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New Analysis Finds 85 Days of "Major Infrastructure Failure" With Five-Hour Delays in Century-Old Tunnel and Bridge

Data Shows Almost 2,000 Lost Hours for Passengers, Findings Demonstrate Urgency of Gateway Program to Relieve Delays and Improve Service

NEWARK – New analysis that was issued today during a meeting of the Gateway Program Development Corporation (GDC) Board of Trustees found dramatic delays throughout the Northeast Corridor caused by failures at the North River Tunnel and Portal Bridge, both of which are 108 years old.

The analysis, based on five years of data provided by NJ TRANSIT and Amtrak, found 85 days between the beginning of 2014 and the end of 2018 where infrastructure failures in the tunnel and on the bridge caused more than five hours of delays for NJ TRANSIT and Amtrak passengers. In total, the incidents caused 112,800 minutes of train delay, or almost 2,000 lost hours in extra transit time.

"Regular delays are unacceptable for any amount of time, but these 85 major delay days are particularly bad, adding up to more than one day a month of major delays." said GDC Board Chair and New Jersey Trustee Jerry Zaro. "Commuters are rightly frustrated at being forced to arrive very late to work and parents dismayed over lost time otherwise spent with family and children. It's past time to build Gateway and give passengers the reliability they pay for and deserve."

"The North River Tunnel and the Portal Bridge might only represent a few miles of track, but they link 20% of the nation's economy and carry 200,000 people per day. Incidents that start here ripple up and down the entire Northeast Corridor, particularly when they are causing five hour delays and more. That's why we're working so hard to get Gateway funded and built," said GDC Board Vice Chair and Amtrak Trustee Anthony R. Coscia.

"These major delay days caused by century-old infrastructure are too frequent, and riders have been forced to become too used to them," said New York GDC Trustee Steven M. Cohen. "Building Gateway is the most effective way to make sure that these unacceptable delays stop."

Other major findings of the analysis include:

- The incidents on these 85 days alone accounted for 35% of all train delays and 43% of all delay minutes attributable to the North River Tunnel and Portal Bridge between 2014 and 2018
- The rate of total delayed trains doubled from 11.8% on an average day to 22.6% on days where there were major incidents at either Portal Bridge or the North River Tunnel
- There were 65 major infrastructure failure incident delay days involving the North River Tunnel and 18 related to mechanical failures of the Portal Bridge. Two days had combined Portal Bridge & North River Tunnel impacts.
- Most of the major incidents involving Portal Bridge failure occurred when the bridge would not close properly after being opened for marine traffic and testing, with some of the remaining incidents resulting from bridge fires
- Even when the Portal Bridge is closed properly, regular openings of the bridge for marine traffic and testing resulted in over 1,000 delays on 230 days between 2014 and 2018
- Power transmission or catenary failures generated 35% of major delays at the North River Tunnel, while a full 65% were caused by other failures including signal problems or track conditions

The data analysis was conducted by Northeast Corridor Commission staff at the request of Amtrak and NJ TRANSIT on behalf of the Gateway Program Development Corporation. It involved examination of 3 million train movements and some 750,000 daily delay records compiled from Amtrak, NJ TRANSIT and other Northeast Corridor operators. The findings focus on the 1.5 million train movements in the New York-New Jersey metropolitan area with additional analysis needed to quantify the ripple effect of these delays on services outside the local area.

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The Gateway Program is the most urgent infrastructure program in the country – a comprehensive rail investment program that will improve commuter and intercity services, add needed resiliency and create new capacity for the busiest section of the Northeast Corridor (NEC). The NEC is the most heavily used passenger rail line in the country hosting more than 2,200 train movements and 800,000 passenger trips daily. The Gateway Program Development Corporation (GDC) is a New Jersey not-for-profit entity with Board members representing Amtrak and the States of New York and New Jersey. It was incorporated in 2016 to oversee and effectuate the Gateway Program in coordination with federal and local partner agencies. Follow the GDC on Twitter @GatewayProgNews.

Analysis of Official Northeast Corridor Railroad Operating Delay Data
Summary of Incidents Caused by Portal Bridge and/or North River Tunnel Between 2014-2018
July 2019

Background

Analysis of more than 3 million train movements and 750,000 daily delay records reveals Portal Bridge and the North River Tunnel are responsible for thousands of incidents resulting in hundreds of hours of train delay over the past five years.

Analysis of data provided by Amtrak and NJ TRANSIT confirms that service disruptions in the very congested territory between Newark, NJ and New York Penn Station can quickly escalate to involve dozens of Amtrak & NJ TRANSIT trains. "Major incident days" (in which more than 5 hours of train delays accrue because of failures involving the Portal Bridge or North River Tunnel) occur on an unplanned basis and so severely disrupt the complex operation of the NEC that commuter & intercity trains up and down the Corridor can be affected.

Some of the complicating factors that drive delay in this territory are:

- Location and traffic volume: Both Portal and the NRT are within 7 miles of New York. As many as 24 trains per hour occupy this busy segment during peak hours.
- Asset complexity: Each asset is a complex system of systems, including tracks, superstructure, signals, tractive transmission and signal power circuits, catenary (and 3rd rail power in NRT), and gearing and motors to operate Portal Bridge. There are many potential points of vulnerability that must operate without fail to prevent delays.
- Operational chokepoints: Both Portal and the NRT are two-track bottlenecks. The distances between locations to allow trains to switch tracks in the event of an obstruction are 1.4 miles around Portal and 3.2 miles around the NRT. There are limited options to maneuver trains around points of failure.
- Accessibility: Each asset presents challenges for personnel to access to diagnose and remedy problems on-the-ground. Tracks must be de-energized while personnel diagnose problems in difficult conditions. This can add time to problem remediation and operational recovery.

The analysis focuses primarily on "major incident days" to demonstrate the magnitude of extended disruptions in this critical territory.

Summary Findings

Between 2014 and 2018, there were 85 days where Portal Bridge and/or the North River Tunnel caused trains collectively to accrue 5 or more hours of delay. These major incident days accounted for 35% of all train delays and 43% of all delay minutes attributed to either Portal or the NRT.

- The 85 major incident days between 2014 and 2018 accounted for 5.5% of trains operated but 10.1% of all late trains to, from, and through Penn Station.
- The rate of delayed trains doubles from 11.8% to 22.6% on major incident days caused by Portal Bridge and/or the North River Tunnels.
- 26.7% of NJT trains were late on major incident days compared to 9.6% on all other days.

- 36.1% of Amtrak trains were late on major incident days compared to 25.2% on all other days.
- 15.6% of LIRR trains were late on major incident days compared to 9.2% on all other days.

North River Tunnel

There were 65 days where incidents in or around the North River Tunnels resulted in more than 5 hours of train delay between 2014 and 2018.

- Infrastructure issues caused 45 of those incidents, resulting in 2,500 delayed trains and 65,800 train delay minutes.
- A typical day in which the system experiences a major infrastructure failure results in delays to an average of 38 trains for 27 minutes each.

Signal Problems

- Signal events generated 13% of the delay minutes. They were broadly divided between signal power or control issues and track occupancy light (TOL) issues.
- TOL issues were more frequent as track circuits can be affected by broken rail, failed insulated joints, standing water or other defects in the signal circuit.

Track Conditions

- Track events generated 31% of the delay minutes and 20 of the 65 days.
- There were eight days where track defects affected on average 50 trains per day.
- The combination of traffic density and time required to find, diagnose and remedy track defects as described above can have substantial impact on performance.

Overhead Power

- Catenary or transmission power failures generated 35% of the NRT delay minutes in the 65 major incident days.
- Traction power incidents were more frequent but catenary wire incidents result in more minutes per delay, as damaged wire and pantographs must be cleared before trains can run.

Portal Bridge

(NOTE: Delays for bridge openings have declined sharply since November of 2016. The main commercial user of the river diverted its cargo to truck. Additionally, in 2019 Amtrak successfully petitioned the Coast Guard to expand the hours that the bridge could remain closed to not interfere with peak train service periods. Bridge openings for marine traffic did see a small uptick toward the end of 2018. The bridge opens not only as traffic demands but also for periodic testing to ensure it can open if required.)

Even when it closed properly, Portal Bridge openings caused delays on 230 days between 2014 and 2018. Portal Bridge openings resulted in 1,000 train delays and 230 hours of train delay.

There were 18 major incident days (failure to close or other) caused by Portal Bridge between 2014 and 2018 resulting in almost 780 hours of train delay.

- Failure to lock: Delays associated with Portal Bridge are almost always attributable to its failure to lock after having been opened. Thirteen major incidents occurred in the study period resulting in almost 39,000 minutes of train delay.
- Bridge fires: Complex circuitry for traction power, signal power and power to operate the bridge, all isolated to enable the bridge to open and close, creates opportunities for circuit overload. Five major trackside fires resulted in 8,000 delay minutes.

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