trains affected	Total train-delay minutes
<b>Quarter 2 (6 major incidents)</b>				<b>391</b>	<b>13,856</b>
20	1/7/2020 3:30 PM 6 hours 30 mins	Signal System Failure	<b>Location:</b> Framingham/Worcester Line, MA <b>Description:</b> The communications circuits used by dispatchers to control the signal system failed on the Framingham/Worcester Line. Eight trains were annulled, and passengers were delayed for upwards of 80 minutes	24	1,543
21	1/21/2020 12:00 PM 9 hours 26 mins	Signal System Failure	<b>Location:</b> Norwood Central and Walpole Interlocking, Norwood, MA <b>Description:</b> Communications lines came down near Norwood Central Station causing a stop signal indication at two interlockings.	17	404
22	2/3/2020 4:32 PM 8 hours 9 mins	Catenary Power Failure	<b>Location:</b> "A" Interlocking, New York, NY <b>Description:</b> A faulty flood gate break caused widespread power issues at "A" Interlocking, delaying 152 trains throughout the PM peak and into the evening. Trains initially reported momentary power outages and electrical arcing which caused the South Tube to be deenergized. Attempts to restore the power to the South Tube led to power issues across both tunnels, so trains single tracked for the remainder of the evening. Simultaneously, Bergen interlocking experienced a TOL that slowed rescue diesel engines that were attempting to retrieve stranded trains in the deenergized tunnel. Due to the reduced throughput, numerous trains were delayed and passengers reported commute times upwards of four hours.	152	5,128
23	2/6/2020 3:20 PM 2 hours 46 mins	Third Party Security	<b>Location:</b> Baltimore Penn Station, Baltimore, MD <b>Description:</b> A disorderly passenger claimed to have an explosive in their luggage while being removed from an Amtrak Train at Baltimore Penn Station. The train was unloaded and no trains were allowed to pass the station until the bomb squad could clear the luggage.	44	4,053
24	3/13/2020 6:11 PM 9 hours 54 mins	Catenary Failure	<b>Location:</b> South Tube, North River Tunnel, NY/NJ <b>Description:</b> At the end of the PM peak, a passing train with a chipped pantograph damaged a catenary glider within the South Tube. The damaged structure was not immediately identified. Lost power was temporarily restored to allow trains out of the tunnel, but trains reported light smoke, electrical arcing, and a transformer explosion before two trains became disabled within "A" Interlocking. The south tube was taken out of service to allow for catenary inspection. The tunnel was not returned to full operating speed until 4 AM the following day.	93	1,466
25	3/13/2020 7:50 AM 1 hour 6 mins	Trespasser Incident	<b>Location:</b> Line 2 East River Tunnel, New York, NY <b>Description:</b> All LIRR trains were temporarily held during the AM peak when a trespasser fled into Line 2 of the East River Tunnel and was pursued by police.	61	1,262
<b>Quarter 3 (3 major incidents)</b>				<b>67</b>	<b>5,944</b>
26	6/3/2020 12:45 PM 32 hours 35 mins	Catenary Failure (Weather-Related)	<b>Location:</b> West of Bryn Mawr, Harrisburg Line <b>Description:</b> A Derecho, with peak wind gusts up to 85 mph, struck the Mid-Atlantic region during the early afternoon and brought down multiple trees west of Bryn Mawr. After the storm, the next train on the Harrisburg line reported downed catenary wires and sagging messenger wires in various locations. The train took 4 additional hours to traverse the Harrisburg line. Because of the extensive damage to the catenary structures SEPTA and Amtrak Keystone trains were annulled for two days. In total 37 trains were annulled.	26	1,232
27	6/3/2020 12:30 PM 7 hours 46 mins	Signal Power Failure (Weather-Related)	<b>Location:</b> Mantua, Interlocking, Philadelphia, PA <b>Description:</b> A Derecho struck the Mid-Atlantic region during the early afternoon causing a signal power outage between Girard and Holmes interlockings. The storm downed a tree onto the rails of track 4 near Mantua and blew construction material into the catenary near Lehigh. Amtrak trains required verbal permission from dispatching to traverse the interlocking while SEPTA service was suspended until the tree was removed.	31	2,832
28	6/28/2020 5:00 PM 4 hours 40 mins	Structures Failure	<b>Location:</b> Bush River Bridge, Edgewater, MD <b>Description:</b> The catenary system of the Bush River Bridge was unable to reconnect after opening due to a broken chain in the pulley system. ET was unable to rectify the problem without a cat car which did not arrive until 8 PM. Diesel engines were dispatched to help shuttle trains across the outage. One train experienced almost five and a half hours of delay due to this issue.	10	1,880

Major NEC incidents by date, FY20 continued on the next page &gt;&gt;

	Date, start time, and duration	Incident type	Location and description	Total trains affected	Total train-delay minutes
<b>Quarter 4 (3 major incidents)</b>				<b>1,276</b>	<b>19,688</b>
29	7/22/2020 4:59 PM 11 hours 4 mins	Catenary Failure (Weather-Related)	<p><b>Location:</b> Gunpow Interlocking, Chase, MD</p> <p><b>Description:</b> A line of severe storms marched across the Mid-Atlantic. The storms contained torrential rains, frequent cloud to ground lightning, and wind gusts in excess of 60 MPH. These storms downed a tree into the catenary wires near Gunpow, rendering it impassable. Trains were held for hours while the situation was assessed. Engineering prioritized getting one track into operations while the other track would not be fully repaired until 4am. On Amtrak, this incident also created Hours of Service issues that were compounded by staffing shortages.</p>	10	3,072
30	8/4/2020 - 8/8/2020	Weather - Hurricane	<p><b>Location:</b> Northeast Corridor</p> <p><b>Description:</b> Hurricane Isaias made landfall in North Carolina then raced up the east coast causing a massive service disruption for all NEC operators. The hurricane downed trees on the corridor and caused power outages. As the storm approached New York, it began picking up speed causing severe damage across New Jersey, New York, and Connecticut. NJT and LIRR experienced the most delays on hurricane days due to issues on and off corridor. After the storm, infrastructure owners began to clear and repair the railroad, but conditions did not return to normal for many days. The Metro-North owned territory was the most impacted portion of the corridor. On the day following the storm, it was unable to support operations because of the extent of the damage. In total, 942 trains were annulled over 5 days while the railroad was recovering.</p>	1,235	9,305
31	9/10/2020 3:30 PM 11 hours	Track Failure (Weather-Related)	<p><b>Location:</b> MP130, Landover, MD</p> <p><b>Description:</b> Heavy rain caused a flash flood on the railroad south of Landover Station. Water was observed three feet above the rail and did not recede for three hours. Trains were annulled on MARC and Amtrak throughout the PM peak. After the water receded, a speed restriction was placed on the track and operators consolidated passengers onto the remaining trains.</p>	31	7,311
<b>FY20 Total (31 major incidents)</b>				<b>2,779</b>	<b>64,409</b>

## Ridership Methodology and Assumptions

Given the significant ridership fluctuations seen throughout FY20 due to the pandemic, this report no longer relies on annual ridership data provided by operators for the NEC Cost Allocation Model to estimate average weekday trips by agency. Estimates are now derived from monthly ridership data (i.e., total number of trips per month) from the FTA's National Transit Database (NTD). As NTD data are not NEC-specific in many cases, the Commission calculated and applied an "NEC share" to each agency's system-wide ridership figures based on publicly available station-level ridership data or prior Model submissions. Amtrak does not submit data to the NTD, but similar monthly ridership data are publicly available for its NEC services. The Commission plans to continue recording and analyzing NTD monthly ridership data in FY21 and beyond as this approach offers a more nuanced view of NEC ridership trends and increases data source consistency across operators.

In addition, ridership estimates for past fiscal years can be calculated using this new approach and compared to prior estimates, as needed. For example, the total number of average weekday trips in the FY19 NEC Annual Report was 819,500 as compared to 829,500 average weekday trips estimated using the new methodology based on NTD data.

**Figure A-2. Ridership estimate methodology.**

Operator	Share of total ridership that occurs entirely or partially on the NEC	Share of total ridership that occurs on weekdays	Source used to calculate shares	Services Included
Amtrak	100.00% <sup>1</sup>	90.00%	Amtrak Monthly Performance Reports (Oct 2019 - Sep 2020)	Northeast Regional, Acela, Hartford Line, Keystone Service
MBTA	62.25%	90.00%	MBTA Commuter Rail Station-level Counts (Spring 2018)	Providence Line; trips on other lines that start or end at an NEC station
CTrail	100.00%	90.00%	N/A. All trips reported to NTD are on the NEC.	All
MNR	38.49%	86.80%	FY20 Cost Allocation Model Submission (Origin-Destination Matrix)	New Haven Line trips that begin or end at an NEC station
LIRR	86.18%	87.35%	MTA LIRR 2019 Ridership Book	Trips that begin or end at Penn Station
NJ TRANSIT	75.96%	92.31%	FY19 Cost Allocation Model Submission (Boardings by Station)	Northeast Corridor; trips on other lines that start or end at an NEC station
SEPTA	52.92%	90.98%	SEPTA Regional Rail Station-level Census (Spring 2019)	Trenton Line, Wilmington-Newark Line, Paoli-Thorndale Line; trips on other lines that start or end at 30th Street Station
MARC	94.11%	90.81%	MARC Station-level counts (FY19)	Penn Line; trips on other lines that start or end at Washington Union Station
VRE	24.90%	100.00%	FY20 Cost Allocation Model Submission (Origin-Destination Matrix)	Trips that begin or end at Washington Union Station

**Table notes:** (1) Amtrak has the ability to report total trips on a monthly basis for each individual route so ridership on NEC services can be separated from Amtrak's total ridership figures.

As agencies conduct and provide new station-level ridership counts, NEC shares will be re-calibrated. In the long-term, if agencies implement new technical capabilities and are able to report ridership actuals (e.g., an origin-destination matrix on a monthly basis), these actuals can replace the estimation methodology described above.

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# Appendix: Infrastructure Summary

## NEC-Wide Capital Renewal

Figure A-3. BCC obligations by operator and owner territory, FY20

Capital renewal of basic infrastructure investments can be funded with Baseline Capital Charges (BCCs) allocated to operators<sup>1</sup> based on methods described in the NEC Commuter and Intercity Rail Cost Allocation Policy. According to the Policy, right-of-way owners must invest operators' BCCs on eligible assets within the operators' service territories in the year the BCCs are contributed.<sup>2</sup> Figure B-1 below shows the FY20 BCC obligations for each service operator by RoW owner territory.

Service Operator	RoW Owner Territory				Total
	Amtrak	MBTA	CTDOT	MNR	
Amtrak	\$266.90 M	\$10.28 M	\$16.48 M	\$2.43 M	\$296.09 M
MBTA	\$1.58 M	\$17.36 M			\$18.94 M
RIDOT	\$2.19 M				\$2.19 M
CTDOT (Shore Line East)	\$4.61 M		\$1.08 M		\$5.68 M
CTDOT (Hartford Line)	\$6.38 M		\$0.22 M		\$6.60 M
CTDOT (New Haven Line)			\$46.82 M		\$46.82 M
MNR				\$13.13 M	\$13.13 M
LIRR <sup>1</sup>	\$25.96 M				\$25.96 M
NJ TRANSIT <sup>2</sup>	\$91.13 M				\$91.13 M
SEPTA	\$40.92 M				\$40.92 M
DelDOT	\$2.63 M				\$2.63 M
Maryland DOT	\$17.52 M				\$17.52 M
VRE	\$0.60 M				\$0.60 M
<b>Total FY20 BCC Obligations</b>	<b>\$460.41 M</b>	<b>\$27.64 M</b>	<b>\$64.59 M</b>	<b>\$15.56 M</b>	<b>\$568.20 M</b>

**Table notes:** (1) LIRR's obligation is subject to revision based on actual expenditures per Amtrak-LIRR agreement. (2) NJ TRANSIT's FY20 BCC obligation reflects the NJ TRANSIT-Amtrak BCC variance for Portal North Bridge, approved by the Commission in August 2019.

<sup>1</sup> The Policy defines "operator" as an entity responsible for, or established to provide, commuter or intercity passenger rail transportation, that is subject to the cost-sharing requirements set forth in 49 U.S.C. § 24905(c). This includes Amtrak, the Massachusetts Bay Transportation Authority, the Rhode Island Department of Transportation, the Connecticut Department of Transportation, the New York Metropolitan Transportation Authority, New Jersey Transit Corporation, the Southeastern Pennsylvania Transportation Authority, the Delaware Department of Transportation, the Maryland Department of Transportation, Virginia Railway Express, any successor agencies and any entity created by one or more such agencies for the purpose of operating, or contracting for the operation of, commuter or intercity service.

<sup>2</sup> The Policy (Section 6.3) allows owners, under certain conditions, to invest an operator's BCCs beyond the year they are contributed. The Policy also allows owners to apply operators' BCCs to system-wide projects (investments that span multiple BCC segments and/or are not physically located in their service territory) if certain criteria are met.

**Figure A-4. Actual capital renewal expenditure by operator and owner territory, FY20**

RoW owners assign service operators' BCCs to fund eligible capital renewal investments. In some cases, RoW owners invest in their territory above the BCC obligated amount. Figure B-2 shows capital renewal expenditures by right-of-way owner territory as assigned to each service operator.

Service Operator	RoW Owner Territory				Total
	Amtrak	MBTA	CTDOT	MNR	
Amtrak	\$315.50 M	\$6.03 M	\$16.48 M	\$2.42 M	\$340.44 M
MBTA	\$1.58 M	\$13.96 M			\$15.54 M
RIDOT	\$2.19 M				\$2.19 M
CTDOT (Shore Line East)	\$4.61 M		\$1.08 M		\$5.68 M
CTDOT (Hartford Line)	\$6.38 M		\$0.22 M		\$6.60 M
CTDOT (New Haven Line)			\$108.95 M		\$108.95 M
MNR				\$13.06 M	\$13.06 M
LIRR <sup>1</sup>	\$17.54 M				\$17.54 M
NJ TRANSIT	\$91.13 M				\$91.13 M
SEPTA	\$40.92 M				\$40.92 M
DelDOT	\$2.63 M				\$2.63 M
Maryland DOT	\$17.52 M				\$17.52 M
VRE	\$0.60 M				\$0.60 M
<b>Total FY20 Actual Expenditure</b>	<b>\$500.60 M</b>	<b>\$19.99 M</b>	<b>\$126.73 M</b>	<b>\$15.48 M</b>	<b>\$662.79 M</b>

**Table note:** (1) Subject to revision per Amtrak-LIRR agreement.

**Figure A-5. Comparison of actual capital renewal expenditure and BCC obligation, FY20**

Figure B-3 shows the difference between FY20 capital renewal expenditures as assigned to each service operator and the FY20 BCC obligation for each operator. In most cases, RoW owners spent the service operators' BCCs in their territories. However, MBTA spent \$7.7 million less than Amtrak's BCC obligation in their territory. On the other hand, both Amtrak and CTDOT spent significantly more than the obligated amount (\$40 million and \$62 million, respectively) in their own territories.

Service Operator	RoW Owner Territory				Total
	Amtrak	MBTA	CTDOT	MNR	
Amtrak	\$48.61 M	-\$4.25 M	\$0.0 M	-\$0.01 M	\$44.34 M
MBTA	\$0.0 M	-\$3.40 M			-\$3.40 M
RIDOT	\$0.0 M				\$0.0 M
CTDOT (Shore Line East)	\$0.0 M		\$0.0 M		\$0.0 M
CTDOT (Hartford Line)	\$0.0 M		\$0.0 M		\$0.0 M
CTDOT (New Haven Line)			\$62.13 M		\$62.13 M
MNR				-\$0.07 M	-\$0.07 M
LIRR <sup>1</sup>	-\$8.42 M				-\$8.42 M
NJ TRANSIT	\$0.0 M				\$0.0 M
SEPTA	\$0.0 M				\$0.0 M
DelDOT	\$0.0 M				\$0.0 M
Maryland DOT	\$0.0 M				\$0.0 M
VRE	\$0.0 M				\$0.0 M
<b>Total FY20 Difference (Actual Minus Obligation)</b>	<b>\$40.19 M</b>	<b>-\$7.65 M</b>	<b>\$62.13 M</b>	<b>-\$0.08 M</b>	<b>\$94.59 M</b>

**Table notes:** (1) Subject to revision per Amtrak-LIRR agreement.

Figure A-6. Capital renewal investments by BCC segment, FY20

BCC Segment	RoW owner	Operators					
		Amtrak	MBTA	RIDOT	CTDOT Shore Line East	CTDOT Hartford Line	CTDOT New Haven Line
1. BOS to MA/RI state line <sup>1</sup>	MBTA	\$6,031,649	\$13,957,375				
2. MA/RI state line to Providence	Amtrak	\$2,797,390	\$1,584,964				
3. Providence to Wickford Junction <sup>2</sup>	Amtrak	\$763,311		\$2,187,665			
4. Wickford Junction to New London	Amtrak	\$27,588,833					
5. New London to New Haven	Amtrak	\$4,889,010			\$4,605,590		
6. New Haven to CT/NY state line	CTDOT	\$16,482,710			\$1,075,888	\$218,763	\$108,948,000
7. CT/NY state line to New Rochelle <sup>3</sup>	MNR	\$2,419,273					
8. New Rochelle to Harold	Amtrak	\$5,891,116					
9. Harold to F Interlocking	Amtrak	\$9,062,089					
10. F Interlocking to Penn Station NY	Amtrak	\$4,489,887					
11. Penn Terminal	Amtrak	\$17,087,636					
12. Penn Station NY to Trenton	Amtrak	\$0					
13. Trenton to Morris <sup>4</sup>	Amtrak	\$(1,281)					
14. Morris to Holmes	Amtrak	\$24,854					
15. Holmes to Shore	Amtrak	\$10,215,939					
16. Shore to Girard	Amtrak	\$17,133,672					
17. Girard to Philadelphia 30th Street	Amtrak	\$11,221,091					
18. Philadelphia 30th St to Arsenal	Amtrak	\$3,485,586					
19. Arsenal to Marcus Hook	Amtrak	\$4,183,070					
20. Marcus Hook to Bacon <sup>5</sup>	Amtrak	\$20,692,123					
21. Bacon to Perryville	Amtrak	\$3,303,632					
22. Perryville to WAS	Amtrak	\$92,175,122					
23. Washington Union Terminal	Amtrak	\$6,134,106					
24. WAS to CP Virginia	Amtrak	\$0					
25. Springfield to New Haven	Amtrak	\$2,409,640				\$6,377,893	
27. Spuyten Duyvil to PSNY	Amtrak	\$5,212,117					
28. Penn to 36th St	Amtrak	\$0					
29. 36th St to Thorndale	Amtrak	\$3,864,656					
30. Thorndale to Harrisburg	Amtrak	\$12,053,179					
31. Amtrak System-wide	Amtrak	\$50,826,734					
<b>FY20 total capital renewal expenditure by agency</b>		<b>\$340,437,144</b>	<b>\$15,542,338</b>	<b>\$2,187,665</b>	<b>\$5,681,478</b>	<b>\$6,596,656</b>	<b>\$108,948,000</b>

**Table notes:** (1) In BCC segment 1, MBTA did not spend Amtrak's full FY20 BCC obligation of \$10,281,930. Per agreement by MBTA and Amtrak, unspent FY18-20 BCCs in MBTA-owned territory will be used as the local match for the Federal-State Partnership for State of Good Repair Grant obtained by MBTA for Tower 1 Interlocking. (2) In BCC segment 3, MBTA operates on behalf of RIDOT, while RIDOT is responsible for charges in this segment. (3) In BCC segment 7, MNR did not spend Amtrak's full FY20 BCC obligation of \$2,432,125. (4) Negative values result from the reversal of accruals within a RoW owner's accounting system during the fiscal year. (5) In BCC segment 20, SEPTA operates under contract with DelDOT, while DelDOT is responsible for charges in this segment. (6) Subject to revision per Amtrak-LIRR agreement.

Operators							FY20 expenditure by segment	BCC
MNR	LIRR <sup>6</sup>	NJ TRANSIT	SEPTA	DelDOT	Maryland DOT	VRE		
							\$19,989,024	1
							\$4,382,354	2
							\$2,950,976	3
							\$27,588,833	4
							\$9,494,600	5
							\$126,725,361	6
\$13,059,033							\$15,478,306	7
							\$5,891,116	8
	\$0						\$9,062,089	9
	\$11,013,004	\$0					\$15,502,891	10
	\$6,527,212	\$17,150,951					\$40,765,799	11
		\$72,067,337					\$72,067,337	12
		\$1,911,234	\$0				\$1,909,953	13
			\$3,012,104				\$3,036,959	14
			\$0				\$10,215,939	15
		\$0	\$0				\$17,133,672	16
		\$0					\$11,221,091	17
							\$3,485,586	18
			\$16,935,978				\$21,119,048	19
				\$2,629,028			\$23,321,151	20
							\$3,303,632	21
					\$17,518,268		\$109,693,390	22
					\$0	\$600,543	\$6,734,649	23
						\$0	\$0	24
							\$8,787,534	25
							\$5,212,117	27
							\$0	28
			\$20,973,218				\$24,837,874	29
							\$12,053,179	30
							\$50,826,734	31
\$13,059,033	\$17,540,216	\$91,129,522	\$40,921,301	\$2,629,028	\$17,518,268	\$600,543	\$662,791,194	

# Region: Attleboro Line

## Operations and Infrastructure Detail

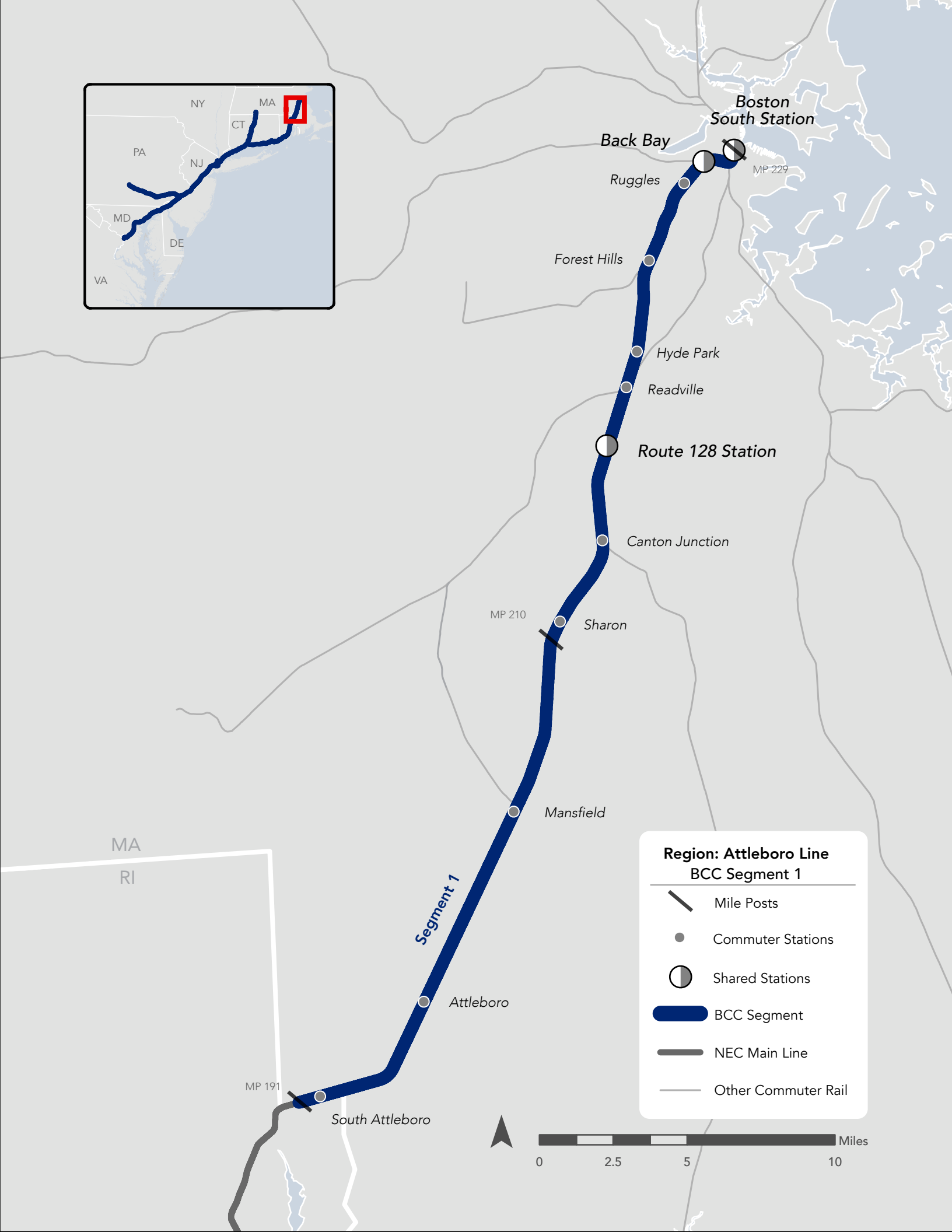
Operators: Amtrak, MBTA

RoW Owners: MBTA

### BCC Segments

1: Boston South Station to MA/RI State Line





**Region: Attleboro Line  
BCC Segment 1**

- Mile Posts
- Commuter Stations
- Shared Stations
- BCC Segment
- NEC Main Line
- Other Commuter Rail

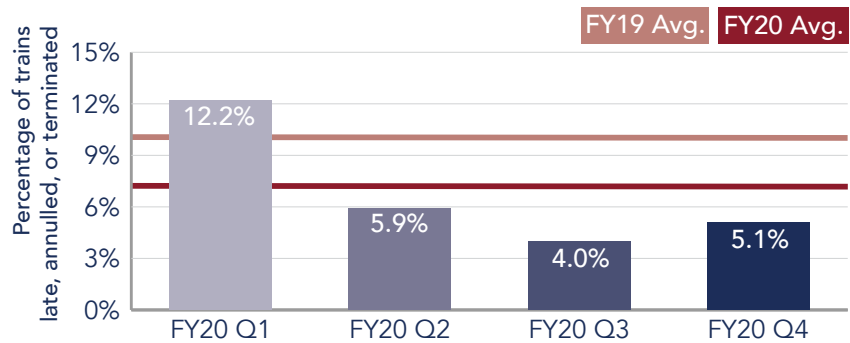
0 2.5 5 10 Miles

## Operations: MBTA

MBTA's train service is comprised of 12 service lines, eight of which access the corridor. The Franklin, Needham, and Providence/Stoughton lines all operate on the NEC spine for a significant portion of their route. The Fairmount, Greenbush, Kingston/Plymouth, Middleborough/Lakeville, and Framingham/Worcester lines all tie into the corridor near Boston's South Station.

### Train performance profile

Metric	FY19 Avg.	FY20 Avg.
Percent NEC trains late, annulled, or terminated	10.5%	5.10%
Percent NEC trains not completed	0.29%	0.41%
Avg min late per NEC train	13.3	11.0

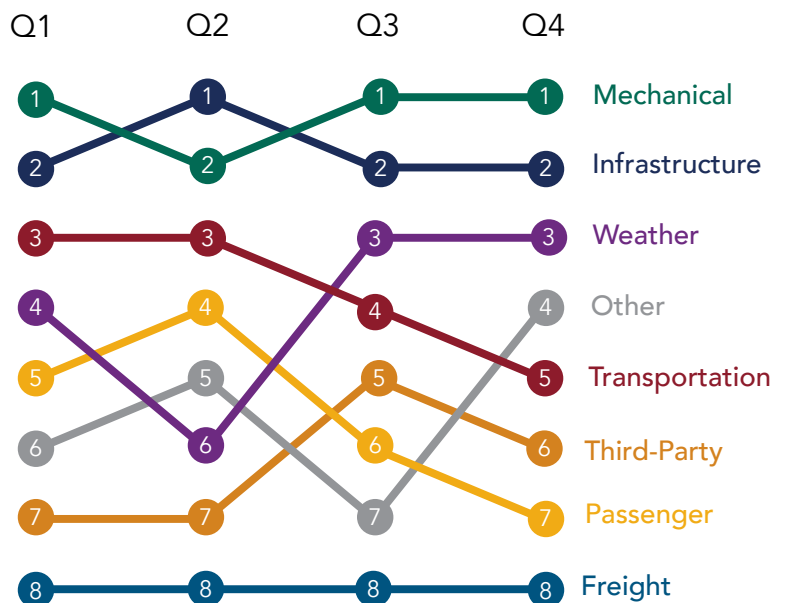


### Train-delay minutes by cause

#### Total and percent change, FY19-20

Cause	FY19	FY20	Change
Infrastructure	25,949	21,914	-15.5%
Mechanical	41,173	27,057	-34.3%
Transportation	22,222	9,439	-57.5%
Passenger	18,502	6,801	-63.2%
Weather	9,573	8,257	-13.7%
Third-Party	3,291	2,664	-19.1%
Freight	506	346	-31.6%
Other	6,591	4,807	-27.1%
<b>Total</b>	<b>127,807</b>	<b>81,285</b>	<b>-36.4%</b>

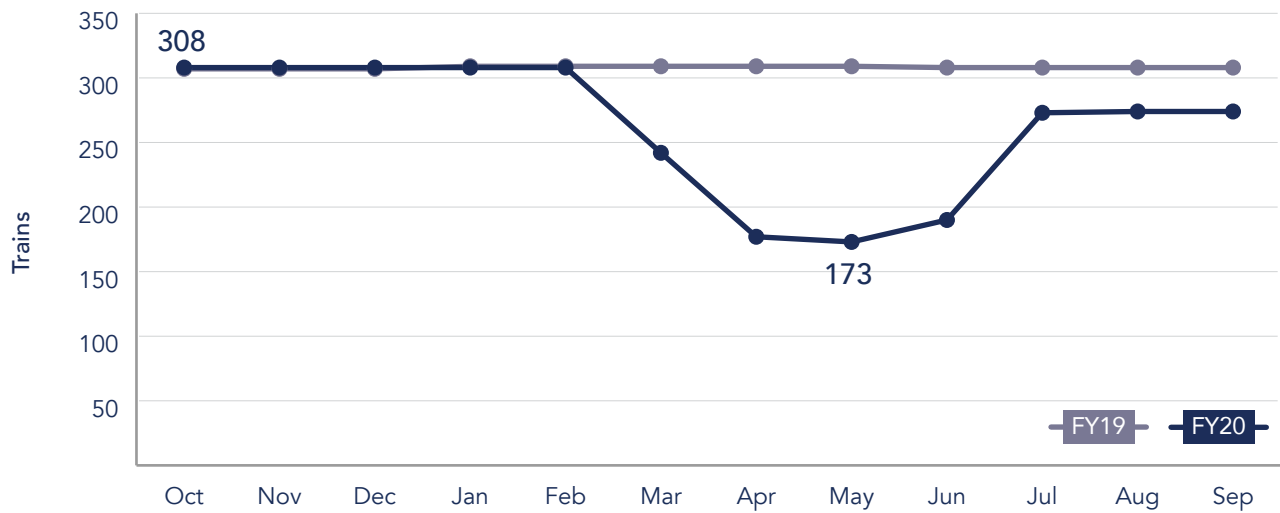
#### Rank by category, FY20



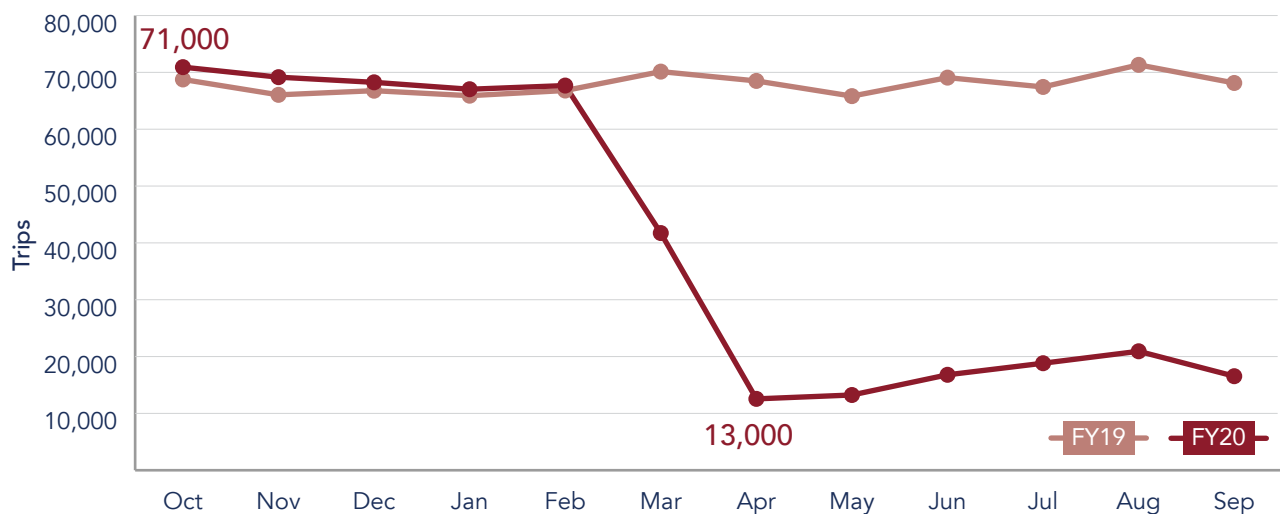
## MBTA NEC Service and Ridership

Period	Average NEC weekday trains			Average NEC weekday trips		
	FY19	FY20	Change from FY19	FY19	FY20	Change from FY19
Q1 (Oct - Dec)	313	308	0% ↔	67,193	69,441	+3% ↑
Q2 (Jan - Mar)	313	285	-8% ↓	67,613	58,813	-13% ↓
Q3 (Apr - Jun)	307	180	-42% ↓	67,798	14,195	-79% ↓
Q4 (Jul - Sep)	300	274	-11% ↓	68,963	18,767	-73% ↓
<b>FY Average (Oct - Sep)</b>	<b>308</b>	<b>262</b>	<b>-15% ↓</b>	<b>67,892</b>	<b>40,304</b>	<b>-41% ↓</b>

MBTA Average NEC Weekday Trains



MBTA Average NEC Weekday Trips



## Infrastructure: Special Projects

Both Amtrak and MBTA coordinated work on 3 special projects throughout the Attleboro Line region. In total, \$14.7 million was invested in FY20, which was 16% less than originally planned.

### Special Projects Detail: Attleboro Line

Amtrak		FY20 Actual Expenditure: \$6,869,057
Next Generation High Speed Fleet Infrastructure: Southampton St. Yard Facility Improvements		
FY20 OYIP Expenditure & Scope	\$2,900,000	S&I Mod: Construction within S&I Facility.
FY20 Actual Expenditure & Accomplishments	\$6,869,057	Completed design for S&I mods. Issued NTP to GC for S&I mods. S&I mods construction approximately 50% complete.
Variance & Explanation	\$3,969,057	Contractor bid amount for Southampton S&I mods exceeded estimate for work scope (primarily due to specialty equipment requirements as well as limited interest in bids for the work).
MBTA		FY20 Actual Expenditure: \$7,835,924
Ruggles Street Station Accessibility Improvements: Phase 1		
FY20 OYIP Expenditure & Scope	\$12,400,000	Completion of lower busway grading and placement of pavement. Opening of platform. Replacement and re-opening of elevators.
FY20 Actual Expenditure & Accomplishments	\$7,405,924	Shut down 2 existing elevators for reconstruction; this work has been mostly complete together with work on one new elevator. West retaining wall was demolished for new platform and west platform panels were installed.
Variance & Explanation	-\$4,994,076	COVID-19 resulted in site being shut down in April. Projected completion of project has been delayed by several months due to issues related fire alarm and signage shop drawing submissions.
South Attleboro Station Accessibility Improvements		
FY20 OYIP Expenditure & Scope	\$2,350,000	FY20 will primarily consist of preparing documents to advertise for construction procurement.
FY20 Actual Expenditure & Accomplishments	\$430,000	15% Design Progress
Variance & Explanation	-\$1,920,000	Due to COVID-19 contract was awarded later than expected which reduced the expected cash flow.

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

## Infrastructure: Capital Renewal

In the Attleboro Line region, Baseline Capital Charges (BCCs) are allocated by Amtrak and MBTA to fund the capital renewal of basic infrastructure on the NEC Main Line in Massachusetts. In total, \$20 million was invested in FY20, which was 39% less than originally planned.

BCC Segment	RoW owner	Operators		FY20 expenditure by segment
		Amtrak	MBTA	
1. Boston South Station to MA/RI State Line	MBTA	\$6,031,649	\$13,957,375	<b>\$19,989,024</b>
<b>FY20 total capital renewal expenditure by agency</b>		<b>\$6,031,649</b>	<b>\$13,957,375</b>	<b>\$19,989,024</b>

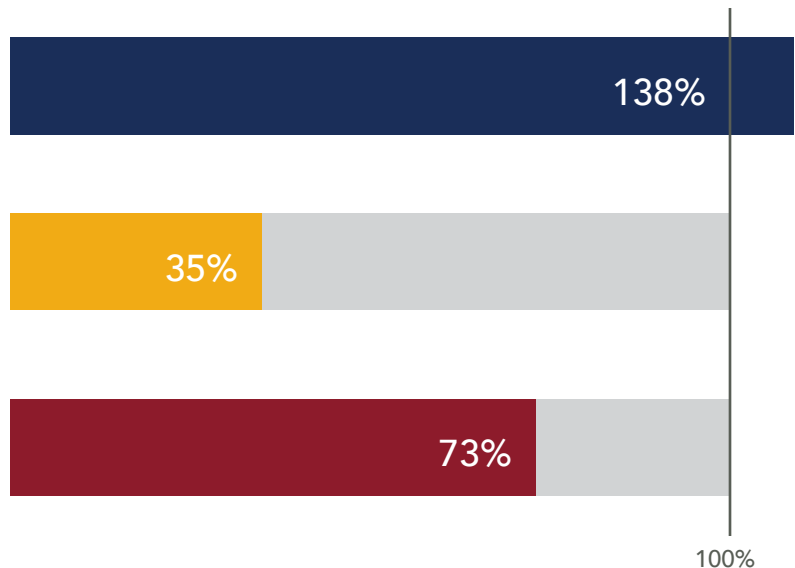
### FY20 Expenditure

**TRACK**  
\$13.6 MILLION

**COMMUNICATION & SIGNALS**  
\$4.1 MILLION

**STRUCTURES & FACILITIES**  
\$2.3 MILLION

### Share of Original FY20 Plan Spent





## Capital Renewal Detail: Attleboro Line (MBTA-owned)

Project/Program	FY20 Planned Expenditure	FY20 Actual Expenditure	Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Back Bay Pit Lighting	\$406,611	\$572,179	\$165,568	Completed the installation of new pit lighting along the Track 1,2, and 3 platforms at Back Bay Station.	Schedule delays incurred due to Boston, MA, city imposed contractor shutdown in response to the coronavirus pandemic.
Battery Bank Replacement Program	\$204,736	\$149,565	-\$55,171	Completed the replacement of 362 batteries in FY20.	Program exceed target production quantity (362 vs. 200 each).
Boston South Station: Tower 1 Interlocking	\$8,000,000	\$701,169	-\$7,298,831	Project is now classified as a special project.	Project is now classified as a special project.
Crossover Replacement	\$1,908,698	\$3,045,011	\$1,136,313	Completed the 12 and 21 crossover replacements at Transfer I/L.	The 12 crossover at Transfer I/L was delayed from the end of FY19 to the start of FY20 resulting in program exceeding scope (4 turnouts vs. 2 turnouts) and planned budget.
CWR Upgrades	\$520,000	\$0	-\$520,000	Project deferred to future fiscal year.	Project deferred to complete other capital maintenance within the program.
Fuse Upgrade Program	\$138,000	\$0	-\$138,000	Project deferred to future fiscal year.	Project deferred due to material procurement delays.
Gas Hot Air Switch Blower Install	\$400,000	\$0	-\$400,000	Project on hold pending funding agreement.	Project on hold pending funding agreement.
Insulated Joint Upgrades	\$189,459	\$269,839	\$80,380	Completed the replacement of 26 insulated joints in FY20.	Program able to exceed target production goal (26 vs. 20 insulated joints).
Int Steel Replacement Program	\$268,027	\$331,077	\$63,050	Replaced switch point stocks at two locations and frogs at two locations.	Program short of target production goal (4 units vs. 6 units).
Interlocking RTU Upgrades	\$481,087	\$25,705	-\$455,382	Design contractor reach 30% design for RTU programming at Mansfield I/L and Holden I/L and began long lead material procurement.	Project experienced delays with contractor and material procurement.
Interlocking Signal LED Upgrades	\$94,450	\$58,011	-\$36,439	Completed the conversion of approximately 70% of the incandescent dwarf signal aspects to LEDs at the Boston area interlockings.	Schedule delays incurred due to an issue with the light out relays within the interlockings.
Joint Elimination Program	\$262,750	\$317,996	\$55,246	Completed 106 thermite welds in FY20.	Program able to exceed target production goal (106 vs. 50 welds).
M3 Switch Machine Upgrades	\$336,103	\$178,346	-\$157,757	Completed the replacement of three switch machines in FY20.	Program short of target production goal (3 vs. 8 switch machines).
Out Of Face Surfacing	\$1,052,318	\$1,588,952	\$536,634	Completed 133,298 pass-feet of out of face surfacing in FY20.	Program able to exceed target production goal (133,298 PF vs 84,000 PF) based on availability of High Speed Surfacing gang.
Power And Express Cable Upgrade	\$4,597,227	\$3,377,086	-\$1,220,141	Completed the installation of over 8,000 feet of power / express / communication cable between Read I/L and Forest I/L.	Project progress slower than anticipated due to unanticipated field conditions.
RoW Fence Upgrades	\$2,150,000	\$910,349	-\$1,239,651	Completed the installation of 1,800 feet of impasse fence along Track 3 in Hyde Park, MA.	Project scope completed per plan.
Rail Grinding	\$250,000	\$0	-\$250,000	Project deferred to future fiscal year.	Project deferred to future fiscal years to align with Amtrak's rail grinding program in FY21.

Capital Renewal Detail: Attleboro Line continued on the next page >>

## Capital Renewal Detail: Attleboro Line (MBTA-owned) [cont.]

Project/Program	FY20 Planned Expenditure	FY20 Actual Expenditure	Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Readville Material Control Warehouse - Construction	\$100,000	\$0	-\$100,000	Project on hold pending funding agreement.	Project on hold pending funding agreement.
Rte. 128 Escalator / Elevator Project	\$0	\$789,220	\$789,220	Completed administrative closeout of contract for the project.	Project delayed due to issues processing invoice credits.
Southampton Street and South Bay I/L Upgrades	\$2,885,148	\$108,593	-\$2,776,555	Contractor on-boarded for project management services and signal design. South Bay I/L signal designs reached 60%, site plans/specifications for South Bay Transformer in 60% design, and material list prepared for DTMF switch installations at Southampton Street Yard.	Project start delayed due to funding agreement date and procurement process delays.
Spot Surfacing	\$1,675,627	\$2,536,175	\$860,548	Completed 44,341 feet of spot surfacing in FY20.	Program short of target production goal (44,341 vs. 65,000 feet). Surfacing gang quarantined for part of year due to coronavirus pandemic.
Spot Undercutting	\$294,656	\$338,982	\$44,326	Completed 321 feet of spot undercutting in FY20.	Program able to exceed target production goal (321 feet vs 180 feet) favorable track outage availability.
Switch Heater Cabinet / Control Upgrades	\$350,000	\$0	-\$350,000	Project on hold pending funding agreement.	Project on hold pending funding agreement.
TAMS - Canton Junction Sta - TAMS Upgrades	\$685,958	\$17,950	-\$668,008	Reached project funding agreement and completed contractor procurement.	Project start delayed due to funding agreement date and procurement process delays.
TAMS - Forest Hills Sta - TAMS Upgrades	\$371,969	\$0	-\$371,969	Reached project funding agreement and completed contractor procurement.	Project start delayed due to funding agreement date and procurement process delays.
TAMS - Ruggles Sta - TAMS Upgrades	\$362,708	\$0	-\$362,708	Reached project funding agreement and completed contractor procurement.	Project start delayed due to funding agreement date and procurement process delays.
Tie/Timber Program	\$669,939	\$2,846,930	\$2,176,991	Completed the replacement of 2,067 ties/timbers in FY20.	Program able to exceed program tie/timber goal (2,067 vs. 800) by taking advantage of tie gang availability and favorable weather conditions in the winter of 2020.
Tower 1 Early Works Design	\$0	\$297,849	\$297,849	Funding agreement reached. Contractor on-boarded for project management and design services. Signal design at 90%. Long lead material list and project phasing plans developed.	New project started in FY20.
Tower One Int - Slip Switch Upgrades	\$1,750,000	\$744,261	-\$1,005,739	Completed the installation of the 532/35 slip switch replacement at Tower 1 in Boston, MA.	Project scope completed per plan and favorable outage conditions lead to a reduced install costs.
Track Circuit Protection	\$300,000	\$0	-\$300,000	Project deferred to future fiscal year.	Project deferred due to material procurement delays.
Track Lead Replacement Program	\$370,000	\$172,502	-\$197,498	Completed the replacement of 34 track leads in FY20.	Program short of target production goal (34 vs 100 each).
Tree Cutting	\$1,025,000	\$611,277	-\$413,723	Removed 1,277 trees, trimmed 592 trees, and cleared/cut brush along 30.95 miles of right of way in FY20Q4.	Project completed planned duration for FY20.
Undergrade Bridge Upgrades	\$443,059	\$0	-\$443,059	Project deferred to future fiscal year.	Project deferred to complete other capital maintenance within the program.
<b>Region Total</b>	<b>\$24,543,530</b>	<b>\$19,989,024</b>	<b>-\$4,554,506</b>		

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

# Region: New England

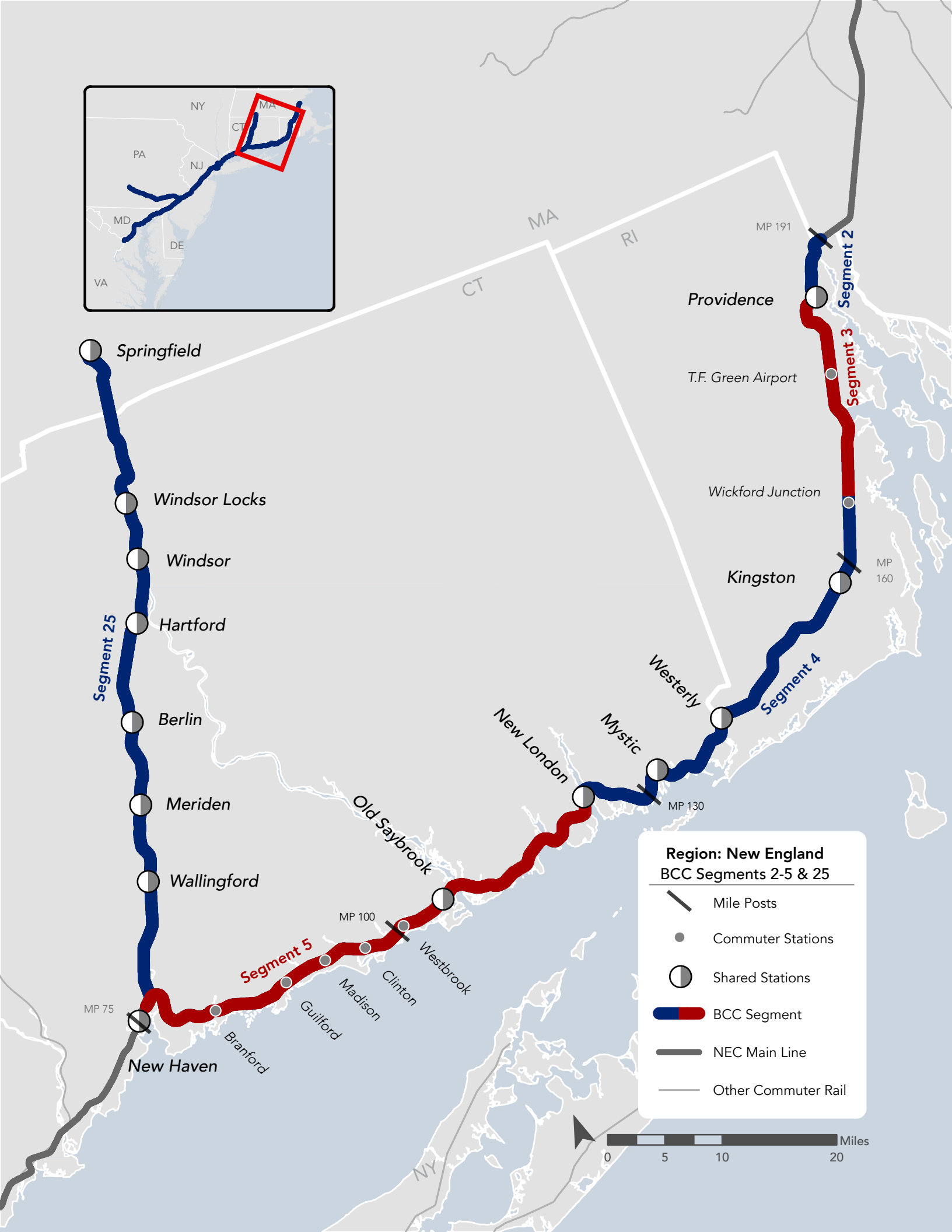
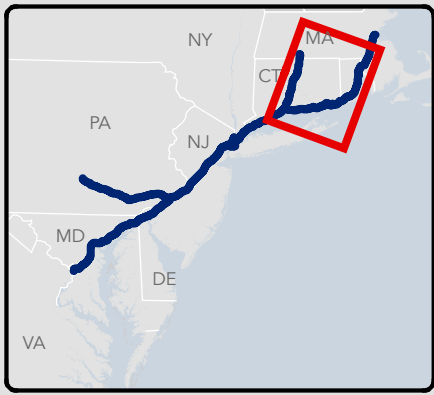
## Operations and Infrastructure Detail

Operators: Amtrak, CTrail, MBTA

RoW Owner: Amtrak

### BCC Segments

- 2: MA/RI State Line to Providence
- 3: Providence to Wickford Junction
- 4: Wickford Junction to New London
- 5: New London to New Haven
- 25: Springfield to New Haven

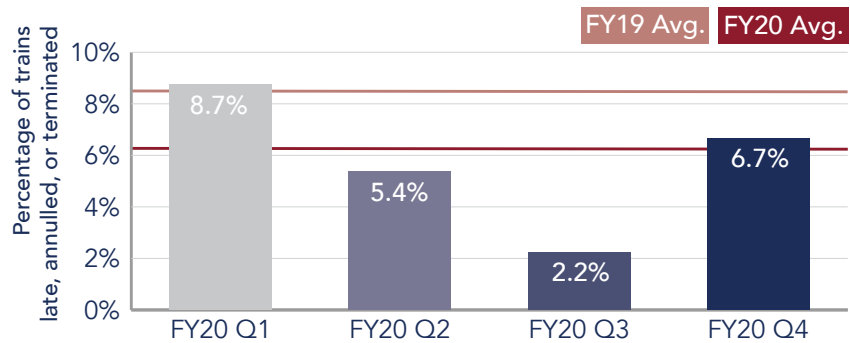


## Operations: CTrail

CTrail's train service operates on two lines, both of which use the NEC. Shore Line East trains operate between New London and New Haven, CT with some extending to Stamford. Hartford Line trains operate between Hartford, CT or Springfield, MA and New Haven.

### Train performance profile

Metric	FY19 Avg.	FY20 Avg.
Percent NEC trains late, annulled, or terminated	8.5%	6.3%
Percent NEC trains not completed	2.14%	2.37%
Avg min late per NEC train	15.3	8.6

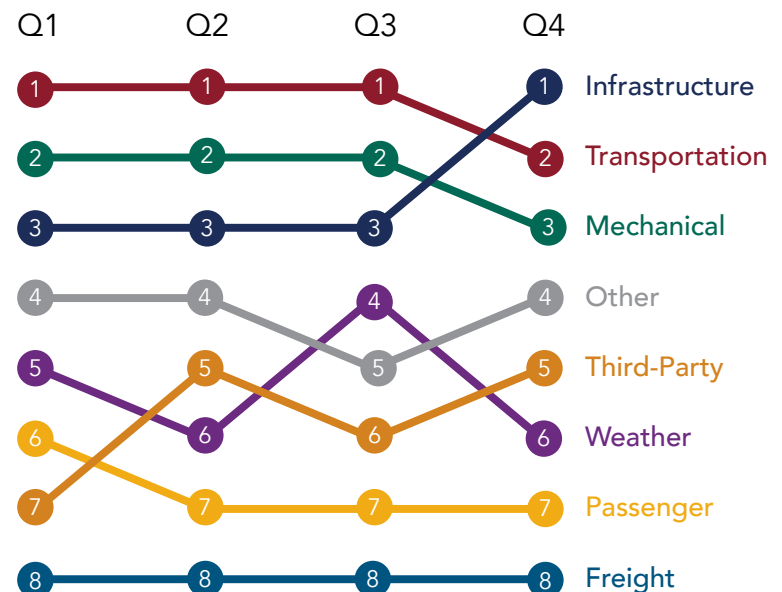


### Train-delay minutes by cause

#### Total and percent change, FY19-20

Cause	FY19	FY20	Change
Infrastructure	6,179	2,675	-56.7%
Mechanical	3,755	2,783	-25.9%
Transportation	3,633	5,040	+38.7%
Passenger	453	228	-49.6%
Weather	354	642	+81.4%
Third-Party	1,107	551	-50.2%
Freight	46	25	-45.7%
Other	4,198	1,142	-72.8%
<b>Total</b>	<b>19,723</b>	<b>13,086</b>	<b>-33.6%</b>

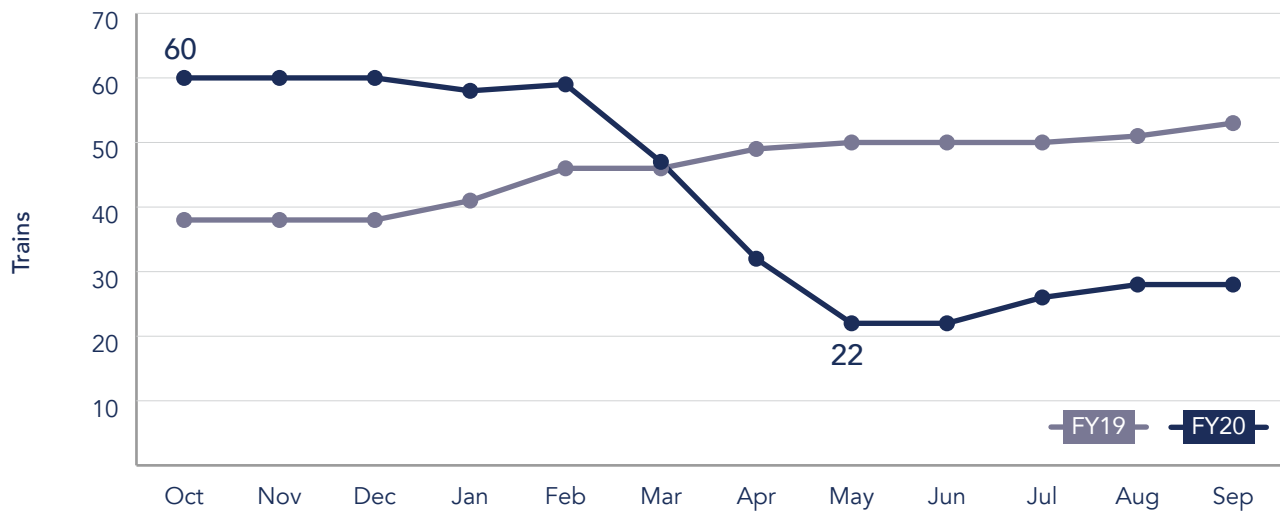
#### Rank by category, FY20



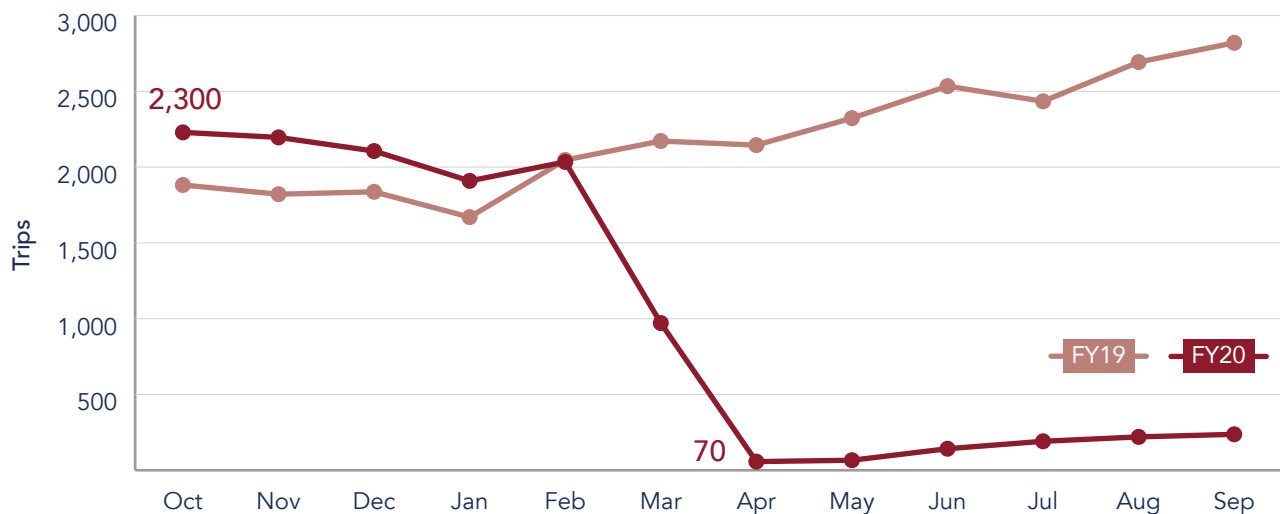
## CTrail NEC Service and ridership

Period	Average NEC weekday trains			Average NEC weekday trips		
	FY19	FY20	Change from FY19	FY19	FY20	Change from FY19
Q1 (Oct - Dec)	38	60	+58% ↑	1,847	2,177	+18% ↑
Q2 (Jan - Mar)	44	56	+25% ↑	1,963	1,638	-17% ↓
Q3 (Apr - Jun)	50	26	-48% ↓	2,334	88	-96% ↓
Q4 (Jul - Sep)	51	27	-47% ↓	2,649	216	-92% ↓
<b>FY Average (Oct - Sep)</b>	<b>46</b>	<b>42</b>	<b>-8% ↓</b>	<b>2,198</b>	<b>1,030</b>	<b>-53% ↓</b>

### CTrail Average NEC Weekday Trains



### CTrail Average NEC Weekday Trips





## Infrastructure: Special Projects

Amtrak, Connecticut DOT, MBTA, and Rhode Island DOT coordinated work on 11 special projects throughout the New England region. In total, \$74 million was invested in FY20, which was 2% more than originally planned.

### Special Projects Detail: New England

Amtrak		FY20 Actual Expenditure: \$6,933,372
<b>Connecticut River Bridge Replacement</b>		
FY20 OYIP Expenditure & Scope	\$5,850,000	Proceeding with Phase B Final Design in order to complete construction documents by FY21.
FY20 Actual Expenditure & Accomplishments	\$3,982,117	Design reached 60% level. Environmental and historical permitting began, applications have been submitted to USACE, CTDEEP, USCG, and others.
Variance & Explanation	-\$1,867,883	Variance directly related to coronavirus pandemic. Design activities put on hold until Q2 FY21, delaying design completion to September, 2021.
<b>Fitter Interlocking</b>		
FY20 OYIP Expenditure & Scope	\$9,500,000	Procurement of C&S, ET and Track materials (signal huts, turnouts, cat poles, hangers, cable, wire, etc.), C&S construction at Lancaster Shops, Contractor construction of catenary pole foundations, civil roadbed work and access road.
FY20 Actual Expenditure & Accomplishments	\$1,539,321	Division C&S forces began relocating signal cable to TK1 in advance of TK2 shift for interlocking construction. Began signal Central Instrument House (CIH) construction at Lancaster Signal Shop.
Variance & Explanation	-\$7,960,679	Variance directly related to coronavirus pandemic. All construction halted in April, 2020. Lancaster Shop permitted to resume construction of the CIH in July with restricted OT usage and COVID related work ruled which affected efficiency against plan.
<b>Veltri Interlocking</b>		
FY20 OYIP Expenditure & Scope	\$1,600,000	Complete design of interlocking and begin long lead procurement and specific advanced construction activities.
FY20 Actual Expenditure & Accomplishments	\$1,411,934	Design progressed to 60%, including major change to the basis of design (turn-out size from #24 to #20). Environmental permitting applications
Variance & Explanation	-\$188,066	Variance for underspend mostly due to design change pausing progress in Q3 and deferral of some long lead procurement activities.
Connecticut DOT		FY20 Actual Expenditure: \$58,883,052
<b>Hartford Line Rail Program: Phases 3B - 5</b>		
FY20 OYIP Expenditure & Scope	\$1,000,000	Begin Construction of short high-level platform at Windsor Station; Begin construction of Windsor Locks Station
FY20 Actual Expenditure & Accomplishments	\$8,195,885	Projects awaiting funding
Variance & Explanation	\$7,195,885	None submitted

Special Projects Detail: New England continued on the next page >>

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

<b>New Haven Line Yard and Facility Program</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$20,000,000	Continue design and construction efforts for various projects (East End Connector, West End Yard, Building 10 Demolitions, Pedestrian Overpass, etc.)
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$38,856,307	East End Connector and West End Yard both in construction.
<b>Variance &amp; Explanation</b>	\$18,856,307	None submitted
<b>Shore Line East Station Improvements</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$12,000,000	Advance Construction of the Clinton Railroad Station by adding a Platform on the New Haven bound side along with a pedestrian overpass
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$11,455,841	Clinton Station is under construction.
<b>Variance &amp; Explanation</b>	-\$544,159	None submitted
<b>Shore Line East Track &amp; Catenary Improvements (FY22)</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$4,000,000	Begin Construction to electrify the siding at the New London Station
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$375,019	Amtrak is working on property issues. The design will be finalized once Amtrak resolves this issue.
<b>Variance &amp; Explanation</b>	-\$3,624,981	None submitted
<b>MBTA</b>		<b>FY20 Actual Expenditure: \$2,710,600</b>
<b>MBTA Pawtucket Layover Facility</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$1,000,000	FY20 will consist of procuring design and commencing design plans for 30% submittal.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$2,710,600	Final Construction Completion of Pawtucket Phase II Fluid Handling Facility.
<b>Variance &amp; Explanation</b>	\$1,710,600	Additional scope was added to Pawtucket Phase II Fluid Handling Facility which included an advanced centralized fluid control system. This change required additional time and funding in order to completed the project. Pawtucket Phase III Train Inspection Shelter is the first of it's kind in the MBTA system and includes features to accommodate possible electrification in the future. These additional features required additional scope and alternative designs.
<b>Rhode Island DOT</b>		<b>FY20 Actual Expenditure: \$5,525,969</b>
<b>Pawtucket/Central Falls Station</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$16,000,000	Continue with design and construction activities for this design/build project per the contractors schedule and resources. Install drainage, utilities, and foundations within Amtrak ROW. Amtrak Force Account covers safety men; utilities; design review; and construction activities.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$5,329,907	The project received all environmental permits. Site-work began and continues on time and on budget. Design progressed from 90% to 100%.
<b>Variance &amp; Explanation</b>	-\$10,670,093	The difference in projected versus actual expenditures is due to the anticipated progress of the project versus actual progress. The project remains on schedule and on budget where we expect expenditures to increase and match projected figures.

Special Projects Detail: New England continued on the next page &gt;&gt;

<b>Providence Station Improvements</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$1,000,000	Complete project initiation agreements with FRA and Amtrak; award final design contract; begin advancement of final design
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$0	Amtrak agreement and design consultant procurement.
<b>Variance &amp; Explanation</b>	-\$1,000,000	Work continues on developing project agreements
<b>Warwick/T.F. Green Airport Station Expansion</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$800,000	Commence preliminary engineering to design the infrastructure necessary to bring electrified, intercity service to T.F. Green, including platform(s), a Track 4 siding, interlockings, catenary, crossovers, passenger station space, and pedestrian circulation between platforms. Commence preparation of an approved NEPA document.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$196,062	Project Team meetings between RIDOT and Amtrak were conducted to select a preferred alternative among several listed within the Conceptual Report, which was finalized in 6/2020.
<b>Variance &amp; Explanation</b>	-\$603,938	Work continues on developing project agreements. The start of design and NEPA process will start once the agreements have been completed.

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

## Infrastructure: Capital Renewal

In the New England region, Baseline Capital Charges (BCCs) are allocated by Amtrak, Connecticut DOT (for Shore Line East and Hartford Line service only), MBTA, and Rhode Island DOT to fund the capital renewal of basic infrastructure on the NEC Main Line in Rhode Island and Connecticut and the NEC Branch Line from New Haven, CT to Springfield, MA. In total, \$53 million was invested in FY20, which was 31% less than originally planned.

BCC Segment	RoW owner	Operators					FY20 expenditure by segment
		Amtrak	MBTA	RIDOT	CTDOT Shore Line East	CTDOT Hartford Line	
2. MA/RI State Line to Providence	Amtrak	\$2,797,390	\$1,584,964	-	-	-	<b>\$4,382,354</b>
3. Providence to Wickford Junction	Amtrak	\$763,311	-	\$2,187,665	-	-	<b>\$2,950,976</b>
4. Wickford Junction to New London	Amtrak	\$27,588,833	-	-	-	-	<b>\$27,588,833</b>
5. New London to New Haven	Amtrak	\$4,889,010	-	-	\$4,605,590	-	<b>\$9,494,600</b>
25. Springfield to New Haven	Amtrak	\$2,409,640	-	-	-	\$6,377,893	<b>\$8,787,534</b>
<b>FY20 total capital renewal expenditure by agency</b>		<b>\$38,448,184</b>	<b>\$1,584,964</b>	<b>\$2,187,665</b>	<b>\$4,605,590</b>	<b>\$6,377,893</b>	<b>\$53,204,297</b>

### FY20 Expenditure

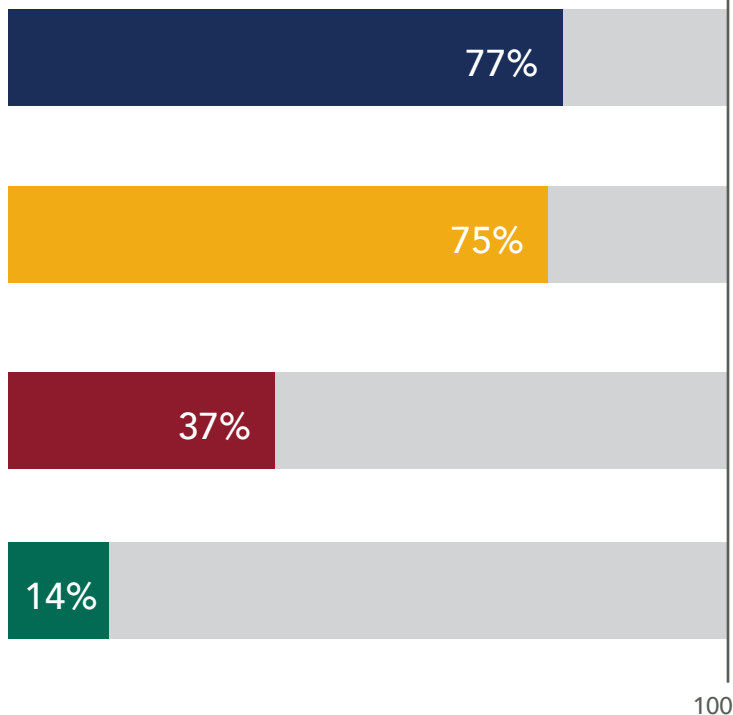
**TRACK**  
\$41.1 MILLION

**COMMUNICATION & SIGNALS**  
\$7.5 MILLION

**STRUCTURES & FACILITIES**  
\$4.4 MILLION

**ELECTRIC TRACTION**  
\$0.3 MILLION

### Plan Adherence



## Capital Renewal Detail: New England (Amtrak-owned)

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. Therefore, they will include activities across all relevant segments, including those outside of the New England region. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Amtrak Owned Positive Train CTRL (PTC) Installation. PG00085. C.EN.201034.	2	\$92,077	\$0	-\$92,077	All boundaries with MBTA were completed making them the first railroad to become fully interoperable with Amtrak on the NEC. Rev 11.3 was successfully completed and installed. Boundaries at CP12, CP75 and CP216 with Metro North were completed. All lines with the exception of Line 3 were migrated to the Hitachi STS Server. PTC Implementation Plan was completed and submitted to the FRA. Work progressed with other railroads (Septa, New Jersey Transit, Long Island Railroad and Metro North) towards interoperability which is anticipated to be complete in Q1 of FY21.	Variance was within a 10% threshold. No explanation.
	3	\$284,586	\$0	-\$284,586		
	4	\$637,353	\$0	-\$637,353		
	5	\$811,222	\$266,561	-\$544,661		
	25	\$654,715	\$0	-\$654,715		
Communications System Upgrades Program. PG00083. C.EN.101857.	2	\$38,403	\$0	-\$38,403	Fiber Optic Electronic Replacement Specs and Voice Recorders Installation was completed. Work continued on new radio and communications huts, fiber installs and cable installs which are anticipated to be complete in FY21.	This program had a Reprogramming to \$1.7M. Therefore, this changes the 48% variance to only 8% over the Reprogramming
	3	\$127,127	\$0	-\$127,127		
	4	\$284,713	\$0	-\$284,713		
	5	\$335,034	\$0	-\$335,034		
	25	\$334,910	\$0	-\$334,910		
Davisville Interlocking - Upgrade to Microlock 2 Project. P000009. C.EN.100727.	3	\$53,568	\$914,143	\$860,575	The full cutting over into service in Q2 and completing and closing out the project.	This project has experienced significant and recurrent delays over its life due to continual design changes since it is a test program for a new approach on interfacing the existing system to the new system resulting in additional pre-testing in the field prior to the actual cut-over (as well as, to a lesser extent, qualified force account manpower shortages and limited track time for testing). A Reprogramming was requested in July 2020 for \$864,549 which is more in line with the FY20 actuals."
Fence Upgrades Program. PG00069. C.EN.101854.	2	\$1,637,292	\$13,186	-\$1,624,105	Westerly Yard, RI and BWI Station SOW were completed.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred most of the projects within the program until FY21.
	4	\$672,805	\$600,089	-\$72,716		
	5	\$2,204,695	\$27,554	-\$2,177,141		
	25	Not in OYIP	\$132,672	\$132,672		

Capital Renewal Detail: New England continued on the next page >>

## Capital Renewal Detail: New England (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. Therefore, they will include activities across all relevant segments, including those outside of the New England region. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
New England Catenary Program. PG00029. C.EN.101836.	2	\$107,169	\$3,819	-\$103,350	Cost savings recognized.	Due to the impacts of COVID-19 that the business incurred, Amtrak reallocated force account. Therefore the program underperformed planned scope based on availability of force account labor.
	3	\$133,604	\$7,517	-\$126,087		
	4	\$370,013	\$169,052	-\$200,961		
	5	\$287,583	\$0	-\$287,583		
New England Communications Program. PG00030. C.EN.101837.	2	\$139,316	\$53,880	-\$85,436	Recognized cost cutting opportunities.	Installation costs for SCADA/RTU locations favorable to plan, however as part of COVID-19 response, a Reprogramming reduction of \$200,000 was requested in April 2020.
	3	\$180,774	\$113,684	-\$67,090		
	4	\$101,779	\$284,899	\$183,120		
	5	\$637,606	\$248,800	-\$388,805		
	25	\$138,172	\$0	-\$138,172		
New England Facilities Program. PG00031. C.EN.101811.	2	\$485,289	\$852,920	\$367,631	The substantial completion of the USS1 transformer upgrades at the Providence, RI, maintenance of way (MOW) facility and the completion of the Southampton Street Yard 480V Ground Power Upgrades.	Program scope reduced at request of Finance as a response to COVID-19 pandemic. Projects not yet started as of the end of March 2020 were deferred to future fiscal years. As part of COVID-19 response, Reprogramming reduction of \$4,427,936 requested in April/May 2020.
	3	\$208,140	\$0	-\$208,140		
	4	\$466,147	\$0	-\$466,147		
	5	\$548,536	\$0	-\$548,536		
	25	\$111,658	\$268,634	\$156,976		
New England Signals Program. PG00033. C.EN.101839.	2	\$562,523	\$767,155	\$204,633	The completion of cable replacements and switch machine replacement at Mystic River Bridge and in Branford, CT, switch heater replacements in Rhode Island, grade crossing house replacement at Palmer Street crossing in Pawcatuck, CT, and surge protector replacements in Connecticut.	Procurement delays for materials, equipment, and design services for fuse replacement in Rhode Island, surge protectors in Rhode Island, RTU upgrades at four CT locations, and switch heater replacements at View I/L and Orms I/L resulted in less than anticipated spending against plan.
	3	\$469,273	\$396,788	-\$72,486		
	4	\$2,239,283	\$1,745,687	-\$493,596		
	5	\$1,789,207	\$913,857	-\$875,350		
	25	\$42,736	\$2,349	-\$40,387		
New England Structures Program. PG00034. C.EN.101840.	2	\$88,970	\$0	-\$88,970	The needed abutment upgrades at locations along the AS & AB lines as well as performing bridge timber replacement at the Connecticut River Bridge on the AS line.	Changes to execution of CT49.73 bridge timber and steel upgrades project from force account to contractor resulted in additional design requirements resulting in delays and less than anticipated spending for the project. Design costs for several other projects favorable to plan. Reprogramming reductions.
	3	\$94,202	\$0	-\$94,202		
	4	\$1,288,911	\$1,235,672	-\$53,240		
	5	\$1,146,950	\$537,643	-\$609,307		
	25	\$169,455	\$336,680	\$167,225		

Capital Renewal Detail: New England continued on the next page >>



## Capital Renewal Detail: New England (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. Therefore, they will include activities across all relevant segments, including those outside of the New England region. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
New England Substations Program. PG00035. C.EN.101841.	2	\$41,502	\$33,549	-\$7,953	Completed the Saybrook Transformer Replacement and 5 battery replacements despite procurement delays.	Norton Transformer project delayed due to procurement challenges. Reprogramming reduction of \$500,000 requested as part of COVID-19 reductions in April 2020.
	3	\$52,942	\$0	-\$52,942		
	4	\$56,934	\$44,705	-\$12,229		
	5	\$903,735	\$20,078	-\$883,656		
	25	\$8,793	\$0	-\$8,793		
New England Track Program. PG00036. C.EN.101842.	2	\$1,296,823	\$659,454	-\$637,370	Not submitted.	Production impacted based on availability of force account labor due to COVID-19 impacts, reduction in overtime, and prioritization of other project work.
	3	\$1,485,913	\$791,639	-\$694,274		
	4	\$3,792,836	\$3,119,030	-\$673,806		
	5	\$4,209,396	\$3,337,202	-\$872,194		
	25	\$3,051,050	\$2,873,854	-\$177,196		
Pawcatuck River RI Bridge Replacement Project. P000125. C.EN.101866.	4	\$1,499,893	\$1,377	-\$1,498,516	No work completed performed in FY20.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project
Production High Speed Surfacing Program. PG00060. C.EN.101855.	2	\$1,598,004	\$46,034	-\$1,551,970	Performed 1,232,096' of Surfacing between High Speed and T/O & X/O.	Undercutter settlement surfacing work was performed on Undercutter project numbers in NED for the last few months of FY20. Some off program work done in FY20. Some of the equipment also had downtime due to repairs that needed to be made.
	3	\$703,707	\$727,206	\$23,499		
	4	\$3,386,600	\$405,008	-\$2,981,591		
	5	\$21,990	\$0	-\$21,990		
Production Wood Tie/Timber Replacement Program. PG00071. C.EN.101858.	25	\$2,177,884	\$3,365,188	\$1,187,304	Additional ties were installed as a result of coordination with SEPTA. Neutral rail temperatures were adjusted. Interlockings were hardened with new timbers.	In Fall 2019 weekend outages were provided. Distressing was performed as a result of heat kink issues.
Quinnipiac River CT Bridge Replacement Project. P000126. C.EN.101790.	5	\$2,678,380	\$0	-\$2,678,380	Not submitted.	Not submitted.

Capital Renewal Detail: New England continued on the next page >>

## Capital Renewal Detail: New England Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. Therefore, they will include activities across all relevant segments, including those outside of the New England region. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Rail Replacement Program. PG00003. C.EN.101856.	4	\$197,919	\$275,973	\$78,054	Despite being deferred due to COVID, the Program was still able to start some work earlier in the fiscal year on the AP Line and in some areas of Mid-Atlantic South.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
Shaws Cove CT Swing Bridge Fender Replacement Project. P000127. C.EN.101584.	5	\$3,031,926	\$6,371	-\$3,025,555	No work completed performed in FY20.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred majority of to FY21, Reprogramming reduction to \$6,251 requested in April/ May 2020.
SPRING (Springfield, MA) Interlocking Renewal Project. P000046. C.EN.101777.	25	\$763,338	\$0	-\$763,338	No work completed performed in FY20.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred majority of to FY21, Reprogramming reduction to \$14,801 requested in April/May 2020.
Springfield Line PTC Installation. P000159. C.EN.101607.	25	Not in OYIP	\$1,752,391	\$1,752,391	No work completed performed in FY20.	This project wasn't in the FY20 Capital Plan, however was added in through Reprogramming for the payment of invoices to close out prior years.
STA PROVD RI. C.RE.100029.	2	Not in OYIP	\$1,158,668	\$1,158,668	Not submitted.	Not submitted.
Total Track Renewal Program. PG00061. C.EN.101871.	5	\$1,210,612	\$0	-\$1,210,612	Completion of Newark Station Track A and 30th St. Track 9 block tie projects were completed along with various ballasted track locations.	Scope elements and locations were added to the program that were not originally included in the estimate. CWR and water proofing was added to Newark Station block tie scope. Ballasted Track renewal was added at Baldwin Track #1.
Track Rehabilitation Program. PG00063. C.EN.101859.	4	\$1,836,975	\$4,080,155	\$2,243,180	A new yard track and wayside switch in Groton, CT, ties at West Yard (Wilmington, DE), and switch replacement at Penn Coach Yard (Philadelphia, PA).	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred some of the projects in this program to future fiscal years.

Capital Renewal Detail: New England continued on the next page >>

## Capital Renewal Detail: New England (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. Therefore, they will include activities across all relevant segments, including those outside of the New England region. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Track Undercutting Program. PG00062. C.EN.100269.	2	\$749,850	\$546,346	-\$203,504	The Undercutting program completed 121,483 Ft of undercutting across the following locations: Grove to Bridge Tk 1, Lehigh to Mantua Tk 1, Groton to High St Tk2, Crescent to Shaw's Cove Tk 1 & 2, Conn to Crescent Tk 1, MP 187.8 to Pawtucket Tk 1 & 2, Kingston to Davisville Tk 2.	Production schedule experienced multiple adjustments throughout the fiscal year. The most significant change occurred due to COVID-19 cost reduction efforts. As a result, a significant schedule change occurred on both the Mid-Atlantic and New England Undercutters. This plan gave more time to the work group, and minimal OT was required. In FY20, 18% of reported hours were Overtime. This is an improvement over the 33% experienced in FY19.
	3	\$189,378		-\$189,378		
	4	\$4,291,296	\$15,627,185	\$11,335,889		
	5	\$16,540,276	\$3,885,629	-\$12,654,647		
Turnout Renewal Program. PG00065. C.EN.101860.	2	Not in OYIP	\$247,342	\$247,342	Performed 27 Installs in FY20 as well as transition panels where required and some additional track work.	Several planned T/O installs for FY20 had to be moved into FY21 due to scheduling conflicts or material issues (Lawn and Gunpow locations.)
	5	\$674,744	\$250,905	-\$423,839		
	25	\$725,763	\$55,765	-\$669,998		
<b>Region Total</b>		<b>\$77,154,254</b>	<b>\$53,204,297</b>	<b>-\$23,949,958</b>		

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# Region: New Haven Line

## Operations and Infrastructure Detail

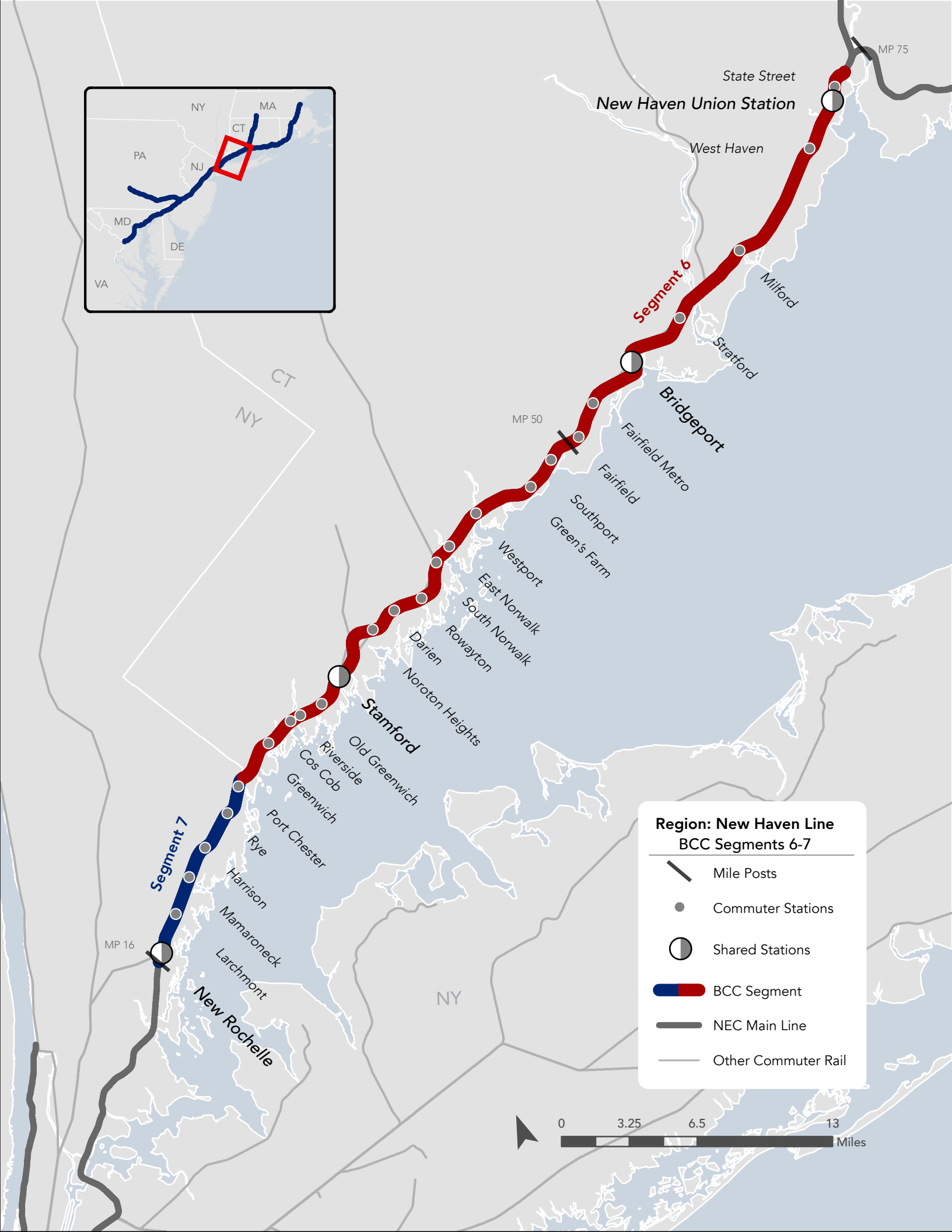
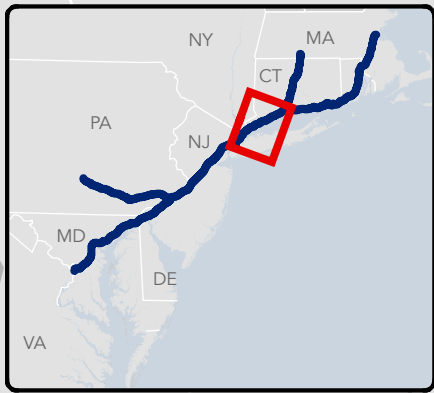
Operators: Amtrak, MTA Metro-North Railroad

RoW Owners: Connecticut DOT, MTA Metro-North Railroad

### BCC Segments

6: New Haven to CT/NY State Line

7: CT/NY State Line to New Rochelle



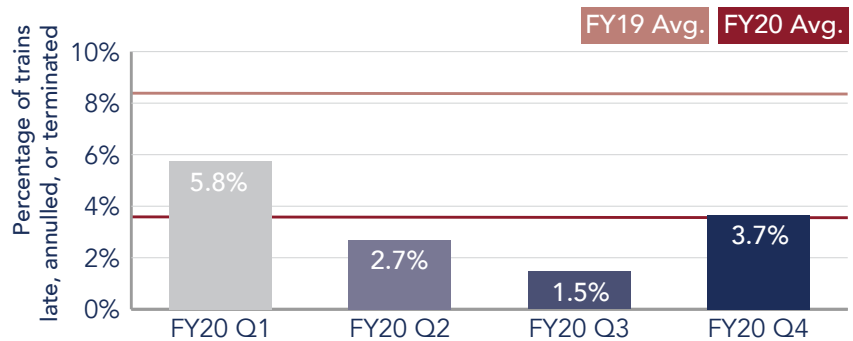


## Operations: MTA Metro-North Railroad

MTA's Metro-North Railroad (MNR) operates on the NEC Main Line, south from New Haven, CT into New York through New Rochelle, NY where trains leave the corridor to proceed to Grand Central Station. Branch lines from New Canaan, Danbury, and Waterbury connect with the New Haven Line at Stamford, South Norwalk, and Devon. MNR service outside of the State of New York is operated on behalf of Connecticut DOT.

### Train performance profile

Metric	FY19	FY20
Percent NEC trains late, annulled, or terminated	8.4%	2.67%
Percent NEC trains not completed	0.40%	0.44%
Avg min late per NEC train	12.3	9.7



### Train-delay minutes by cause

#### Total and percent change, FY19-20

Cause	FY19	FY20	Change
Infrastructure	43,095	9,647	-77.6%
Mechanical	14,599	6,144	-57.9%
Transportation	3,025	1,086	-64.1%
Passenger	6,925	2,727	-60.6%
Weather	13,458	8,914	-33.8%
Third-Party	9,142	6,030	-34.0%
Freight	120	0	-100.0%
Other	4,596	1,061	-76.9%
<b>Total</b>	<b>94,960</b>	<b>35,609</b>	<b>-62.5%</b>

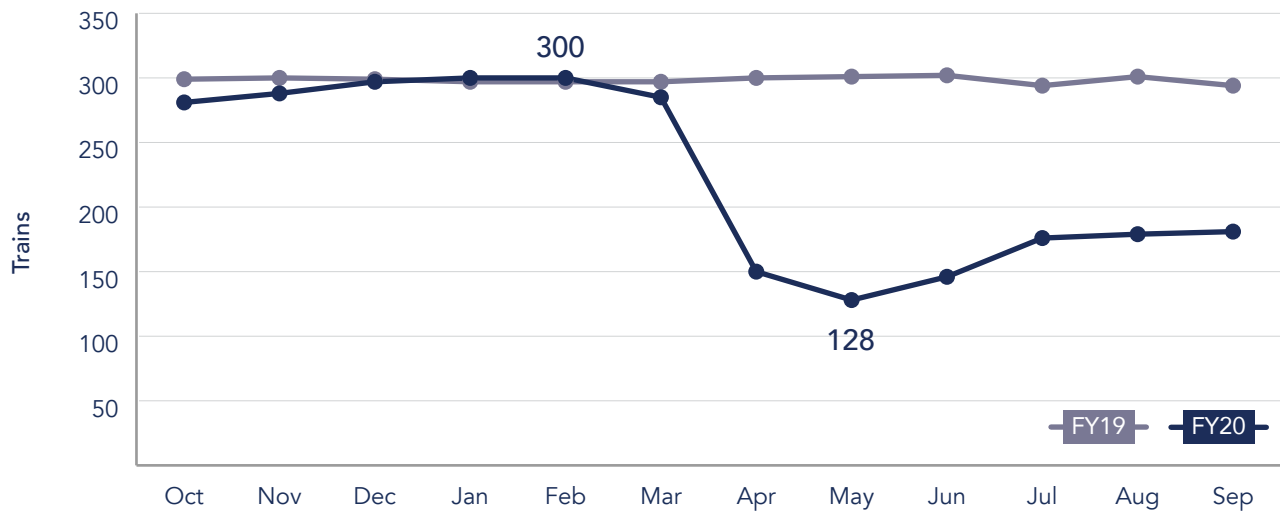
#### Rank by category, FY20



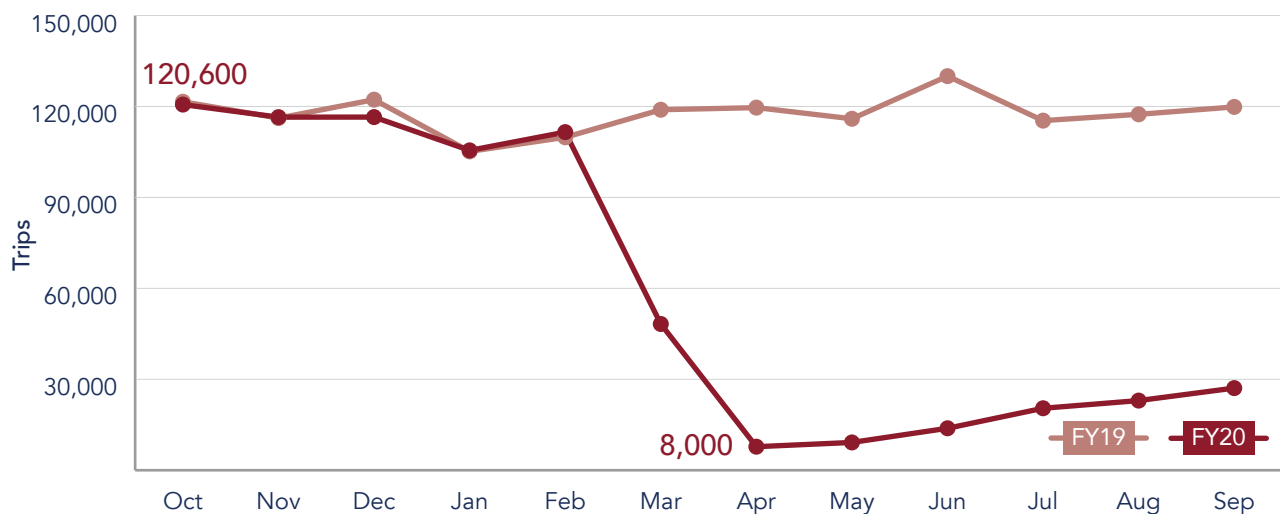
## MNR NEC Service and ridership

Period	Average Weekday NEC Trains			Average Weekday NEC Trips		
	FY19	FY20	Change from FY19	FY19	FY20	Change from FY19
Q1 (Oct - Dec)	299	289	-4% ↓	119,991	117,868	-2% ↓
Q2 (Jan - Mar)	297	295	-1% ↓	111,309	88,430	-21% ↓
Q3 (Apr - Jun)	301	142	-53% ↓	121,856	10,260	-92% ↓
Q4 (Jul - Sep)	296	178	-40% ↓	117,531	23,507	-80% ↓
<b>FY Average (Oct - Sep)</b>	<b>298</b>	<b>226</b>	<b>-24% ↓</b>	<b>117,672</b>	<b>60,016</b>	<b>-49% ↓</b>

### MNR Average NEC Weekday Trains



### MNR Average NEC Weekday Trips



## Infrastructure: Special Projects

Connecticut DOT coordinated work with Amtrak and MTA Metro-North Railroad on 4 special projects throughout the New Haven Line. In total, \$127 million was invested in FY20, which was 11% less than originally planned.

### Special Projects Detail: New Haven Line

Connecticut DOT		FY20 Actual Expenditure: \$123,366,301
<b>Devon Bridge Replacement</b>		
FY20 OYIP Expenditure & Scope	\$1,500,000	Proceeding with Phase B Final Design in order to complete construction documents by FY21.
FY20 Actual Expenditure & Accomplishments	\$75,038	Preliminary engineering advancing
Variance & Explanation	-\$1,424,962	None submitted
<b>New Haven Line Network Infrastructure Upgrade</b>		
FY20 OYIP Expenditure & Scope	\$12,000,000	Procurement of C&S, ET and Track materials (signal huts, turnouts, cat poles, hangers, cable, wire, etc.), C&S construction at Lancaster Shops, Contractor construction of catenary pole foundations, civil roadbed work and access road.
FY20 Actual Expenditure & Accomplishments	\$3,766,491	This investment was moved to Capital Renewal. See Capital Renewal Detail on page 84.
Variance & Explanation	-\$8,233,509	This investment was moved to Capital Renewal. See Capital Renewal Detail on page 84.
<b>Stamford Station Improvements</b>		
FY20 OYIP Expenditure & Scope	\$4,000,000	Procurement of C&S, ET and Track materials (signal huts, turnouts, cat poles, hangers, cable, wire, etc.), C&S construction at Lancaster Shops, Contractor construction of catenary pole foundations, civil roadbed work and access road.
FY20 Actual Expenditure & Accomplishments	\$3,163,734	Project on schedule
Variance & Explanation	-\$836,266	None submitted
<b>Walk Bridge Program</b>		
FY20 OYIP Expenditure & Scope	\$125,000,000	Complete design of interlocking and begin long lead procurement and specific advanced construction activities.
FY20 Actual Expenditure & Accomplishments	\$120,127,529	The final design for Walk bridge and East Ave, Osborne and Fort Point bridge projects are being finalized.
Variance & Explanation	-\$4,872,471	None submitted

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

## Infrastructure: Capital Renewal

On the New Haven Line, Baseline Capital Charges (BCCs) are allocated by Amtrak, Connecticut DOT, and MTA Metro-North Railroad to fund the capital renewal of basic infrastructure on the NEC Main Line between New Haven, CT and New Rochelle, NY. In total, \$53 million was invested in FY20, which was 31% less than originally planned.

BCC Segment	RoW owner	Operators					FY20 expenditure by segment
		Amtrak	CTDOT Shore Line East	CTDOT Hartford Line	CTDOT New Haven Line	MTA Metro-North Railroad	
6. New Haven to CT/NY State Line	CTDOT	\$16,482,710	\$1,075,888	\$218,763	\$108,948,000	-	<b>\$126,725,361</b>
7. CT/NY State Line to New Rochelle	MNR	\$2,419,273	-	-	-	\$13,059,033	<b>\$15,478,306</b>
<b>FY20 total regional capital renewal expenditure by agency</b>		<b>\$18,901,983</b>	<b>\$1,075,888</b>	<b>\$218,763</b>	<b>\$108,948,000</b>	<b>\$13,059,033</b>	<b>\$142,203,668</b>

### FY20 Expenditure

### Plan Adherence

#### TRACK

\$27.3 MILLION

118%

#### COMMUNICATION & SIGNALS

\$26.8 MILLION

87%

#### STRUCTURES & FACILITIES

\$42.5 MILLION

60%

#### ELECTRIC TRACTION

\$24.6 MILLION

94%

#### OTHER

\$20.9 MILLION

60%

100%

## Capital Renewal Detail: New Haven Line (CTDOT-owned; BCC Segment 6)

Project/Program	FY20 Planned expenditure	FY20 Actual expenditure	Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
NHL - ALL Movable Bridge Repairs	\$12,000,000	\$2,054,609	-\$9,945,391	None submitted	None submitted
NHL CT - Bridge Design(DOT03000175PE Bridge Design)	\$3,200,000	\$1,764,022	-\$1,435,978	None submitted	None submitted
NHL CT - Bridge Replacement/Repair Program	\$8,000,000	\$6,071,252	-\$1,928,748	None submitted	None submitted
NHL CT - Bridges - Atlantic Street Bridge, Stamford including Yard/Platform/Catenary (DOT01350301CN/DOT03010163CN)	\$20,000,000	\$16,053,191	-\$3,946,809	Major construction activities for bridge replacement complete.	None submitted
NHL CT - Bridges - East Ave, Osbourne and Fort Point Bridges (DOT03010189PE)	\$10,000,000	\$3,268,045	-\$6,731,955	Project on schedule	None submitted
NHL CT - Catenary Replacement (Segments C1A and C2 - Construction DOT03010145CN)	\$10,000,000	\$20,653,071	\$10,653,071	Project nearing completion	Completion delayed until first 2nd quarter 2021. Manpower shortages due to COVID contributed in 3rd Quarter 2020
NHL CT - Network Infrastructure Upgrade - All Phases (DOT03000215PE Network Infrastructure Upgrade Phase 4)	\$14,000,000	\$6,852,717	-\$7,147,283	Working on scope of work	None submitted
NHL CT - Signal System Replacement Phase 1(DOT03010154CN Signal System)	\$15,000,000	\$15,854,016	\$854,016	Project on schedule	None submitted
NHL CT - Track Program (C Program)(C-31 DOT03000190CN)	\$9,600,000	\$11,171,650	\$1,571,650	Met goals for cyclical maintenance	None submitted
NHL CT - Track Program (C Program)(C-32 DOT03000206CN)	\$10,400,000	\$15,247,763	\$4,847,763	Met goals for cyclical maintenance	None submitted
NHL S program/Timber Program (DOT03000161CN Bridge Timber Program)	\$2,900,000	\$2,069,948	-\$830,052	Met goals for cyclical maintenance	None submitted
NHL S program/Timber Program(DOT03000207CN (S-23)/ DOT03000195CN (S-22))	\$3,100,000	\$2,017,719	-\$1,082,281	Met goals for cyclical maintenance	None submitted
Positive Train Control	\$35,000,000	\$20,471,618	-\$14,528,382	Project on schedule to meet FRA mandate.	None submitted
Substation Repairs/Improvements (DOT03010508PE/DOT03010508CN/ DOT03010505CN)	\$5,000,000	\$688	-\$4,999,312	The Design and Procurement phase is on-going and it is anticipated that the project will be start in the Spring of 2021	None submitted
Substation Replacements DOT03010072CN (5 Substations) DOT03010153CN (6th Substation)	\$10,000,000	\$3,175,053	-\$6,824,947	The construction phase is on-going and it is anticipated that the project will be completed in the Spring of 2021	None submitted
<b>Total (CTDOT-owned)</b>	<b>\$168,200,000</b>	<b>\$126,725,361</b>	<b>-\$41,474,639</b>		

Capital Renewal Detail: New Haven Line continued on the next page >>

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

## Capital Renewal Detail: New Haven Line (MNR-owned; BCC Segment 7)

Project/Program	FY20 Planned expenditure	FY20 Actual expenditure	Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Autonomous Track Geometry Measurement System	\$12,000,000	\$2,054,609	-\$9,945,391	None submitted	None submitted
Bridge 23	\$3,200,000	\$1,764,022	-\$1,435,978	Bridge 23 is largely commissioned with punch list of consultant and closeout documents finalized	None submitted
C&S Microcomputer Replacement	\$8,000,000	\$6,071,252	-\$1,928,748	None submitted	None submitted
Catenary Structure Rehabilitation	\$20,000,000	\$16,053,191	-\$3,946,809	Project completed inventory review of catenary bridge structures, with design recommendations and construction packages for bid work ongoing.	Project experienced delay, continued from FY19 to FY20.
Customer Communication-Stations	\$10,000,000	\$3,268,045	-\$6,731,955	None submitted	None submitted
Cyclical Track Program	\$10,000,000	\$20,653,071	\$10,653,071	None submitted	Track work was largely reprogrammed out of NYS to CT territory, due to NYS funding availability related to COVID pandemic
Fork Truck Fleet Replacement	\$14,000,000	\$6,852,717	-\$7,147,283	None submitted	None submitted
Geometry Car Machinists and Support Vehicles	\$15,000,000	\$15,854,016	\$854,016	None submitted	None submitted
GIS Expansion	\$9,600,000	\$11,171,650	\$1,571,650	None submitted	None submitted
Independent Engineer	\$10,400,000	\$15,247,763	\$4,847,763	None submitted	None submitted
MoW Inspection Car	\$2,900,000	\$2,069,948	-\$830,052	None submitted	None submitted
PBX Replacement	\$3,100,000	\$2,017,719	-\$1,082,281	Acceptance of Work Plan to advance PBX replacement.	None submitted
Positive Train Control	\$35,000,000	\$20,471,618	-\$14,528,382	MNR began extended revenue service demonstration on the New Haven Line in August 2020. Amtrak boundary installation and commissioning occurred in September 2020. Once M8 safety software testing is complete, full PTC operation is anticipated end of Q1 2021.	Ongoing implementation of PTC, larger amount of work completed to meet Federal mandated deadlines.
Program Administration	\$5,000,000	\$688	-\$4,999,312	None submitted	Previous quarter adjustments due to delayed account update
Program Scope Development	\$8,000	\$41,138	\$33,138	None submitted	None submitted
Purchase MoW Equipment	\$593,730	\$246,468	-\$347,262	None submitted	None submitted
Purchase Two Catenary Maintenance Vehicles	Not in OYIP	\$1,463	\$1,463	None submitted	None submitted
Railroad Protective Liability	\$12,000	\$2,781	-\$9,219	None submitted	None submitted
Replace Timbers on Undergrade Bridges	Not in OYIP	\$1,122,331	\$1,122,331	None submitted	None submitted
Retaining Wall Reconstruction	\$2,000,000	\$292,109	-\$1,707,891	Project entered construction	Shortly after submission of FY20 plan, project start was delayed from March 2020 to June 2020

Capital Renewal Detail: New Haven Line continued on the next page >>



## Capital Renewal Detail: New Haven Line (MNR-owned; BCC Segment 7) [cont.]

Project/Program	FY20 Planned expenditure	FY20 Actual expenditure	Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Substation 128 and 178 Replacement	\$1,220,000	\$325,983	-\$894,017	Design work is ongoing, MNR intends to advertise in 2021/22 for design/build contract starting in FY22.	None submitted
Undergrade Bridge Rehabilitation	\$10,400,000	\$6,075,443	-\$4,324,557	Project entered construction	Shortly after submission of FY20 plan, project start was delayed from March 2020 to June 2020
Vehicle Replacement Provision	Not in OYIP	\$193,917	\$193,917	None submitted	None submitted
<b>Total (MNR-owned)</b>	<b>\$17,629,126</b>	<b>\$15,478,306</b>	<b>-\$2,150,820</b>		

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# Region: New Jersey - New York

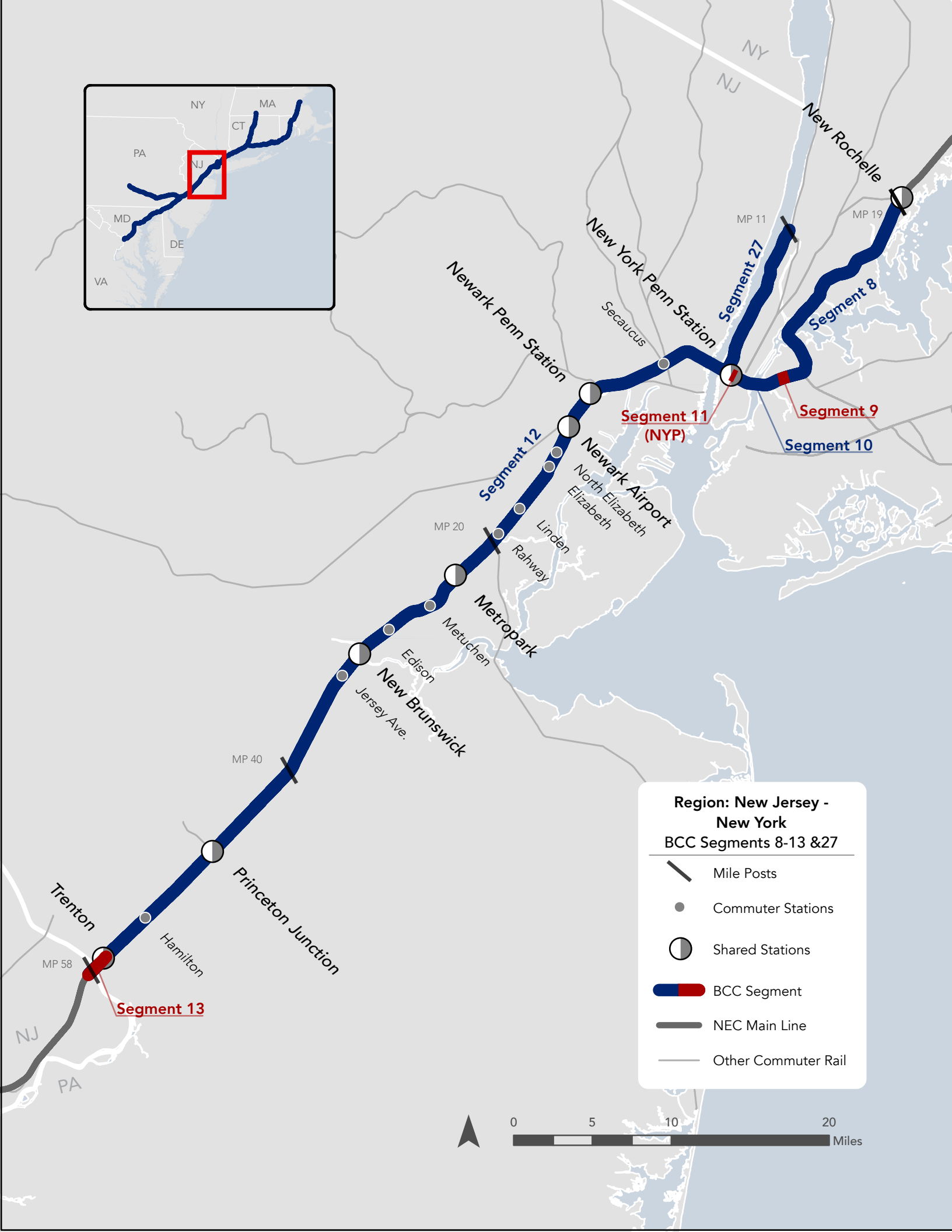
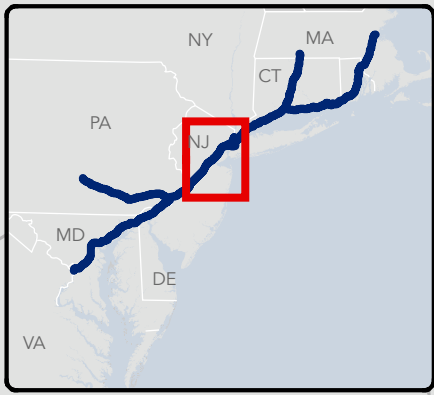
## Operations and Infrastructure Detail

Operators: Amtrak, MTA Long Island Rail Road, NJ TRANSIT, SEPTA

RoW Owners: Amtrak

### BCC Segments

- 8: New Rochelle to Harold
- 9: Harold to F Interlocking
- 10: F Interlocking to Penn Station New York
- 11: Penn Terminal
- 12: Penn Station New York to Trenton
- 13: Trenton to Morris
- 27: Spuyten Duyvil to Penn Station New York



**Region: New Jersey - New York**  
**BCC Segments 8-13 & 27**

- Mile Posts
- Commuter Stations
- Shared Stations
- BCC Segment
- NEC Main Line
- Other Commuter Rail

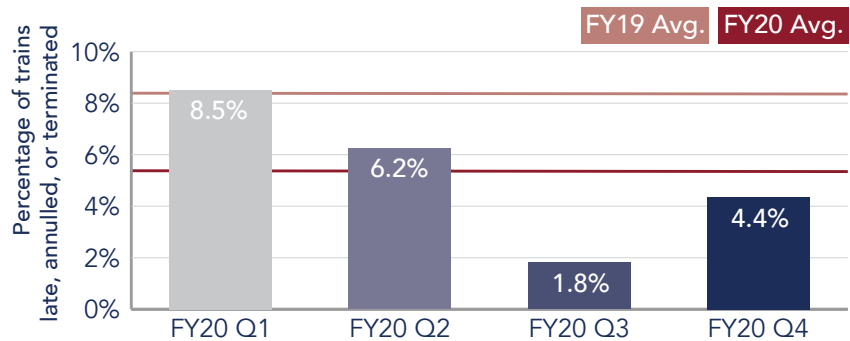


## Operations: MTA Long Island Rail Road

MTA's Long Island Rail Road (LIRR) operates eleven branch lines, ten of which connect to the NEC at Harold Interlocking in Queens operate into New York Penn Station. Passengers on the Oyster Bay branch heading to Penn Station must transfer at Jamaica Station. Passengers on the Far Rockaway, Hempstead, and West Hempstead branches must frequently make this transfer as well.

### Train performance profile

Metric	FY19	FY20
Percent NEC trains late, annulled, or terminated	8.4%	5.38%
Percent NEC trains not completed	0.64%	0.58%
Avg min late per NEC train	11.2	11.0

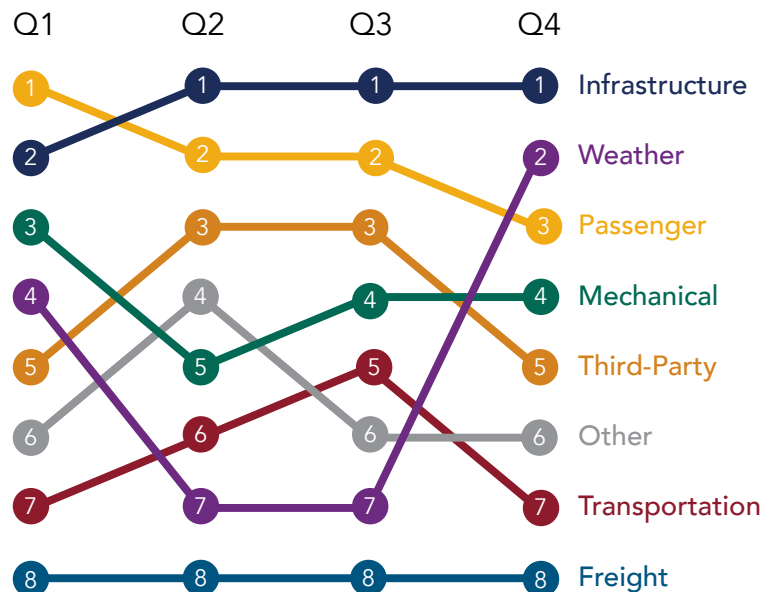


### Train-delay minutes by cause

#### Total and percent change, FY19-20

Cause	FY19	FY20	Change
Infrastructure	33,983	24,062	-29.2%
Mechanical	11,262	8,889	-21.1%
Transportation	7,179	3,368	-53.1%
Passenger	35,788	18,893	-47.2%
Weather	12,309	8,466	-31.2%
Third-Party	23,207	9,080	-60.9%
Freight	153	90	-41.2%
Other	10,065	5,653	-43.8%
<b>Total</b>	<b>133,946</b>	<b>78,501</b>	<b>-41.4%</b>

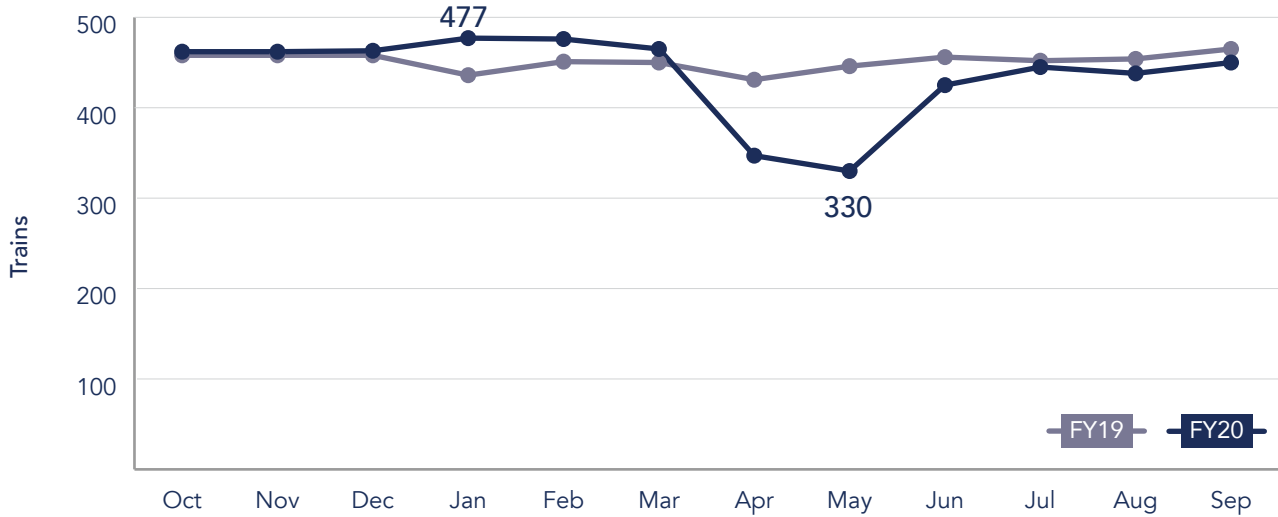
#### Rank by category, FY20



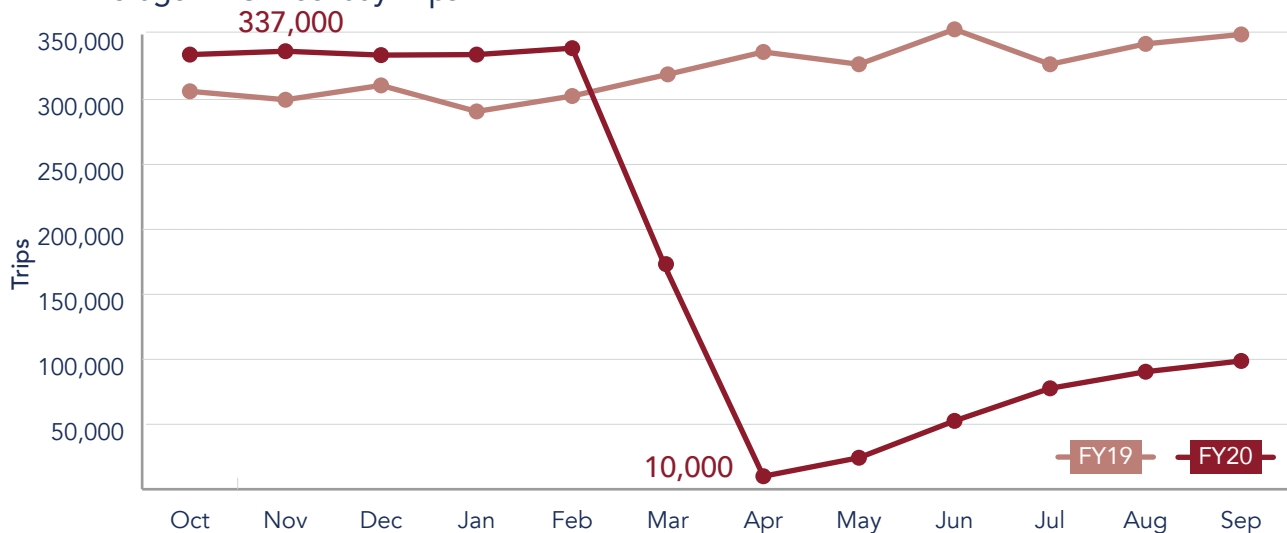
## LIRR NEC Service and Ridership

Period	Average Weekday NEC Trains			Average Weekday NEC Trips		
	FY19	FY20	Change from FY19	FY19	FY20	Change from FY19
Q1 (Oct - Dec)	458	462	+1% ↑	305,647	335,288	+10% ↑
Q2 (Jan - Mar)	445	473	+6% ↑	304,270	280,268	-8% ↓
Q3 (Apr - Jun)	444	368	-17% ↓	339,225	28,957	-91% ↓
Q4 (Jul - Sep)	457	444	-3% ↓	339,993	88,955	-74% ↓
<b>FY Average (Oct - Sep)</b>	<b>451</b>	<b>437</b>	<b>-3% ↓</b>	<b>322,284</b>	<b>183,367</b>	<b>-43% ↓</b>

### LIRR Average NEC Weekday Trains



### LIRR Average NEC Weekday Trips

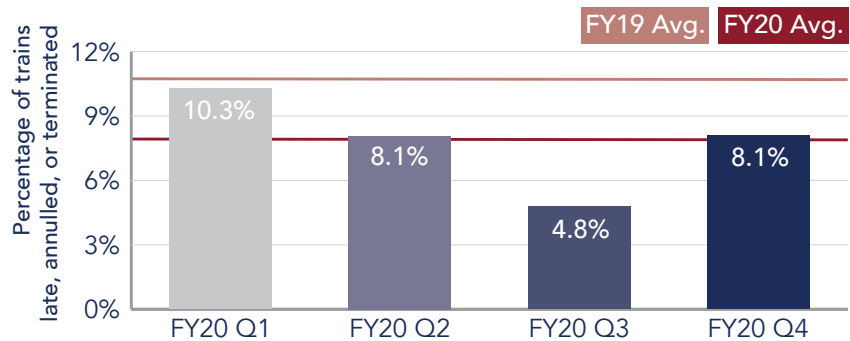


## Operations: NJ TRANSIT

NJ TRANSIT (NJT) operates its Northeast Corridor Line service on the NEC Main Line between Penn Station New York and Trenton, NJ. The North Jersey Coast, Midtown Direct, and Raritan Valley Lines to/from Penn Station New York also operate partially on the NEC. The Atlantic City Line operates between Philadelphia 30th St Station and Atlantic City, NJ, partially on the NEC.

### Train performance profile

Metric	FY19	FY20
Percent NEC trains late, annulled, or terminated	11.1%	7.22%
Percent NEC trains not completed	2.19%	0.29%
Avg min late per NEC train	17.3	11.5

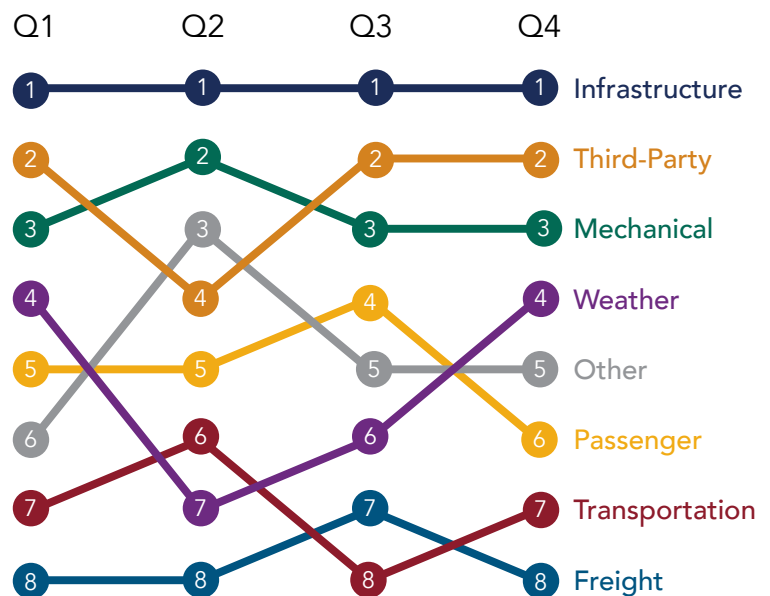


### Train-delay minutes by cause

#### Total and percent change, FY19-20

Cause	FY19	FY20	Change
Infrastructure	61,107	34,657	-43.3%
Mechanical	35,565	18,000	-49.4%
Transportation	12,108	4,304	-64.5%
Passenger	14,424	7,388	-48.8%
Weather	18,995	8,530	-55.1%
Third-Party	24,424	21,437	-12.2%
Freight	882	254	-71.2%
Other	22,814	10,564	-53.7%
<b>Total</b>	<b>190,319</b>	<b>105,134</b>	<b>-44.8%</b>

#### Rank by category, FY20

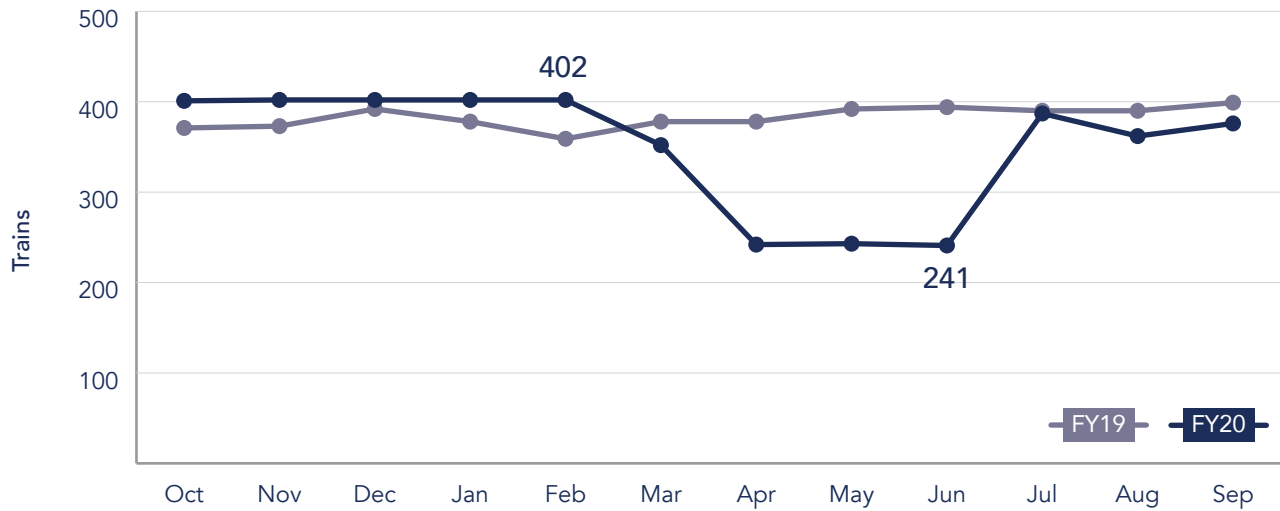




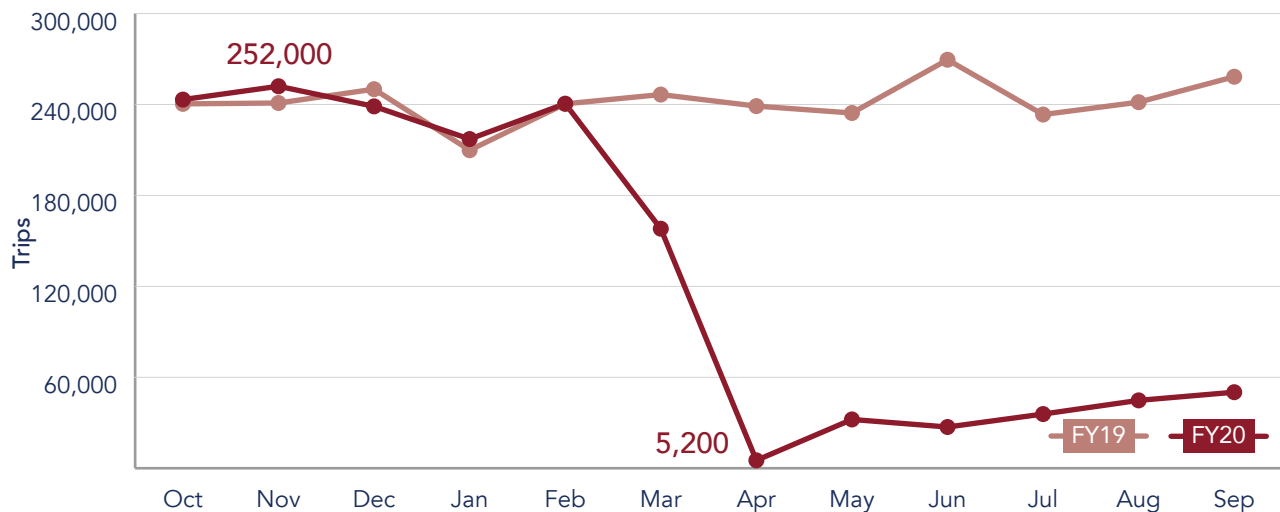
## NJ TRANSIT NEC Service and ridership

Period	Average Weekday NEC Trains			Average Weekday NEC Trips		
	FY19	FY20	Change from FY19	FY19	FY20	Change from FY19
Q1 (Oct - Dec)	378	402	+6% ↑	243,817	244,666	0% ↑
Q2 (Jan - Mar)	372	384	+3% ↑	232,261	205,238	-12% ↓
Q3 (Apr - Jun)	388	242	-38% ↓	247,606	21,529	-91% ↓
Q4 (Jul - Sep)	393	375	-5% ↓	244,391	43,560	-82% ↓
<b>FY Average (Oct - Sep)</b>	<b>383</b>	<b>351</b>	<b>-8% ↓</b>	<b>242,019</b>	<b>128,748</b>	<b>-47% ↓</b>

### NJ TRANSIT Average NEC Weekday Trains



### NJ TRANSIT Average NEC Weekday Trips



## Infrastructure: Special Projects

Amtrak, MTA, and NJ TRANSIT coordinated work on 24 special projects throughout the New Jersey - New York region. In total, \$386 million was invested in FY20, which was 33% less than originally planned.

### Special Projects Detail: New Jersey - New York

Amtrak		FY20 Actual Expenditure: \$107,194,364
<b>East River Tunnel Rehabilitation: Tunnel Proper</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$5,760,000	The FY20 scope of work for this project will advance the design of the tunnel rehab from nominally 60% to nominally 90%; prepare the conceptual design(s) of the various "enabling projects" which are necessary to fortify the routes into and out of Sunnyside Yard during the continuous outages of ERT 1 and ERT 2.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$5,574,794	<ul style="list-style-type: none"> <li>Completed second Live Fire Test and associated Diesel Locomotive run-by test in November 2019 as part of Fire/Smoke detection testing program. This informed the final design scope.</li> <li>60% Design received on schedule and budget in December 2019. Presented design to all stakeholders within FY20-Q2.</li> <li>Final full-weekend outages for inspection and hazmat sampling completed in February 2020.</li> <li>Supported a joint "ERT Early Work" State/Fed Partnership SOGR grant application on an expedited 5 week timeline in June/July 2020.</li> <li>Received 100% Design of "S3 Relocation" early work package. This is mandatory preparatory work in order to take ERT-2 out of service.</li> <li>This design PM and external design team helmed the North River Tunnel Interim Reliability Improvement launch and Phase A between Feb 2020 and Oct 2020 to applied ERT knowledge in development of a series of reliability improvement work package recommendations for the NRT in support of the Gateway Program.</li> </ul>
<b>Variance &amp; Explanation</b>	-\$185,206	<ul style="list-style-type: none"> <li>Q4 underspend resulted in roughly 4% FY under-variance. This underspend is likely the result of (1) slow ramp-up after a COVID-19 spend throttle through Spring 2020, (2) canceled/postponed weeknight inspection windows and (3) focus diversion on the executive-mandated North River Tunnel Interim Reliability Report.</li> <li>Slight schedule slippage (1-2 months) on FY21 milestones incurred due to COVID-19 spend throttle, deferment of critical scope modifications to FY21 and slow-down of field inspection work. Schedule slippage is not yet critical path.</li> <li>Most "enabling project" design activities have been deferred out of FY20 and FY21. These projects are critical path, contingent upon desired construction timeline.</li> </ul>
<b>Gateway: Harrison Fourth Track Phase 1</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$750,000	Complete 30% preliminary design and process NEPA documents for approval with FRA.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$448,979	NTP issued, field work completed, and design progressed toward 15% submittal.
<b>Variance &amp; Explanation</b>	-\$301,021	Work was slightly delayed due to scheduling of site access for initial field work.
<b>Gateway: Hudson Tunnel Project</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$31,692,000	Completion of PE and NEPA, supplemental geotechnical borings, contract packaging and risk analysis, commencement of final design of interior tunnel systems, property acquisition, start of construction of Hudson Yards Concrete Casing Section 3 Early Work/Utility Relocation (HYCC-3).
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$11,609,779	Contract awarded for HYCC-3 Early Work.
<b>Variance &amp; Explanation</b>	-\$20,082,221	Hudson Tunnel Project PE sign-off and NEPA continued in its hold by FRA through most of the FY, pushing anticipated ROD to FY21. As a result, risk analysis and geotechnical work is ongoing. Start of HYCC-3 Early Work was delayed due to ongoing negotiations with site owners.

Special Projects Detail: New Jersey - New York continued on the next page >>

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

<b>Gateway: Hudson Yards Concrete Casing</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$6,475,805	Ongoing costs associated with completion of HYCC-1, including returning the LIRR Maintenance of Equipment (MOE) Building to service: project management; LIRR Force Account labor; and settlement costs related to ongoing litigation over the delay of the LIRR MOE building.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$3,916,267	Settlement of litigation claim and project close out.
<b>Variance &amp; Explanation</b>	-\$2,559,538	None reported
<b>Gateway: Sawtooth Bridges Replacement Project</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$7,091,667	Commencement of preliminary engineering of the Sawtooth Bridge Replacement Project
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$32,628	Project obtained environmental determination of Finding of No Significant Impact.
<b>Variance &amp; Explanation</b>	-\$7,059,039	P.E. work was deferred to FY21 due to COVID-19 pandemic budget reductions.
<b>Moynihan Station: Phase 2</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$69,600,000	Construction of the Moynihan Train Hall will proceed toward completion during FY2020. The construction of Amtrak's back of house facilities and the fit-out and furnishings of all spaces, including systems and customer amenities, is targeted for a fourth quarter CY2020 completion.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$66,440,649	The Moynihan Program team continued to make progress towards an end of calendar year opening of Moynihan Train Hall. The building structures continue to take shape as construction work progresses towards completion. The Program team developed a minimally viable product (MVP) document to guide Amtrak to a successful opening date. This document details which activities must be completed prior to opening day, and it is used as a prioritization tool by the Program team to ensure key customer-facing spaces will be ready and available. The team has gained incremental access to complete activities including furniture installation, IT work (including installation of Passenger Information Display Systems (PIDS), and familiarization tours for Station Operations and Amtrak Police Department staff. Tabletop exercise continue to take place and have been effective in planning for various operational and security scenarios.
<b>Variance &amp; Explanation</b>	-\$3,159,351	None reported
<b>New Jersey HSR Improvement Program</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$4,700,000	Removal of catenary assets retired by the construction performed under the NJ High Speed Rail Improvement Project, including catenary structures, cat, body and steady spans, aerial signal power line. Final punch list and close out of project tasks. Program management, construction management and procurement services in support of the Project.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$4,120,995	The Program completed the remaining task under the catenary upgrades, removing the retired catenary structures from the ROW. The steel structures were scrapped through Amtrak's asset recovery process. Project punch list was generated and completed. The project team completed various administrative tasks to close out PO's, WBS's for project closeout.
<b>Variance &amp; Explanation</b>	-\$579,005	The planned scope of work for FY20 was completed within the fiscal year.
<b>Newark Penn Station: Amtrak Projects</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$700,000	<ul style="list-style-type: none"> <li>Structural movement assessment: The Structural Movement assessment will also determine how to stabilize the structure</li> <li>Design of platforms: Design for full depth replacement and partial replacement of high level platform.</li> <li>Execution of FRA grant agreement: Coordination among Amtrak, FRA, and NJ TRANSIT is expected to result in a finalized grant agreement by April 2020 for Platform D rehabilitation.</li> </ul>
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$132,034	Oct-Feb: dynamic and Static movement study; site investigation. June - Sept: development of soil boring locations and SSWP.
<b>Variance &amp; Explanation</b>	-\$567,966	Schedule was impacted by COVID-19 shutdown in March through May.

Special Projects Detail: New Jersey - New York continued on the next page &gt;&gt;

Next Generation High Speed Fleet Infrastructure: Sunnyside Yard Facility Improvements		
FY20 OYIP Expenditure & Scope	\$8,900,000	There are two aspects to this project – work within the S&I Facility and the additional Ready Tracks in the yard. S&I Mod: Construction within S&I Facility. Ready Tracks: Design Development
FY20 Actual Expenditure & Accomplishments	\$11,025,331	Completed design for S&I mods. Issued NTP to GC for S&I mods. S&I mods construction approximately 50% complete. Design for Ready Tracks 95% complete. Ready Tracks Package 'A' Bid Documents prepared. Ready Tracks Package 'B' 100% Pre-final Documents prepared (90% equivalent).
Variance & Explanation	\$2,125,331	Contractor bid amount for Sunnyside S&I mods exceeded estimate for work scope (primarily due to specialty equipment requirements as well as limited interest in bids for the work). Ready Tracks design progressing with some impacts due to COVID-19.
Pelham Bay Bridge Replacement		
FY20 OYIP Expenditure & Scope	\$500,000	The FY20 scope of work for the project will be to develop, advertise and award Request for Proposal (RFP) for NEPA and Preliminary Engineering consultants and start NEPA and Preliminary Engineering.
FY20 Actual Expenditure & Accomplishments	\$277,137	Completed milestone to award and issue Notice To Proceed (NTP) for NEPA documentation to design consultant. COVID-19 has impacted both budget and schedule for the project.
Variance & Explanation	-\$222,863	Variance in budget and schedule are directly related to COVID-19 impacts.
NY MTA		FY20 Actual Expenditure: \$250,401,533
Harold Interlocking		
FY20 OYIP Expenditure & Scope	\$47,000,000	FY20 information to be updated pending discussions between MTA and Amtrak
FY20 Actual Expenditure & Accomplishments	\$42,968,686	<ul style="list-style-type: none"> <li>Eastbound Reroute east approach structure support of excavation completed.</li> <li>Demolition of Amtrak Building #7 progressed, including demolition of chimney stack and completion of all environmental abatement.</li> <li>Negotiations progressed for the 3rd Party Catenary Contract (CH063) and resulted in an award in September 2020. Procurement of Eastbound Reroute Contract (CH058B) permitted to proceed.</li> </ul>
Variance & Explanation	-\$4,031,314	<ul style="list-style-type: none"> <li>Expenditure under-run resulting from delays in procurement and award of 3rd party catenary contract (CH063) and Eastbound Reroute contract (CH058B), due to COVID-19 pandemic impacts.</li> <li>Harold Program Schedule realized impacts due to COVID-19 pandemic impacts.</li> </ul>
East River Tunnel: Right of Way Infrastructure Improvements		
FY20 OYIP Expenditure & Scope	\$34,000,000	ERT Stray Current Study will continue. Communications Antenna replacement will continue in ERT 3 or 4. Total track replacement will restart (since 2016) in ERT Line 4 with 13 planned weekend tunnel outages. Amtrak FY2020 SOGR of Tracks 11, 14 and various switches.
FY20 Actual Expenditure & Accomplishments	\$12,643,064	Completed 78% of LIRR radio communication infrastructure with 19,500.00LF of cables upgraded. Completed 1,655.00LF of block tie replacement for PSNY Tracks 11 & 14 and completed 3,000.00LF ERT line 4 Track Replacement with its associated switches.
Variance & Explanation	-\$21,356,936	Funds not expended due to Amtrak cancellation of ERT outages.
Penn Station New York: Long Island Rail Road Projects*		
FY20 OYIP Expenditure & Scope	\$213,000,000	Construction of New Entrance and new Elevator. Train Hall Renovation: Widening of 33rd Street corridor, heightened ceilings, wayside and lighting improvements, new finishes, expanded HVAC and improved retail spaces. Continue refurbishment of elevators and escalators. Staircase replacements.
FY20 Actual Expenditure & Accomplishments	\$165,725,230	Construction of the new entrance with 3-escalators and an external canopy achieved 78% with the escalators well in place and the external canopy halfway completed. Completed refurbishment of PSNY 14 escalators out of 14 units and 4 elevators out of 5 units. The Moynihan Train Station achieved 93% completion highlighted by the completion of the skylight and its associated lightings. LIRR Fit-out Office achieved 92% completion as well.
Variance & Explanation	-\$47,274,770	Completion of Elevator & Escalator Refurbishment was extended to November 30, 2020 due to additional Change Order works and COVID-19 related reasons.
* Starting in FY21, MTA investments in Penn Station were brought under three projects: Penn Station New York: Reconstruction Master Plan; Gateway: Penn Station Expansion; and Penn Station New York: Long Island Rail Road Projects.		

Special Projects Detail: New Jersey - New York continued on the next page &gt;&gt;

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

<b>River-to-River Rail Resiliency Projects (R4)</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$40,000,000	Begin Construction of the Queens Perimeter flood walls. Begin Construction of the West Side Yard flood walls. Continue design of the ERT Portal Flood Protection.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$171,844	The 3rd party designer completed 30% Construction Design Package for the West Side Yard Perimeter Flood Wall Protection. Prepared RFP for the D&B procurements of the West Side Yard and Queens North and South Flood Walls and under review pending resolution of LIRR and AMTRAK Site Agreement at the Queens project site.
<b>Variance &amp; Explanation</b>	-\$39,828,156	Time extension needed to resolve issues between LIRR and Amtrak on the Site Access Agreement at the Queens site of the project.
<b>Penn Station Access</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$32,000,000	Advance preliminary design in coordination with Amtrak. Complete NEPA environmental review process with FTA as lead agency. Issue Request for Qualifications for Design/Build contractors. Execute Design/Build Phase Agreement with Amtrak.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$28,892,709	Reached agreement with Amtrak on track alignment and service plan and updated Environmental Assessment. Preliminary design of approved alignment advanced to 30%.
<b>Variance &amp; Explanation</b>	-\$3,107,291	Review of alignment and service plan led to changes in design and NEPA schedule. D/B RFP delayed due to COVID-related financial crisis.
<b>NJ TRANSIT</b>		<b>FY20 Actual Expenditure: \$28,503,167</b>
<b>Delco Lead</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$15,000,000	NJ Transit's Board of Directors are expected to award Contracts GC.01 and GC.02 and, NTP is anticipated to be issued for both contracts soon thereafter.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$3,471,516	Design activities continued towards the 100% completion level. These activities are currently in a stoppage until discussions with Amtrak have ended. Construction Management Contract was issued to Urban / AECOM. Train dispatching terms have been finalized at Stone Interlocking.
<b>Variance &amp; Explanation</b>	-\$11,528,484	Discussions over a number of issues with Amtrak continued throughout the fiscal year. The resolution of such issues impacts the completion of certain design and procurement activities that had been planned for the fiscal year. To date, the COVID-19 pandemic has had little to no impact on the Project.
<b>Elizabeth Station Improvements</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$10,000,000	The design plans are expected to advance towards a 100% completion for this Design / Build Project. Other elements of the ongoing construction work will continue.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$9,864,976	The project is currently at a 20% level of completion. All work continues on schedule
<b>Variance &amp; Explanation</b>	-\$135,024	The COVID-19 pandemic has had minimal impact on the progression of the project.
<b>Gateway: NJ TRANSIT Storage Yard</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$150,000	Planning study currently in progress, investigating NJT future needs and potential rail yard areas in northern NJ. Study expected to be complete in FY20.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$277,248	The study was substantially completed in this FY. A final draft report has been developed and most of NJT's inter-departmental outreach/coordination has occurred. Close out work will occur in FY21, including refinement of the final report, some external partner agency coordination, and potential follow-up technical activities.
<b>Variance &amp; Explanation</b>	\$127,248	COVID-19 caused some complications, pushing back the schedule somewhat and delaying the timing of various coordination activities. A closer review of project invoices and the timing of expenditures resulted in a shift of some project funds into FY20 Q4 that were previously reported in FY20 Q3.

Special Projects Detail: New Jersey - New York continued on the next page &gt;&gt;

Gateway: Portal North Bridge		
FY20 OYIP Expenditure & Scope	\$29,402,509	NJ TRANSIT: Design activities will continue with the finalization of the plans and specifications. Labor Clearance and Division of Work meetings will continue with Amtrak. Preparations will continue to hold a Contractor Outreach event as part of a Special Prequalification initiative to procure the services of the next contractor. Property Acquisition activities will continue with the onset of negotiations with various property owners to secure temporary and permanent easements. Amtrak: Completion of ongoing contract packaging work; modifications to final design, and property acquisition.
FY20 Actual Expenditure & Accomplishments	\$10,338,611	Approval of the Project's Special Prequalification package was the major achievement during the Quarter.
Variance & Explanation	-\$19,063,898	The project's scope, schedule, budget and financial plan remain under review by the FTA, FRA and Amtrak as well as NJ Transit. Any variations in either of the above items are directly attributable to these ongoing review activities.
New Brunswick Station Improvements		
FY20 OYIP Expenditure & Scope	\$8,000,000	Rehabilitation of the existing Elevator will continue, in addition to the replacement of the Escalator. Construction of the new Walkway Overpass is expected to get underway
FY20 Actual Expenditure & Accomplishments	\$3,068,167	Work on all design and construction elements continue to be advanced towards completion at New Brunswick Station.
Variance & Explanation	-\$4,931,833	None submitted
Newark Penn Station: NJ TRANSIT Projects		
FY20 OYIP Expenditure & Scope	\$200,000	See Newark Penn Station: Amtrak Projects on page 95.
FY20 Actual Expenditure & Accomplishments	\$0	
Variance & Explanation	-\$200,000	
NJ TRANSITGRID		
FY20 OYIP Expenditure & Scope	\$7,500,000	Central Power Plant Project: The Design-Build contract is expected to be executed with construction beginning in November 2019. NTP for the DBOM contract is to be issued in November 2019. Distributed Generation Project: The DG contract will be executed in August, 100% design will be completed in March 2020 with NTP to be issued in April 2020.
FY20 Actual Expenditure & Accomplishments	\$4,180,855	The Microgrid Central Facility Project continued to advance towards the completion of design, and the commencement of construction.
Variance & Explanation	-\$3,319,145	None submitted
Penn Station New York: NJ TRANSIT Projects		
FY20 OYIP Expenditure & Scope	\$1,000,000	Design of the relocation of the currently displayed Art is expected to continue. The design of the Unified Signage Program project will continue.
FY20 Actual Expenditure & Accomplishments	\$753,532	None submitted
Variance & Explanation	-\$246,468	None submitted
Princeton Junction Station Improvements		
FY20 OYIP Expenditure & Scope	\$600,000	This project is finally anticipated to begin construction during the FY20 fiscal year
FY20 Actual Expenditure & Accomplishments	\$164,032	The project was funded, and NTP was issued to the contractor.
Variance & Explanation	-\$435,968	None submitted

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

## Infrastructure: Capital Renewal

In the New Jersey - New York region, Baseline Capital Charges (BCCs) are allocated by Amtrak, MTA Long Island Rail Road, NJ TRANSIT, and SEPTA to fund the capital renewal of basic infrastructure on the NEC Main Line in New York and New Jersey and the NEC Branch Line from Penn Station New York to Spuyten Duyvil, NY. In total, \$150 million was invested in FY20, which was 29% less than originally planned.

BCC Segment	RoW owner	Operators				FY20 expenditure by segment
		Amtrak	MTA Long Island Rail Road	NJ TRANSIT	SEPTA	
8. New Rochelle to Harold	Amtrak	\$5,891,116	-	-	-	<b>\$5,891,116</b>
9. Harold to F Interlocking	Amtrak	\$9,062,089	\$0	-	-	<b>\$9,062,089</b>
10. F Interlocking to Penn Station New York	Amtrak	\$4,489,887	\$11,013,004	\$0	-	<b>\$15,502,891</b>
11. Penn Terminal	Amtrak	\$17,087,636	\$6,527,212	\$17,150,951	-	<b>\$40,765,799</b>
12. Penn Station New York to Trenton	Amtrak	\$0	-	\$72,067,337	-	<b>\$72,067,337</b>
13. Trenton to Morris	Amtrak	-\$1,281	-	\$1,911,234	\$0	<b>\$1,909,953</b>
27. Spuyten Duyvil to Penn Station New York	Amtrak	\$5,212,117	-	-	-	<b>\$5,212,117</b>
<b>FY20 total regional capital renewal expenditure by agency</b>		<b>\$41,741,563</b>	<b>\$17,540,216</b>	<b>\$91,129,522</b>	<b>\$0</b>	<b>\$150,411,301</b>

### FY20 Expenditure

#### TRACK

\$91.4 MILLION

#### COMMUNICATION & SIGNALS

\$13.1 MILLION

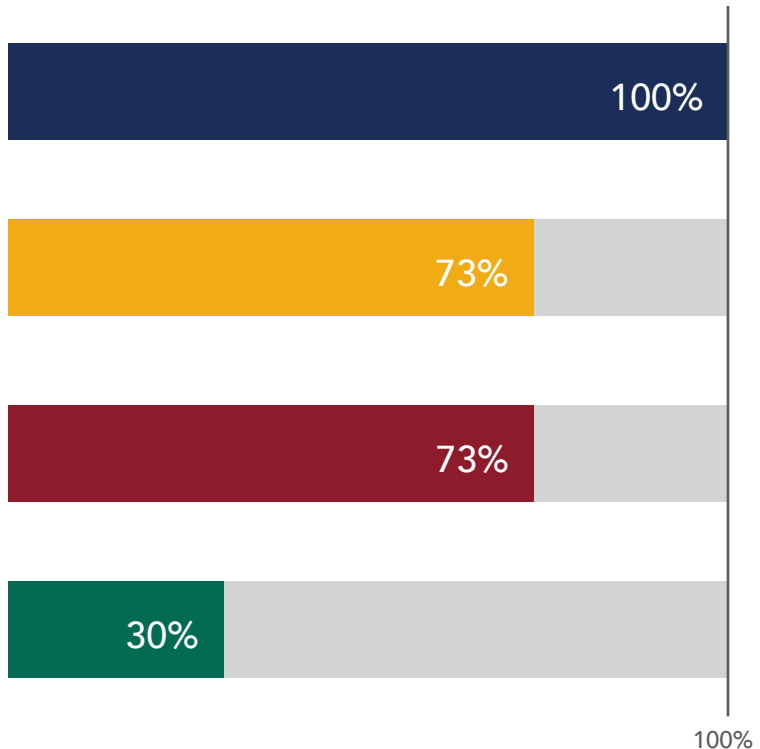
#### STRUCTURES & FACILITIES

\$26.5 MILLION

#### ELECTRIC TRACTION

\$18.6 MILLION

### Plan Adherence





## Capital Renewal Detail: New Jersey - New York (Amtrak-owned)

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. Therefore, they will include activities across all relevant segments, including those outside of the New Jersey - New York region. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Amtrak Owned Positive Train CTRL (PTC) Installation. PG00085. C.EN.201034.	8	\$596,288	\$124,122	-\$472,167	All boundaries with MBTA were completed making them the first railroad to become fully interoperable with Amtrak on the NEC. Rev 11.3 was successfully completed and installed. Boundaries at CP12, CP75 and CP216 with Metro North were completed. All lines with the exception of Line 3 were migrated to the Hitachi STS Server. PTC Implementation Plan was completed and submitted to the FRA. Work progressed with other railroads (Septa, New Jersey Transit, Long Island Railroad and Metro North) towards interoperability which is anticipated to be complete in Q1 of FY21.	Variance was within a 10% threshold. No explanation.
	9	\$26,898	\$0	-\$26,898		
	10	\$233,686	\$1,412,843	\$1,179,157		
	11	\$539,702	\$0	-\$539,702		
	12	\$1,782,791	\$154,228	-\$1,628,563		
	13	\$31,301	\$0	-\$31,301		
	27	\$154,019	\$206,369	\$52,351		
Clark to Ham Constant Tension Upgrade Project. P000011. C.EN.101765.	12	\$26,462,395	\$1,788,862	-\$24,673,533	Completed design for new catenary foundations and started procurement of construction contractor. Completed 90% design for Overhead catenary system.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project as well as the procurement and construction of new foundations until FY21.
Communications System Upgrades Program. PG00083. C.EN.101857.	11	Not in OYIP	\$33,854	\$33,854	Fiber Optic Electronic Replacement Specs and Voice Recorders Installation was completed. Work continued on new radio and communications huts, fiber installs and cable installs which are anticipated to be complete in FY21.	This program had a Reprogramming to \$1.7M. Therefore, this changes the 48% variance to only 8% over the Reprogramming
	12	\$67,512	\$153	-\$67,360		
	13	\$1,908	\$56,060	\$54,151		
	27	\$106,684	\$0	-\$106,684		
Dock Fender Replacement Project. P000128. C.EN.101867.	12	\$5,457,474	\$115,853	-\$5,341,621	Completed the fender system design.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to FY21, Reprogramming the original FY20 AOP budget to \$117,041.
East River Tunnels Radio Antenna Replacement Project. P000012. C.EN.101780.	10	\$2,362,331	\$1,501,216	-\$861,115	Continued with installation of radio cable.	This is a 100% reimbursable, LIRR sponsored project.
East River Tunnels Track Replacement Project. P000021. C.EN.100755.	10	\$13,872,994	\$9,131,039	-\$4,741,955	Replaced 2940 LF of track and third rail over seven weekends in Line 4. Completed bench wall repair and signal upgrades throughout Line 4.	The project scope was reduced due to limited outages as a result of COVID-19 to address critical locations in Line 4

Capital Renewal Detail: New Jersey - New York continued on the next page >>

## Capital Renewal Detail: New Jersey - New York (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Empire Line Lighting Upgrade Project . P000136. C.EN.100732.	27	\$1,424,898	\$81,984	-\$1,342,914	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to future fiscal years.
Fair Interlocking Renewal Project. P000026. C.EN.101277.	12	\$5,249,119	\$5,883,618	\$634,498	Completed replacement of 43 switch and conversion all but one switch from air/propane to electrical power.	A Reprogramming was approved for additional funding to complete track work which required more overnight and weekend outages than planned due to limited track time.
Fence Upgrades Program. PG00069. C.EN.101854.	12	\$1,837,812	\$269,125	-\$1,568,687	Westerly Yard, RI and BWI Station SOW were completed.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred most of the projects within the program until FY21.
Ham Interlocking Renewal. P000156. C.EN.101308	12	Not in OYIP	\$684,286	\$684,286	Started procurement of signal design consultant and received new signal troughing material.	The project was added to the FY20 plan through Reprogramming. Work was delayed due to COVID-19 and replacement of troughing moved to FY21.
Hellgate Substation 45-47 Upgrade Project. P000018. C.EN.101745.	8	\$2,769,987	\$255,581	-\$2,514,406	Worked to reach agreement with NYSDOT.	Funding agreement was not reached with NYSDOT so procurement did not proceed. A change request was submitted May 2020 reducing AOP to \$160k. The variance between actuals and the CR are due to a C&S design and procurement of those materials not being completed in FY20.
Kearny to Waverly Transmission Tower Upgrade Project. P000036. C.EN.101787.	12	\$9,610,399	\$337,867	-\$9,272,532	Completed 100% Design. Commenced construction contract procurement. Obtained approval of USACE and SHPO.	Due to the impacts of COVID-19 that the business incurred, Amtrak reduced scope and funding to only continue easement/permit applications and 3rd party procurement.
Metuchen Frequency Converter - Equipment Upgrades Project. P000042. C.EN.101747.	12	\$8,046,872	\$9,360,350	\$1,313,478	Removal of the unit from service, performing all upgrades in scope of work, installed new control room equipment, upgraded the motors, cooling, lubrication, and electrical systems, upgrade of transmission feeders and returning unit to service and commissioning it.	FY20 approved late year Reprogramming not reflected in this AOP. The original FY20 AOP was \$7,510,950, the Reprogramming request was \$1.6M and the New Proposed FY20 AOP should have been \$9.1M creating a variance of only 4% caused by delays by the contractor which produced less costs than previously anticipated.

Capital Renewal Detail: New Jersey - New York continued on the next page >>

## Capital Renewal Detail: New Jersey - New York (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Movable Point Frog Switch Machine Rod Replacement Project. P000160. C.EN.101894.	10	Not in OYIP	\$71,916	\$71,916	Not applicable.	Long lead materials did not arrive until the last month of the fiscal year, September 2020.
New Hackensack Substation 42 Control House Project. P000048. C.EN.101535.	12	\$5,623,665	\$113,526	-\$5,510,138	Completed 90% design with modifications to include additional requirements for future Gateway Project.	Due to the impacts of COVID-19 that the business incurred, Amtrak reduced scope and funding to only continue with revised design.
New York Catenary Program. PG00037. C.EN.101843.	8	\$91,572	\$386,168	\$294,596	Completed the replacement of trolley/auxiliary wires on Track 1 at Hunter Interlocking MP10.5, (this replacement was required because the existing wires were causing multiple failures at Track 1 site.), Completed the upgrades of the failing station post insulators supporting 12.5 KV feeder cable; static line and catenary steel at Hellgate Line between MP 12.8 and 13.8, completed the replacement of existing catenary, body and steady spans between Bergen Interlocking and MP3.0 on AZ Line to improve the system reliability and completed the work to procure third rail warning devices.	Restrictions on overtime due to COVID-19, causing a portion of planned work to slip into FY21.
	9	\$3,163	\$0	-\$3,163		
	10	\$17,471	\$0	-\$17,471		
	12	\$1,306,257	\$897,917	-\$408,340		
	13	\$9,639	\$0	-\$9,639		
	27	\$65,064	\$0	-\$65,064		
New York Communications Program. PG00038. C.EN.101844.	8	\$15,262	\$0	-\$15,262	Completed the installation of communication hut at Elmora Interlocking.	Planned work was not performed due to the delayed shipment of equipment. Incomplete project work to be performed in FY21 under Systems Communication Program.
	10	\$2,912	\$0	-\$2,912		
	12	\$57,534	\$86,215	\$28,682		
	13	\$1,607	\$0	-\$1,607		
	27	\$10,844	\$0	-\$10,844		
New York Facilities Program. PG00039. C.EN.101845.	8	\$346,439	\$2,302	-\$344,137	Completed the heating system rehabilitation at Adams Facility.	Restrictions on overtime due to COVID-19, causing a portion of planned work to slip into FY21.
	9	\$6,087	\$0	-\$6,087		
	10	\$25,216	\$117,901	\$92,685		
	11	\$122,134	\$0	-\$122,134		
	12	\$1,321,382	\$976,278	-\$345,104		
	13	\$416,741	\$309,229	-\$107,512		
	27	\$93,909	\$695,677	\$601,768		

## Capital Renewal Detail: New Jersey - New York (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
New York Signals Program. PG00041. C.EN.101846.	8	\$118,280	\$26,548	-\$91,733	Completed FY20 scope to replace the code relays at East River Tunnel Lines 1/4, completed the upgrade of RTU at Menlo Interlocking MP23.7, completed FY20 scope to replace Switch Machine Upgrades at Morris Interlocking MP58.0. Installed eleven switch machines in total through end of Q4, completed FY20 scope for the installation of code and high-speed rail control relays, completed FY20 scope to replace the transponders at various locations, completed the replacement of existing signal lights to LEDs at west end of Hunter Interlocking, completed replacement of damaged main feeder cable between Inwood Central Instrument House (MP9.9) and transformer located on west of Track 2 and completed the replacement of event recorders at Delco and Adams Interlocking.	A Reprogramming of AOP to \$2,728,234. Resources reallocated to other projects and the project incurred Force Account overtime restrictions. A portion of the planned work slipped into FY21.
	9	\$304,835	\$0	-\$304,835		
	10	\$22,567	\$0	-\$22,567		
	11	\$599,957	\$53,561	-\$546,396		
	12	\$636,016	\$569,074	-\$66,941		
	13	\$12,451	\$0	-\$12,451		
	27	\$84,041	\$0	-\$84,041		
New York Structures Program. PG00042. C.EN.101847.	8	\$1,268,917	\$152,920	-\$1,115,997	Completed generator rehabilitation at 1st Avenue pumping station for East River Tunnels, completed Portal Bridge Timber Ties replacement at Track 2, completed lighting fixture replacement at "JO" interlocking, completed retaining wall upgrades at Union Interlocking, completed motor drive replacement at Pelham Bay Bridge, Portal Bridge and Spuyten Duyvil, completed the bearing rehabilitation at Washington Ave Bridge, completed the North River Tunnel - 11th Ave Vent Shaft Automatic Transfer Switch work, completed the replacement of the circuit controllers at Portal Bridge that will improve the reliability of the bridge and completed the bench wall diamond plate replacement work at East River Tunnels.	Restrictions on overtime due to COVID-19. A portion of planned work slipped into FY21.
	9	\$33,122	\$1,366,054	\$1,332,933		
	10	\$3,483,331	\$787,424	-\$2,695,907		
	11	\$4,250	\$86,580	\$82,330		
	12	\$8,008,814	\$6,025,892	-\$1,982,922		
	13	\$206,197	\$127,232	-\$78,964		
	27	\$1,689,663	\$279,141	-\$1,410,522		
New York Substations Program. PG00043. C.EN.101848.	8	\$998,560	\$436,503	-\$562,057	Completed the Morris/Grundy cut section upgrade work, completed the Van Nest Sub 46 breaker installation work, completed Metuchen #38 RTU/Battery Charger replacement, completed Waverly Substation #40 B&F Switch Replacement and completed the replacement of the trough covers at Morrisville Substation #34.	A Reprogramming of AOP budget to \$4,843,039. Due to COVID-19 resources were reallocated to other projects and the project incurred Force Account overtime restrictions. A portion of the planned work slipped into FY21.
	9	\$27,943	\$281,118	\$253,175		
	10	\$26,993	\$0	-\$26,993		
	11	\$771,373	\$1,352,156	\$580,783		
	12	\$2,292,411	\$1,907,500	-\$384,910		
	13	\$100,601	\$223,519	\$122,918		
	27	\$100,524	\$0	-\$100,524		

Capital Renewal Detail: New Jersey - New York continued on the next page >>

## Capital Renewal Detail: New Jersey - New York (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
New York Track Program. PG00044. C.EN.101849.	8	\$1,286,960	\$4,506,972	\$3,220,011	Completed installation of wood ties and timbers, concrete ties, rail, insulated joints, frogs, as well as joint eliminations.	A Reprogramming of AOP budget to \$32,474,636. Unplanned emergency work and the need to incur more than anticipated overtime from Force Account staff.
	9	\$5,800,151	\$1,475,070	-\$4,325,081		
	10	\$245,538	\$2,480,552	\$2,235,013		
	11	\$8,061,025	\$0	-\$8,061,025		
	12	\$15,991,269	\$17,822,854	\$1,831,585		
	13	\$178,324	\$1,146,434	\$968,111		
	27	\$914,419	\$2,252,634	\$1,338,215		
Penn Station LIRR Platform Improvements. P000095. C.EN.101781	11	Not in OYIP	\$0	\$0	Not applicable.	This project is to provide Amtrak Force Account protection to support LIRR in their design and repair/ replacement of staircases on Platform 11, however LIRR hasn't requested much Amtrak Force Account protection in FY20.
Penn Station NY - Infrastructure Renewal Project. P000059. C.EN.101104.	11	\$15,829,033	\$22,625,068	\$6,796,035	Replaced 103 and 435 switches, replaced timbers on 547 and 549 switch, and completed total track rehabilitation for Track 11 and Track 14	Reprogramming approved for additional funding which was required due to lower than anticipated production rates for Track 11 and Track 14 replacement. COVID-19 restrictions impacted productivity.
Penn Station NY Scada Phase II Project. P000060. C.EN.100081.	11	\$3,214,056	\$584,349	-\$2,629,707		Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
Penn Station NY Sectionalizing Project. P000037. C.EN.101783.	11	\$2,694,599	\$302,274	-\$2,392,325	Received material for new automatic sectionalizing switch mechanisms.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
Production Concrete Tie/Timber Replacement Program. PG00067. C.EN.101870.	12	\$3,470,152	\$1,695,863	-\$1,774,289	538 concrete ties were installed between West Fair and Ham during nightly outages.	Portal to Allied Track #2 project work was postponed.

Capital Renewal Detail: New Jersey - New York continued on the next page >>

## Capital Renewal Detail: New Jersey - New York (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Production High Speed Surfacing Program. PG00060. C.EN.101855.	12	\$4,702,826	\$1,586,785	\$1,752,391	Performed 1,232,096' of Surfacing between High Speed and T/O & X/O.	Undercutter settlement surfacing work was performed on Undercutter project numbers in NED for the last few months of FY20. Some off program work done in FY20. Some of the equipment also had downtime due to repairs that needed to be made.
	13	\$88,086	\$0	-\$88,086		
Production Wood Tie/Timber Replacement Program. PG00071. C.EN.101858.	9	\$2,042,151	\$980,256	-\$1,061,894	Additional ties were installed as a result of coordination with SEPTA. Neutral rail temperatures were adjusted. Interlockings were hardened with new timbers.	In Fall 2019 weekend outages were provided. Distressing was performed as a result of heat kink issues.
	11	\$32,324	\$0	-\$32,324		
	12	\$2,996,458	\$3,528	-\$2,992,930		
	13	\$314,020	\$0	-\$314,020		
Q Interlocking C&S Equipment Replacement Project. P000066. C.EN.100676.	9	\$2,946,218	\$3,747,068	\$800,850	Completed fabrication of Power House, QD, QB, and commenced fabrication of CIH.	Project had budgetary Reprogramming to FY20 AOP of \$3,479,230 to keep Amtrak Force Account working on signal house fabrication and construction
Rail Grinding Program. PG00064. C.EN.101794.	12	\$71,681	\$9,475	-\$62,206	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
Rail Replacement Program. PG00003. C.EN.101856.	12	\$3,562,440	\$6,410,074	\$2,847,635	Despite being deferred due to COVID-19, the Program was still able to start some work earlier in the fiscal year on the AP Line and in some areas of Mid-Atlantic South.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
Signal System Upgrade to 562 - County To Elmora Project. P000129. C.EN.101817.	12	\$6,569,439	\$3,683,970	-\$2,885,469	Completed design and fabrication of three signal houses, completed installation of one signal house and completed plow train 60% design.	Due to the impacts of COVID-19 that the business incurred, Amtrak reduced project funding and all project work was stopped, delaying project until FY22.
Spuyten Duyvil Fenders System Upgrades Project. P000049. C.EN.101791.	27	\$11,743,966	\$1,036,519	-\$10,707,447	Awarded and issued NTP to construction contractor	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred the project until FY21, FY20 budget was reprogrammed to \$1,011,276 to finalize contractor invoices.

Capital Renewal Detail: New Jersey - New York continued on the next page >>

## Capital Renewal Detail: New Jersey - New York (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
STA PENN STA NY (PLATFORM/ ELEV). C.SP.100041.	11	Not in OYIP	\$261,353	\$261,353	Not submitted.	Not submitted.
STA PENN STA NY-PLATFORM IMPRV. C.RE.100075.	11	Not in OYIP	\$12,231,972	\$12,231,972	Not submitted.	Not submitted.
STA PSNY VRTCL TRNSP ELEV C2 P4. C.RE.100078.	11	Not in OYIP	\$2,385,247	\$2,385,247	Not submitted.	Not submitted.
STA PSNY- ESCALATOR SOGR. C.RE.100050.	11	Not in OYIP	\$849,385	\$849,385	Not submitted.	Not submitted.
Sunnyside Yard Frequency Converter Upgrade Project. P000077. C.EN.101239.	9	Not in OYIP	\$1,212,523	\$1,212,523	Completed milestones for conceptual design and 15% Preliminary Engineering design	Issuing NTP to Designer was delayed by 2 months due to time of Reprogramming. The FY20 AOP budget was reduced o \$1,100,000.
	10	\$1,070,829	\$0	-\$1,070,829		
TLS Concrete Tie Replacement Program. PG00057. C.EN.101652.	13	Not in OYIP	\$2,446	\$2,446	The TLS program installed 16,250 concrete ties and 62,418 Ft of CWR across the following locations: Hook to Holly Tk 3, Lehigh to Mantua Tk 1, Delair Branch Tk 1 Conrail Derailment Repairs, and Bridge to Grove, Tk 2	Production schedule experienced many adjustments throughout the fiscal year. The most significant change occurred due to COVID-19 cost reduction efforts. All OT was removed from the estimate/schedule. The schedule was adjusted to compensate for the removal of OT. In FY20, 26% of reported hours were Overtime. This is an improvement over the 33% experienced in FY19.
Total Track Renewal Program. PG00061. C.EN.101871.	12	\$3,561,068	\$8,501,790	\$4,940,722		Scope elements and locations were added to the program that were not originally included in the estimate. CWR and water proofing was added to Newark Station block tie scope. Ballasted Track renewal was added at Baldwin Track #1.

Capital Renewal Detail: New Jersey - New York continued on the next page >>



## Capital Renewal Detail: New Jersey - New York (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Track Undercutting Program. PG00062. C.EN.100269.	12	\$558,168	\$0	-\$558,168	The Undercutting program completed 121,483 Ft of undercutting across the following locations: Grove to Bridge Tk 1, Lehigh to Mantua Tk 1, Groton to High St Tk2, Crescent to Shaw's Cove Tk 1 & 2, Conn to Crescent Tk 1, MP 187.8 to Pawtucket Tk 1 & 2, Kingston to Davisville Tk 2.	Production schedule experienced multiple adjustments throughout the fiscal year. The most significant change occurred due to COVID-19 cost reduction efforts. As a result, a significant schedule change occurred on both the Mid-Atlantic and New England Undercutters. This plan gave more time to the work group, and minimal OT was required. In FY20, 18% of reported hours were Overtime. This is an improvement over the 33% experienced in FY19.
Turnout Renewal Program. PG00065. C.EN.101860.	10	\$1,198,427	\$0	-\$1,198,427	Performed 27 Installs in FY20 as well as transition panels where required and some additional track work.	Several planned T/O installs for FY20 had to be moved into FY21 due to scheduling conflicts or material issues (Lawn and Gunpow locations.)
	12	\$782,821	\$66,213	-\$716,608		
	13	\$706,325	\$0	-\$706,325		
Washington Ave. Bridge Replacement Project. P000132. C.EN.101586.	13	\$964,217	\$45,032	-\$919,185	Completed the RFP document for design.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project was deferred to FY22 and the FY20 budget was Reprogrammed to \$45,580.
Westside Connection Tunnel Track Upgrades. P000141. C.EN.101646.	27	Not in OYIP	\$659,793	\$659,793	Settled a change order with General Contractor.	Settled change order with General Contractor about \$1M less than originally requested and budgeted.
<b>Region Total</b>		<b>\$210,973,017</b>	<b>\$150,411,301</b>	<b>-\$60,561,716</b>		

# Region: Mid-Atlantic North

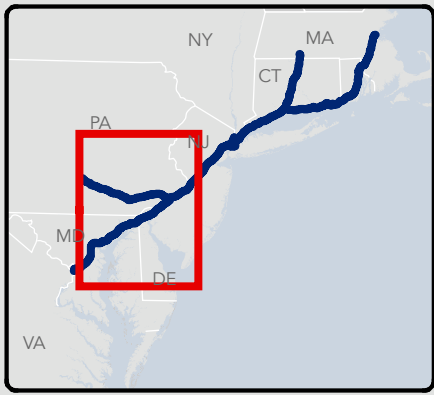
## Operations and Infrastructure Detail

Operators: Amtrak, NJ TRANSIT, SEPTA

RoW Owner: Amtrak

### BCC Segments

- 14: Morris to Holmes
- 15: Holmes to Shore
- 16: Shore to Girard
- 17: Girard to Philadelphia 30th Street
- 18: Philadelphia 30th Street to Arsenal
- 19: Arsenal to Marcus Hook
- 20: Marcus Hook to Bacon
- 28: Philadelphia 30th Street to 36th St
- 29: 36th Street to Thorndale
- 30: Thorndale to Harrisburg



MP 105



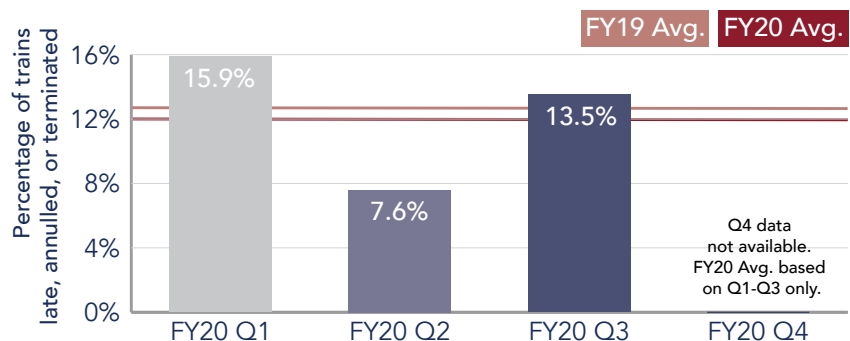
## Operations: SEPTA

SEPTA operates on the NEC Main Line between Trenton, NJ and Newark, DE and on an NEC Branch Line between Philadelphia 30th Street Station and Thorndale, PA. Three additional SEPTA lines operate partially on the NEC and all SEPTA lines are accessible via Philadelphia 30th Street. SEPTA service in Delaware is operated on behalf of Delaware DOT.

SEPTA experienced a malware attack in August 2020 and was not able to provide fourth quarter (i.e., July 1, 2020 - September 30, 2020) train performance data in time for publication of this report. Annual train performance figures are representative of SEPTA's first three quarters.

### Train performance profile

Metric	FY19	FY20
Percent NEC trains late, annulled, or terminated	12.7%	8.70%
Percent NEC trains not completed	0.91%	0.53%
Avg min late per NEC train	17.4	7.7

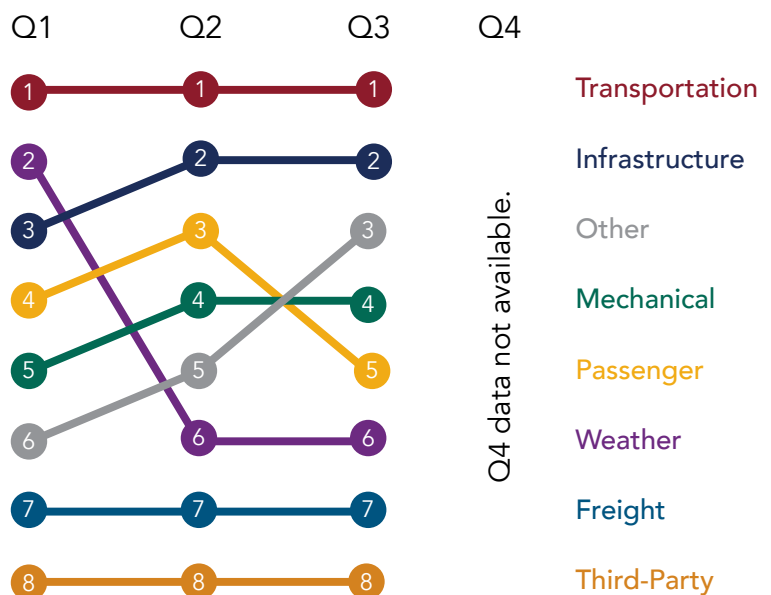


### Train-delay minutes by cause

#### Total and percent change, FY19-20

Cause	FY19	FY20	Change
Infrastructure	35,017	16,093	-54.0%
Mechanical	20,672	8,562	-58.6%
Transportation	46,096	26,976	-41.5%
Passenger	22,162	13,128	-40.8%
Weather	19,361	11,097	-42.7%
Third-Party	-	-	-
Freight	418	151	-63.9%
Other	13,883	7,398	-46.7%
<b>Total</b>	<b>157,609</b>	<b>83,405</b>	<b>-47.1%</b>

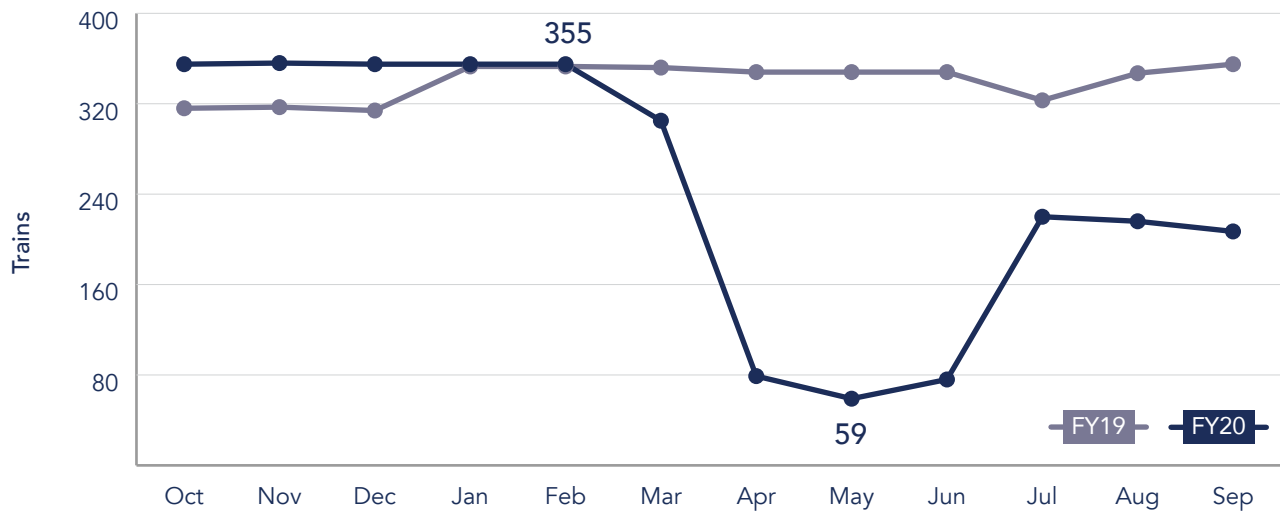
#### Rank by category, FY20



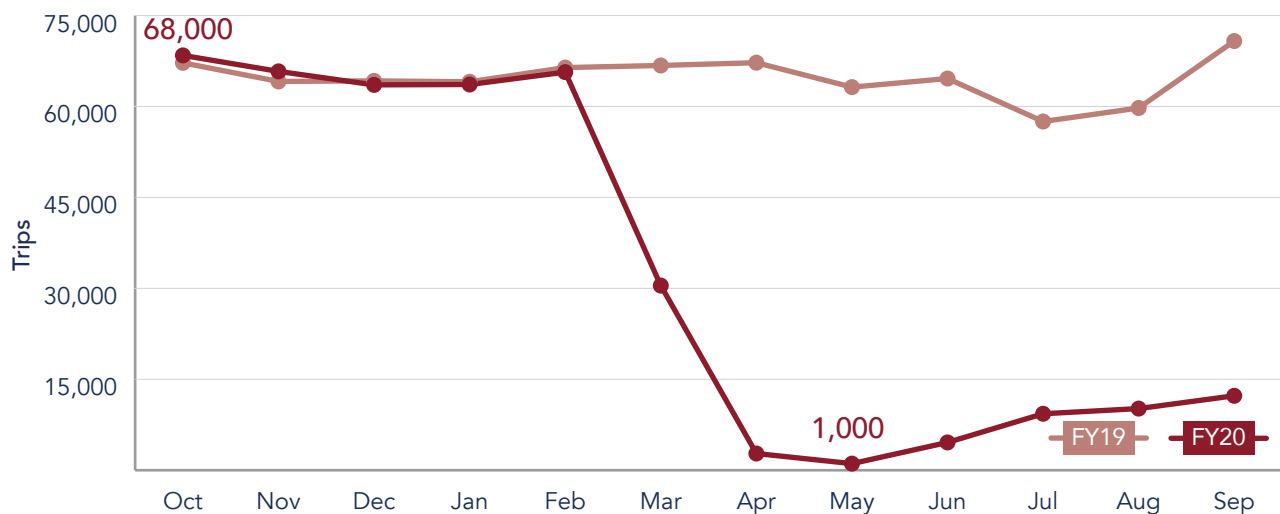
## SEPTA NEC Service and Ridership

Period	Average Weekday NEC Trains			Average Weekday NEC Trips		
	FY19	FY20	Change from FY19	FY19	FY20	Change from FY19
Q1 (Oct - Dec)	316	355	+13% ↑	65,181	65,924	+1% ↑
Q2 (Jan - Mar)	353	338	-4% ↓	65,752	53,249	-19% ↓
Q3 (Apr - Jun)	348	72	-79% ↓	65,006	2,811	-96% ↓
Q4 (Jul - Sep)	341	214	-37% ↓	62,687	10,588	-83% ↓
<b>FY Average (Oct - Sep)</b>	<b>340</b>	<b>245</b>	<b>-28% ↓</b>	<b>64,657</b>	<b>33,143</b>	<b>-49% ↓</b>

### SEPTA Average NEC Weekday Trains



### SEPTA Average NEC Weekday Trips



## Infrastructure: Special Projects

Amtrak, Delaware DOT, Pennsylvania DOT, and SEPTA coordinated work on 15 special projects throughout the Mid-Atlantic North region. In total, \$51 million was invested in FY20, which was 28% less than originally planned.

### Special Projects Detail: Mid-Atlantic North

Amtrak		FY20 Actual Expenditure: \$1,883,867
Harrisburg Line Automatic Block System: Park to Paoli		
FY20 OYIP Expenditure & Scope	\$1,600,000	Design of ABS - Park to Paoli to be finalized Dec 2019. Amtrak design review will be required. Amtrak construction to initiate work in 2020.
FY20 Actual Expenditure & Accomplishments	\$131,619	Design completed in December 2019. Amtrak installing signals with their own program funding in 2020.
Variance & Explanation	-\$1,468,381	None reported
Philadelphia 30th Street Station District Plan Implementation		
FY20 OYIP Expenditure & Scope	\$1,360,000	Planned activities for FY2020 include completing the procurement process and selecting a best value developer for 30th Street Station with the expectation a Development Agreement will be executed in Summer 2020.
FY20 Actual Expenditure & Accomplishments	\$1,883,867	Issued final RFP addendum February 2020, bids received from two teams in March 2020, reviewed proposals in April 2020, Board approval in May 2020, noticed developers of selection in June 2020 and kicked off due diligence and design activities in July 2020.
Variance & Explanation	\$523,867	Increased spend from plan vs actual as a result of undertaking a Building Information Modeling (BIM) data scanning effort of the station to document the building and support the development of the 30% design documents.
Delaware DOT		FY20 Actual Expenditure: \$26,621,668
Claymont Regional Transportation Center		
FY20 OYIP Expenditure & Scope	\$24,000,000	Performance of site preparation of work and testing. Design submissions from the design/build contractor and multiple party reviews. Commencement of building and platform and garage construction.
FY20 Actual Expenditure & Accomplishments	\$10,927,418	Project site preparation work was completed in November 2019. The design of station garage, pedestrian overpass and platform was undertaken. Certain designs were submitted to Amtrak for review throughout FY20. Received Amtrak design comments were reviewed and where necessary plans were (and are being) redesigned. In Q2 and Q3 all utility/sewage piping in the DelDOT right of way were completed. Additionally, the contractor removed the Avarz Steel rail bridge and abutments that crossed Philadelphia Pike. Planned activities in FY21 include the erection of the parking garage and the commencement of building and platform construction.
Variance & Explanation	-\$13,072,582	Due to unforeseen drainage and track elevation issues raised by Amtrak, work in the Amtrak right of way could not start until the issues were resolved and final design drawings are approved. Most issues have been resolved and the submission and final approval of project drawings and specifications are expected to be received in Q1 and Q2 of FY21.
Delaware Third Track Program		
FY20 OYIP Expenditure & Scope	\$7,200,000	Complete installation of panels at Mill Creek Bridge. Perform cut and throw work to connect Track 1 South End. Install 300 feet of track to finish construction of new Track 3. Connect track to existing track 2.
FY20 Actual Expenditure & Accomplishments	\$7,585,703	Amtrak spent the Q1, Q2 and Q3 FY20 preparing for the final field work that was scheduled for August 2020. The prep work included the assembly of track panels, welding of new track; testing of signals and the testing of interlockings. Amtrak's work preparation allowed it to begin and complete final field work as scheduled. From August 2020 through September 2020 Amtrak installed 1,800 of new track and finished Mill Creek Bridge panel installation. The third track, and the other tracks in the area, were placed into revenue service by September 1, 2020. Amtrak is presently completing punch list work and is scheduled to complete all project work by the end of Q1 FY21.
Variance & Explanation	\$385,703	Work was performed as scheduled.

Special Projects Detail: Mid-Atlantic North continued on the next page >>

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

<b>Newark (DE) Regional Transportation Center</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$5,800,000	Completion of Contract 2, Station Building construction. Completion of Contract 3A, Catenary and Signal foundation work. Award of contract 3B, Pedestrian Bridge and Platform work.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$8,108,547	Contract 2A, Station was substantially completed in Q3 FY20. The contractor worked on punch list items through the end of Q4 FY20. The contractor also worked on completing minor changes to the station that were required to due to COVID-19 concerns; safety concerns and other issues that could only be identified after the building had reached substantial completion. Concurrent to Contract 2, Contract 3A, Catenary Foundations work was being performed. 98 of 100 foundations were installed. Two (2) foundations had to be removed from the contract because of unforeseen site conflicts. These foundations will be addressed as part of Contract 3B. Contract 3A reached substantial completion in Q4 FY20. The contractor is performing punch list work. With regard to Contract 3B, Overhead Pedestrian Bridge and Platform, the project engineer continued to work on final designs for each. It is anticipated that final design completion and approval will occur in Q2 of FY21.
<b>Variance &amp; Explanation</b>	\$2,308,547	There were no significant deviations from planned activities for FY20.
<b>Pennsylvania DOT</b>		<b>FY20 Actual Expenditure: \$7,860,475</b>
<b>Coatesville Station Improvements</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$650,000	This project will eventually modernize the Amtrak station at Coatesville, along the Harrisburg Line. PennDOT is leading construction. The new station will provide ADA access with high-level boarding platforms, improved/expanded parking, and multimodal connections. This project will improve the passenger experience and lead to community and economic development. Coatesville Station is fully funded.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$1,540,628	Revised 100% plans have been submitted to Amtrak for their approval. Project to be advertised for bid by 12/31/20
<b>Variance &amp; Explanation</b>	\$890,628	COVID related delays applicable to Amtrak reviews well over the 30 review period.
<b>Downingtown Station Improvements</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$1,000,000	PennDOT to hire a consultant for 30% design of the Amtrak Bridge over US 322.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$272,615	15% design delayed until 4/2/21 due to attaining geotechnical boring data on Amtrak property.
<b>Variance &amp; Explanation</b>	-\$727,385	3 month delay due to lack of Amtrak design review agreement and permit to enter on Amtrak property.
<b>Harrisburg Line Interlocking Improvements: Zoo</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	TBD	Coordination has started and is ongoing with PennDOT, FRA, FTA, Amtrak and SEPTA to clarify and refine the scope of work, project schedule and funding.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$699,475	100% wall design to be completed 12/31/20
<b>Variance &amp; Explanation</b>	\$699,475	None reported
<b>Middletown Station Improvements</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$6,800,000	Amtrak shift of #1 track and Catenary. PennDOT contractor to start and install foundations
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$5,121,650	Construction project is 2 months ahead of planned schedule.
<b>Variance &amp; Explanation</b>	-\$1,678,350	None reported

Special Projects Detail: Mid-Atlantic North continued on the next page &gt;&gt;



<b>Parkesburg Station Improvements</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$800,000	Design of ADA access between East bound and West Bound areas with additional parking at current location.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$94,488	None reported
<b>Variance &amp; Explanation</b>	-\$705,512	None reported
<b>SEPTA</b>		<b>FY20 Actual Expenditure: \$14,161,496</b>
<b>30th Street West Catenary Replacement</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$2,938,886	Replacement and upgrade of the overhead contact system including catenary structures from 30th Street Station to 'K' Interlocking and the Powelton Yard Complex. Work also includes repairs to aging catenary foundations, retaining walls, tunnels and site drainage
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$224,591	The project reached 100% design.
<b>Variance &amp; Explanation</b>	-\$2,714,295	Project was temporarily delayed due to staffing shortages related to the COVID-19 pandemic.
<b>Ardmore Transportation Center: Phase 1 ADA Improvements</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$4,836,256	Improvements to the Ardmore Transportation Center on SEPTA's Paoli/Thorndale Regional Rail Line and Amtrak's Keystone Corridor will be completed in two phases. Phase 1 will make this station fully ADA accessible with enhancements that include a new inbound station building; outbound shelters; high and low-level platforms; canopies; passenger amenities; tunnel accessibility improvements; elevators and accessible pathways; improved lighting; new signage; landscaping and site improvements including storm water management; and installing foundations for a future parking garage. Phase 1 costs include design for Phase 2. There is a separate project for parking at the Station (Ardmore Station Parking Improvements in the FY2019-2023 NEC Capital Investment Plan). SEPTA currently leases this station from Amtrak.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$2,595,232	Construction on a shared-use station to make the facility ADA-accessible is underway.
<b>Variance &amp; Explanation</b>	-\$2,241,024	Project was temporarily suspended in accordance with the Governor's executive orders related to the COVID-19 pandemic.
<b>Frazer Rail Shop and Yard Upgrade</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$2,132,915	Phased upgrade of the Frazer Maintenance Facility to accommodate the expansion of SEPTA's rail car and locomotive fleets including multi-level cars. Work includes extending existing storage tracks and adding new storage tracks; major upgrades to the repair shop and equipment, including the wheel truing machine and drop table; construction of a shop extension, new cleaning track, train washer building, storage building and yardmaster building; utility upgrades and storm water improvements. In addition, the roof will be replaced and mechanical equipment will be replaced.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$4,381,231	The closeout for Phase 2 continued and design for Phase 3 reached 90%. The expanded yard will be one of two locations for SEPTA's new multi-level regional rail fleet.
<b>Variance &amp; Explanation</b>	\$2,248,316	Phase 2 closeout has been delayed due to material order issues related to final punch list items. Phase 3 design was also delayed as a result of access revisions.
<b>Southwest Connection Improvement Project</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$10,489,862	Reconfiguration and rebuilding of signals, track, catenary, and interlockings from 30th Street Station to Phil Interlocking. Work includes new track special work, Overhead Contact Systems (OCS), and switch and lock mechanisms, as well as the addition of new Positive Train Control (PTC) systems. Design and construction will progress in phases with construction outages scheduled for the summer of 2018, 2019 and 2020. As part of this project, SEPTA will assume maintenance responsibility for Amtrak's tracks on a segment where SEPTA is the sole operator.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$6,440,968	SEPTA altered the summer outages to take capitalize on low ridership and service suspensions, which is resulted in completing the planned 2020 work under budget.
<b>Variance &amp; Explanation</b>	-\$4,048,894	Work for 2020 was completed under budget.

Special Projects Detail: Mid-Atlantic North continued on the next page &gt;&gt;

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

Villanova Station: Phase 2 ADA Improvements		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$112,000	This project will modernize Villanova Station on the Paoli/Thorndale Regional Rail Line, making the station fully ADA accessible, and will advance in phases. Phase 1 will improve station accessibility and will include construction of a new, wider pedestrian tunnel with access ramps and stairs, additional parking spaces, storm water management improvements, new signage, lighting, and passenger amenities. Phase 2 will make the station fully ADA accessible and includes full length high-level platforms, new canopies, station building improvements, passenger shelters, security improvements and passenger amenities. SEPTA currently leases this station from Amtrak.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$519,474	Closeout of Phase 1 is underway.
<b>Variance &amp; Explanation</b>	\$407,474	Phase 1 closeout has been delayed due to finalizing punch list items with the contractor.

## Infrastructure: Capital Renewal

In the Mid-Atlantic North region, Baseline Capital Charges (BCCs) are allocated by Amtrak, NJ TRANSIT, SEPTA, and Delaware DOT to fund the capital renewal of basic infrastructure on the NEC Main Line in Pennsylvania and Delaware and the NEC Branch Line from Philadelphia to Harrisburg, PA. In total, \$126 million was invested in FY20, which was 29% less than originally planned.

BCC Segment	RoW owner	Operators				FY20 expenditure by segment
		Amtrak	NJ TRANSIT	SEPTA	Delaware DOT	
14. Morris to Holmes	Amtrak	\$24,854	-	\$3,012,104	-	<b>\$3,036,959</b>
15. Holmes to Shore	Amtrak	\$10,215,939	-	\$0	-	<b>\$10,215,939</b>
16. Shore to Girard	Amtrak	\$17,133,672	\$0	\$0	-	<b>\$17,133,672</b>
17. Girard to Philadelphia 30th Street	Amtrak	\$11,221,091	\$0	-	-	<b>\$11,221,091</b>
18. Philadelphia 30th Street to Arsenal	Amtrak	\$3,485,586	-	-	-	<b>\$3,485,586</b>
19. Arsenal to Marcus Hook	Amtrak	\$4,183,070	-	\$16,935,978	-	<b>\$21,119,048</b>
20. Marcus Hook to Bacon	Amtrak	\$20,692,123	-	-	\$2,629,028	<b>\$23,321,151</b>
28. Philadelphia 30th Street to 36th St	Amtrak	\$0	-	-	-	<b>\$0</b>
29. 36th St to Thorndale	Amtrak	\$3,864,656	-	\$20,973,218	-	<b>\$24,837,874</b>
30. Thorndale to Harrisburg	Amtrak	\$12,053,179	-	-	-	<b>\$12,053,179</b>
<b>FY20 total regional capital renewal expenditure by agency</b>		<b>\$82,874,170</b>	<b>\$0</b>	<b>\$40,921,301</b>	<b>\$2,629,028</b>	<b>\$126,424,499</b>

### FY20 Expenditure

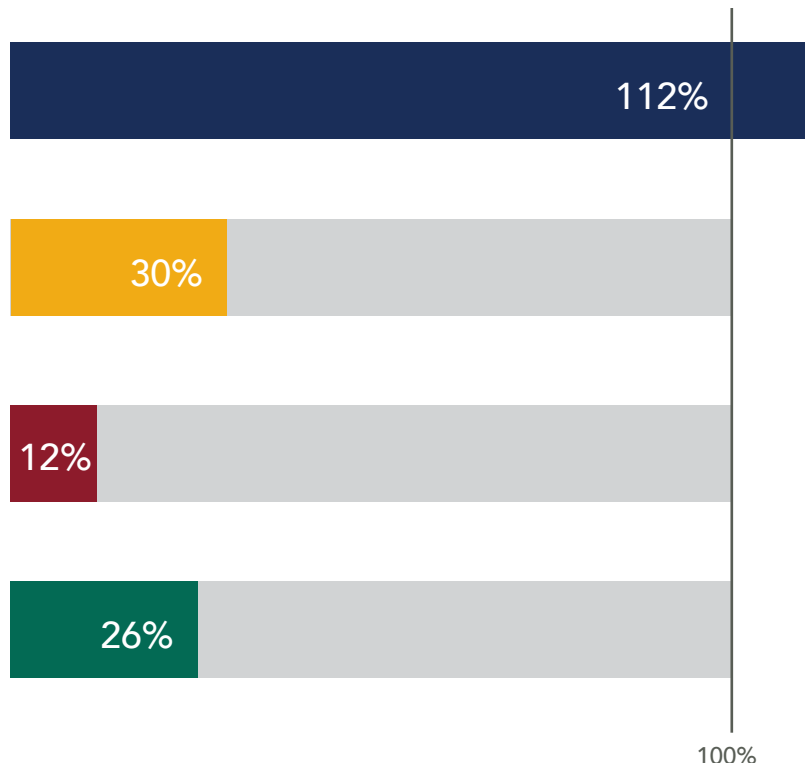
**TRACK**  
\$115.1 MILLION

**COMMUNICATION & SIGNALS**  
\$3.9 MILLION

**STRUCTURES & FACILITIES**  
\$2.5 MILLION

**ELECTRIC TRACTION**  
\$4.7 MILLION

### Plan Adherence



## Capital Renewal Detail: Mid-Atlantic North (Amtrak-owned)

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. Therefore, they will include activities across all relevant segments, including those outside of the Mid-Atlantic North region. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
30th Street Station Facade Restoration Project. P000091. C.EN.100039.	17	\$3,406,899	\$0	-\$3,406,899	Completion of all base contract work and currently approved changes to the construction contract. The project is currently in close out mode.	A criminal investigation into the project led the Amtrak OIG to recommend no further additional work be assigned to the construction contractor. Thus planned changes to the contract were not undertaken. The project also had less contractor Construction Management support and the Designer of Record construction support was used to reduce overall cost.
30th Street Station Fire Alarm System Improvements. P000108. C.EN.100213.	17	Not in OYIP	\$238,033	\$238,033	Preliminary Design established.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project until FY21.
Amtrak Owned Positive Train CTRL (PTC) Installation. PG00085. C.EN.201034.	14	\$378,435	\$0	-\$378,435	All boundaries with MBTA were completed making them the first railroad to become fully interoperable with Amtrak on the NEC. Rev 11.3 was successfully completed and installed. Boundaries at CP12, CP75 and CP216 with Metro North were completed. All lines with the exception of Line 3 were migrated to the Hitachi STS Server. PTC Implementation Plan was completed and submitted to the FRA. Work progressed with other railroads (Septa, New Jersey Transit, Long Island Railroad and Metro North) towards interoperability which is anticipated to be complete in Q1 of FY21.	Variance was within a 10% threshold. No explanation.
	15	\$59,317	\$0	-\$59,317		
	16	\$142,643	\$27,399	-\$115,244		
	17	\$82,946	\$71,355	-\$11,591		
	18	\$11,018	\$0	-\$11,018		
	19	\$217,209	\$0	-\$217,209		
	20	\$322,816	\$0	-\$322,816		
	28	\$15,387	\$0	-\$15,387		
	29	\$401,670	\$0	-\$401,670		
	30	\$795,729	\$0	-\$795,729		

Capital Renewal Detail: Mid-Atlantic North continued on the next page >>

## Capital Renewal Detail: Mid-Atlantic North (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Communications System Upgrades Program. PG00083. C.EN.101857.	14	\$22,544	\$0	-\$22,544	Fiber Optic Electronic Replacement Specs and Voice Recorders Installation was completed. Work continued on new radio and communications huts, fiber installs and cable installs.	This program had a Reprogramming to \$1.7M. Therefore, this changes the 48% variance to only 8% over the Reprogramming
	15	\$5,845	\$0	-\$5,845		
	16	\$6,680	\$0	-\$6,680		
	17	\$1,789	\$0	-\$1,789		
	18	\$1,431	\$0	-\$1,431		
	19	\$17,176	\$0	-\$17,176		
	20	\$40,436	\$66,053	\$25,617		
	28	\$5,396	\$0	-\$5,396		
	29	\$135,668	\$0	-\$135,668		
	30	\$285,674	\$0	-\$285,674		
Conestoga Substation Improvements Project. P000111. C.EN.101877.	30	\$482,108	\$12,383	-\$469,726	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project until FY21.
Conestoga to Royalton Transmission Line Replacement Project. P000014. C.EN.101785.	30	\$3,150,846	\$1,158,631	-\$1,992,215	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project until FY21.
Fence Upgrades Program. PG00069. C.EN.101854.	20	\$180,385	\$0	-\$180,385	Westerly Yard, RI and BWI Station SOW were completed.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred most of the projects within the program until FY21.
	30	\$622,488	\$60,742	-\$561,745		

Capital Renewal Detail: Mid-Atlantic North continued on the next page >>

## Capital Renewal Detail: Mid-Atlantic North (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. Therefore, they will include activities across all relevant segments, including those outside of the Mid-Atlantic North region. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Mid-Atlantic North Catenary Program. PG00013. C.EN.101822.	15	\$3,643	\$0	-\$3,643	Some SAP assemblies were still installed in FY20.	Due to the impacts of COVID-19 that the business incurred, Amtrak reallocated funding and resources which caused the deferral of SAP Assembly installation, North Penn Sectionalizing Switch Replacements and Thorndale Contact Wire Replacement, attributing to the variance in spend against plan.
	16	\$325,569	\$11,029	-\$314,541		
	17	\$643,926	\$292,594	-\$351,333		
	18	\$12,986	\$0	-\$12,986		
	19	\$646,545	\$0	-\$646,545		
	20	\$1,504,213	\$0	-\$1,504,213		
	28	\$1,115	\$0	-\$1,115		
	29	\$345,940	\$0	-\$345,940		
	30	\$131,874	\$410,340	\$278,466		
Mid-Atlantic North Signals Program. PG00017. C.EN.101825.	15	\$48,416	\$225,773	\$177,357	Project had spending against plan fall within 5%.	The ADE who developed the plan retired early in the program execution and was not immediately replaced. Anticipated underspending while trying to prioritize the plan in the ADE's absence.
	16	\$655,290	\$27,354	-\$627,936		
	17	\$443,362	\$62,497	-\$380,865		
	18	\$10,965	\$0	-\$10,965		
	19	\$143,176	\$676,641	\$533,464		
	20	\$125,486	\$0	-\$125,486		
	28	\$14,821	\$0	-\$14,821		
	29	\$647,473	\$1,254,048	\$606,575		
	30	\$1,541,823	\$744,672	-\$797,151		
Mid-Atlantic North Structures Program. PG00018. C.EN.101826.	15	\$39,243	\$0	-\$39,243	Program realized cost saving strategies when executing work in FY20.	The ADE who developed the FY20 Program retired early in the program execution and was not immediately replaced; the eventual replacement selected different projects, with smaller budgets to execute.
	16	\$794,795	\$191,461	-\$603,334		
	17	\$12,013	\$339,049	\$327,036		
	18	\$8,718	\$0	-\$8,718		
	19	\$919,732	\$11,323	-\$908,410		
	20	\$101,711	\$223,913	\$122,202		
	28	\$12,013	\$0	-\$12,013		
	29	\$2,085,587	\$696,380	-\$1,389,207		
	30	\$1,144,250	\$0	-\$1,144,250		

Capital Renewal Detail: Mid-Atlantic North continued on the next page >>

## Capital Renewal Detail: Mid-Atlantic North (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. Therefore, they will include activities across all relevant segments, including those outside of the Mid-Atlantic North region. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Mid-Atlantic North Substations Program. PG00019. C.EN.101827.	15	\$17,268	\$212,237	\$194,969	FY20 Battery/Charger work at SUB #04 PAOLI, SUB #30 FRANKFORD, SUB #69 LANDISVILLE, and SUB#02A ARSENAL were completed.	Deferral of the Solid State Signal Power Machine Installation at Zoo.
	16	\$1,048,233	\$0	-\$1,048,233		
	17	\$85,638	\$92,217	\$6,580		
	18	\$3,337	\$27,774	\$24,438		
	19	\$265,910	\$315,756	\$49,846		
	20	\$205,459	\$422,111	\$216,653		
	28	\$139,205	\$0	-\$139,205		
	29	\$426,987	\$274,955	-\$152,032		
	30	\$479,917	\$150,503	-\$329,414		
Mid-Atlantic North Track Program. PG00020. C.EN.101828.	14	\$264,400	\$0	-\$264,400	Program performed within 7% of plan.	Program performed within 7% of plan.
	15	\$1,165,980	\$1,351,701	\$185,721		
	16	\$3,665,285	\$2,641,641	-\$1,023,644		
	17	\$74,166	\$529,843	\$455,677		
	18	\$1,259,024	\$1,330,397	\$71,372		
	19	\$6,521,870	\$4,438,914	-\$2,082,956		
	20	\$2,691,473	\$3,412,615	\$721,143		
	28	\$25,650	\$0	-\$25,650		
	29	\$5,217,746	\$3,250,092	-\$1,967,654		
	30	\$4,593,853	\$6,937,726	\$2,343,873		
Mid-Atlantic South Catenary Program. PG00021. C.EN.101829.	20	\$137,588	\$0	-\$137,588	Despite FY20 impacts the Program replaced 8 catenary poles, started 3 switch heater replacement projects, and started fabrication of SAP assemblies.	The schedule slipped for several switch heater projects that will need to finish work in early FY21.
Mid-Atlantic South Communications Program. PG00022. C.EN.101830.	20	\$116,421	\$0	-\$116,421	The replacement and relocation of 250 feet of lateral fiber optic cable.	Communications work was done under a system-wide bucket causing a decrease in expenditures. There was a request to decrease the budget and return \$485k.

Capital Renewal Detail: Mid-Atlantic North continued on the next page >>



## Capital Renewal Detail: Mid-Atlantic North (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. Therefore, they will include activities across all relevant segments, including those outside of the Mid-Atlantic North region. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Mid-Atlantic South Facilities Program. PG00023. C.EN.101831.	20	\$79,378	\$0	-\$79,378	The program was able to accomplish Compressor design (Ivy City), compressor replacement (Washington Terminal), vacuum sewage system upgrade and booster pump replacement.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project.
Mid-Atlantic South Signal System Upgrades to 562 Project. P000120. C.EN.101872.	20	\$1,293,801	\$0	-\$1,293,801	Completion of certain portions of design, fabrication, and construction/installation of 562 signal upgrade equipment from Oak to Bush were still accomplished.	C&S Production Force Account schedule was altered due to COVID-19, therefore force account were reallocated to higher priority projects. This impacted scope, leading to scope deferral from FY20 to FY21.
Mid-Atlantic South Signals Program. PG00025. C.EN.101832.	20	\$49,743	\$144,410	\$94,666	The program was still able to accomplish signal bridge upgrades, RTU replacements, and relay transmitter replacements.	Project work was hampered by COVID-19 The ADE who helped develop the program retired.
Mid-Atlantic South Structures Program. PG00026. C.EN.101833.	20	\$564,182	\$326,517	-\$237,665	The program was able to accomplish 2 culvert replacements, upgrades on 2 movable bridges, upgrades on 4 undergrade bridges, and upgrades on 1 tunnel.	B&B Production work slipped due to them needing to prioritize Acela 21 work. Glendale culvert work was put on hold due to contractor issues.
Mid-Atlantic South Substations Program. PG00027. C.EN.101834.	20 30	\$63,502 \$204,954	\$550,305 \$0	\$486,802 -\$204,954	The program was still able to accomplish the replacement of 4 air break switches, 7 breakers, and 1 transformer.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to future fiscal years.
Mid-Atlantic South Track Program. PG00028. C.EN.101835.	20	\$1,508,568	\$4,101,698	\$2,593,129	The program accomplished the completion of 20 I-Joints, 330 joint eliminations, 90 concrete ties, 1631 wood ties, 15 frogs, 26,000 feet of spot undercutting, and 294,000 feet of spot surfacing.	The original AOP of this Program was insufficient, therefore a Reprogramming mid-year helped the actuals align with the updated plan.
NEC C&S Interlocking Upgrades. PG00087. C.EN.101701.	18	Not in OYIP	\$10,403	\$10,403	Not applicable.	Project was mistakenly left out of the FY20 Portfolio, however it was Reprogrammed into the Capital Plan and allocated budget in February. Due to impacts of COVID19 and the late year Reprogramming, this was then deferred until later fiscal years.

Capital Renewal Detail: Mid-Atlantic North continued on the next page >>

## Capital Renewal Detail: Mid-Atlantic North (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
New York Catenary Program. PG00037. C.EN.101843.	14	\$113,863	\$0	-\$113,863	Completed the replacement of trolley/auxiliary wires on Track 1 at Hunter Interlocking MP10.5, (this replacement was required because the existing wires were causing multiple failures at Track 1 site.), completed the upgrades of the failing station post insulators supporting 12.5 KV feeder cable; static line and catenary steel at Hellgate Line between MP 12.8 and 13.8, completed the replacement of existing catenary, body and steady spans between Bergen Interlocking and MP3.0 on AZ Line to improve the system reliability and completed the work to procure third rail warning devices.	Restrictions on overtime due to COVID-19, causing a portion of planned work to slip into FY21.
New York Communications Program. PG00038. C.EN.101844.	14	\$18,977	\$0	-\$18,977	Completed the installation of communication hut at Elmora Interlocking.	Planned work was not performed due to the delayed shipment of equipment. Incomplete project work to be performed in FY21 under Systems Communication Program.
New York Facilities Program. PG00039. C.EN.101845.	14	\$147,072	\$5,677	-\$141,395	Completed the heating system rehabilitation at Adams Facility.	Restrictions on overtime due to COVID-19, causing a portion of planned work to slip into FY21.
New York Signals Program. PG00041. C.EN.101846.	14	\$164,342	\$0	-\$164,342	Completed FY20 scope to replace the code relays at East River Tunnel Lines 1/4, completed the upgrade of RTU at Menlo Interlocking MP23.7, completed FY20 scope to replace Switch Machine Upgrades at Morris Interlocking MP58.0. Installed eleven switch machines in total through end of Q4, completed FY20 scope for the installation of code and high-speed rail control relays, completed FY20 scope to replace the transponders at various locations, completed the replacement of existing signal lights to LEDs at west end of Hunter Interlocking, completed replacement of damaged main feeder cable between Inwood Central Instrument House (MP9.9) and transformer located on west of Track 2 and completed the replacement of event recorders at Delco and Adams Interlocking.	A Reprogramming of AOP to \$2,728,234. Resources reallocated to other projects and the project incurred Force Account overtime restrictions. A portion of the planned work slipped into FY21.

Capital Renewal Detail: Mid-Atlantic North continued on the next page >>

## Capital Renewal Detail: Mid-Atlantic North (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
New York Structures Program. PG00042. C.EN.101847.	14	\$1,225,605	\$9,437	-\$1,216,169	Completed generator rehabilitation at 1st Avenue pumping station for East River Tunnels, completed Portal Bridge Timber Ties replacement at Track 2, completed lighting fixture replacement at "JO" interlocking, completed retaining wall upgrades at Union Interlocking, completed motor drive replacement at Pelham Bay Bridge, Portal Bridge and Spuyten Duyvil, completed the bearing rehabilitation at Washington Ave Bridge, completed the North River Tunnel - 11th Ave Vent Shaft Automatic Transfer Switch work, completed the replacement of the circuit controllers at Portal Bridge that will improve the reliability of the bridge and completed the bench wall diamond plate replacement work at East River Tunnels.	Restrictions on overtime due to COVID-19. A portion of planned work slipped into FY21.
New York Substations Program. PG00043. C.EN.101848.	14	\$647,313	\$728,417	\$81,105	Completed the Morris/Grundy cut section upgrade work, completed the Van Nest Sub 46 breaker installation work, completed Metuchen #38 RTU/Battery Charger replacement, completed Waverly Substation #40 B&F Switch Replacement and completed the replacement of the trough covers at Morrisville Substation #34.	A Reprogramming of AOP budget to \$4,843,039. Due to COVID-19 resources were reallocated to other projects and the project incurred Force Account overtime restrictions. A portion of the planned work slipped into FY21.
New York Track Program. PG00044. C.EN.101849.	14	\$1,985,920	\$2,095,508	\$109,588	Completed installation of wood ties and timbers, concrete ties, rail, insulated joints, frogs, as well as joint eliminations.	A Reprogramming of AOP budget to \$32,474,636. Unplanned emergency work and the need to incur more than anticipated overtime from Force Account staff.
Penn Coach Yard High Mast Lighting Project. P000112. C.EN.101874.	17	\$1,524,778	\$5,948	-\$1,518,830	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
Penn Coach Yard Paving Improvements Project. P000135. C.EN.101807.	17	\$651,918	\$2,672	-\$649,246	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
Penn Coach Yard Water Main Replacement Project. P000114. C.EN.101876.	17	\$687,272	\$105,801	-\$581,471	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.

Capital Renewal Detail: Mid-Atlantic North continued on the next page >>

## Capital Renewal Detail: Mid-Atlantic North (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Production High Speed Surfacing Program. PG00060. C.EN.101855.	14	\$1,241,137	\$178,742	-\$1,062,395	Performed 1,232,096' of Surfacing between High Speed and T/O & X/O.	Undercutter settlement surfacing work was performed on Undercutter project numbers in NED for the last few months of FY20. Some off program work done in FY20. Some of the equipment also had downtime due to repairs that needed to be made.
	15	\$69,141	\$0	-\$69,141		
	16	\$308,303	\$0	-\$308,303		
	17	\$80,557	\$0	-\$80,557		
	18	\$39,479	\$0	-\$39,479		
	19	\$556,980	\$393,494	-\$163,486		
	20	\$715,431	\$836,368	\$120,937		
	28	\$54,268	\$0	-\$54,268		
	29	\$2,117,133	\$188,303	-\$1,928,830		
	30	\$734,960	\$2,578,181	\$1,843,222		
Production Wood Tie/Timber Replacement Program. PG00071. C.EN.101858.	14	\$1,068,694	\$0	-\$1,068,694	Additional ties were installed as a result of coordination with SEPTA. Neutral rail temperatures were adjusted. Interlockings were hardened with new timbers.	In Fall 2019 weekend outages were provided. Distressing was performed as a result of heat kink issues.
	15	\$676,996	\$0	-\$676,996		
	16	\$572,565	\$10,165	-\$562,400		
	17	Not in OYIP	\$2,428,258	\$2,428,258		
	28	\$484,854	\$0	-\$484,854		
	29	\$2,049,026	\$11,858,873	\$9,809,846		
Rail Grinding Program. PG00064. C.EN.101794.	30	\$3,260,796	\$0	-\$3,260,796	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
	15	\$32,816	\$8,870	-\$23,945		
	16	\$29,311	\$25,288	-\$4,022		
Rail Replacement Program. PG00003. C.EN.101856.	20	\$143,367	\$50,576	-\$92,791	Despite being deferred due to COVID, the Program was still able to start some work earlier in the fiscal year on the AP Line and in some areas of Mid-Atlantic South.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
	14	\$620,732	\$0	-\$620,732		
	20	\$3,686,079	\$1,057,243	-\$2,628,836		
	29	\$1,244,195	\$1,231,782	-\$12,413		

Capital Renewal Detail: Mid-Atlantic North continued on the next page >>

## Capital Renewal Detail: Mid-Atlantic North (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
South Penn Interlocking Improvements Project. P000116. C.EN.100679.	17	\$1,014,213	\$0	-\$1,014,213	The installation of two crossovers and one yard turnout.	Delay in end of year FY19 project work caused the first switch installation to be moved from FY19 to FY20 (October 2019). Additional Electric Traction (ET) realignment work also was required.
	18	\$811,371	\$2,117,011	\$1,305,641		
STA PHL PA-REPLC STP CHN & HND RL ESC (25/26/27/28). C.RE.100062.	17	Not in OYIP	\$32,888	\$32,888	Not submitted.	Not submitted.
TLS Concrete Tie Replacement Program. PG00057. C.EN.101652.	14	Not in OYIP	\$19,177	\$19,177	The TLS program installed 16,250 concrete ties and 62,418 Ft of CWR across the following locations: Hook to Holly Tk 3, Lehigh to Mantua Tk 1, Delair Branch Tk 1 Conrail Derailment Repairs, and Bridge to Grove, Tk 2.	Production schedule experienced many adjustments throughout the fiscal year. The most significant change occurred due to COVID-19 cost reduction efforts. All OT was removed from the estimate/schedule. The schedule was adjusted to compensate for the removal of OT. In FY20, 26% of reported hours were Overtime. This is an improvement over the 33% experienced in FY19.
	15	\$8,003,350	\$8,417,357	\$414,007		
	16	\$5,639,765	\$11,686,278	\$6,046,513		
	19	\$1,970,611	\$0	-\$1,970,611		
	20	\$7,163,629	\$8,191,225	\$1,027,596		
Total Track Renewal Program. PG00061. C.EN.101871.	17	\$4,045,003	\$4,713,871	\$668,867	Completion of Newark Station Track A and 30th St. Track 9 block tie projects were completed along with various ballasted track locations.	Scope elements and locations were added to the program that were not originally included in the estimate. CWR and water proofing was added to Newark Station block tie scope. Ballasted Track renewal was added at Baldwin Track #1.
	19	Not in OYIP	\$1,226,817	\$1,226,817		
Track Circuits Upgrades to 562 - Park to Paoli Project. P000117. C.EN.101770.	29	\$1,558,644	\$616,130	-\$942,515	The implementation/installation of 562 signal upgrades from Park I/L to Thorn I/L, fabrication and long lead item procurement of 562 signal equipment for Thorn to Downs and portion of Downs to Glen and partial design for Thorn to Glen.	Two Change Requests were submitted to cover increased spending on the project. Increased Production Force Account were placed on the project to keep working during COVID-19, to accelerate the in-service date of FY20 scope portion of overall program. Lancaster Shops accelerated scope to construction of the 562 signal upgrade equipment for multiple blocks in overall 5 year plan.
	30	\$3,273,153	\$0	-\$3,273,153		
Track Rehabilitation Program. PG00063. C.EN.101859.	17	\$1,109,816	\$977,177	-\$132,640	A new yard track and wayside switch in Groton, CT, ties at West Yard (Wilmington, DE), and switch replacement at Penn Coach Yard (Philadelphia, PA).	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred some of the projects in this program to future fiscal years.
	20	\$1,482,483	\$3,382,921	\$1,900,437		

Capital Renewal Detail: Mid-Atlantic North continued on the next page >>

## Capital Renewal Detail: Mid-Atlantic North (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Track Undercutting Program. PG00062. C.EN.100269.	16	\$3,966,803	\$2,513,058	-\$1,453,745	The Undercutting program completed 121,483 Ft of undercutting across the following locations: Grove to Bridge Tk 1, Lehigh to Mantua Tk 1, Groton to High St Tk2, Crescent to Shaw's Cove Tk 1 & 2, Conn to Crescent Tk 1, MP 187.8 to Pawtucket Tk 1 & 2, Kingston to Davisville Tk 2.	Production schedule experienced multiple adjustments throughout the fiscal year. The most significant change occurred due to COVID-19 cost reduction efforts. As a result, a significant schedule change occurred on both the Mid-Atlantic and New England Undercutters. This plan gave more time to the work group, and minimal OT was required. In FY20, 18% of reported hours were Overtime. This is an improvement over the 33% experienced in FY19.
Turnout Renewal Program. PG00065. C.EN.101860.	17	Not in OYIP	\$1,321,757	\$1,321,757	Performed 27 Installs in FY20 as well as transition panels where required and some additional track work.	Several planned T/O installs for FY20 had to be moved into FY21 due to scheduling conflicts or material issues (Lawn and Gunpow locations.)
	19	\$10,315,922	\$14,056,104	\$3,740,183		
	20	\$1,052,102	\$553,674	-\$498,429		
	29	\$6,805,961	\$4,903,827	-\$1,902,134		
Zoo to Paoli Catenary Structure Upgrade Project. P000090. C.EN.201264.	17	\$291,333	\$0	-\$291,333	Design of the Bryn Mawr Substation finalized and Catenary was at 100% design phase.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project until FY21.
	29	\$6,409,320	\$25,016	-\$6,384,304		
<b>Region Total</b>		<b>\$153,921,067</b>	<b>\$126,424,499</b>	<b>-\$27,496,569</b>		

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# Region: Mid-Atlantic South

## Operations and Infrastructure Detail

Operators: Amtrak, MARC, VRE

RoW Owner: Amtrak

### BCC Segments

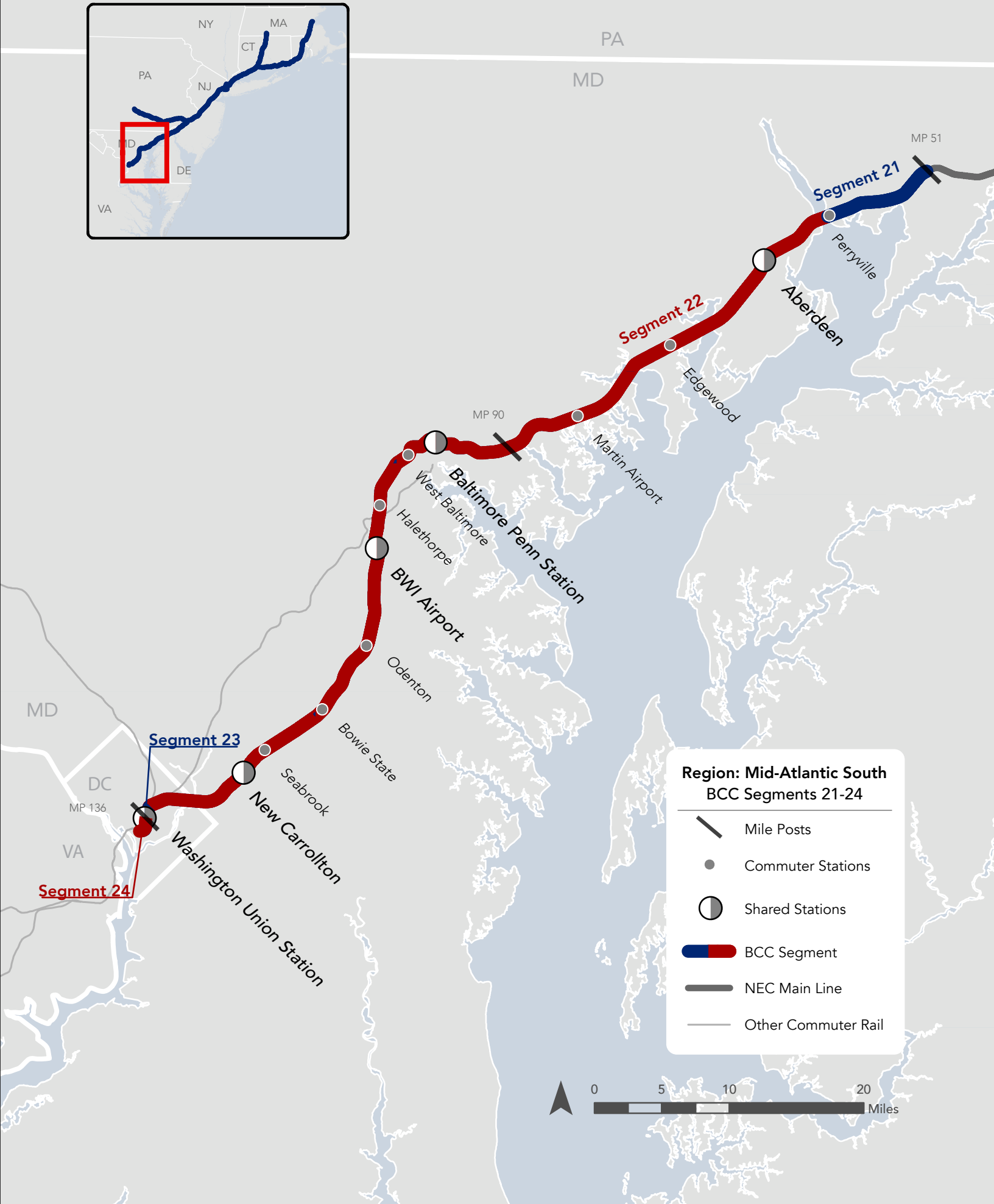
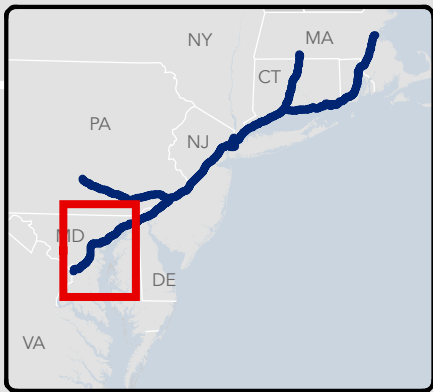
21: Bacon to Perryville

22: Perryville to Washington Union Station

23: Washington Union Terminal

24: Washington Union Station to CP Virginia





**Region: Mid-Atlantic South**  
**BCC Segments 21-24**

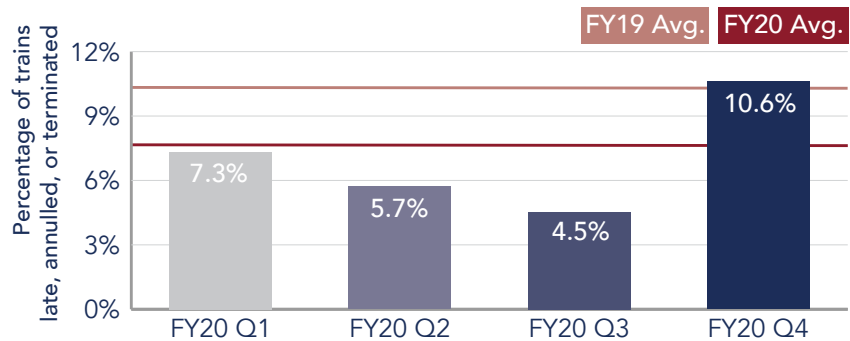
- Mile Posts
- Commuter Stations
- Shared Stations
- BCC Segment
- NEC Main Line
- Other Commuter Rail

## Operations: MARC

MARC's Penn Line service operates entirely on the NEC Main Line between Perryville, MD and Washington Union Station, while the Camden and Brunswick services operate on CSX lines that connect to the NEC at "C" Interlocking, just north of Washington Union Station.

### Train performance profile

Metric	FY19	FY20
Percent NEC trains late, annulled, or terminated	10.4%	7.51%
Percent NEC trains not completed	0.75%	1.53%
Avg min late per NEC train	11.3	20.9

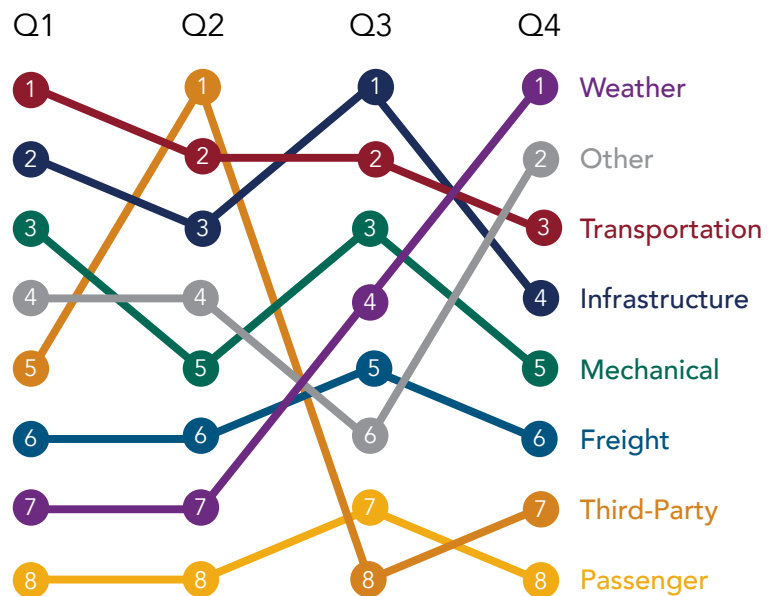


### Train-delay minutes by cause

Total and percent change, FY19-20

Cause	FY19	FY20	Change
Infrastructure	10,507	7,369	-29.9%
Mechanical	6,384	4,963	-22.3%
Transportation	19,076	8,910	-53.3%
Passenger	1,133	472	-58.3%
Weather	5,090	8,684	+70.6%
Third-Party	5,134	6,234	+21.4%
Freight	5,135	2,214	-56.9%
Other	11,018	7,538	-31.6%
<b>Total</b>	<b>63,477</b>	<b>46,384</b>	<b>-26.9%</b>

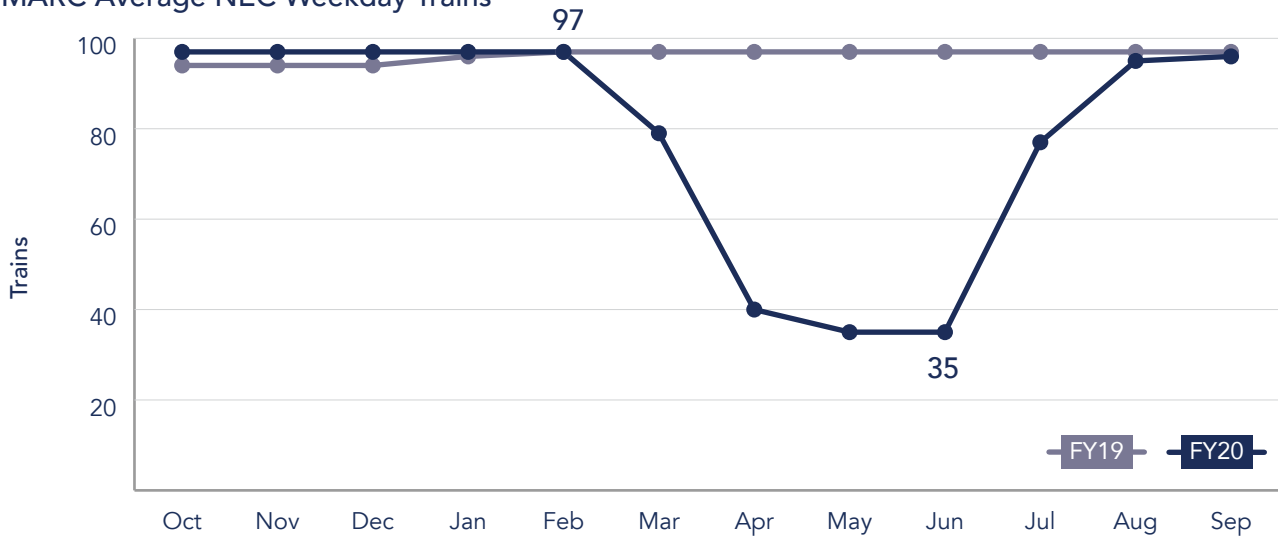
Rank by category, FY20



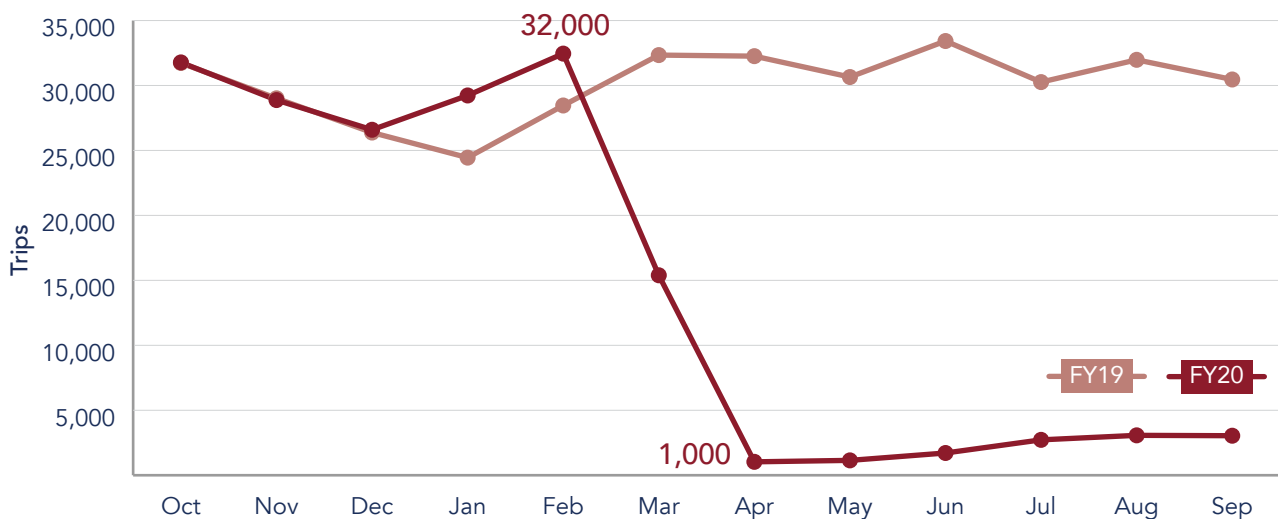
## MARC NEC Service and Ridership

Period	Average Weekday NEC Trains			Average Weekday NEC Trips		
	FY19	FY20	Change from FY19	FY19	FY20	Change from FY19
Q1 (Oct - Dec)	94	97	+3% ↑	29,042	29,082	0% ↑
Q2 (Jan - Mar)	97	91	-6% ↓	28,416	25,693	-10% ↓
Q3 (Apr - Jun)	97	37	-62% ↓	32,111	1,296	-96% ↓
Q4 (Jul - Sep)	97	89	-8% ↓	30,900	2,946	-90% ↓
<b>FY Average (Oct - Sep)</b>	<b>96</b>	<b>78</b>	<b>-19% ↓</b>	<b>30,117</b>	<b>14,754</b>	<b>-51% ↓</b>

### MARC Average NEC Weekday Trains



### MARC Average NEC Weekday Trips

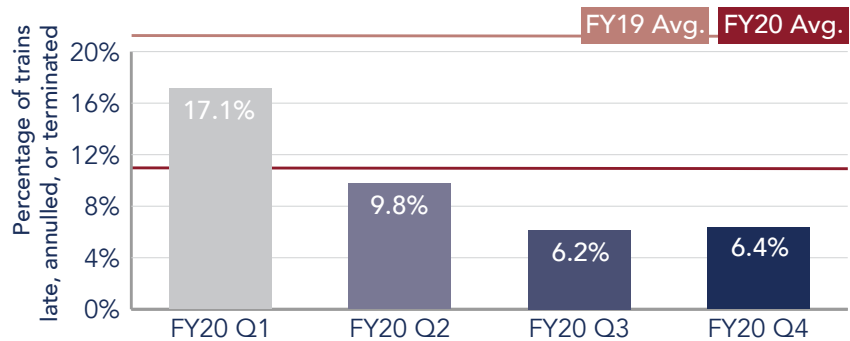


## Operations: VRE

VRE operates two commuter lines out of Washington Union Station to Manassas, VA over NS track and Fredricksburg, VA over CSX track. Both lines operate on a segment of the NEC Main Line just south of Washington Union Station.

### Train performance profile

Metric	FY19	FY20
Percent NEC trains late, annulled, or terminated	22.8%	7.92%
Percent NEC trains not completed	0.08%	5.29%
Avg min late per NEC train	17.0	16.0

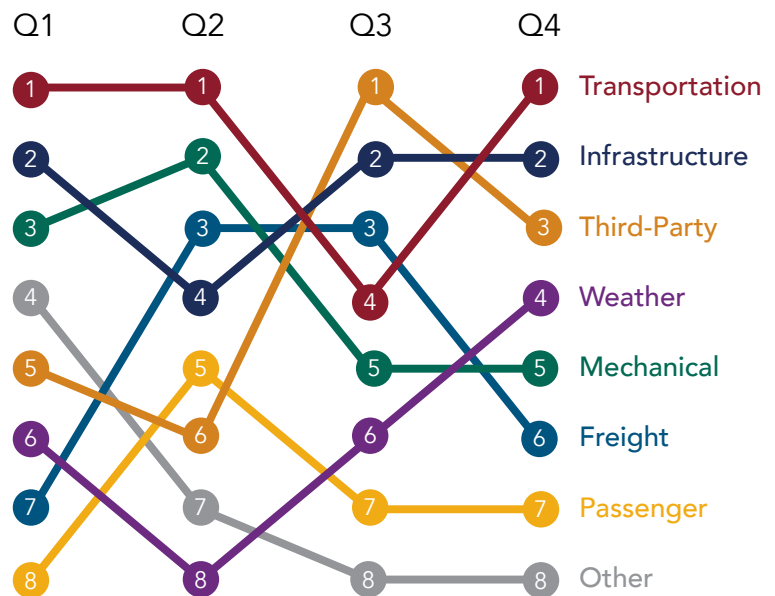


### Train-delay minutes by cause

Total and percent change, FY19-20

Cause	FY19	FY20	Change
Infrastructure	7,602	1,817	-76.1%
Mechanical	3,534	1,739	-50.8%
Transportation	6,159	3,646	-40.8%
Passenger	5,989	314	-94.8%
Weather	1,292	597	-53.8%
Third-Party	49	1,458	+2875.5%
Freight	865	969	12.0%
Other	6,274	566	-91.0%
<b>Total</b>	<b>31,764</b>	<b>11,106</b>	<b>-65.0%</b>

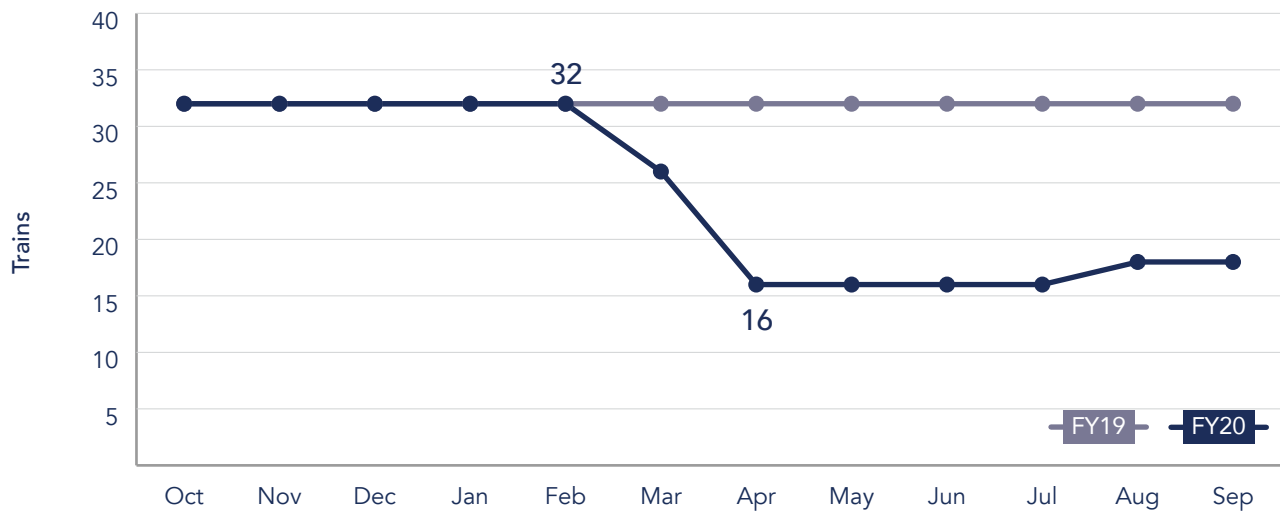
Rank by category, FY20



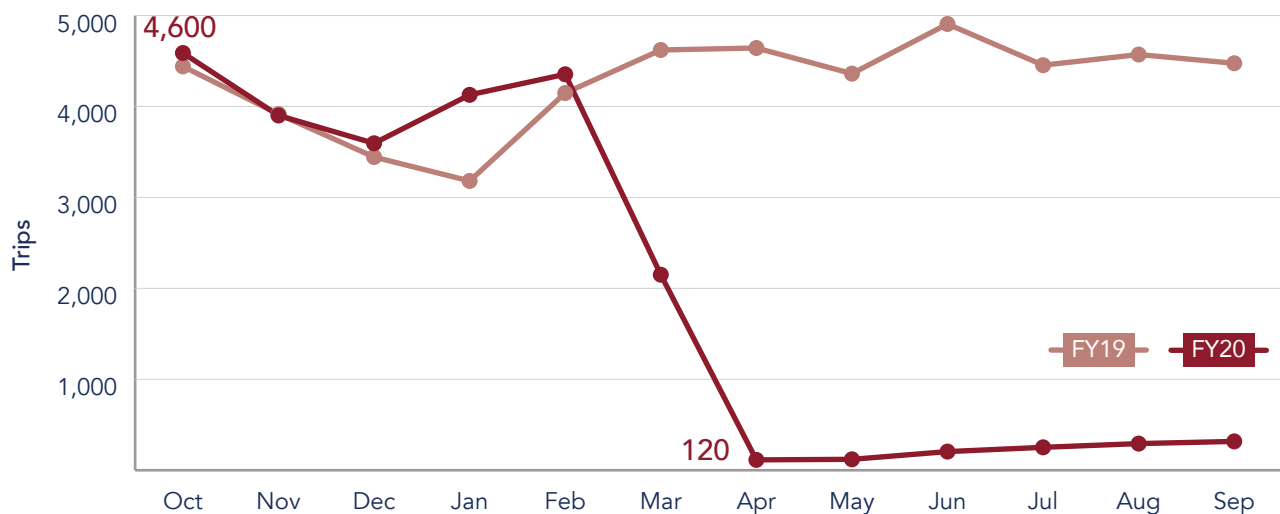
## VRE NEC Service and Ridership

Period	Average Weekday NEC Trains			Average Weekday NEC Trips		
	FY19	FY20	Change from FY19	FY19	FY20	Change from FY19
Q1 (Oct - Dec)	32	32	0% ↓	3,934	4,028	+2% ↑
Q2 (Jan - Mar)	32	30	-6% ↓	3,983	3,544	-11% ↓
Q3 (Apr - Jun)	32	16	-50% ↓	4,637	146	-97% ↓
Q4 (Jul - Sep)	32	17	-45% ↓	4,500	287	-94% ↓
<b>FY Average (Oct - Sep)</b>	<b>32</b>	<b>24</b>	<b>-25% ↓</b>	<b>4,264</b>	<b>2,001</b>	<b>-53% ↓</b>

### VRE Average NEC Weekday Trains



### VRE Average NEC Weekday Trips



## Infrastructure: Special Projects

Amtrak, Maryland DOT, and VRE coordinated work on 16 special projects throughout the Mid-Atlantic South region. In total, \$41 million was invested in FY20, which was 32% less than originally planned.

### Special Projects Detail: Mid-Atlantic South

Amtrak		FY20 Actual Expenditure: \$39,810,779
<b>Baltimore &amp; Potomac Tunnel Replacement: Enabling Components</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$4,000,000	Design 60% of Utility Relocations and new Power Feeder Ducts plus Street Alterations; advance design for relocating Substation #20; begin Priority Property Acquisition; advance design of Franklinton Road & Warwick Avenue; replacement bridges; advance design of CSX Bridge Pier Relocation Bid Package; advance design of new interlocking south of Tunnel Proper; develop Contract Packaging Plan; conduct HABS/HAER and Prepare Building Demolition Package; advance development of Programmatic Agreement required historic displays; conduct historic property boundary delineation per Programmatic Display.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$402,703	Prepared application and received a Federal-State Partnership for SOGR grant Winans to Bridge. Advanced 60% design for Warwick and Franklinton Bridges, including historic context sensitive features, and explored concepts for Substation No. 20. Continued stakeholder engagement, particularly with the City of Baltimore. Advanced HABS / HAER Documentation pursuant to Programmatic Agreement. Developed the framework for a flexible project delivery strategy. Explored operational configuration refinement and its relationship to project phasing.
<b>Variance &amp; Explanation</b>	-\$3,597,297	Due to COVID-19, contracted work was temporarily suspended effective April 1, severely limiting progress against FY20 planned activities.
<b>Baltimore &amp; Potomac Tunnel Replacement: Tunnel Proper</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$8,000,000	Advance tunnel design, including approaches, ancillary spaces, and ventilation system. Perform additional geotechnical investigation.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$2,574,870	Evaluated adjustments to the internal diameter of tunnel, track alignment, and ventilation system as part of value engineering. Advanced structural modeling of tunnel liner. Continued stakeholder engagement, particularly with the City of Baltimore. Drafted Historic American Engineering Record (HAER) reports; advanced Construction Protection Plan. Engaged Amtrak Real Estate regarding acquisition of three high priority properties needed for project which are currently commercially available. Advanced Geotech program. Developed the framework for a flexible project delivery strategy. Explored operational configuration refinement and its relationship to project phasing.
<b>Variance &amp; Explanation</b>	-\$5,425,130	Due to COVID-19 contracted work was temporary suspended effective April 1; severely limiting progress against FY20 planned activities.
<b>Baltimore Penn Station: Infrastructure Improvements</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$16,000,000	Upgrading the C&S signals at the south end of Tracks 1 & 3, performing demolition of the current Platform 2, and beginning construction on the New Platform 2 at Baltimore Penn Station. There may also be some signal work at the south end of Track 7 and Track F performed this year but it may end up being pushed to FY21.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$371,603	In FY20, The project team completed design changes to the 100% set after performing a constructibility review and updating the design to reflect new IT standards. This project also began solicitation and is moving toward an award of a contract for General Contracting services in Q1 of FY21.
<b>Variance &amp; Explanation</b>	-\$15,628,397	Total FY20 expenditure was \$371,603 against a plan of \$6,620,795. This lower expenditure was due to some delays in getting to solicitation and construction. Our original \$6 million plan for FY20 included several months of construction work. Design changes and other constructibility review items delayed the start of solicitation and the solicitation process was extended by a large number of RFIs that required responses and several rounds of site visits that were requested by the bidders.

Special Projects Detail: Mid-Atlantic South continued on the next page >>

<b>Baltimore Penn Station: Master Plan</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$1,000,000	Complete review and approval of the preliminary design and master plan for the redevelopment of Baltimore Penn Station and surrounding properties. This work will include advancing the real estate transaction from Commercial Close to Financial Close with the execution of long-term ground leases for the master development station properties. All Amtrak program management personnel, technical consultant support, and legal fees will continue through FY20 as the design for the Master Development Partnership program advances into construction.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$675,045	Complete review and approval of preliminary designs for repairs and expansion of Amtrak Baltimore Penn Station through a Master Development Agreement with Penn Station Partners.
<b>Variance &amp; Explanation</b>	-\$324,955	FY20 actuals remained below the plan due to delays at the initiation of the project, including contract executions at the beginning of FY20.
<b>Hanson Interlocking</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$10,400,000	New signal bridge installation and associated C&S work. Access road completion. Continuation of OCS installation.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$10,348,060	Catenary poles/signal bridge foundations completed in October 2019; 100% ET drawings completed November 2019; Hanson central instrument house (CIH), Landover CIH, Hanson Location A & B and Landover Location B all set in the field by November 2019; Signal bridges fabricated July 2020; Landover Power installed July 2020; Pepco duct bank was completed September 2020
<b>Variance &amp; Explanation</b>	-\$51,940	Catenary poles/signal bridge install was pushed to FY21; Originally pushed due to funding concerns due to COVID. Discovered in July 2020 the original NEPA approval did not include catenary poles/signal bridges/Landover Tower. New NEPA review began right away.
<b>Maryland Section Reliability Improvements</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$3,100,000	Track alignment shifts and ET wire shifts between Grove and Bridge. C&S and PTC upgrades between New Hanson and Bridge.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$1,614,113	"1. Track 1 alignment shifts and ET wire shifts between Grove and Bridge were completed. 2. The post construction track geometry and rail neutral temperature were tested."
<b>Variance &amp; Explanation</b>	-\$1,485,887	C&S and PTC upgrades between New Hanson and Bridge will happen in FY21. Track Design is reviewing the post construction track geometry to approve the new speed table.
<b>New Carrollton Station: Acela 21</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$17,700,000	Finalize WMATA Adjacent construction review and wrap up design phase of the project. Once the design has been completed, construction procurement process to begin. Amtrak to coordinate any 3rd party or in-house construction that can begin prior to NTP. These items would include PEPCO relocation of transmission lines, gauntlet track construction and Track 1 realignment.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$589,517	AECOM signed a separate letter agreement with WMATA for site survey in January. AECOM completed necessary WMATA RWP training in March. Site survey was completed in June. Amtrak Letter Agreement executed in April. Amtrak made payment to WMATA for JDAC review time. WMATA Adjacent Construction Documents Submitted and reviewed. WMATA provided comments and AECOM working toward final submission for WMATA. Amtrak stakeholders reviewed 95% design and provided comments.
<b>Variance &amp; Explanation</b>	-\$17,110,483	Schedule of entire project is behind due to adjacency of new platform to WMATA tracks/Property. This issue has now been resolved as Amtrak entered into an agreement with WMATA. WMATA has reviewed the design documents and provided comments. The designer has addressed WMATA's concerns thus far as we look to complete WMATA review. Budget Variance is also high on overall project due to delay in schedule and required reprogramming, as previously documented. Project has been moving forward with design milestones updated and new expected schedule.

Special Projects Detail: Mid-Atlantic South continued on the next page &gt;&gt;

<b>New Carrollton Station: SOGR &amp; ADA</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$1,000,000	Complete design documents including cost estimate and schedule.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$201,475	Completed design procurement 3/2/2020. Completed preliminary design 30% submission 4/20/2020. Completed design development 75% submission 9/4/2020.
<b>Variance &amp; Explanation</b>	-\$798,525	Due to COVID-19 project schedule was impacted; design phase will continue into FY21.
<b>Next Generation High Speed Fleet Infrastructure: Ivy City/Washington Terminal Yard Facility Improvements</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$13,600,000	There are two aspects to this project – work within the S&I Facility and the additional Ready Tracks in the yard. S&I Mod: Construction within S&I Facility. Ready Tracks: Finalize Design, Procure GC, and Begin Construction.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$10,109,035	Completed design for S&I mods. Issued NTP to GC for S&I mods. S&I mods construction approximately 50% complete. Completed design for North Storage Tracks. Amtrak forces 80% complete track installation for North Storage Tracks. Issued NTP to GC for North Storage Tracks. Completed design for Wheel True Pit Modifications. Provided NTP to Contractor for Wheel True Pit Modifications.
<b>Variance &amp; Explanation</b>	-\$3,490,965	Contractor bid amount for Ivy City S&I mods exceeded estimate for work scope (primarily due to specialty equipment requirements as well as limited interest in bids for the work). Late start for North Storage Track work (due to re-scope for labor clearance) resulted in lower expenditures in FY20 than planned. Delay from COVID-19 resulted in later expenditure for wheel true pit mods than planned.
<b>Susquehanna River Bridge Replacement: Phase 1</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$4,000,000	Design to 60%.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$1,566,971	No milestones were able to be achieved in FY20 due to funding being deferred to FY21 as a result of COVID-19 reductions. The design was progressing toward a 60% design milestone but was not able to achieve this milestone.
<b>Variance &amp; Explanation</b>	-\$2,433,029	The variance in planned completed scope in FY20 as well as reduced spending in FY20 against planned was due to COVID-19 related deferment of funds at the end of March 2020.
<b>Washington Union Station: Claytor Concourse Modernization Program</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$17,247,000	Completion of construction of Amtrak Police Department building. Design completion and construction procurement underway for Concourse Modernization project.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$1,527,763	Advanced electric workshop construction; completed updated concourse project base plan which included the revised location for the Metropolitan Lounge.
<b>Variance &amp; Explanation</b>	-\$15,719,237	The completion of the electric workshop has been delayed due to contractor performance issues. The Concourse project is experiencing a major schedule delay due to USRC assuming project delivery responsibility because of station ownership and governance issues at the beginning of FY20; no major advancements occurred in FY20.
<b>Washington Union Station: Long Term Station Expansion</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$2,015,000	Continuation of activities to support and advance the Station Expansion Project, including support for the EIS, Terminal Infrastructure, and Constructibility review.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$852,646	Finalized work that was undertaken by Amtrak consultants in support of FRA releasing the draft Station Expansion Environmental Impact Statement (EIS) in June 2020. Advanced the design of utility relocation in the H Street tunnel that is needed prior to the District DOT reconstruction of the H Street Bridge.
<b>Variance &amp; Explanation</b>	-\$1,162,354	Variance in expenditure due to the delayed release of the draft EIS and low consultant spend as a result.

Special Projects Detail: Mid-Atlantic South continued on the next page &gt;&gt;



<b>Washington Union Station: Near Term Rail Program</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$4,555,000	Advance design and construction activities in support of Near Term rail projects
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$506,549	Advanced new design scope for the Satellite Commissary. Undertook utility investigation on the west side of the terminal to support updated designs.
<b>Variance &amp; Explanation</b>	-\$4,048,451	Variance in scope and expenditure due to deferring completion of Substation 25A and Crew Base design to FY21 because of COVID budget reductions.
<b>Washington Union Station: Subbasement Program</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$1,305,000	Continued design completion and pre-construction support of the Subbasement Reconstruction project.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$8,470,429	Progressed subbasement concept design to 50% design, after re-scoping the consultant at the beginning of FY20 to undertake a more simplified scope that allowed for a single span bridge replacement; Amtrak consultant team responsible for rail infrastructure and utility design as well as the bridge replacement design. USRC assumed responsibility to deliver the station utility relocation portion of the project; completed various stages of design in FY20. Track 22 awarded the construction contract to Skanska and they began their work in April 2020. Construction work is progressing according to schedule.
<b>Variance &amp; Explanation</b>	\$7,165,429	Expenditure variance exists because the scope did not include the Track 22 project in the subbasement planned expenditure at the beginning of FY20. Subbasement project was over spent in FY20 due to Amtrak needing to fund the USRC work which was more costly than anticipated.
<b>Maryland DOT</b>		<b>FY20 Actual Expenditure: \$732,594</b>
<b>MARC Storage Improvements: Martin Airport</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$8,545,000	ROW Acquisition required for Project is anticipated during FY20. 4.199 Ac in fee simple and associated easements have been Appraised and MTA received FTA concurrence for on March 6, 2019. Complete 100% Design; Issue NTP; Begin Procurement.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$732,594	Collaborated with BGE for relocation of Overhead Pole Line that conflicts with new Overhead Contact System, agreed on revised scope to relocate overhead instead of underground, with cost savings of approximately \$500K and reduced track outage during construction.
<b>Variance &amp; Explanation</b>	-\$7,812,406	The budget was cut due to reduced revenues as a result of the COVID-19 pandemic.
<b>VRE</b>		<b>FY20 Actual Expenditure: \$304,806</b>
<b>VRE Midday Storage Facility</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$14,000,000	Complete preliminary design and start final design
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$304,806	Preliminary design completed Dec 2019.
<b>Variance &amp; Explanation</b>	-\$13,695,194	Delayed initiation of final design due to ongoing agreement negotiations to be resolved in early 2021.

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

## Infrastructure: Capital Renewal

In the Mid-Atlantic South region, Baseline Capital Charges (BCCs) are allocated by Amtrak, MARC, and VRE to fund the capital renewal of basic infrastructure on the NEC Main Line in Maryland the District of Columbia. In total, \$126 million was invested in FY20, which was 29% less than originally planned.

BCC Segment	RoW owner	Operators			FY20 expenditure by segment
		Amtrak	MARC	VRE	
21: Bacon to Perryville	Amtrak	\$3,303,632	-	-	<b>\$3,303,632</b>
22: Perryville to Washington Union Station	Amtrak	\$92,175,122	\$17,518,268	-	<b>\$109,693,390</b>
23: Washington Union Terminal	Amtrak	\$6,134,106	\$0	\$600,543	<b>\$6,734,649</b>
24: Washington Union Station to CP Virginia	Amtrak	\$0	-	\$0	<b>\$0</b>
<b>FY20 total regional capital renewal expenditure by agency</b>		<b>\$101,612,860</b>	<b>\$17,518,268</b>	<b>\$600,543</b>	<b>\$119,731,671</b>

### FY20 Expenditure

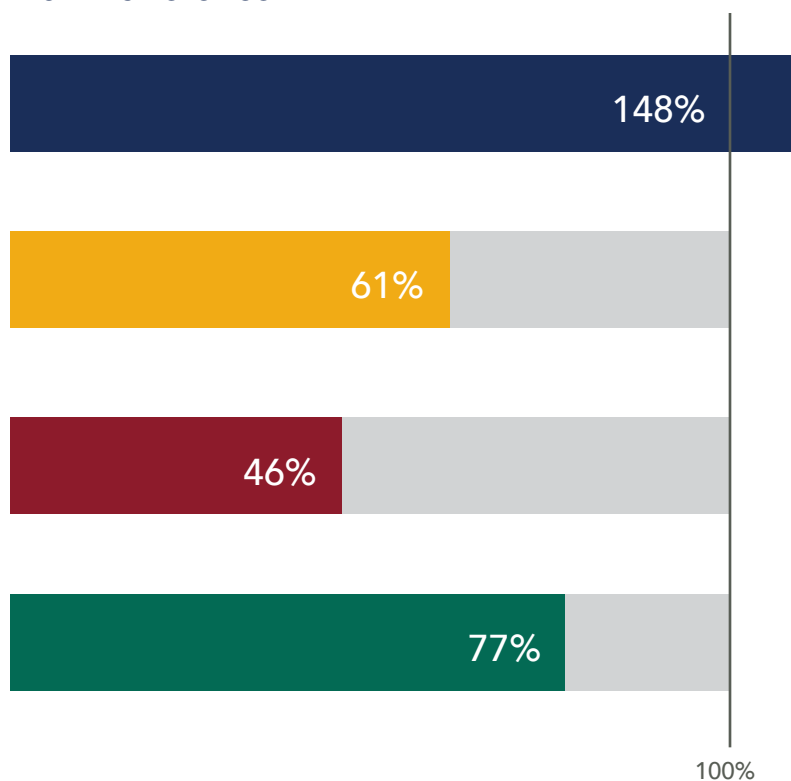
**TRACK**  
\$104.9 MILLION

**COMMUNICATION & SIGNALS**  
\$3.4 MILLION

**STRUCTURES & FACILITIES**  
\$6.3 MILLION

**ELECTRIC TRACTION**  
\$5.1 MILLION

### Plan Adherence



## Capital Renewal Detail: Mid-Atlantic South (Amtrak-owned)

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Amtrak Owned Positive Train CTRL (PTC) Installation. PG00085. C.EN.201034.	21	\$79,990	\$0	-\$79,990	All boundaries with MBTA were completed making them the first railroad to become fully interoperable with Amtrak on the NEC. Rev 11.3 was successfully completed and installed. Boundaries at CP12, CP75 and CP216 with Metro North were completed. All lines with the exception of Line 3 were migrated to the Hitachi STS Server. PTC Implementation Plan was completed and submitted to the FRA. Work progressed with other railroads (Septa, New Jersey Transit, Long Island Railroad and Metro North) towards interoperability which is anticipated to be complete in Q1 of FY21.	Variance was within a 10% threshold. No explanation.
	22	\$783,276	\$0	-\$783,276		
	23	\$70,402	\$0	-\$70,402		
	24	\$6,283	\$0	-\$6,283		
B&P Block Tie Replacement Project. P000130. C.EN.101885.	22	\$8,875,477	\$49,642,620	\$40,767,143	Phase 1 construction completed in April 2020 and Phase 2 construction complete in September 2020.	The initial variance from \$6M reflects an increase in costs to cover the difference between the project estimate to actual bids received. The lowest qualified bid increased the FY20 budget to \$15M without any change in scope. Additional variance from \$15M to \$46M reflects an increase in FY20 scope undertaken as Phase 2 in order to utilize outages available due to COVID-19 service reductions.
Collington Ave MD Bridge Replacement Project. P000121. C.EN.201018.	22	\$187,487	\$0	-\$187,487	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
Communications System Upgrades Program. PG00083. C.EN.101857.	21	\$10,020	\$0	-\$10,020	Fiber Optic Electronic Replacement Specs and Voice Recorders Installation was completed. Work continued on new radio and communications huts, fiber installs and cable installs.	This program had a Reprogramming to \$1.7M. Therefore, this changes the 48% variance to only 8% over the Reprogramming
	22	\$276,874	\$234,224	-\$42,650		
	23	\$1,193	\$173,028	\$171,835		
Fence Upgrades Program. PG00069. C.EN.101854.	22	\$1,897,106	\$611,428	-\$1,285,678	Westerly Yard, RI and BWI Station SOW were completed.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred most of the projects within the program until FY21.
Mid-Atlantic South Catenary Program. PG00021. C.EN.101829.	21	\$54,516	\$0	-\$54,516	Despite FY20 impacts the Program replaced 8 catenary poles, started 3 switch heater replacement projects, and started fabrication of SAP assemblies.	The schedule slipped for several switch heater projects that will need to finish work in early FY21.
	22	\$3,855,739	\$2,782,788	-\$1,072,951		
	23	\$5,991	\$283,969	\$277,979		
	24	\$6,590	\$0	-\$6,590		

Capital Renewal Detail: Mid-Atlantic South continued on the next page >>

## Capital Renewal Detail: Mid-Atlantic South (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Mid-Atlantic South Communications Program. PG00022. C.EN.101830.	21	\$46,129	\$18,503	-\$27,626	The replacement and relocation of 250 feet of lateral fiber optic cable.	Communications work was done under a system-wide bucket causing a decrease in expenditures. There was a request to decrease the budget and return \$485k.
	22	\$416,209	\$0	-\$416,209		
	23	\$4,992	\$0	-\$4,992		
	24	\$5,492	\$0	-\$5,492		
Mid-Atlantic South Facilities Program. PG00023. C.EN.101831.	21	\$513,560	\$166,420	-\$347,140	The program was able to accomplish Compressor design (Ivy City), compressor replacement (Washington Terminal), vacuum sewage system upgrade and booster pump replacement.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project.
	22	\$2,159,503	\$229	-\$2,159,274		
	23	\$2,995	\$33,250	\$30,254		
	24	\$3,295	\$0	-\$3,295		
Mid-Atlantic South Signal System Upgrades to 562 Project. P000120. C.EN.101872.	21	\$320,588	\$0	-\$320,588	Completion of certain portions of design, fabrication, and construction/installation of 562 signal upgrade equipment from Oak to Bush were still accomplished.	C&S Production Force Account schedule was altered due to COVID-19, therefore force account were reallocated to higher priority projects. This impacted scope, leading to scope deferral from FY20 to FY21.
	22	\$2,885,290	\$2,699,204	-\$186,086		
Mid-Atlantic South Signals Program. PG00025. C.EN.101832.	21	\$19,710	\$109,374	\$89,664	The program was still able to accomplish signal bridge upgrades, RTU replacements, and relay transmitter replacements.	Project work was hampered by COVID-19 The ADE who helped develop the program retired.
	22	\$634,493	\$178,480	-\$456,013		
	23	\$1,498	\$0	-\$1,498		
	24	\$1,647	\$0	-\$1,647		
Mid-Atlantic South Structures Program. PG00026. C.EN.101833.	21	\$1,403,042	\$480,302	-\$922,739	The program was able to accomplish 2 culvert replacements, upgrades on 2 movable bridges, upgrades on 4 undergrade bridges, and upgrades on 1 tunnel.	B&B Production work slipped due to them needing to prioritize Acela 21 work. Glendale culvert work was put on hold due to contractor issues.
	22	\$7,565,238	\$4,291,526	-\$3,273,713		
	23	\$1,353,169	\$399,384	-\$953,785		
	24	\$15,376	\$0	-\$15,376		
Mid-Atlantic South Substations Program. PG00027. C.EN.101834.	21	\$25,161	\$0	-\$25,161	The program was still able to accomplish the replacement of 4 air break switches, 7 breakers, and 1 transformer.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to future fiscal years.
	22	\$2,652,715	\$2,046,358	-\$606,357		
	23	\$2,496	\$0	-\$2,496		
	24	\$2,746	\$0	-\$2,746		

Capital Renewal Detail: Mid-Atlantic South continued on the next page >>

## Capital Renewal Detail: Mid-Atlantic South (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Mid-Atlantic South Track Program. PG00028. C.EN.101835.	21	\$2,186,570	\$1,592,454	-\$594,116	The program accomplished the completion of 20 I-Joints, 330 joint eliminations, 90 concrete ties, 1631 wood ties, 15 frogs, 26,000 feet of spot undercutting, and 294,000 feet of spot surfacing.	The original AOP of this Program was insufficient, therefore a Reprogramming mid-year helped the actuals align with the updated plan.
	22	\$14,002,432	\$12,883,610	-\$1,118,822		
	23	\$887,113	\$3,538,635	\$2,651,522		
	24	\$247,305	\$0	-\$247,305		
NEC C&S Interlocking Upgrades. PG00087. C.EN.101701.	21	Not in OYIP	-\$7,552	-\$7,552	Not applicable.	Project was mistakenly left out of the FY20 Portfolio, however it was Reprogrammed into the Capital Plan and allocated budget in February. Due to impacts of COVID19 and the late year Reprogramming, this was then deferred until later fiscal years.
	22	Not in OYIP	-\$2,426	-\$2,426		
Prince Interlocking Renewal Project. P000131. C.EN.101778.	21	\$3,090,037	\$54,237	-\$3,035,801	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project until FY23.
Production High Speed Surfacing Program. PG00060. C.EN.101855.	21	\$477,756	\$862,982	\$385,226	Performed 1,232,096' of Surfacing between High Speed and T/O & X/O.	Undercutter settlement surfacing work was performed on Undercutter project numbers in NED for the last few months of FY20. Some off program work done in FY20. Some of the equipment also had downtime due to repairs that needed to be made.
	22	\$1,337,227	\$1,668,050	\$330,822		
	23	\$50,419	\$0	-\$50,419		
Production Wood Tie/Timber Replacement Program. PG00071. C.EN.101858.	22	\$4,224,031	\$3,345,157	-\$878,875	Additional ties were installed as a result of coordination with SEPTA. Neutral rail temperatures were adjusted. Interlockings were hardened with new timbers.	In Fall 2019 weekend outages were provided. Distressing was performed as a result of heat kink issues.
	23	\$1,576,956	\$1,439,804	-\$137,153		
Rail Grinding Program. PG00064. C.EN.101794.	21	\$23,895	\$25,288	\$1,393	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
	22	\$95,581	\$50,530	-\$45,051		
STA BALT MD-CONSTR FOR ESCLTR-ELEV STEPS. C.SP.100060.	22	Not in OYIP	\$1,037	\$1,037	Not submitted.	Not submitted.

Capital Renewal Detail: Mid-Atlantic South continued on the next page >>

## Capital Renewal Detail: Mid-Atlantic South (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
STA NEW CARROLLTON MD-SOGR (DETAILED DSN/ PM/NEPA/SHPO). C.RE.100031.	22	Not in OYIP	\$363,811	\$363,811	Not submitted.	Not submitted.
STA WAS DC-PLATFORM REFRESH (TRK 19/20/PRJ MGT). C.RE.100084.	23	Not in OYIP	\$568,330	\$568,330	Not submitted.	Not submitted.
TLS Concrete Tie Replacement Program. PG00057. C.EN.101652.	21	Not in OYIP	\$1,624	\$1,624	The TLS program installed 16,250 concrete ties and 62,418 Ft of CWR across the following locations: Hook to Holly Tk 3, Lehigh to Mantua Tk 1, Delair Branch Tk 1 Conrail Derailment Repairs, and Bridge to Grove, Tk 2	Production schedule experienced many adjustments throughout the fiscal year. The most significant change occurred due to COVID-19 cost reduction efforts. All OT was removed from the estimate/schedule. The schedule was adjusted to compensate for the removal of OT. In FY20, 26% of reported hours were Overtime. This is an improvement over the 33% experienced in FY19.
	22	\$5,751,607	\$1,751,550	-\$4,000,058		
Total Track Renewal Program. PG00061. C.EN.101871.	22	\$1,957,458	\$3,398,436	\$1,440,979	Completion of Newark Station Track A and 30th St. Track 9 block tie projects were completed along with various ballasted track locations.	Scope elements and locations were added to the program that were not originally included in the estimate. CWR and water proofing was added to Newark Station block tie scope. Ballasted Track renewal was added at Baldwin Track #1.
Track Undercutting Program. PG00062. C.EN.100269.	22	\$23,696,074	\$20,840,949	-\$2,855,125	The Undercutting program completed 121,483 Ft of undercutting across the following locations: Grove to Bridge Tk 1, Lehigh to Mantua Tk 1, Groton to High St Tk2, Crescent to Shaw's Cove Tk 1 & 2, Conn to Crescent Tk 1, MP 187.8 to Pawtucket Tk 1 & 2, Kingston to Davisville Tk 2.	Production schedule experienced multiple adjustments throughout the fiscal year. The most significant change occurred due to COVID-19 cost reduction efforts. As a result, a significant schedule change occurred on both the Mid-Atlantic and New England Undercutters. This plan gave more time to the work group, and minimal OT was required. In FY20, 18% of reported hours were Overtime. This is an improvement over the 33% experienced in FY19.
Turnout Renewal Program. PG00065. C.EN.101860.	22	\$328,729	\$2,905,830	\$2,577,101	Performed 27 Installs in FY20 as well as transition panels where required and some additional track work.	Several planned T/O installs for FY20 had to be moved into FY21 due to scheduling conflicts or material issues (Lawn and Gunpow locations.)
	23	\$328,729	\$247,870	-\$80,859		

Capital Renewal Detail: Mid-Atlantic South continued on the next page >>

## Capital Renewal Detail: Mid-Atlantic South (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. Therefore, they will include activities across all relevant segments, including those outside of the Mid-Atlantic South region. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Washington Terminal & Ivy City Facility Electrical Upgrades Project. P000074. C.EN.100850.	23	\$535,676	\$50,379	-\$485,297	Not applicable.	Delays in finalizing assessment for SOW development to advance site coordination and visits for Procurement contract award to third party developer due to COVID-19. The design manager left under the VSIP which also impacted the schedule. Due to the impacts incurred, this project was deferred to a later fiscal year.
<b>Region Total</b>		<b>\$96,943,883</b>	<b>\$119,731,671</b>	<b>\$22,787,788</b>		

# Region: Amtrak System-wide

## Operations and Infrastructure Detail

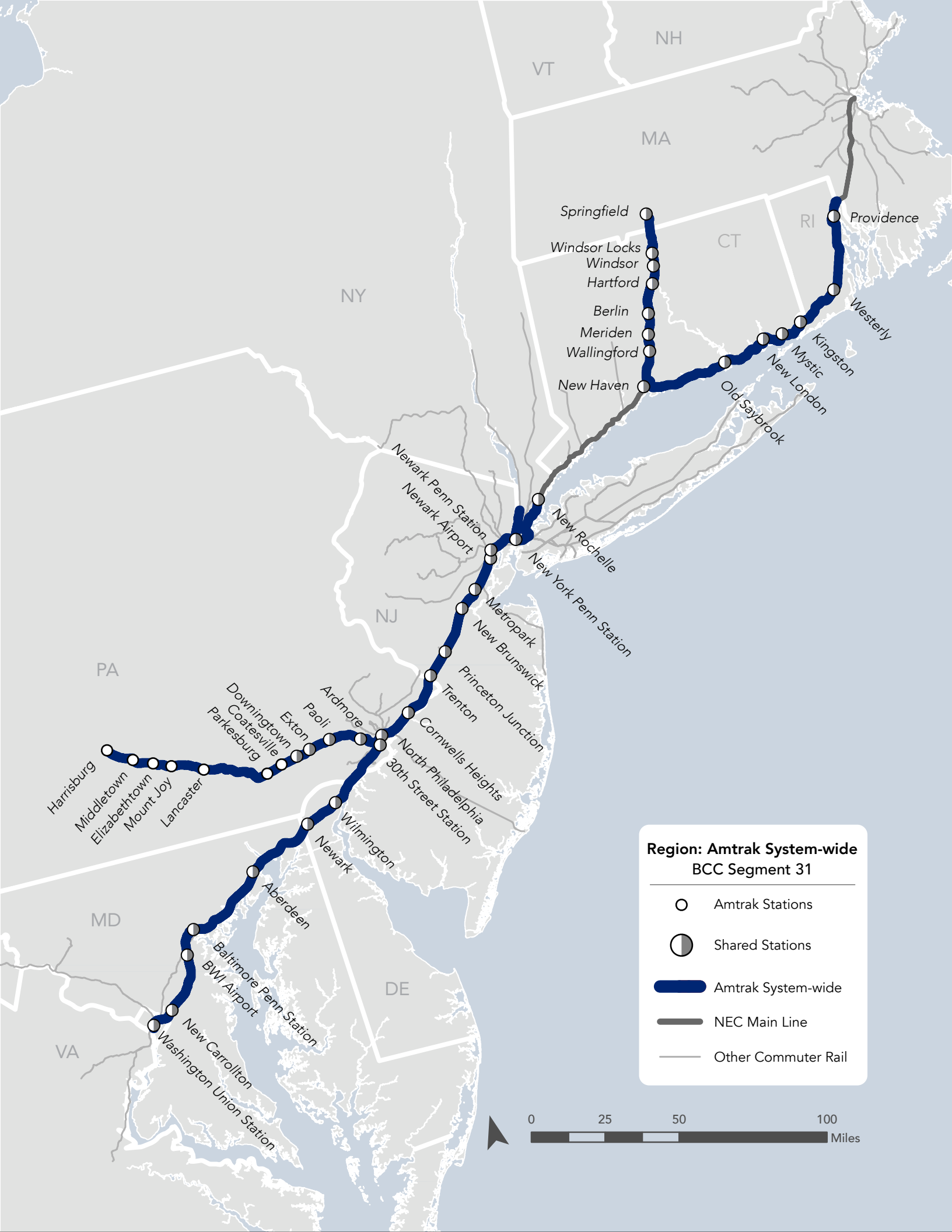
Operators: Amtrak

RoW Owner: Amtrak

### BCC Segments

31: Amtrak System-wide



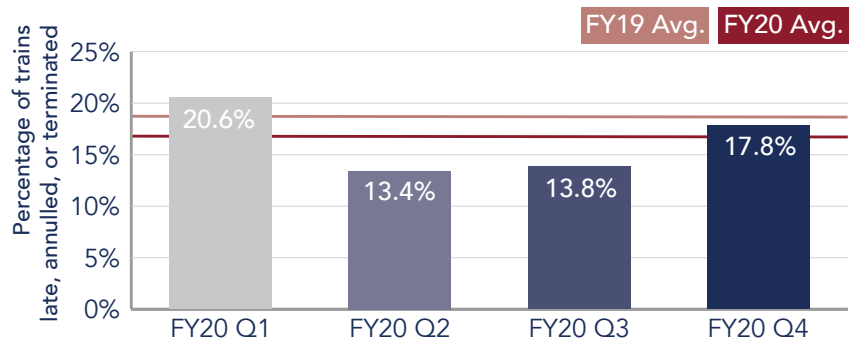


## Operations: Amtrak

Amtrak operates intercity service on along the NEC Main Line between Boston, MA and Washington D.C. and on the three NEC Branch Lines to Springfield, MA, Spuyten Duyvil, NY, and Harrisburg, PA. Amtrak's Northeast Regional, Acela, Hartford Line, and Keystone Services routes operate entirely on the NEC main and branch lines and several state-supported and long distance routes operate on sections of the NEC.

### Train performance profile

Metric	FY19	FY20
Percent NEC trains late, annulled, or terminated	18.9%	15.32%
Percent NEC trains not completed	0.75%	0.91%
Avg min late per NEC train	62.3	66.0

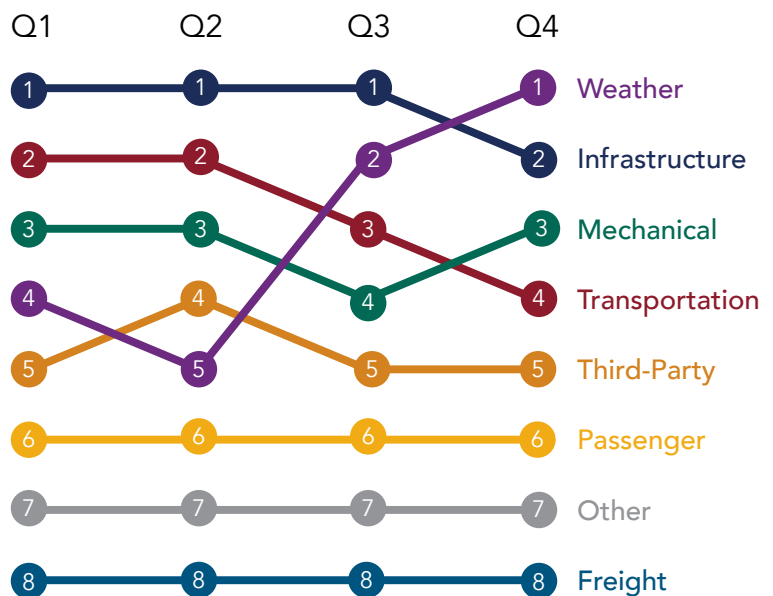


### Train-delay minutes by cause

#### Total and percent change, FY19-20

Cause	FY19	FY20	Change
Infrastructure	104,879	48,691	-53.6%
Mechanical	54,552	31,740	-41.8%
Transportation	67,079	37,233	-44.5%
Passenger	21,657	9,919	-54.2%
Weather	27,690	26,651	-3.8%
Third-Party	23,137	17,916	-22.6%
Freight	2,749	1,624	-40.9%
Other	11,264	6,245	-44.6%
<b>Total</b>	<b>313,007</b>	<b>180,019</b>	<b>-42.5%</b>

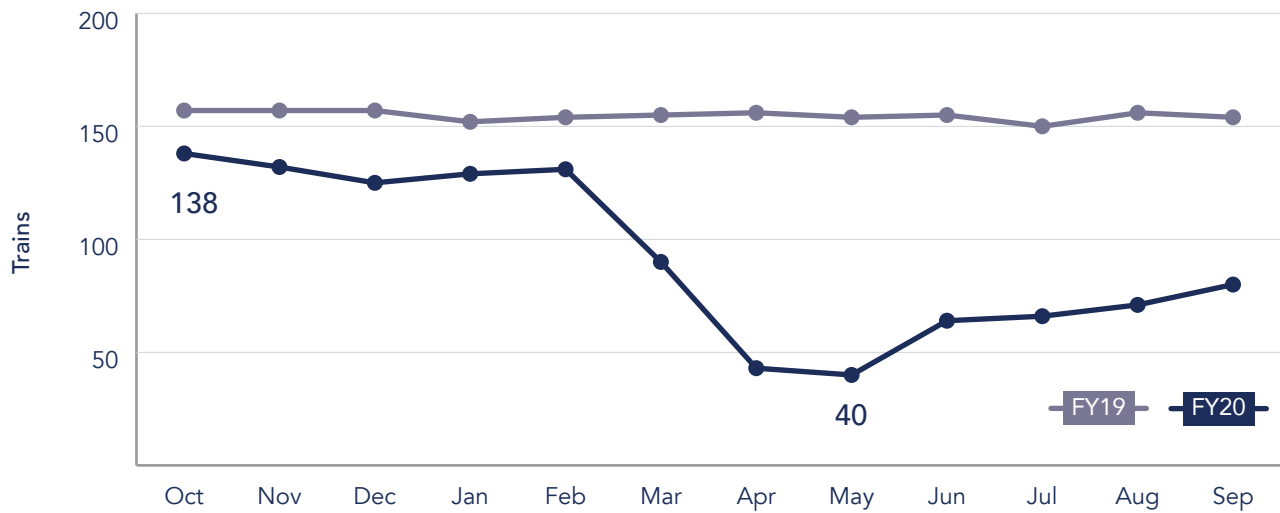
#### Rank by category, FY20



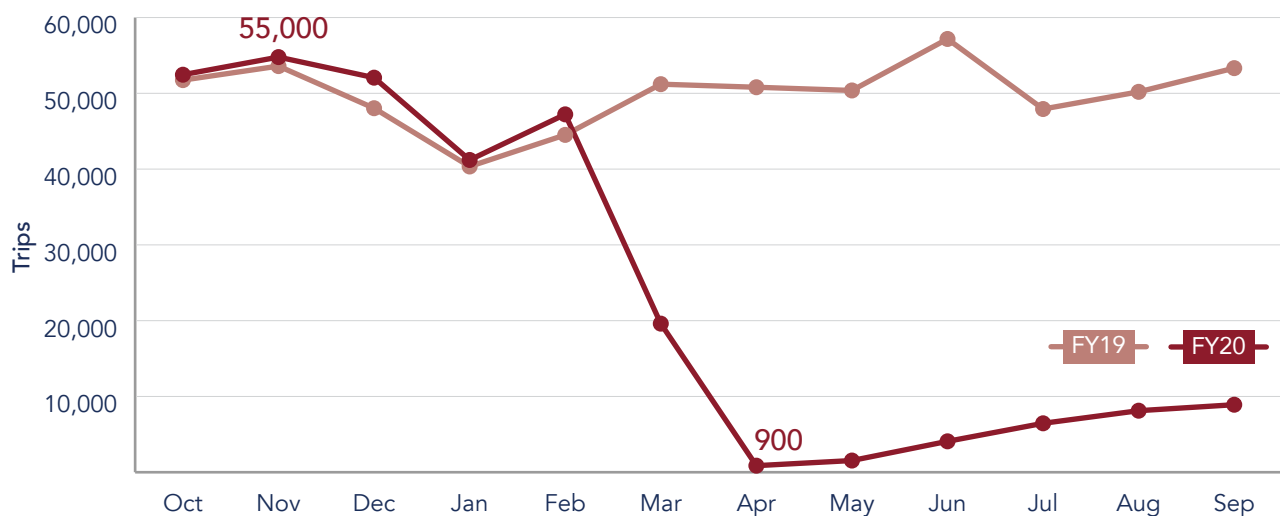
## Amtrak NEC Service and Ridership

Period	Average Weekday NEC Trains			Average Weekday NEC Trips		
	FY19	FY20	Change from FY19	FY19	FY20	Change from FY19
Q1 (Oct - Dec)	157	132	-16% ↓	51,122	53,100	+4% ↑
Q2 (Jan - Mar)	156	116	-26% ↓	45,356	36,012	-21% ↓
Q3 (Apr - Jun)	156	49	-68% ↓	52,783	2,163	-96% ↓
Q4 (Jul - Sep)	156	72	-54% ↓	50,482	7,829	-84% ↓
<b>FY Average (Oct - Sep)</b>	<b>156</b>	<b>92</b>	<b>-41% ↓</b>	<b>49,936</b>	<b>24,776</b>	<b>-50% ↓</b>

### Amtrak Average NEC Weekday Trains



### Amtrak Average NEC Weekday Trips



## Infrastructure: Special Projects

Amtrak coordinated work on 2 special projects throughout it's NEC region with the commuter operators. In total, \$13 million was invested in FY20, which was 9% more than originally planned.

### Special Projects Detail: Amtrak System-wide

Amtrak		FY20 Actual Expenditure: \$12,644,900
<b>Next Generation High Speed Fleet Infrastructure: Ride Quality Investment</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$6,200,000	Upgrade Continuously Operating Reference Station (CORS) Network to cover entire NEC. NEC LiDAR Baseline Survey
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$2,231,284	<ol style="list-style-type: none"> <li>1. NEC Conducted LiDAR survey between Washington and Boston. SSI has completed 2 LiDAR Scans for all tracks except those out of service.</li> <li>2. Completed 19 of the 21 installations for densifying the CORS nodes along the NEC Right of Way</li> <li>3. Amtrak IT are working on a direct cloud data transfer system for LiDAR data (LAZ files). Amtrak IT and Engineering are investigating workstation requirements needed to handle design drawing development.</li> <li>4. Completed defining process flow from baseline survey to design which details asset extraction from the LiDAR data.</li> </ol>
<b>Variance &amp; Explanation</b>	-\$3,968,716	Procurement cycle took longer than expected because of COVID-19.
<b>Next Generation High Speed Fleet Infrastructure: Safety Mitigation</b>		
<b>FY20 OYIP Expenditure &amp; Scope</b>	\$5,400,000	Fencing: During FY2019, 18 out of the selected 20 locations under the RRIF program will be completed. FY2020 spending will complete 2 locations in the Mid-Atlantic Division with fabric/pickets, bringing the completion count for locations under the RRIF program to 20.
<b>FY20 Actual Expenditure &amp; Accomplishments</b>	\$10,413,616	<p>Security Fencing:</p> <ul style="list-style-type: none"> <li>• Fencing &amp; Guiderail Installation 100% completed. Installed 78,557 LFT of security fencing.</li> </ul> <p>PTSR:</p> <ul style="list-style-type: none"> <li>• Review Final Positive Train Stop Override (PTSR) Design Draft Documents with Technical Team for internal Stake Holder approval.</li> <li>• We have updated Keypad specification documents and the test bench cabling has been delivered to 30 street Lab.</li> </ul> <p>MOW:</p> <ul style="list-style-type: none"> <li>• We have completed the RFP for internal approval and began the Procurement process.</li> </ul> <p>Adj Tks:</p> <ul style="list-style-type: none"> <li>• Blaine Chemical Lead: Installed all 18 tracks panels.</li> <li>• Merkens Chocolate Completed: Completed joints bar inspections and replacement. Completed tighten joint bar bolts. Completed 100% of the bad tie replacement. Completed surfacing the track. Completed final track QA/QC process</li> </ul>
<b>Variance &amp; Explanation</b>	\$5,013,616	Blaine Chemical Lead construction completed was delayed because of COVID-19. Blaine Chemical Lead construction is expected to be completed in Dec 2020.

Project data including expenditures, accomplishments, and explanation of variances are published as submitted by coordinating agencies.

Infrastructure: Capital Renewal

Through Amtrak's NEC system, it can allocate Baseline Capital Charges (BCCs) to fund the capital renewal of basic infrastructure on the NEC main and branch lines. In total, \$126 million was invested in FY20, which was 29% less than originally planned.

BCC Segment	RoW owner	Operators		FY20 expenditure by segment
			Amtrak	
31. Amtrak System-wide	Amtrak		\$50,826,734	\$50,826,734
FY20 total regional capital renewal expenditure by agency			\$50,826,734	\$50,826,734

FY20 Expenditure

TRACK  
\$104.9 MILLION

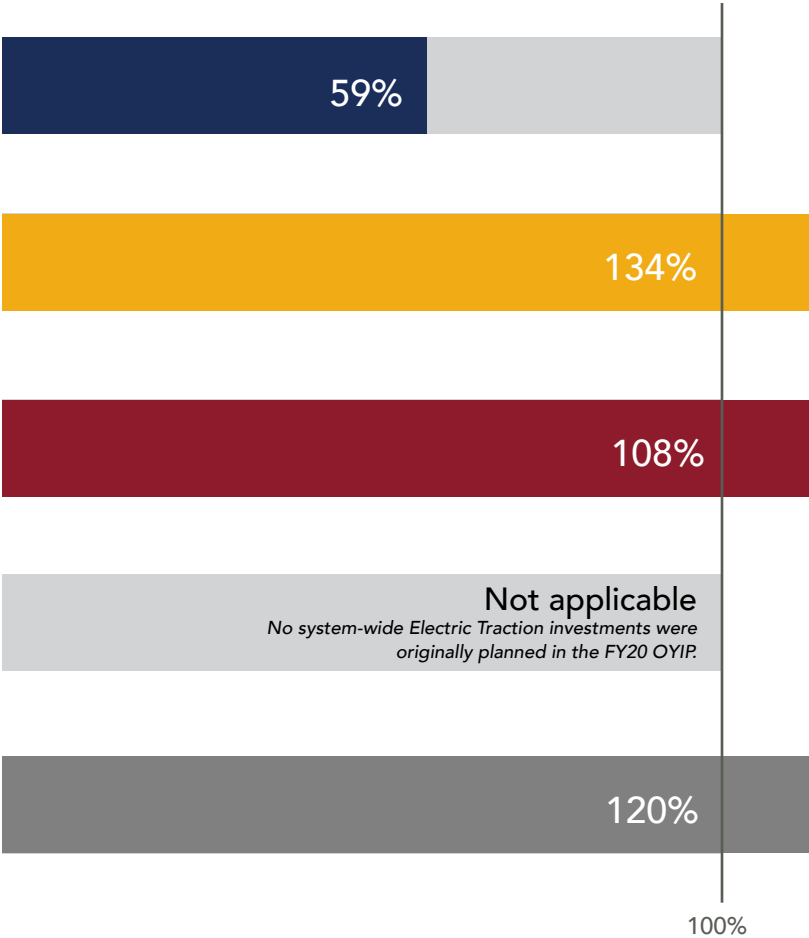
COMMUNICATION & SIGNALS  
\$24.8 MILLION

STRUCTURES & FACILITIES  
\$6.3 MILLION

ELECTRIC TRACTION  
\$5.1 MILLION

OTHER  
\$7.2 MILLION

Plan Adherence



## Capital Renewal Detail: Amtrak System-wide (Amtrak-owned)

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Amtrak Owned Positive Train CTRL (PTC) Installation. PG00085. C.EN.201034.	31	\$4,355,089	\$8,655,316	\$4,300,227	All boundaries with MBTA were completed making them the first railroad to become fully interoperable with Amtrak on the NEC. Rev 11.3 was successfully completed and installed. Boundaries at CP12, CP75 and CP216 with Metro North were completed. All lines with the exception of Line 3 were migrated to the Hitachi STS Server. PTC Implementation Plan was completed and submitted to the FRA. Work progressed with other railroads (Septa, New Jersey Transit, Long Island Railroad and Metro North) towards interoperability which is anticipated to be complete in Q1 of FY21.	Variance was within a 10% threshold. No explanation.
Brill to Landlith OCS Improvements. P000109. C.EN.101880.	31	Not in OYIP	\$10,292	\$10,292	The project team was still able to complete the review of TEC proposals.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project until FY21.
CETC Technology Renewal Program. PG00081. C.EN.101853.. PG00081. C.EN.101853.	31	\$5,681,487	\$1,896,337	-\$3,785,150	Not submitted.	Not submitted.
Communications System Upgrades Program. PG00083. C.EN.101857.	31	\$1,696,282	\$391,079	-\$1,305,203	Fiber Optic Electronic Replacement Specs and Voice Recorders Installation was completed. Work continued on new radio and communications huts, fiber installs and cable installs.	This program had a Reprogramming to \$1.7M. Therefore, this changes the 48% variance to only 8% over the Reprogramming.
Concrete Tie Redesign. P000006. C.EN.101178.	31	\$342,833	\$273,468	-\$69,365	This project was able to install and complete post tension test tie section at TTCI's Fast test track in Pueblo, CO for accelerated testing, before it had to closeout.	Due to the impacts of COVID-19 that the business incurred, Amtrak closed out this project early in March 2020.
Electric Traction System Aerial System Assessment. P000158. C.EN.101809.	31	Not in OYIP	\$428,604	\$428,604	Completed Phase A capturing 1000 locations and creation of SOGR database	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.

Capital Renewal Detail: Amtrak System-wide continued on the next page >>

## Capital Renewal Detail: Amtrak System-wide (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Engineering Asset Management System. PG00078. C.EN.100123.	31	Not in OYIP	\$2,393,297	\$2,393,297	Not applicable.	Internal budgetary change from \$3.5M to \$2.9M causing the postponement of several programs like the Autonomous Signal System and the Asset Library upgrades. Also postponed was the purchase of Oil Test equipment and elimination of travel for many of these programs. Lastly, there were several invoicing and accounts payable issues with the new Ariba procurement system which has created a backlog of invoices from one of the Programs major vendors major vendors.
Engineering Capital Program/Project Management. PG00077. C.EN.100418.	31	\$5,999,571	\$4,829,021	-\$1,170,550	Not applicable.	Not applicable.
ET Linear Assets Research and Development. PG00086. C.EN.101873.	31	Not in OYIP	\$477	\$477	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
Fence Upgrades Program. PG00069. C.EN.101854.	31	\$3,197,707	\$32,426	-\$3,165,281	Westerly Yard, RI and BWI Station SOW were completed.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred most of the projects within the program until FY21.
Mid-Atlantic North Catenary Program. PG00013. C.EN.101822.	31	Not in OYIP	\$339,795	\$339,795	Some SAP assemblies were still installed in FY20.	Due to the impacts of COVID-19 that the business incurred, Amtrak reallocated funding and resources which caused the deferral of SAP Assembly installation, North Penn Sectionalizing Switch Replacements and Thorndale Contact Wire Replacement, attributing to the variance in spend against plan.
Mid-Atlantic North Facilities Program. PG00015. C.EN.101824.	31	Not in OYIP	\$30,260	\$30,260	In FY20, projects within the program were transferred to the appropriate departments for execution.	Several projects within the program being transferred to the Mechanical Department programs. Several other projects that stayed under this program were deferred due to COVID-19.

Capital Renewal Detail: Amtrak System-wide continued on the next page >>

## Capital Renewal Detail: Amtrak System-wide (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Mid-Atlantic North Signals Program. PG00017. C.EN.101825.	31	Not in OYIP	\$24,975	\$24,975	Project had spending against plan fall within 5%.	The ADE who developed the plan retired early in the program execution and was not immediately replaced. Anticipated underspending while trying to prioritize the plan in the ADE's absence.
Mid-Atlantic North Structures Program. PG00018. C.EN.101826.	31	Not in OYIP	\$28,422	\$28,422	Program realized cost saving strategies when executing work in FY20.	The ADE who developed the FY20 Program retired early in the program execution and was not immediately replaced; the eventual replacement selected different projects, with smaller budgets to execute.
Mid-Atlantic North Substations Program. PG00019. C.EN.101827.	31	Not in OYIP	\$32,542	\$32,542	FY20 Battery/Charger work at SUB #04 PAOLI, SUB #30 FRANKFORD, SUB #69 LANDISVILLE, and SUB#02A ARSENAL were completed.	Deferral of the Solid State Signal Power Machine Installation at Zoo.
Mid-Atlantic North Track Program. PG00020. C.EN.101828.	31	Not in OYIP	\$1,038,610	\$1,038,610	Program performed within 7% of plan.	Program performed within 7% of plan.
Mid-Atlantic South Catenary Program. PG00021. C.EN.101829.	31	Not in OYIP	\$21,575	\$21,575	Despite FY20 impacts the Program replaced 8 catenary poles, started 3 switch heater replacement projects, and started fabrication of SAP assemblies.	The schedule slipped for several switch heater projects that will need to finish work in early FY21.
Mid-Atlantic South Communications Program. PG00022. C.EN.101830.	31	Not in OYIP	\$1,602	\$1,602	The replacement and relocation of 250 feet of lateral fiber optic cable.	Communications work was done under a system-wide bucket causing a decrease in expenditures. There was a request to decrease the budget and return \$485k.
Mid-Atlantic South Facilities Program. PG00023. C.EN.101831.	31	Not in OYIP	\$19,828	\$19,828	The program was able to accomplish Compressor design (Ivy City), compressor replacement (Washington Terminal), vacuum sewage system upgrade and booster pump replacement.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project.

Capital Renewal Detail: Amtrak System-wide continued on the next page >>



## Capital Renewal Detail: Amtrak System-wide (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Mid-Atlantic South Signal System Upgrades to 562 Project. P000120. C.EN.101872	31	Not in OYIP	\$59,048	\$59,048	Completion of certain portions of design, fabrication, and construction/installation of 562 signal upgrade equipment from Oak to Bush were still accomplished.	C&S Production Force Account schedule was altered due to COVID-19, therefore force account were reallocated to higher priority projects. This impacted scope, leading to scope deferral from FY20 to FY21.
Mid-Atlantic South Signals Program. PG00025. C.EN.101832.	31	Not in OYIP	\$51,735	\$51,735	The program was still able to accomplish signal bridge upgrades, RTU replacements, and relay transmitter replacements."	Project work was hampered by COVID-19 The ADE who helped develop the program retired.
Mid-Atlantic South Structures Program. PG00026. C.EN.101833.	31	Not in OYIP	\$44,028	\$44,028	The program was able to accomplish 2 culvert replacements, upgrades on 2 movable bridges, upgrades on 4 undergrade bridges, and upgrades on 1 tunnel.	B&B Production work slipped due to them needing to prioritize Acela 21 work. Glendale culvert work was put on hold due to contractor issues.
Mid-Atlantic South Substations Program. PG00027. C.EN.101834.	31	Not in OYIP	\$18,561	\$18,561	The program was still able to accomplish the replacement of 4 air break switches, 7 breakers, and 1 transformer.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to future fiscal years.
Mid-Atlantic South Track Program. PG00028. C.EN.101835.	31	Not in OYIP	\$1,657,723	\$1,657,723	The program accomplished the completion of 20 I-Joints, 330 joint eliminations, 90 concrete ties, 1631 wood ties, 15 frogs, 26,000 feet of spot undercutting, and 294,000 feet of spot surfacing.	The original AOP of this Program was insufficient, therefore a Reprogramming mid-year helped the actuals align with the updated plan.
Movable Platform Extension Prototype. P000152. C.EN.101816.	31	Not in OYIP	\$7,546	\$7,546	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project.
Movable Point Frog Switch Machine Rod Replacement Project. P000160. C.EN.101894.	31	Not in OYIP	\$18,810	\$18,810	Not applicable.	Long lead materials did not arrive until the last month of the fiscal year, September 2020.

Capital Renewal Detail: Amtrak System-wide continued on the next page >>

## Capital Renewal Detail: Amtrak System-wide (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
NEC C&S Interlocking Upgrades. PG00087. C.EN.101701.	31	Not in OYIP	\$164,562	\$164,562	Not applicable.	Project was mistakenly left out of the FY20 Portfolio, however it was Reprogrammed into the Capital Plan and allocated budget in February. Due to impacts of COVID19 and the late year Reprogramming, this was then deferred until later fiscal years.
NEC PTC Secure Wireless Communication Project. P000030. C.EN.101537.	31	\$1,131,155	\$0	-\$1,131,155	Not submitted.	Not submitted.
NEC-ARINC CETC Project. P000045. C.EN.100119.	31	\$3,822,584	\$3,852,598	\$30,014	Not submitted.	Not submitted.
New England Catenary Program. PG00029. C.EN.101836.	31	Not in OYIP	\$32,404	\$32,404	Cost savings recognized.	Due to the impacts of COVID-19 that the business incurred, Amtrak reallocated force account. Therefore the program underperformed planned scope based on availability of force account labor.
New England Communications Program. PG00030. C.EN.101837.	31	Not in OYIP	\$9,633	\$9,633	Recognized cost cutting opportunities.	Installation costs for SCADA/RTU locations favorable to plan, however as part of COVID-19 response, a Reprogramming reduction of \$200,000 was requested in April 2020.
New England Facilities Program. PG00031. C.EN.101811.	31	Not in OYIP	\$50,203	\$50,203	The substantial completion of the USS1 transformer upgrades at the Providence, RI, maintenance of way (MOW) facility and the completion of the Southampton Street Yard 480V Ground Power Upgrades.	Program scope reduced at request of Finance as a response to COVID-19 pandemic. Projects not yet started as of the end of March 2020 were deferred to future fiscal years. As part of COVID-19 response, Reprogramming reduction of \$4,427,936 requested in April/May 2020.
New England Signals Program. PG00033. C.EN.101839.	31	Not in OYIP	\$25,376	\$25,376	The completion of cable replacements and switch machine replacement at Mystic River Bridge and in Branford, CT, switch heater replacements in Rhode Island, grade crossing house replacement at Palmer Street crossing in Pawcatuck, CT, and surge protector replacements in Connecticut.	Procurement delays for materials, equipment, and design services for fuse replacement in Rhode Island, surge protectors in Rhode Island, RTU upgrades at four CT locations, and switch heater replacements at View I/L and Orms I/L resulted in less than anticipated spending against plan.

Capital Renewal Detail: Amtrak System-wide continued on the next page >>

## Capital Renewal Detail: Amtrak System-wide (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
New England Structures Program. PG00034. C.EN.101840.	31	Not in OYIP	\$117,873	\$117,873	The needed abutment upgrades at locations along the AS & AB lines as well as performing bridge timber replacement at the Connecticut River Bridge on the AS line.	Changes to execution of CT49.73 bridge timber and steel upgrades project from force account to contractor resulted in additional design requirements resulting in delays and less than anticipated spending for the project. Design costs for several other projects favorable to plan. Reprogramming reductions.
New England Substations Program. PG00035. C.EN.101841.	31	Not in OYIP	\$31,761	\$31,761	Completed the Saybrook Transformer Replacement and 5 battery replacements despite procurement delays.	Norton Transformer project delayed due to procurement challenges. Reprogramming reduction of \$500,000 requested as part of COVID-19 reductions in April 2020.
New England Track Program. PG00036. C.EN.101842.	31	Not in OYIP	\$55,708	\$55,708	Not applicable.	Production impacted based on availability of force account labor due to COVID-19 impacts, reduction in overtime, and prioritization of other project work.
New York Catenary Program. PG00037. C.EN.101843.	31	Not in OYIP	\$10,255	\$10,255	Completed the replacement of trolley/auxiliary wires on Track 1 at Hunter Interlocking MP10.5, (this replacement was required because the existing wires were causing multiple failures at Track 1 site.), completed the upgrades of the failing station post insulators supporting 12.5 KV feeder cable; static line and catenary steel at Hellgate Line between MP 12.8 and 13.8, completed the replacement of existing catenary, body and steady spans between Bergen Interlocking and MP3.0 on AZ Line to improve the system reliability and completed the work to procure third rail warning devices.	Restrictions on overtime due to COVID-19, causing a portion of planned work to slip into FY21.
New York Communications Program. PG00038. C.EN.101844.	31	Not in OYIP	\$3,550	\$3,550	Completed the installation of communication hut at Elmora Interlocking.	Planned work was not performed due to the delayed shipment of equipment. Incomplete project work to be performed in FY21 under Systems Communication Program.
New York Facilities Program. PG00039. C.EN.101845.	31	Not in OYIP	\$15,976	\$15,976	Completed the heating system rehabilitation at Adams Facility.	Restrictions on overtime due to COVID-19, causing a portion of planned work to slip into FY21.

Capital Renewal Detail: Amtrak System-wide continued on the next page >>

## Capital Renewal Detail: Amtrak System-wide (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
New York Signals Program. PG00041. C.EN.101846.	31	Not in OYIP	\$395,101	\$395,101	Completed FY20 scope to replace the code relays at East River Tunnel Lines 1/4, completed the upgrade of RTU at Menlo Interlocking MP23.7, completed FY20 scope to replace Switch Machine Upgrades at Morris Interlocking MP58.0. Installed eleven switch machines in total through end of Q4, completed FY20 scope for the installation of code and high-speed rail control relays, completed FY20 scope to replace the transponders at various locations, completed the replacement of existing signal lights to LEDs at west end of Hunter Interlocking, completed replacement of damaged main feeder cable between Inwood Central Instrument House (MP9.9) and transformer located on west of Track 2 and completed the replacement of event recorders at Delco and Adams Interlocking.	A Reprogramming of AOP to \$2,728,234. Resources reallocated to other projects and the project incurred Force Account overtime restrictions. A portion of the planned work slipped into FY21.
New York Structures Program. PG00042. C.EN.101847.	31	Not in OYIP	\$115,083	\$115,083	Completed generator rehabilitation at 1st Avenue pumping station for East River Tunnels, completed Portal Bridge Timber Ties replacement at Track 2, completed lighting fixture replacement at "JO" interlocking, completed retaining wall upgrades at Union Interlocking, completed motor drive replacement at Pelham Bay Bridge, Portal Bridge and Spuyten Duyvil, completed the bearing rehabilitation at Washington Ave Bridge, completed the North River Tunnel - 11th Ave Vent Shaft Automatic Transfer Switch work, completed the replacement of the circuit controllers at Portal Bridge that will improve the reliability of the bridge and completed the bench wall diamond plate replacement work at East River Tunnels.	Restrictions on overtime due to COVID-19. A portion of planned work slipped into FY21.
New York Substations Program. PG00043. C.EN.101848.	31	Not in OYIP	\$125,326	\$125,326	Completed the Morris/Grundy cut section upgrade work, completed the Van Nest Sub 46 breaker installation work, completed Metuchen #38 RTU/Battery Charger replacement, completed Waverly Substation #40 B&F Switch Replacement and completed the replacement of the trough covers at Morrisville Substation #34.	A Reprogramming of AOP budget to \$4,843,039. Due to COVID-19 resources were reallocated to other projects and the project incurred Force Account overtime restrictions. A portion of the planned work slipped into FY21.
New York Track Program. PG00044. C.EN.101849.	31	Not in OYIP	\$3,144,277	\$3,144,277	Completed installation of wood ties and timbers, concrete ties, rail, insulated joints, frogs, as well as joint eliminations.	A Reprogramming of AOP budget to \$32,474,636. Unplanned emergency work and the need to incur more than anticipated overtime from Force Account staff.

Capital Renewal Detail: Amtrak System-wide continued on the next page >>

## Capital Renewal Detail: Amtrak System-wide (Amtrak-owned) [cont.]

Accomplishments and explanations of variance are submitted by Amtrak for the entire project or program. All data is published, as submitted by the RoW owner.

Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Production Concrete Tie/Timber Replacement Program. PG00067. C.EN.101870.	31	\$424,141	\$5,532	-\$418,610	538 concrete ties were installed between West Fair and Ham during nightly outages.	Portal to Allied Track #2 project work was postponed.
Production High Speed Surfacing Program. PG00060. C.EN.101855.	31	\$2,176,652	\$2,128,856	-\$47,796	Performed 1,232,096' of Surfacing between High Speed and T/O & X/O.	Undercutter settlement surfacing work was performed on Undercutter project numbers in NED for the last few months of FY20. Some off program work done in FY20. Some of the equipment also had downtime due to repairs that needed to be made.
Production Wood Tie/Timber Replacement Program. PG00071. C.EN.101858.	31	\$2,424,875	\$339,679	-\$2,085,196	Additional ties were installed as a result of coordination with SEPTA. Neutral rail temperatures were adjusted. Interlockings were hardened with new timbers.	In Fall 2019 weekend outages were provided. Distressing was performed as a result of heat kink issues.
Rail Grinding Program. PG00064. C.EN.101794.	31	\$97,640	\$9,770	-\$87,870	Not applicable.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
Rail Replacement Program. PG00003. C.EN.101856.	31	\$2,539,528	\$123,279	-\$2,416,249	Despite being deferred due to COVID, the Program was still able to start some work earlier in the fiscal year on the AP Line and in some areas of Mid-Atlantic South.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project to a future fiscal years.
Signal System Upgrades to 562 - Park to Paoli. C.EN.101770.	31	Not in OYIP	\$5,876,485	\$5,876,485	The implementation/installation of 562 signal upgrades from Park I/L to Thorn I/L, fabrication and long lead item procurement of 562 signal equipment for Thorn to Downs and portion of Downs to Glen and partial design for Thorn to Glen.	Two Change Requests were submitted to cover increased spending on the project. Increased Production Force Account were placed on the project to keep working during COVID-19, to accelerate the in-service date of FY20 scope portion of overall program. Lancaster Shops accelerated scope to construction of the 562 signal upgrade equipment for multiple blocks in overall 5 year plan.

Capital Renewal Detail: Amtrak System-wide continued on the next page >>

## Capital Renewal Detail: Amtrak System-wide (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
TLS Concrete Tie Replacement Program. PG00057. C.EN.101652.	31	\$4,696,579	\$3,158,963	-\$1,537,616	The TLS program installed 16,250 concrete ties and 62,418 Ft of CWR across the following locations: Hook to Holly Tk 3, Lehigh to Mantua Tk 1, Delair Branch Tk 1 Conrail Derailment Repairs, and Bridge to Grove, Tk 2	Production schedule experienced many adjustments throughout the fiscal year. The most significant change occurred due to COVID-19 cost reduction efforts. All OT was removed from the estimate/schedule. The schedule was adjusted to compensate for the removal of OT. In FY20, 26% of reported hours were Overtime. This is an improvement over the 33% experienced in FY19.
Total Track Renewal Program. PG00061. C.EN.101871.	31	\$1,235,695	\$14,297	-\$1,221,398	Completion of Newark Station Track A and 30th St. Track 9 block tie projects were completed along with various ballasted track locations.	Scope elements and locations were added to the program that were not originally included in the estimate. CWR and water proofing was added to Newark Station block tie scope. Ballasted Track renewal was added at Baldwin Track #1.
Track Rehabilitation Program. PG00063. C.EN.101859.	31	\$2,682,361	\$106,296	-\$2,576,064	A new yard track and wayside switch in Groton, CT, ties at West Yard (Wilmington, DE), and switch replacement at Penn Coach Yard (Philadelphia, PA).	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred some of the projects in this program to future fiscal years.
Track Undercutting Program. PG00062. C.EN.100269.	31	\$6,434,359	\$4,027,997	-\$2,406,362	The Undercutting program completed 121,483 Ft of undercutting across the following locations: Grove to Bridge Tk 1, Lehigh to Mantua Tk 1, Groton to High St Tk2, Crescent to Shaw's Cove Tk 1 & 2, Conn to Crescent Tk 1, MP 187.8 to Pawtucket Tk 1 & 2, Kingston to Davisville Tk 2.	Production schedule experienced multiple adjustments throughout the fiscal year. The most significant change occurred due to COVID-19 cost reduction efforts. As a result, a significant schedule change occurred on both the Mid-Atlantic and New England Undercutters. This plan gave more time to the work group, and minimal OT was required. In FY20, 18% of reported hours were Overtime. This is an improvement over the 33% experienced in FY19.
Turnout Renewal Program. PG00065. C.EN.101860.	31	\$2,914,130	\$1,157,813	-\$1,756,317	Performed 27 Installs in FY20 as well as transition panels where required and some additional track work.	Several planned T/O installs for FY20 had to be moved into FY21 due to scheduling conflicts or material issues (Lawn and Gunpow locations.)
Washington to Boston ARINC to AMTEC Software Upgrade Project. P000085. C.EN.101767.	31	\$1,821,230	\$3,422,700	\$1,601,470	Not submitted.	Not submitted.

Capital Renewal Detail: Amtrak System-wide continued on the next page >>

## Capital Renewal Detail: Amtrak System-wide (Amtrak-owned) [cont.]

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Project/Program	BCC Segment	FY20 Planned segment expenditure	FY20 Actual segment expenditure	Segment Expenditure Variance	Submitted project/program accomplishments	Submitted project/program explanation of variance
Wilmington Training Center Parking Access Improvements Project. P000119. C.EN.101879.	31	\$396,057	\$0	-\$396,057	Preliminary Design established.	Due to the impacts of COVID-19 that the business incurred, Amtrak deferred this project until FY21.
Region Total		\$54,069,956	\$50,826,734	-\$3,243,222		

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