

## **APPENDIX**

**Senate Legislative Oversight and  
Assembly Judiciary Joint Meeting  
Testimony of Richard T. Hammer  
Commissioner, NJ Department of Transportation  
October 21, 2016**

- Good morning Mr. Chairmen and members of the Committee.
- Thank you for the opportunity to speak with you today as Commissioner of the NJ Department of Transportation and as Chairman of NJ TRANSIT's Board of Directors.
- First, I'd like to express my condolences again to the families of Fabiola Bittar de Kroon and to all those who were injured or impacted by the Hoboken Terminal accident last month and also to the families of Joseph Barthelus and Jesy Garcia, the victims of the Newark bus accident.
- I understand you have several questions regarding NJ TRANSIT's operations and I am here to answer them today.
- As the third largest agency in the country as well as the largest statewide agency in the nation, NJ TRANSIT operates more than 1,800 buses a day, nearly 700 trains each day, three light rail systems and a statewide paratransit network.
- We serve customers on 254 bus routes through 384 municipalities around New Jersey and into Philadelphia on bus, and operate 12 commuter rail lines through 116 towns in New Jersey and into Philly and New York City.
- Mr. Chairmen, safety has and will always be NJ TRANSIT's highest priority. To that end, the Hoboken crash was a very sad day in NJ TRANSIT's history.
- The National Transportation Safety Board (NTSB) is investigating this accident and by their directive NJ TRANSIT is unable to discuss potential causes or anything associated with the accident until the conclusion of their investigation.
- The NTSB is expected to deliver a FINAL report within a year from the date of the accident.
- The Federal Railroad Administration (FRA) is also conducting a parallel review.
- While we cannot talk specifics, I can – and will – talk to you about our operations, relationships with regulatory agencies, safety programs and projects and organization as a whole.

- As you know, one week ago, the NJ TRANSIT Board of Directors appointed Steve Santoro, as the permanent Executive Director. On behalf of the NJ TRANSIT Board of Director, we look forward to working with Steve in the coming months to advance NJ TRANSIT into the future, safely.
- AT NJ TRANSIT, safety is job number one. We work very closely with the FRA as we do all of our regulatory agencies.
- In fact, this morning Executive Director Santoro is meeting with the FRA Regional Director. Under Steve's leadership and commitment to work with the FRA, every day, NJ TRANSIT will work to be at the top of our game.

### PTC

- I would like to lead off with an area I know is of particular interest, Positive Train Control.
- I want to be crystal clear: NJ TRANSIT will meet the 2018 deadline for implementation of PTC. We have been working on this in a number of ways.
- PTC is complex and challenging, particularly for a railroad that has as vast and extensive territory as NJ TRANSIT and requires inter-operability coordination with freight railroads Amtrak and Metro North, with whom we share tracks.
- PTC is currently a \$275 million safety initiative which the State has fully funded, and NJ TRANSIT is prepared to fund any additional costs.
- Chairmen, we have made substantial progress on PTC. Here are just two examples:
- First, one of the major PTC challenges for railroads all across the country has been acquiring the radio frequency spectrum needed for all the PTC components to "talk" to each other, from the train to the track to the central control computer.
- The NJ TRANSIT Board of Directors will be voting on the acquisition of the spectrum system at a special meeting next Wednesday.
- Next year we will have our PTC test track segment up and running on six miles of the Morris and Essex Line. This will allow for a comprehensive- pressure testing of the systems engineering, installation and communication. Successful testing will lead to the full, strategic rollout of the PTC on the NJ TRANSIT system.
- Executive Director Santoro recognizes the importance and will be enhancing his PTC Project Team with additional technical staff to meet the deadline of 2018.
- I repeat: We will meet that challenge of the PTC 2018 deadline.

## Rail Operations

- Continuing our focus today on rail operations, NJ TRANSIT works with the FRA, on a daily basis to achieve a common mission to enable the safe, reliable, and efficient movement of people.
- On behalf of NJ TRANSIT, Executive Director Santoro has retained the expertise of Peter Cannito, a widely-respected rail operations executive, to assist Steve to ensure that NJ TRANSIT's rail operation is properly aligned and has the bandwidth and talent to meet and exceed safety standards of the FRA.
- NJ TRANSIT is also recruiting a compliance officer with expanded authority, reporting directly to the Executive Director.
- I also want to highlight two safety initiatives that were put in place immediately following the Hoboken accident.
- Trains entering Hoboken and the Atlantic City rail terminals, where customers stand awaiting trains at the head-end, must now reduce their speed to 5 mph. Previously, it was 10 mph.
- In addition, NJ TRANSIT is now requiring that there must be a conductor on the head end – also known as the front cab car – with the engineer when entering Hoboken and Atlantic City terminals.
- With that said, I recognize a great deal of information is being reported in the press on NJ TRANSIT statistics. I would like to take a moment and read you NJ TRANSIT safety stats as reported on the FRA website. (I am happy to provide the committee a link to the source data as reported by the FRA).
- So far this year, NJ TRANSIT has fewer total accidents and incidents (accidents and incidents are defined by damage cost thresholds.)
- Between 2010 and 2015, NJ TRANSIT's total accidents per year have decreased by one-third. NJ TRANSIT train accidents per mile in that timeframe have decreased by 35 percent, and in each year since 2010, they have been lower than they were in 2007.
- NJ TRANSIT also had 24 percent fewer accidents in 2015 than in 2007 and is on pace for far fewer in 2016.
- We attribute many of these positive gains in safety performance to the establishment of an Office of System Safety (OSS) in May 2014. OSS consolidated agency-wide safety functions across all transit modes and in the workplace.
- OSS focuses on promoting the health and safety of the agency's customers and employees and preventing accidents and injuries. OSS coordinates and manages incident prevention efforts and develops a more rigorous safety culture.

- NJ TRANSIT is committed to continue on the positive gains in safety performance in the coming months and years.

### **NJ TRANSIT Budget**

- Mr. Chairman, there have been numerous inaccurate media reports that state funding to NJ TRANSIT has declined – this is categorically wrong.
- NJ TRANSIT funding fluctuates slightly from year to year, but continues to trend upward. FY 2017 includes more than \$30 million in additional funding compared to FY 2012. The upcoming FY 2017 budget includes nearly 125 million dollars more than the five years prior to this administration 2005-2009.
- Let me stress: NJ TRANSIT has the resources it needs, the capital and operating resources, to fulfill its mission in keeping the more than 2,000 buses moving and 700 trains traveling each day, and it provides daily Access Link services to our transit-dependent customers.
- On the capital side, the money buys projects large and small, from upcoming rehabilitation of rail stations to the replacement of the Raritan River Draw Bridge.

### **In Conclusion**

- I have been clear in my instruction to Executive Director Santoro that he focus on progressing Positive Train Control and other important safety measures – and that he report publicly on NJ TRANSIT's progress. And that this will be accomplished while other important work – the Portal Bridge project, Superstorm Sandy resiliency and others – continues in earnest. Mr. Santoro is in full agreement.
- These directives, among many other initiatives, represent NJ TRANSIT's continued commitment to provide the safest and most reliable transit system possible to the people of New Jersey. That commitment will not waiver.
- Ladies and Gentlemen, every department in this agency has dedicated men and women, and I am proud of what they accomplish every day – providing safe, convenient, comfortable, and affordable transportation services to our customers and the taxpayers of New Jersey.
- Chairmen, thank you for your time. I look forward to your questions.

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Statement Michael Marino, Director PATH Rail System – Port Authority of NY & NJ

Good morning, Chairman Gordon and members of the Committee. On behalf of PATH and the Port Authority of New York and New Jersey, thank you for the invitation to appear before the Committee today as you discuss the issue of rail Positive Train Control.

I'm Michael Marino, Director/General Manager of the PATH Rail System, a subsidiary corporation of the Port Authority of New York and New Jersey. I've been in this role since 2014, and prior to that I spent 43 years in the railroad industry. With me are the Deputy Director of PATH, Clarelle DeGraffe and Radomir Bulayev, Superintendent of the Power Signals and Communications Division of PATH.

PATH is a 24-hour 7 days-a-week transit system, covering a 13.8 mile route, with 13 stations – 7 of them in New Jersey -- and 350 cars (230 cab cars, and 120 non-cab cars) in operation. While PATH is 7<sup>th</sup> in the nation in terms of total annual ridership, it is second only to the NYC MTA in terms of riders per mile, at 18,978 riders per mile.

Last year, PATH served 76.6 million passengers, and ridership is increasing. This year we project that around 80 million riders will be served. As of September, our average weekday ridership for 2016 was 278,139; up from 269,025 in 2015.

PATH is an essential transportation component across the New Jersey-New York metropolitan region. It has been a catalyst for urban development and economic growth along the corridor it serves. It remains a vital trans-Hudson link for residents, commuters, businesses and visitors.

BUT PATH also is 108-years-old, and requires continual maintenance and investment. The Port Authority's current 10-year capital program calls for \$3.3 billion in spending for PATH, including \$702 million for the Superstorm Sandy recovery and resiliency program.

PATH's chief priority is safety. The safety program has been enhanced over the past several years, due to various lessons learned in the industry. A significant part of our current capital program consists of the Positive Train Control (PTC) and Communications Based Train Control (CBTC) systems. They make up components of Automatic Train Control technology, known as ATC. PTC, as you know, is the safety system mandated by the Federal Railroad Administration for installation by the end of 2018. PATH is on track to meet that federally mandated deadline.

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It should be noted that the Port Authority and PATH are not receiving any federal or state funding to perform these critical – and federally mandated -- safety improvements. The program is self-funded through the Port Authority.

The new PTC/CBTC signal system is PATH's highest priority capital project. It utilizes an advanced signal technology that enhances safety by helping to prevent accidents caused by:

- excessive speed
- collisions
- unauthorized incursions into work zones, and
- movement of trains onto incorrect tracks.

CBTC continuously calculates and communicates a train's exact position, speed, travel direction and safe braking distance. Equipped with this technology, trains will be capable of running more frequently and closer together. That will improve service capacity, enable us to run trains with shorter headways, and increase the system's effective capacity.

The CBTC system also will allow for further enhancements in the future, such as real time information capabilities in PATH stations.

Let me now go into greater detail on the PTC program.

PATH's existing signal system already provides (two) 2 of the four (4) components of PTC required by the law; preventing train-to-train collisions, and preventing movement of trains onto incorrect tracks. These are achieved by utilizing block signal design system with train stops. This automatically keeps trains from colliding when they enter into a zone occupied by another train.

The current signal system also offers broken rail protection through detection by the existing signal equipment, as well as cab alerters and controls that monitor train speeds. The PTC system is designed to enhance existing protections by monitoring and authorizing safe train movements in a centralized control system.

When PTC installation is completed in 2018, it will help provide system-wide protection from potential collisions. PATH will be training over 920 employees in how to use this new system.

Infrastructure and railcar work required to achieve these goals includes:

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- Equipping all 230 of our cab railcars with signal car-borne equipment to allow communications with the new system. As of now work on 209 cars has been completed.
- The replacement of wayside and track signal field equipment along our 13.8-mile route plus train yard tracks, 13 interlockings, which prevent conflicting train movements through crossing tracks, 13 stations with new signal cables and signal equipment, including transponders, track circuits, and wayside communications and radio equipment.
- Installation of 28 signal equipment locations, a new fiber optic data communications system, and a new signal power system.
- Outfitting primary and secondary control centers with all necessary computerized state-of-the-art control equipment. This will allow us to monitor and control all train movements on the main service lines from either location.

Construction and installation of the PTC system requires careful planning and staging. PATH needs to balance maintenance work and capital projects while operating 24/7. We need to make sure we have the time necessary to do the work, while not interrupting daily service – especially during the morning and afternoon rush hours. To achieve this balance, we are working to compress the construction period. Currently, we can work on weekends and week nights only.

In order to do work on our uptown 33<sup>rd</sup> Street Line that connects Jersey City and Hoboken with Manhattan, this required us to suspend weekend service this year. This work began in early August and is on schedule to be completed by the end of this year. This disruption in service provided a disruption for riders which we mitigated by utilizing a free shuttle bus service from the World Trade Center Station uptown along the 33<sup>rd</sup> Street service route. An additional option for riders was the easy transfer, at the World Trade Center, to the MTA's subway lines at Fulton Center.

All of this work also requires robust public communication and outreach campaigns. PATH works closely with the agency's Public Affairs team to provide comprehensive communications to our customers. That outreach includes public open house events, briefings with public officials, and use of traditional and social media. We also employ PATH alerts, the Port Authority website, and marketing materials. I know our video on our PTC/CBTC work has already been shared with you, and further details are available on our website, [panynj.gov](http://panynj.gov).



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Thank you again for the opportunity to participate in today's hearing, and to provide a brief overview of the work we're doing at PATH to improve service, safety and customer satisfaction.

I'm now happy to answer any questions you have.



NJ TRANSIT

ANNUAL UPDATE TO NJ TRANSIT'S  
POSITIVE TRAIN CONTROL IMPLEMENTATION PLAN

DATE

16 APRIL 2015

VERSION 1.0

SUBMITTED IN FULFILLMENT OF 49 CFR PART 236, SUBPART I, § 236.1006 AND 236.1011

Date	Revision	Description	Author
1 March 2010	Original	First Draft	P. Stangas et.al.
15 April 2010	Revision 1	Official Submission	P. Stangas et.al.
9 August 2010	Revision 2	Revised per FRA Provisional Approval dated 9 July 2010	P. Stangas et.al.
16 April 2011	Annual Update Version 1.0	Annual Update due 16 April 2011	P. Stangas et.al.
9 June 2011	Annual Update Version 2.0	Revised to reflect Interoperability information	P. Stangas et.al.
16 April 2012	Annual Update Version 1.0	Annual Update due 16 April 2012	P. Stangas et.al.
16 Apr 2013	Annual Update Version 1.0	Annual Update due 16 Apr 2013	P. Stangas et. al.
16 Apr 2014	Annual Update Version 1.0	Annual Update due 16 Apr 2014	P. Stangas et. al.
16 Apr 2015	Annual Update Version 1.0	Annual Update due 16 Apr 2015	P. Stangas et. al.

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## **1 INTRODUCTION:**

The following constitutes NJ TRANSIT's "Annual Update" to its PTCIP as required by 49 CFR Part 236.1006. This provision requires that the filing railroad report its progress towards achieving the goals for implementation of its PTC system by the RSIA 2008 mandated deadline.

NJ TRANSIT's submission of this "2015 Annual Update" is based on its current Positive Train Control Implementation Plan, Version 3.0, dated 30 September 2011 (Docket Number FRA-2010-0033-0008) and the letter from the FRA granting "provisional approval", dated 5 October 2010 (Docket Number FRA-2010-0033-0003.1). This 2013 update also reflects NJ TRANSIT's Positive Train Control Development Plan (Version 1.0 submitted on 30 September 2011) and FRA comments in response in a letter to NJ TRANSIT dated 23 December 2011, and the revised PTCDP Version 3.0 submitted on 12 October 2012. This version was granted "conditional approval" by the FRA in its letter dated 5 June 2013. NJ TRANSIT addressed those conditions in a response to the FRA in a letter dated 1 August 2013. The FRA subsequently granted approval of NJ TRANSIT's PTCDP in a letter dated 28 January 2014.

Since NJ TRANSIT's PTC Program is now underway and consistent with content in the FRA-approved documents, progress highlights are incorporated. The facts contained below expand on that foundation to comply with the information requested by Federal Regulation.

### **1.1 Executive Summary of Annual Update 2015:**

"NJ TRANSIT's PTCIP Version 3.0, dated 30 September 2011, lists PTC equipment will be installed on approximately 22% of its locomotives in CY2014. NJ TRANSIT installed PTC equipment on one locomotive and one cab car during CY2014. NJ TRANSIT is behind on achieving PTCIP goals of equipping 22% of its locomotives in CY2014. None of the tenant railroads operating on NJ TRANSIT planned to install PTC equipment on locomotives in CY2014."

"NJ TRANSIT's PTCIP Version 3.0, dated 30 September 2011 indicates that zero percent of total NJ TRANSIT trains will be operated in PTC equipped territories with PTC equipped locomotives during CY2014. In CY2014, NJ TRANSIT operated zero percent of its trains with PTC equipped controlling locomotives operating in PTC equipped territory. NJ TRANSIT met the PTCIP goals of zero percent in CY2014."

## **2 BACKGROUND:**

NJ TRANSIT has embarked on the program to equip its commuter rail lines with PTC as mandated by RSIA 2008. As part of this program, NJ TRANSIT filed its original PTCIP on 16 April 2010 as required by law. Subsequently the FRA responded by requesting more information and specific detail with respect to MTEAs. NJ TRANSIT's original and revised

PTCIP described its plan for implementation and deployment of on-board system for each year until the deadline of December 2015. However, the FRA is required to monitor annual progress or other actions underway by each railroad taken towards meeting the deadline as stated below:

**"§ 236.1006. Equipping locomotives operating in PTC territory.**

(a) Except as provided in paragraph (b) of this section, each train operating on any track segment equipped with a PTC system shall be controlled by a locomotive equipped with an onboard PTC apparatus that is fully operative and functioning in accordance with the applicable PTCSP approved under this subpart.

(b) *Exceptions.* (1) Prior to December 31, 2015, each railroad required to install PTC shall include in its PTCIP specific goals for progressive implementation of onboard systems and deployment of PTC-equipped locomotives such that the safety benefits of PTC are achieved through incremental growth in the percentage of controlling locomotives operating on PTC lines that are equipped with operative PTC onboard equipment. The PTCIP shall include a brief but sufficient explanation of how those goals will be achieved, including assignment of responsibilities within the organization. The goals shall be expressed as the percentage of trains operating on PTC-equipped lines that are equipped with operative onboard PTC apparatus responsive to the wayside, expressed as an annualized (calendar year) percentage for the railroad as a whole.

(2) Each railroad shall adhere to its PTCIP and shall report, on April 16, of 2011, 2012, 2013, and 2014, its progress toward achieving the goals set under paragraph (b)(1) of this section. In the event any annual goal is not achieved, the railroad shall further report the actions it is taking to ensure achievement of subsequent annual goals."

This "2015 Annual Update" includes those changes or developments that have occurred, or actual progress, which affect the "Deployment Sequence and Schedule" described in Section 7 of NJ TRANSIT's PTCIP as filed. The annual update per §236.1006 contains the following information to satisfy regulatory requirements:

- Incremental growth in the percentage of controlling locomotives or cab cars.
- Lines equipped with PTC wayside installations,
- Command and control capabilities provided by NJ TRANSIT's Rail Operations Center,
- System linkages via a functional communications network, and
- Interoperability agreements

### **3 NJ TRANSIT PTCIP ANNUAL 2015 PROGRAM UPDATE:**

#### **3.1 Progress Update – 2015 Since submission of its PTCIP, 2012 Update, 2013 Update, 2014 Update and PTCDP:**

Since submission of its PTCIP, the 2012, 2013 and 2014 Annual Updates, and the revised PTCDP NJ TRANSIT has accomplished:

- 1) The dedicated project staff is directing the PTC program with the assistance of a consultant team of technical specialists.
- 2) NJ TRANSIT has awarded a "turnkey" contract for procurement and installation of the PTC system. Notice-To-Proceed (NTP) was issued in August 2011 and work has continued since then.

"The Contractor is required to develop, furnish and install the wayside, on-board and office systems, prepare associated documentation, and provide all other services and support to provide a fully functioning PTC system that will be fully interoperable with Amtrak and freight host and tenant operations."

Since the previous annual update (April 2014) the following activities are underway or have been completed:

- NJ TRANSIT's contract for consultant support services was extended through 2018.
- NJ TRANSIT has issued a formal scope of work to its Contactor for a Locomotive Simulator to certify Locomotive Engineers and train new engineers on the PTC system. NJ TRANSIT has also designed a facility for the Simulator and training staff and resources.
- NJ TRANSIT has prepared a ground based communications network for the PTC Demonstration Test Area, ordered materials, and scheduled field installation of these components (starting in summer 2015) in time for the Demonstration Test.
- The revised track transponder layout for the Demonstration Area has been approved. The design principles will be incorporated in the designs for the remainder of NJ TRANSIT territory
- Developed a formal Configuration Management Procedure. This process has been initiated among the using and affected groups (MOW, MOW, Rail Operations, etc.) and individuals have been assigned responsibility.
- This formal Configuration Management Process is currently being used to track changes to NJ TRANSIT's physical plant and determine impacts on PTC design or the need to resurvey.
- NJ TRANSIT has a draft Risk Analysis Report and Register going through a cycle of review and revision.
- NJ TRANSIT meets regularly with representatives of Conrail to advance and resolve interoperability issues, including installation of cab signaling on the Lehigh Line where NJ TRANSIT is a tenant and Dispatcher control and hand-off between Conrail and NJ TRANSIT. The cab signal installation on the Lehigh Line is nearly complete; however it will not be turned on until PTC is ready for both Conrail and NJ TRANSIT.
- NJ TRANSIT is participating in monthly meetings of an AAR sponsored Interoperability committee and an NEC PTC subcommittee to identify and coordinate technical interfaces and interoperability issues among ACSES and I-ETMS users.

- NJ TRANSIT participates in monthly conference calls with TTCI regarding RF Spectrum frequency management issues and technology to minimize and mitigate interference generated by proximity of I-ETMS and ASCES radio signals.
- NJ TRANSIT participated in a series of site visits, laboratory tests and technical review discussions with the CHER manufacturer to identify inputs, required data logs and confirm equipment capabilities and recording formats.
- NJ TRANSIT participated in laboratory demonstrations, prototype testing, FAT testing environmental testing, preliminary and detailed design review meetings in multiple visits to ALSTOM's plant in Rochester, NY along with its Contractor, Parsons. The cab signal portion of the ASES/ACSES system has been accepted for installation on a prototype vehicle and a subsequent pilot demonstration test.
- NJ TRANSIT has accepted delivery of the following PTC materials that have been approved for purchase and are now in storage awaiting installation:
  - 1591 Track Transponders
  - 1438 Transponder Plugs
  - 136 Transponder Antennas
  - 131 On-Board Computers
  - 202 On-Board Computer data plugs
  - 8 Speed Display Units
  - 242 CHERs
  - 292 Ethernet Switches
  - 147 Micro WIUs
  - 2 STS servers
  - Other on-board materials included track receiver coils, junction boxes, cables, switches, cable harnesses and CTV boxes.
- Designs for placement of WIU and communications equipment are being advanced.
- Meetings to develop training programs for all crafts have occurred and draft training programs are under development
- The Demonstration test of the cab signal system mounted on the two prototype vehicles (one locomotive and one cab car) is anticipated to commence in late spring of 2015.
- NJ TRANSIT has completed the installation of the on-board PTC equipment for the prototype locomotive and cab car. However, only the cab signal elements in this equipment are functional. The Speed Enforcement System (SES) software will not be installed until further lab testing is completed. When NJ TRANSIT wishes to test the SES system it will issue an official request to the FRA seeking their concurrence.
- The prototype Comet V cab car has undergone limited "shakedown" testing of the CSS system, which has led to software and wiring changes.
- The prototype locomotive has been undergoing static testing which has led to software and wiring changes.



- NJ TRANSIT has delivered a multilevel Cab Car and a GP-40 locomotive to the Contractor for prototype installations on these vehicle types.
  - NJ TRANSIT has delivered one production Comet V cab car to the Contractor for installation of the on-board equipment.
  - NJ TRANSIT has incorporated on-board cell modems for radio configuration file updates and maintenance functions, following an Amtrak approach.
  - Two meetings were held among FRA representatives, NJ TRANSIT and its Contractors one to discuss Positive Train Stop Override and Grade Crossing Malfunction processes; a second to review progress and provide a status update and opportunity to inspect the prototype Comet V cab car.
  - NJ TRANSIT has modified the original design by adding three new Interlockings on the Atlantic City Line. The Contractor has been directed to include these new locations in the PTC System Design.
  - PTC Project Management has held meetings with NJ TRANSIT Rules staff to identify changes to NORAC and Special Instructions arising from the introduction of PTC. Proposed changes are being refined and communicated to the NORAC committee for consideration and incorporation.
  - NJ TRANSIT has issued contractual authorization to the Contractor to proceed with the design, acquisition and installation of on-board, wayside, and office based ACSES radios, CMUs and associated equipment.
  - Multiple and progressive design review meetings among the Rail Operations Center staff, the NJ TRANSIT Rules staff and the Contractor and Subcontractors have continued through the course of the year. The HMI between the train dispatchers and the PTC system is being developed to interface with the hardware and software at NJ TRANSIT's Train Management and Control Center (TMAC).
  - The Speed Enforcement System is being prepared for testing in early 2016 the FRA will be informed in advance of any testing and NJ TRANSIT will submit a formal request with supporting documentation to the FRA prior to commencement.
- 3) NJ TRANSIT has leased a segment of 220 MHz RF Spectrum from SEPTA that covers a small and separate portion of NJ TRANSIT territory. NJ TRANSIT's efforts at RF Spectrum procurement have found the open market approach to be unsatisfactory. Furthermore, the FCC issued a directive regarding antenna placement further complicating efforts develop the data radio network. NJ TRANSIT is currently pursuing subleasing RF Spectrum from another commuter rail agency, while simultaneously communicating with two other license-holders of the required spectrum. If either existing license-holder agrees to provide RF Spectrum, such an acquisition would be complicated by its "sole-source" nature (due to NJ TRANSIT Procurement Rules). Concurrently, NJ TRANSIT has obtained permission from an existing RF Spectrum license holder to perform pilot demonstration tests of the data radio when such tests are scheduled.
- 4) Based on the current status of RF Spectrum acquisition, NJ TRANSIT is preparing another RF Spectrum Request for Proposal to the commercial market. NJ TRANSIT may

be forced to obtain licenses from multiple sources in order to obtain sufficient coverage for its operating territory. Simultaneously NJ TRANSIT is pursuing legal assistance with FCC licensing and RF Spectrum legal issues.

### **3.2 NJ TRANSIT'S PTC PROGRAM IS SCHEDULED IN THREE PHASES:**

Phase I - Prototype Program: This phase requires the contractor to prepare a prototype version of the functioning components effectively "proving" the design concept. NJ TRANSIT must approve the results of this test prior to authorizing the next phase. The PTCDP (revised version 3.0 referenced above) was completed and submitted and updated as required, as part of the Phase I effort.

Phase II- Demonstration/Pilot Program: This phase requires the contractor to develop the prototype equipment for a field test. This will involve a field installation of the wayside equipment, mounting the on-board equipment on two different vehicles (one locomotive and one cab car), and simulation version of the NJ TRANSIT Rail Operations Center ("office") interface at a wayside location linked via a temporary communications network. This demonstration test is designed to prove the functionality and reliability of the technology and components in a "real world" application and document those results. Planning for this effort is now underway by the Contractor and being overseen by NJ TRANSIT. In order to accelerate progress, NJ TRANSIT has authorized early start of certain Phase II activities that can occur in parallel with Phase I activities, where such events are not dependent upon approval of a prior serial event.

Phase III - Full System Build Out: Once NJ TRANSIT verifies that the Phase II test fulfills FRA and NJ TRANSIT requirements, authorization for the full build-out will be given. At that time a full production, installation and test program will commence, in conjunction with associated training for maintainers, dispatchers, engineers, vehicle technicians etc. Revisions to operating rules and practices will be prepared. Specific equipment and protocols for interoperability will be implemented. Additionally all necessary supporting documentation including the Positive Train Control Safety Plan (PTCSP) will be assembled and forwarded to the FRA for review and approval to obtain system certification. In order to accelerate progress, NJ TRANSIT has authorized early start of certain Phase III activities that can occur in parallel with Phase I and Phase II activities. All such activities will be carefully selected to avoid any events that require FRA Safety Certification or events serially linked to another activity not previously accepted by NJ TRANSIT.

### **3.3 PROGRESSIVE IMPLEMENTATION AND DEPLOYMENT OF ON-BOARD SYSTEMS:**

The Deployment Schedule is based on wayside work occurring in parallel with the vehicle work. The wayside activity is planned to take 36 months to complete the 322 miles of NJ TRANSIT routes. This wayside installation will commence as soon as the prototype is accepted and will be completed within 36 months. NJ TRANSIT is committing three (3) force account gangs to complete NJ TRANSIT's 101 existing and three new interlockings and maintain a production rate of approximately 3.0% of the interlockings per month, contributing to the increased productivity is the plan to

"nest" some interlockings. This reduces the number of installations since closely-based interlockings are consolidated. Also occurring in parallel will be the office work. The objective is to have the three key system elements (vehicle, wayside and office) being installed concurrently to approach completion in the same time period. Additional activities occurring simultaneously include:

- Modifications to NJ TRANSIT's Train Management and Control (TMAC) facility at Rail Operations Center (ROC)
- Verification and validation of the track database for PTC
- Establish and implement a Configuration Management program
- Train NJ TRANSIT engineers to operate using PTC System
- Revise NJ TRANSIT Rule Books and other critical documents to reflect PTC System operating rules and practices.

As has been previously explained, the program and deployment described in the PTCIP was severely impacted by Hurricane Sandy (Fall 2012). Specific effects are explained below. In summary, the initial deployment plan is no longer feasible so NJ TRANSIT is revising and adapting to the situation in a cooperative manner with its Contractor and NJ TRANSIT resources.

The Contractor will retrofit all designated rolling stock with equipment and material provided by the vendor. This will include installation of a new SDU/ADU unit, mounting brackets for radios, antennas, and all other on-board equipment, removal of old event recorder and replacement with a new CHER, cabling and connections, ASCES II card files, speed sensors, a new SES, MCP radio, associated alarms and switches. Rolling stock to be equipped is described in Section 8 *Rolling Stock* of the PTCIP with updated fleet information in Section 3.4 of this Annual Update.

NJ TRANSIT's program to retrofit its locomotive and cab car fleet with the ASES II PTC on-board equipment is shown in Table 3-1 below. This information was originally derived from the PTC Deployment Schedule Contained in Section 7, "*Deployment Sequence and Schedule*" of the PTCIP. The retrofit dates and production rates have been slightly revised (from the original) to reflect productivity capabilities and fleet availability. The table highlights the equipment type, fleet size and relative percentage and the duration of the program to retrofit each type of vehicle. The rate of production by equipment type is shown, along with start and end dates of the retrofit program. Typically the vehicle retrofits will commence at slower rate than shown, and the pace will accelerate to a greater rate as the program becomes more repetitive, so an average production rate was used.

Once each vehicle is outfitted with the on-board ASES II equipment, it will then be returned to service, although the ASES II system will not be fully functional until all wayside work, office work and testing and commissioning is complete and system certification is received

Table 3-1 - Fleet Deployment Schedule

NJT Fleet	Fleet Size	Fleet %	Retrofit Program (months)	Monthly Rate of ASES II Equipment Retrofits	Retrofit Start	Retrofit End
Electric Locomotive	65	13	36	2.0 % of Electric Locomotive Fleet per month	July 2015	Jan 2018
Cab Car	161	32	42	4.0 % of Cab Car Fleet per month	July 2015	Dec 2018
Electric Multiple Units (Arrow III, includes 100 Married Pair and 30 Singles)	130	26	42	3.0 % of EMU Fleet per month	July 2015	Dec 2018
Diesel Locomotive (includes Dual-Power)	145	29	42	3.5 % of Diesel Locomotive Fleet per month	July 2015	Dec 2018
<b>Grand Total</b>	<b>501</b>	<b>100</b>	NA			

As PTC equipped vehicles are returned to revenue service and wayside installations are completed sequentially on each line; and communications links to TMAC and are tested and commissioned, NJ TRANSIT can derive the benefits of PTC technology by operating using

the PTC system on selected routes prior to as soon as possible, provided that the FRA has issued system certification or some type of temporary waiver to operate in revenue service in a "testing mode." NJ TRANSIT is also considering "partial" PTC implementation. If approved by the FRA, NJ TRANSIT could provide civil speed enforcement as transponders are installed along the right-of-way. As rolling stock is modified with the on-board PTC installation any trains so equipped would be civil-speed-limited by the SES portion of the system and the CSS system is functioning at all times.

This schedule for implementation and deployment of the on-board system has been extended from that expressed in the April 2014 Annual Update. This schedule is based the actual August 2011 NTP of the Contract, projected schedule for completion of prototype and factory acceptance testing, projected completion of demonstration program, installation and commissioning of on-board equipment and constraints on loss of vehicles from revenue service.

These delays to implementation have arisen from the extended impacts of Hurricane Sandy. The difficulties caused by Sandy included shutdown of NJ TRANSIT commuter rail service, loss of its Rail Operations Center, loss of traction power substations, communications and signal system elements, damage to track and infrastructure, and loss of a significant portion of its rolling stock. Furthermore NJ TRANSIT's Contractor was shut down for over week to due effects of the storm. NJ TRANSIT was unable to provide staff resources to perform survey work, assist the Contractor, and provide required technical documentation; moreover, the damage required modification to some existing infrastructure documentation. Moreover, NJ TRANSIT periodically improves or modifies its physical plant. These actions have required a repetition of survey activity and updating the current database to conform to configuration management requirements.

The PTC Program schedule has also been affected by other issues. These include technical development of the on-board components (it has simply taken longer than originally anticipated). As laboratory and prototype testing has progressed it reveals additional design or practical operational considerations that must be addressed before advancing to the next step. While this has slowed progress, it helps to assure a more reliable and functionally sound product.

The acquisition of RF Spectrum has been and remains a major dilemma. NJ TRANSIT expended time and funds to examine other alternative technologies to replace the need for 220 MHz RF Spectrum. Unfortunately this research proved futile, leaving NJ TRANSIT still seeking the necessary bandwidth. Additionally, NJ TRANSIT needs to upgrade its communications backbone, the ground-based network that supports PTC. This too has proved to be more difficult than anticipated, particularly in light of the damage from "Sandy" and the objective to "harden" or protect more infrastructure and system resources from potential damage. Finally the FCC directive on antenna placement has added to the difficulties of choosing optimal sites for data radio antennas. NJ TRANSIT no longer has the option of placing every antenna to achieve the most favorable signal propagation; placement must incorporate other non-broadcast factors.

The information provided above is presently accurate and reflects projected service requirements. Ultimately vehicle fleet count and equipment type will be subject to revision throughout the course of the program. NJ TRANSIT reevaluates its need for motive power (diesel, electric or dual power), cab cars, EMUs and spares frequently based on current and future service needs, funding, and the durability of the existing fleet. All updates and changes will be reported regularly to the FRA in these annual updates.

### **3.4 ROLLING STOCK DESIGNATED FOR PTC EQUIPMENT INSTALLATION:**

NJ TRANSIT will equip as many locomotives, EMUs, and cab cars in the rail operations fleet as possible with the onboard ASES II PTC system prior to December 31, 2015 consistent with the requirements of 49 CFR Part 236. Any vehicles not completed by the deadline will be completed as soon as possible after the deadline. Equipment listed is anticipated to be in the active fleet inventory unless otherwise noted.

The information in this Section describes the onboard implementation consistent with the present NJ TRANSIT Fleet Plan. The Fleet Plan is subject to change based upon factors that include budget, operational needs, ridership, and schedule modifications. Additional vehicles may be acquired or other changes not reflected below prior to December 31, 2015, and this information will be updated if and when this may be necessary. Hurricane Sandy may impact the specific vehicles designated for retro fit with the PTC system, however, this has not been confirmed at this time.

The following existing active NJ TRANSIT vehicles will be PTC equipped:

- 84 Comet V cab cars (numbered 6000 through 6083, consecutive)
- 52 Multi-Level Cab Cars (numbered 7000 through 7051, consecutive)
- 29 ALP-46 locomotives (numbered 4600 through 4628, consecutive)
- 10 F-40 locomotives (numbered 4113 through 4129, non-consecutive)
- 43 GP-40 locomotives (numbered 4100 through 4219, non-consecutive)
- 4 GP-40 locomotives (non-revenue service, numbered 4300 through 4303, consecutive)
- 33 PL-42 locomotives (numbered 4000 through 4032, consecutive)
- 5 MP-20 locomotives (non-revenue service, numbered 1001 through 1005, consecutive)

#### **Total of 260 Vehicles to be Equipped**

The total above is revised from the PTCIP 2014 Annual Update, since NJ TRANSIT eliminated the 21 Comet IV and 3 ALP-44E locomotives from the active fleet, thus reducing the quantity above to 260.

The following existing active NJ TRANSIT vehicles were not originally intended to be PTC equipped, and now are designated to be PTC equipped:

100 Married-Pair Arrow III electric multiple unit (EMU) cars

30 Single Arrow III electric multiple unit cars

If certain vehicles in the fleet are retired they will be replaced with new EMU or push-pull locomotive-propelled trainsets. The retirement/replacement schedule has not been established at this time. The production schedule will be adjusted as required to accommodate any new vehicles. Any adjustments to the vehicle fleet cited in the PTCIP will be reported in the next Annual Update to NJ TRANSIT's PTCIP.

At this time, the following vehicles are scheduled to be active on NJ TRANSIT prior to December 31, 2015, and will be scheduled for update or installation as appropriate:

36 ALP-46A locomotives

35 ALP-45 dual power locomotives

10 Multi-Level II cab cars

**211 Total additional vehicles**

In addition to the NJ TRANSIT rolling stock described above, NJ TRANSIT will work with Metro North Railroad (MNR) to install the NJ TRANSIT ASES II PTC system onboard selected MNR rolling stock that are operated and maintained by NJ TRANSIT. The MNR fleet to be equipped for PTC operation includes:

8 F-40 locomotives (numbered 4125 through 4913, non-consecutive)

7 GP-40 locomotives (numbered 4900 through 4906, consecutive)

15 Comet V cab cars (numbered 6700 through 6714, consecutive)

**30 Total Metro North vehicles**

The aggressive schedule provides for a total of 501 vehicles within the approximate 3.5 year installation and testing period.

### **3.5 INTEROPERABILITY:**

All tenant locomotives operating over NJ TRANSIT PTC equipped trackage will be required to be equipped with a functioning PTC system, prior to entry. The system proposed at this time for freight tenants is the apparent freight standard I-ETMS system.

Metro-North Railroad (MNR), a commuter railroad, will use NJ TRANSIT's ASES II system, on all locomotives and cab cars used on NJ TRANSIT lines. All vehicle work will be performed by NJ TRANSIT's Contractor and conform to NJ TRANSIT requirements. All MNR vehicle work will be scheduled and performed by NJ TRANSIT. MNR is

installing CSS on its Southern Tier in anticipation of delivery by NJ TRANSIT's of PTC wayside equipment for MNR territory.

Conrail is equipping its Lehigh Line with CSS to serve as the foundation for NJ TRANSIT's ASES II system. This installation was recently completed, However, it will not be placed in service until NJ TRANSIT and Conrail place their respective PTC systems in service in a coordinated sequence.

NJ TRANSIT is host to two short line tenants, the Morristown & Erie, and the Southern Railroad of New Jersey. The existing operating agreement between NJ TRANSIT and each of the respective tenants will be modified to reflect PTC technology and requirements. The motive power used by these tenants to traverse NJ TRANSIT trackage will be equipped with on-board systems which are compatible with NJ TRANSIT's PTC system. NJ TRANSIT will evaluate the cost/benefit of adapting either the ASES II or I-ETMS PTC system with each tenant. The parties will then agree to implement the most suitable PTC system to operate over NJ TRANSIT routes.

These requirements will be codified in the "PTC Interoperability Agreement" between NJ TRANSIT and the tenant railroads.

Existing Tenant Railroad	PTC System	Rolling Stock	Schedule
Metro-North Railroad	ASES II	8 F-40 locomotives (4125 through 4913, non- consecutive); 7 GP-40 locomotives (4900 to 4906); 15 Comet V cab cars (6700 to 6714)	2016 to 2017
Conrail	I-ETMS	Conrail will use I-ETMS equipped locomotives	Status of I-ETMS Deployment Unknown
Norfolk Southern	I-ETMS	Equipping 3,411 of 3,756 units with I-ETMS.	Status of I-ETMS Deployment Unknown
Morristown and Erie	ASES II	2 - C424 Alco (#18, #19) 1 - EMD SW 1500 (#2)	2017



Southern Railroad of New Jersey (SRNJ)	I-ETMS or ASES II	Plans to use NS "run-through" power, equipped with I-ETMS or equip its own power with NJT approved PTC technology.	2017
New York Susquehanna & Western (NYS&W)	Not Applicable		
Cape May Seashore Line (CMSL)	Not Applicable		

NJ TRANSIT's PTC Interoperability Agreement requires that each freight tenant provide a roster of I-ETMS PTC equipped locomotives to NJ TRANSIT. This roster must be updated when new equipment is introduced for service on NJ TRANSIT trackage or existing equipment is removed or reassigned from the "approved/equipped" roster.

### 3.5.1 INTEROPERABILITY TIMELINE:

The procurement and installation of the I-ETMS equipment is an integral element of NJ TRANSIT's ASES II PTC procurement. NJ TRANSIT has an ongoing collaboration and coordination effort with each of its freight tenants.

Originally, the schedule for selection of the I-ETMS product was anticipated for a time during 2012, to be followed by demonstration of the product and integration with the ASES II Wayside Interface units in 2012. The original schedule for wayside and office systems design and installation for ASES II was scheduled to begin about January 2013, and the I-ETMS was to occur at the same time, with installation also scheduled simultaneously with the ASES II systems. I-ETMS office systems were scheduled to be completed prior to June 2014, at which time full system testing would commence and I-ETMS interoperability could be achieved for the first lines upon successful testing and approval.

However, the I-ETMS system is not sufficiently developed to conform to this earlier schedule. NJ TRANSIT has limited ability to influence the development and deployment of I-ETMS until a commercial-of-the-shelf product is available in quantity. This issue has been the subject of NJ TRANSIT interoperability discussions with its freight tenants. The following is excerpted from a recent AAR report submitted to the FRA. These comments were echoed in the FRA Report to Congress, June 2012.

"Significant hurdles must be surmounted in completing the design, production, and installation of the more than 20 major components that underlie the nationwide PTC network. Essential software and hardware for many components are still under development and testing of these components must be performed after the software and hardware are available. FRA must review

each railroad's PTC safety plan and certify the railroads' PTC systems after the development and testing of the components are complete, and then PTC installation must be completed. The task is made particularly complex by the need to ensure that individual railroad systems are fully interoperable and the many potential failure points and failure modes in PTC systems (across multiple interoperating railroads) are identified, isolated, and corrected. The interoperability concern has been magnified by current plans for phasing in PTC, which instead of providing for the implementation of PTC in less complex areas first to reduce operational risk, actually provide for PTC to be installed first in the areas most complex from the perspective of interoperability."

NJ TRANSIT and its Contractor are actively engaged in obtaining technical information and product availability for I-ETMS systems. Presently, NJ TRANSIT is unable to predict a firm fixed date when such information will be available, and is sufficiently mature to develop system interfaces, specify product details and quantities, prepare installation requirements, and test planning and procedures.

NJ TRANSIT is planning on a "work-around", in that it intends to install its ASSES II system and will provide physical space in wayside locations and in the office to accommodate the I-ETMS equipment when available. This approach is being discussed with tenant freight entities.

Implementation of I-ETMS is complicated by the availability and source of 220 MHz RF Spectrum. This burdens commuter railroads with additional licensing requirements in conjunction with a "sole source" acquisition. Recent research has also indicated that co-location of I-ETMS and ASSES II radios/antennas may be problematic. This will add to the design burden of selecting suitable sites for each system.

Therefore, both NJ TRANSIT and its freight tenants are considered a "hosted server" concept developed by a third party contractor. Initial discussions among all parties indicate that further evaluation and prototype testing is merited.

### **3.6 IMPLEMENTATION AND SYSTEM DEPLOYMENT ON NJ TRANSIT:**

Now that the Contractor's work is actively underway and progressing NJ TRANSIT has extended its timetable by approximately one and a half years for full system deployment based on current information regarding the state of the technology, factory mock-up demonstrations and review/comment/approval cycles of technical documentation. System integration and coordination of manifold project activities have generated multifaceted requirements for deployment.

Encompassed in these additional efforts is the need to acquire radio frequency spectrum and upgrade the NJ TRANSIT's existing communications backbone to support PTC. Although peripheral to PTC on-board, wayside, and office installations they are essential for system function.

The installation of the on-board equipment means a loss of fleet that provides revenue service, installation of wayside equipment needs to be scheduled to avoid impacting

operations; the office installation has similar constraints. System integration testing must also avoid impacting daily passenger operations. These factors in conjunction with manufacturer engineering and production constraints along with training NJ TRANSIT engineers and installation forces are productivity constrictions.

As the FRA noted in its report to Congress, June 2012, "Passenger railroads have encountered significant technical and programmatic issues that make accomplishment of these plans questionable. Given the current state of development and availability of the required hardware and software, along with deployment considerations, most railroads will likely not be able to complete full RSIA-required implementation of PTC by December 31, 2015. Partial deployment of PTC can likely be achieved; however, the extent of which is dependent upon successful resolution of known technical and programmatic issues and any new emergent issues."

Based on current progress, full deployment on all lines and all equipment by the deadline is not projected at this time. Currently NJ TRANSIT is still recovering from some "Sandy" impacts, and also focusing on "hardening" some resources from another such event. Additionally, a number of interoperability concerns are being addressed in meetings with NEC-ACSES partners. In the interest of operational safety, NJ TRANSIT is committed to implementing a reliable and properly functioning PTC system that the FRA can certify and that this best fulfills the goals of RSIA.



# NU TRANSIT OVERVIEW

Assembly Judiciary and Senate  
Legislative Oversight Joint Hearing

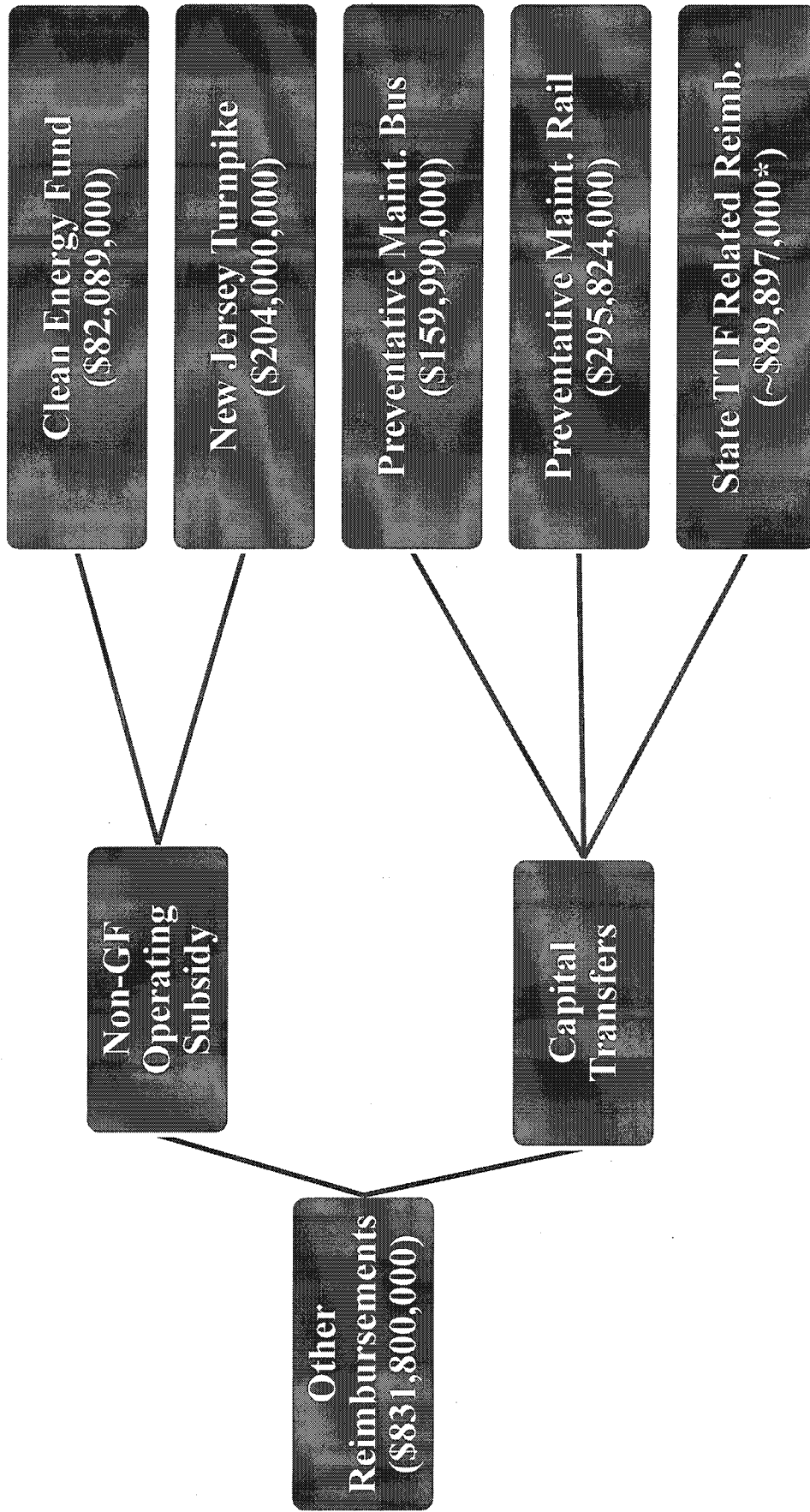
10/21/2016

# NJT Budget FY 2017

Operating		Capital	
\$1,023,100,000	Farebox Revenue	\$582,500,000	State TTF
\$115,200,000	Commercial Rev.	<u>\$1,070,388,000</u>	<u>Federal TTF</u>
\$831,800,000	Other Reimb.	<b>\$1,652,888,000</b>	<b>Total</b>
\$140,856,000	<u>State GF Subsidy</u>		
<b>\$2,110,956,000</b>	<b>Total</b>		

This display represents the operating and capital budget as provided in the budget. Capital to operating transfers are counted twice in this display. Much of the controversy over NJ Transit's budget derives from the line "Other Reimbursements" where non-General Fund subsidies are provided and where capital to operating transfers occur.

# Other Reimbursements



\*-State TTF amount is estimated. FY 2017 responses to OLS budget questions identified \$116.1 million in the Governor's Proposed budget, but that would exceed the total Other Reimbursements line item, so the estimated amount is reduced accordingly.



# NJ Transit Subsidy History

NJ Transit Budget					
(in \$ thousands)					
<u>Fiscal Year</u>	<u>Operating Budget</u>	<u>State Subsidy</u>	<u>Clean Energy Fund</u>	<u>NJ Tpk contribution</u>	<u>Total Subsidy</u>
2017	\$2,110,956	\$160,856	\$62,089	\$204,000	\$426,945
2016	\$2,115,456	\$33,156	\$62,089	\$295,000	\$390,245
2015	\$2,018,716	\$40,284	\$32,889	\$295,000	\$368,173
2014	\$1,940,973	\$73,173	\$23,280	\$295,000	\$391,453
2013	\$1,898,873	\$68,173		\$295,000	\$363,173
2012	\$1,870,527	\$309,400		\$110,000	\$419,400
2011	\$1,809,900	\$276,200			\$276,200
2010	\$1,789,900	\$296,200			\$296,200
2009	\$1,723,500	\$358,200			\$358,200
2008	\$1,674,454	\$298,200			\$298,200
2007	\$1,588,645	\$300,700			\$300,700
2006	\$1,484,322	\$273,700			\$273,700

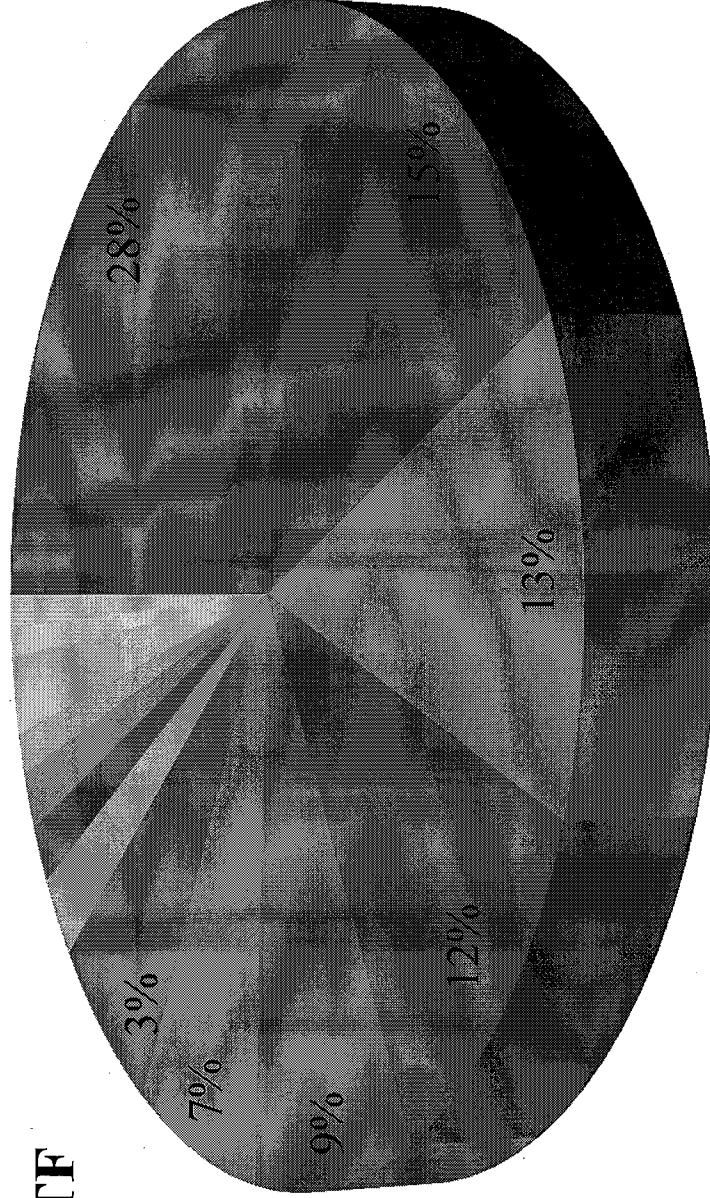
# Comparison of NJT and SEPTA

(Millions)	SEPTA		NJ Transit			
Year	2014	2015	2016	2014	2015	2016
Operating Budget	\$1,253	\$1,309	\$1,347	\$1,940	\$2,018	\$2,115
Farebox Recovery	\$471 (36.2%)	\$479 (37.6%)	\$484 (35.9%)	\$921 (47.8%)	\$929 (46%)	\$1,010 (47.6%)
Subsidy	\$746	\$794	\$827	\$892	\$977	\$995
Federal	\$69	\$74	\$73	\$487	\$487	\$487
State	\$592	\$630	\$659	\$391	\$368	\$390
Local	\$85	\$90	\$95			



# FY 2017 NJT Capital Program

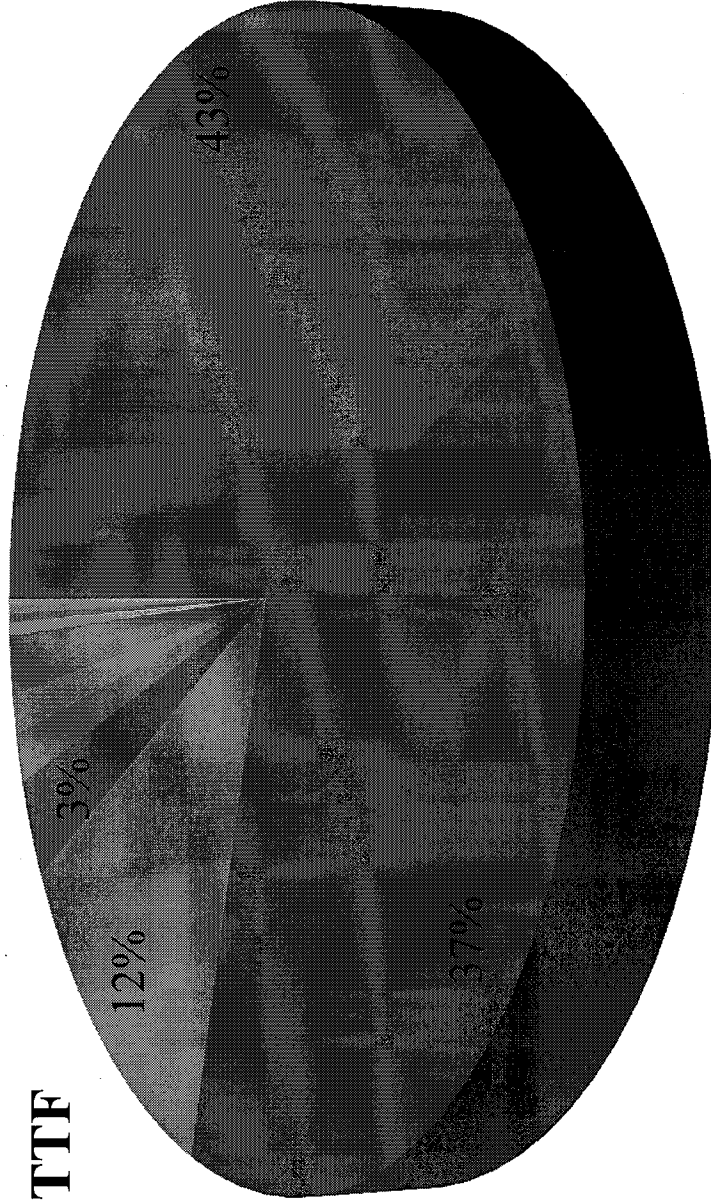
State TTF



- Bus and Rail Acquisition/Overhaul
- Operating Expenses/Buildings and Facilities
- Signals and Communications
- NEC Improvements
- River LINE LRT
- Misc. Soft Costs (engineering, planning, etc)
- Track Program

# FY 2017 NJT Capital Program

## Federal TTF

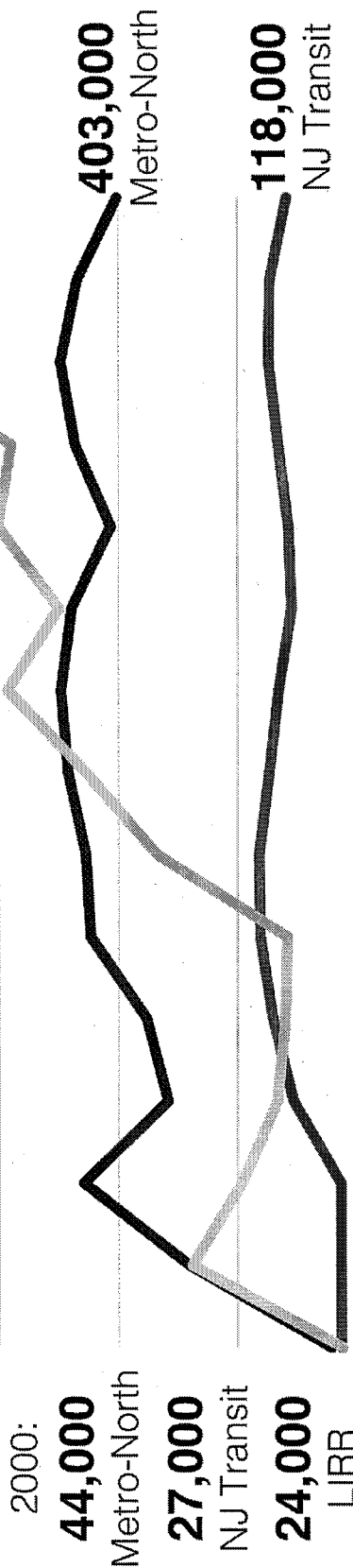


- Preventive Maintenance
- NJ TRANSIT Grid Project
- Rail Rolling Stock Procurement
- Bus Support Facilities and Equipment
- Other Rail Station/Terminal Improvements
- NEC Improvements
- NEC Elizabeth Intermodal Station Improvements

# SAFETY

## Trains Fail Far More Often at NJ Transit Than at Its Peers

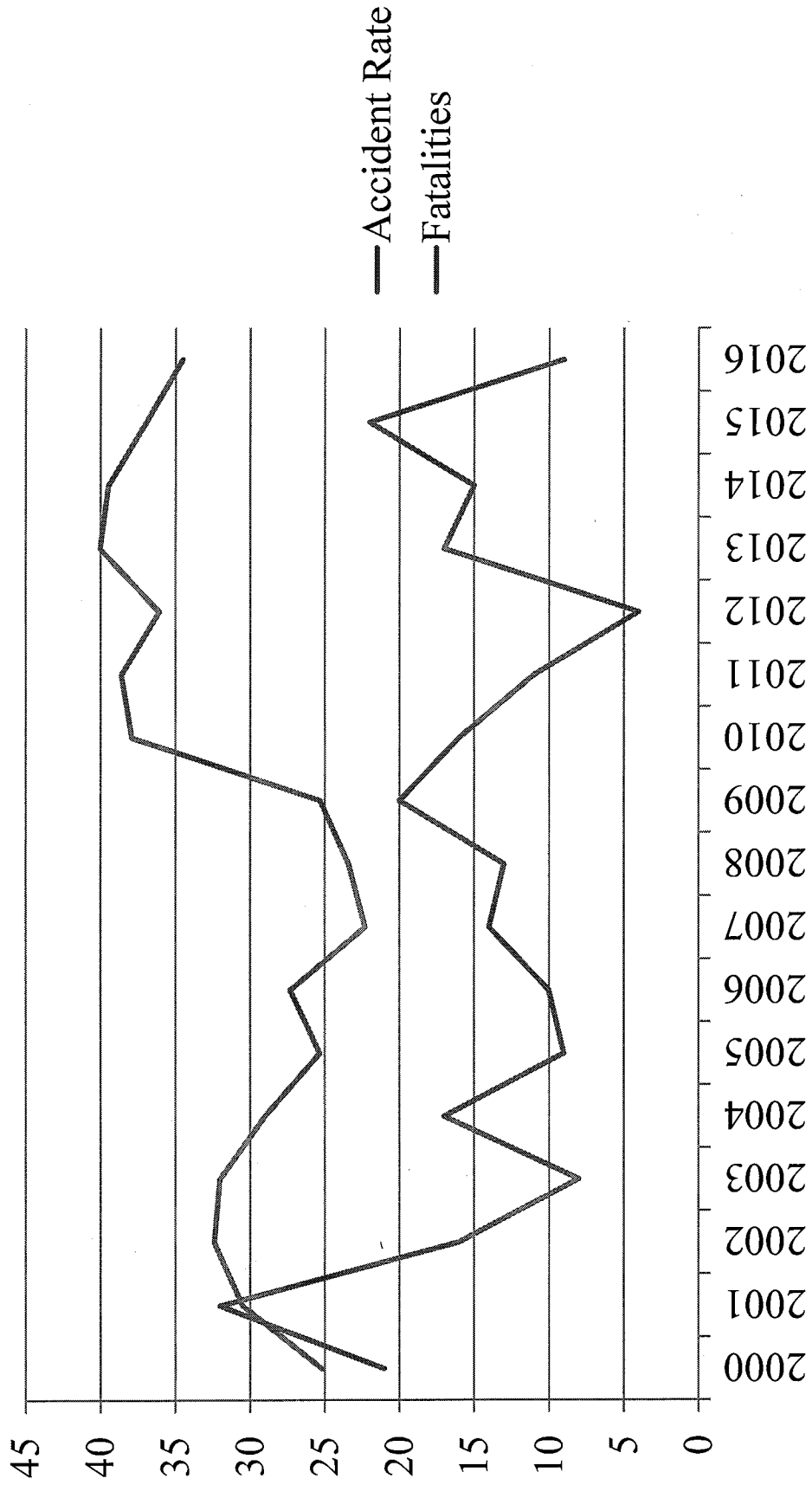
*Metro-North and the Long Island Rail Road have increased the average distance between failures by 922% and 2,875%, respectively since 2000. NJ Transit has not kept up and has consistently lagged behind its regional peers.*



NEW JERSEY FOR TRANSIT NJ4TRANSIT.ORG

NJ Transit has previously pointed to improvement in distance between failures. Context shows that this improvement is dwarfed by peer agencies.

# Accidents



Accident Rate is the number of rail system accidents per 1,000,000 train miles.  
 Fatalities include all sources, including trespassers on the rail lines.

[Railroad Safety](#)
[Divisions](#)
[Signal and Train Control](#)
[Positive Train Control \(PTC\)](#)
[PTC Overview & Individual Railroads](#)
[More about PTC Systems](#)
[PTC Annual and Quarterly Reports](#)
[Home Page](#) // [Railroad Safety](#) // [Divisions](#) // [Signal and Train Control](#) // [Positive Train Control \(PTC\)](#) // [PTC Overview & Individual Railroads](#)

## Positive Train Control

### Overview

In 2008, Congress required Class I Railroad mainlines handling poisonous-inhalation-hazard materials and any railroad main lines with regularly scheduled intercity and commuter rail passenger service to fully implement Positive Train Control by December 31, 2015. PTC uses communication-based/processor-based train control technology that provides a system capable of reliably and functionally preventing train-to-train collisions, overspeed derailments, incursions into established work zone limits, and the movement of a train through a main line switch in the wrong position.

In late 2015, Congress extended the deadline by at least three years to December 31, 2018, with the possibility for two additional years if certain requirements are met. The new legislation, the PTC Enforcement and Implementation Act, required that railroads submit a revised PTC Implementation Plan (PTCIP) by January 26, 2016, outlining when and how the railroad would have a system fully installed and activated.

The Federal Railroad Administration (FRA) continues to support railroads in implementing PTC, as well as rail carriers that are continuing to voluntarily implement PTC. That assistance includes:

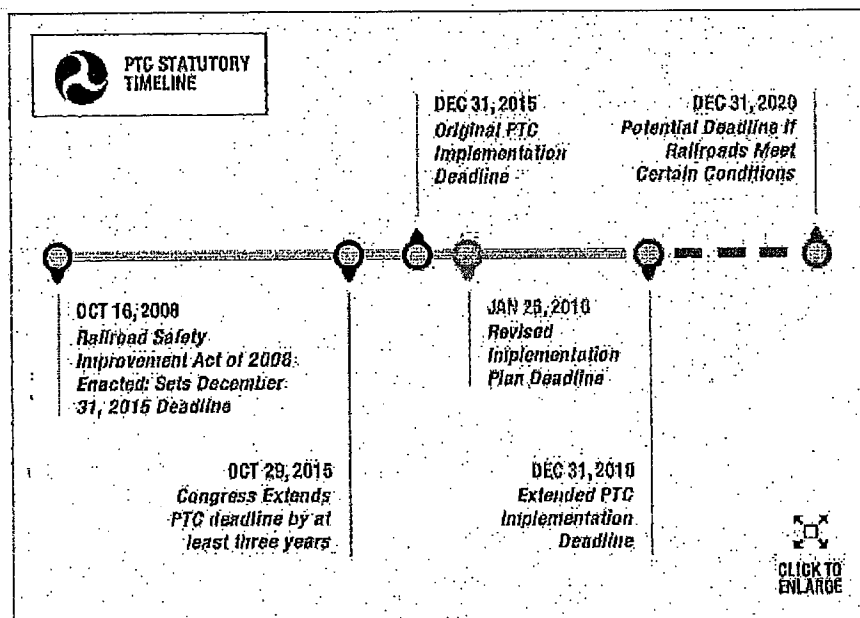
- Providing more than \$650 million to passenger railroads, including nearly \$400 million in Recovery Act funding.
- Issuing a nearly \$1 billion loan to the Metropolitan Transportation Authority to implement PTC on the Long Island Rail Road and Metro-North.
- Building a PTC testbed in Pueblo, Colorado.
- Making \$25 million available in competitive grant funding to railroads, suppliers, and state and local governments.
- Working directly with the Federal Communications Commission (FCC) and the Advisory Council on Historic Preservation to resolve issues related to spectrum use and improve the approval process for PTC communication towers.
- Dedicate staff to continue work on PTC implementation in March 2010, including establishing a PTC task force.

PTC Document Submission: Railroads meeting the requirements for PTC implementation must submit for FRA approval various PTC-related documents. Those documents are available on [www.regulations.gov](http://www.regulations.gov) under each railroad's PTC docket number.

For resources related to PTC grants, please visit [Railroad Safety Technology Grants](#).

### PTC Statutory Timeline

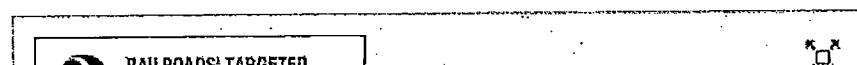
To view detailed information, click on the timeline to enlarge.



### Target Completion of PTC Implementation By Railroad

The graphic below displays a summary of when each railroad is targeted to complete their PTC implementation, as reported in the railroad's revised PTC Implementation Plan.

For more information on a specific railroad's progress toward PTC implementation, see [2015 Annual PTC Progress Reports](#) and [PTC implementation status by railroad](#).

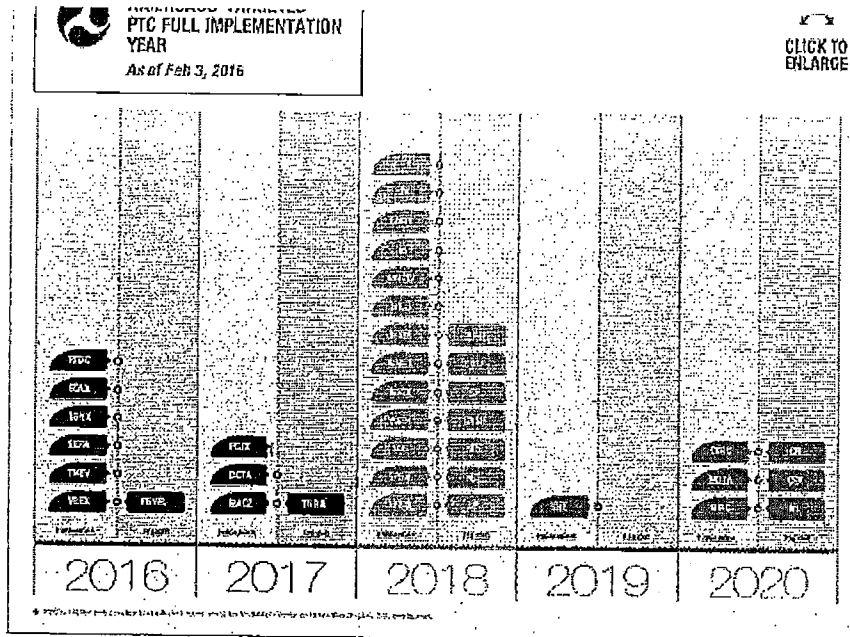

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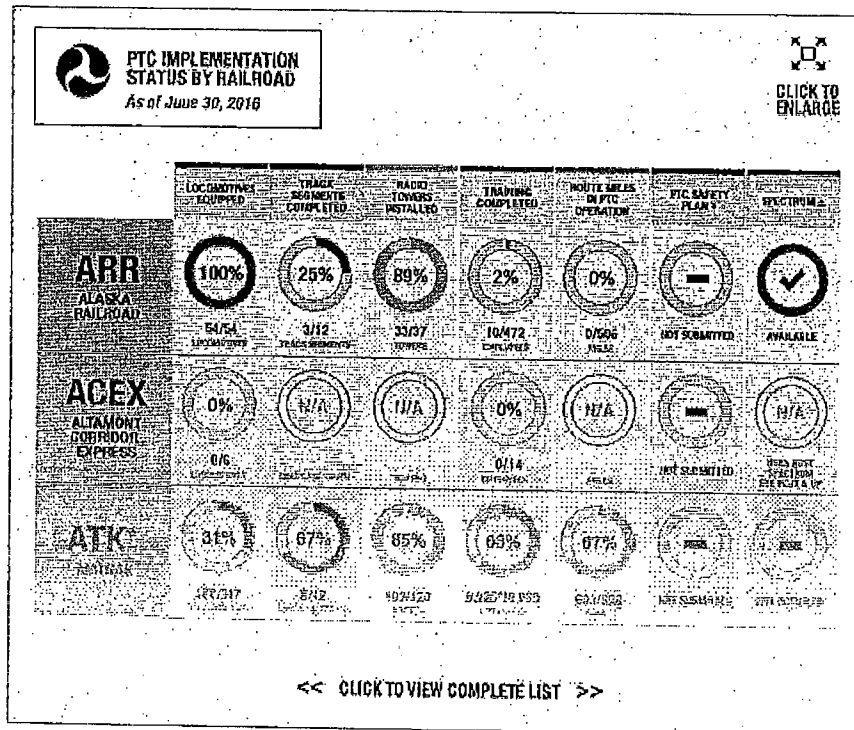
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[eLibrary](#)
[PTCIP Resubmission Template](#)
[FCC Comments on PTC Spectrum by 06/20/2010](#)
[PTC-Regulatory/Economic Impact Analysis](#)
[PTC System Type Approvals](#)
[PTC Document Submissions](#)
[Railroad Safety Technology Grant Program](#)
[PTC Implementation Plan Template Example](#)
[Risk Prioritization Methodology for PTC System Implementation](#)
[Federal Railroad Administration Report to Congress](#)



### Latest PTC Implementation Status By Railroad

The graphic below is a summary of current PTC Implementation status broken down by major Installation categories, as reported in each railroad's quarterly update on PTC implementation progress.

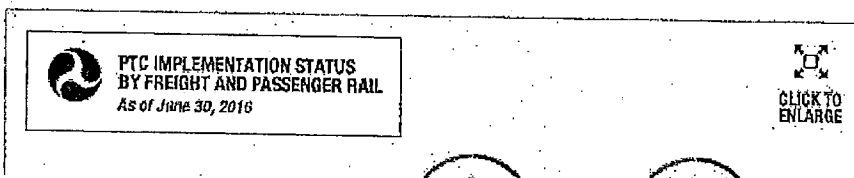


### PTC Implementation Status By Freight and Passenger Rail

The graphic below provides a summary of current overall PTC implementation status collectively by freight and passenger railroads.

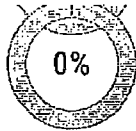
To view current PTC Implementation status for a specific railroad, see [PTC implementation status by railroad](#).

For additional detail on PTC technology, visit [PTC system information](#).

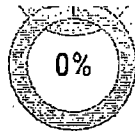


# NJ TRANSIT

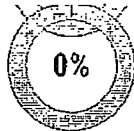
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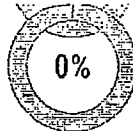
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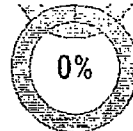
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TRACK SEGMENTS



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TOWERS



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EMPLOYEES

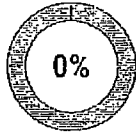


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MILES

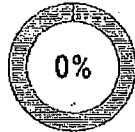
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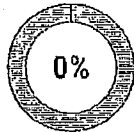
## NMRX NEW MEXICO RAIL RUNNER EXPRESS



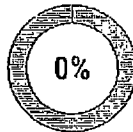
0/18  
LOCOMOTIVES



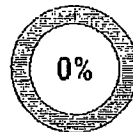
0/7  
TRACK SEGMENTS



0/22  
TOWERS



0/88  
EMPLOYEES

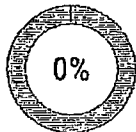


0/96  
MILES

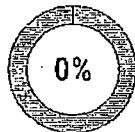
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NOT ACQUIRED

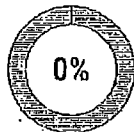
## NRTX NASHVILLE AND EASTERN



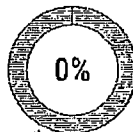
0/14  
LOCOMOTIVES



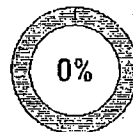
0/58  
TRACK SEGMENTS



0/1  
TOWERS



0/15  
EMPLOYEES



0/33  
MILES

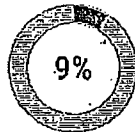
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AVAILABLE

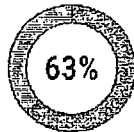
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848/2,900  
LOCOMOTIVES



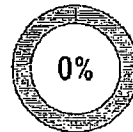
12/132  
TRACK SEGMENTS



2,307/3,670  
TOWERS



5,587/21,446  
EMPLOYEES

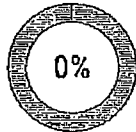


0/8,028  
MILES

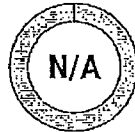
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AVAILABLE

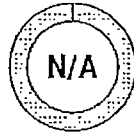
## NSCR MINNESOTA NORTHSTAR



0/12  
LOCOMOTIVES



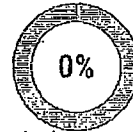
N/A  
TRACK SEGMENTS



N/A  
TOWERS

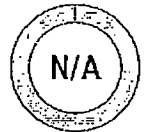


18/18  
EMPLOYEES



0/39  
MILES

NOT SUBMITTED

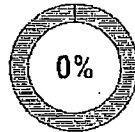


PTC-220

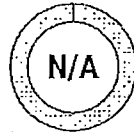
## PATH PORT AUTHORITY TRANS-HUDSON



198/230  
LOCOMOTIVES



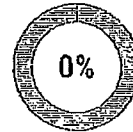
0/7  
TRACK SEGMENTS



N/A  
TOWERS



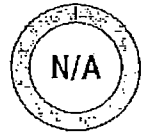
818/921  
EMPLOYEES



0/43  
MILES

SUBMITTED

PATH



CBTC

## PCJX PENINSULA CORRIDOR JOINT POWERS BOARD



67/67  
LOCOMOTIVES



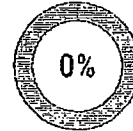
3/3  
TRACK SEGMENTS



14/14  
TOWERS



87/199  
EMPLOYEES

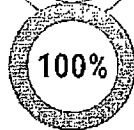
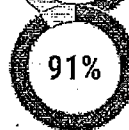
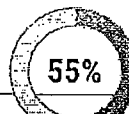
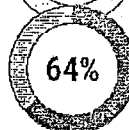


0/52  
MILES

NOT SUBMITTED

AVAILABLE

## PNWR

PORTLAND AND  
WESTERN**RTDC**  
REGIONAL  
TRANSPORTATION  
DISTRICT50/54  
LOCOMOTIVES3/3  
TRACK SEGMENTS50/50  
TOWERS106/116  
EMPLOYEES23/36  
MILES

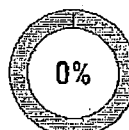
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ACQUIRED

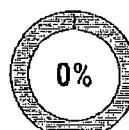
**SCAX**SOUTHERN  
CALIFORNIA  
REGIONAL RAIL  
AUTHORITY112/112  
LOCOMOTIVES8/10  
TRACK SEGMENTS198/196  
TOWERS350/330  
EMPLOYEES246/249  
MILESPROVISIONALLY  
CERTIFIED

AVAILABLE

**SCR**SOUNDER  
COMMUTER RAIL32/32  
LOCOMOTIVES1/1  
TRACK SEGMENTS5/5  
TOWERS2/4  
EMPLOYEES0/10  
MILES

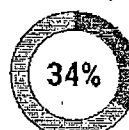
NOT SUBMITTED

AVAILABLE

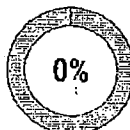
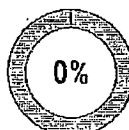
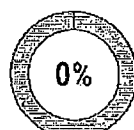
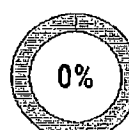
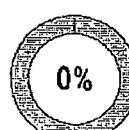
**SDNX**NORTH COUNTY  
TRANSIT DISTRICT17/17  
LOCOMOTIVES1/1  
TRACK SEGMENTS19/19  
TOWERS83/87  
EMPLOYEES0/58  
MILES

NOT SUBMITTED

AVAILABLE

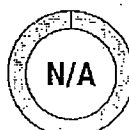
**SEPA**SOUTHEASTERN  
PENNSYLVANIA  
TRANSPORTATION  
AUTHORITY288/288  
LOCOMOTIVES12/12  
TRACK SEGMENTS36/36  
TOWERS1,192/1,192  
EMPLOYEES41/120  
MILESPROVISIONALLY  
CERTIFIED

AVAILABLE

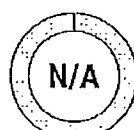
**SEPTA****SFRV**SOUTH FLORIDA  
REGIONAL  
TRANSIT  
AUTHORITY0/47  
LOCOMOTIVES0/1  
TRACK SEGMENTS0/7  
TOWERS0/184  
EMPLOYEES0/73  
MILES

NOT SUBMITTED

NOT ACQUIRED

**TMEV**TRI-MET  
WESTSIDE  
EXPRESS SERVICE  
(SEE PNWR)6/6  
LOCOMOTIVES

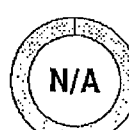
TRACK SEGMENTS



TOWERS



EMPLOYEES



MILES

NOT SUBMITTED



E-ATC

**TRE**





## PTC IMPLEMENTATION STATUS BY RAILROAD

2016 Q1 and Q2

*This graphic represents a summary of overall PTC implementation status, as reported in railroads' quarterly PTC progress report, and is not intended to show detailed implementation progress.*

### PTC SAFETY PLAN ¶

✖ Railroad has not submitted PTCSP to FRA

✚ Railroad has submitted PTCSP, but the plan is not yet certified. This may include plans that are currently under review, plans that are under revision, and plans that have received provisional certification. Provisional certification indicates that the plan is temporarily approved until full review is complete

✓ Railroad PTCSP has been submitted and certified

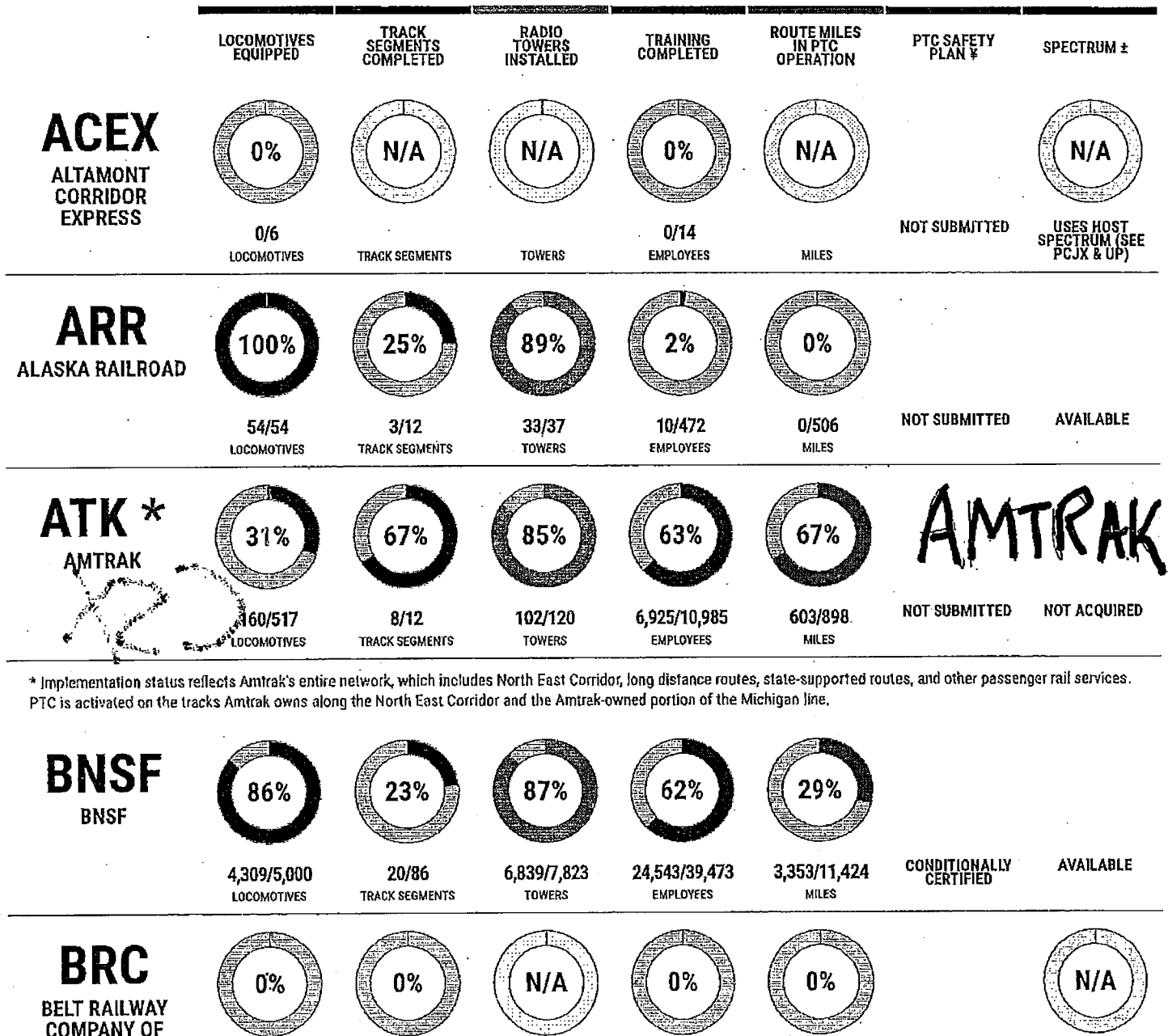
### SPECTRUM ±

✖ Spectrum is not fully acquired and not fully available for use

✚ Spectrum is acquired but not fully available for use

✓ Spectrum is fully acquired and available for use

N/A E-ATC indicates the railroad is using an E-ATC system, which does not require spectrum. PTC-220 indicates that the railroad is leasing spectrum from PTC-220, LLC. CBTC indicates the railroad is using a CBTC system, which uses a different spectrum frequency



\* Implementation status reflects Amtrak's entire network, which includes North East Corridor, long distance routes, state-supported routes, and other passenger rail services. PTC is activated on the tracks Amtrak owns along the North East Corridor and the Amtrak-owned portion of the Michigan line.

40x

CHICAGO	0/5 LOCOMOTIVES	0/28 TRACK SEGMENTS	TOWERS	0/305 EMPLOYEES	0/28 MILES	NOT SUBMITTED	PTC-220
<b>CFRC</b> CENTRAL FLORIDA RAIL CORRIDOR	0%	0%	0%	0%	0%	NOT SUBMITTED	NOT ACQUIRED
	0/24 LOCOMOTIVES	0/110 TRACK SEGMENTS	0/5 TOWERS	0/94 EMPLOYEES	0/61 MILES	NOT SUBMITTED	NOT ACQUIRED
<b>CMTY</b> CAPITAL METRO	0%	0%	0%	0%	0%	NOT SUBMITTED	N/A
	0/26 LOCOMOTIVES	0/1 TRACK SEGMENTS	0/15 TOWERS	0/148 EMPLOYEES	0/32 MILES	NOT SUBMITTED	E-ATC
<b>CN</b> CANADIAN NATIONAL	9%	8%	61%	35%	0%	NOT SUBMITTED	AVAILABLE
	54/586 LOCOMOTIVES	3/39 TRACK SEGMENTS	1,013/1,670 TOWERS	1,172/3,331 EMPLOYEES	0/3,563 MILES	NOT SUBMITTED	AVAILABLE
<b>CP</b> CANADIAN PACIFIC	26%	5%	62%	36%	0%	SUBMITTED	AVAILABLE
	129/505 LOCOMOTIVES	1/22 TRACK SEGMENTS	625/1,001 TOWERS	993/2,775 EMPLOYEES	0/2,112 MILES	SUBMITTED	AVAILABLE
<b>CR</b> CONRAIL	0%	100%	0%	0%	0%	NOT SUBMITTED	AVAILABLE
	0/47 LOCOMOTIVES	1/1 TRACK SEGMENTS	0/5 TOWERS	0/693 EMPLOYEES	0/6 MILES	NOT SUBMITTED	AVAILABLE
<b>CSX</b> CSX	26%	12%	34%	94%	21%	PROVISIONALLY CERTIFIED	AVAILABLE
	836/3,200 LOCOMOTIVES	16/130 TRACK SEGMENTS	146/434 TOWERS	18,471/19,595 EMPLOYEES	2,002/9,590 MILES	PROVISIONALLY CERTIFIED	AVAILABLE
<b>DCTA</b> DENTON COUNTY TRANSPORTATION AUTHORITY	0%	0%	0%	0%	0%	NOT SUBMITTED	N/A
	0/11 LOCOMOTIVES	0/1 TRACK SEGMENTS	0/2 TOWERS	0/50 EMPLOYEES	0/21 MILES	NOT SUBMITTED	E-ATC
<b>HIES</b> HOOSIER STATE							

# NJ TRANSIT FACTS AT A GLANCE

**Fiscal Year 2015**

(July 1, 2014 through June 30, 2015)

## RIDERSHIP

Average Weekday Unlinked Passenger Trips .....928,494

	Avg. Weekday	Avg. Saturday	Avg. Sunday
Bus .....	537,174	283,211	188,284
NJ TRANSIT Bus (Directly Operated).....	497,921	260,650	175,180
Contract Carriers .....	39,253	22,561	13,104
Rail* .....	308,523	108,521	90,518
Light Rail.....	75,253	35,033	27,825
Hudson-Bergen Light Rail.....	47,010	22,699	18,804
Newark Light Rail .....	19,289	6,841	4,363
River LINE .....	8,954	5,493	4,658
Demand Response .....	4,501	2,184	1,608
Access Link .....	4,501	2,184	1,608
Vanpool .....	3,043	0	0
<b>Total .....</b>	<b>928,494</b>	<b>428,949</b>	<b>308,235</b>

Annual Unlinked Passenger Trips ..... 276.5 million

	Total Annual Unlinked Trips
Bus .....	162,454,667
NJ TRANSIT Bus (Directly Operated) .....	150,769,395
Contract Carriers .....	11,685,272
Rail* .....	89,348,383
Light Rail.....	22,531,577
Hudson-Bergen Light Rail.....	14,201,074
Newark Light Rail .....	5,600,164
River LINE .....	2,830,339
Demand Response .....	1,400,014
Access Link .....	1,400,014
Vanpool .....	763,734

Annual Passenger Miles ..... 3.4 billion

Bus .....	1.1 billion
NJ TRANSIT Bus (Directly Operated) .....	1.022 billion
Contract Carriers .....	49.6 million
Rail .....	2.2 billion
Light Rail.....	105.3 million
Hudson-Bergen Light Rail.....	48.5 million
Newark Light Rail .....	12.2 million
River LINE .....	44.6 million
Demand Response .....	8.7 million
Access Link .....	8.7 million
Vanpool .....	29.9 million

\* Includes Metro North West of Hudson Service data.

Stations with the Highest Boarding Levels

	Avg. Weekday Boardings
Penn Station New York (Rail).....	92,314
Port Authority Bus Terminal (Bus).....	78,006
Newark Penn Station (Rail) .....	27,487
Frank R. Lautenberg Secaucus Junction (Rail).....	26,641
Hoboken Terminal (Rail).....	15,101
Metropark Station (Rail).....	7,745
Princeton Junction (Rail).....	6,968

## BUS OPERATIONS

Bus Routes..... 257  
 NJ TRANSIT Operated..... 200  
 Contracted by NJ TRANSIT (Purchased Transportation)..... 57

NJ Municipalities with Bus Service..... 384

	Avg. Weekday	Avg. Saturday	Avg. Sunday
Daily Revenue Bus Trips* .....	15,978	8,894	5,866

Bus Network Directional Route Miles\*..... 8,166.3

Bus Actual Annual Vehicle Revenue Miles\* ..... 79.6 million

\*Includes Directly Operated and Purchased Transportation

### Bus Fleet

	Owned and Operated by NJ	Purchase Transportation	Private Carrier	Total
NJ TRANSIT Bus/Private Carrier				
Cruiser* .....	1,162	0	509	1,671
Suburban .....	250	0	0	250
Articulated .....	85	0	0	85
Transit .....	787	200	103	1,090
Minibuses/WHEELS .....	0	11	0	11
<b>Subtotal .....</b>	<b>2,284</b>	<b>211</b>	<b>612</b>	<b>3,107</b>

\*Includes 63 CNG & 4 Hybrid buses

Local and Community Service Fleet	Total
Access Link.....	432
Vanpool.....	197
<b>Subtotal .....</b>	<b>629</b>

**Total Bus Fleet .....** 3,736

### Total Non-Revenue Maintenance Fleet

Bus Support Vehicles (Tow and Service Trucks)..... 19

### Bus Passenger Facilities

Stations..... 30  
 Stops..... over 18,778  
 Commuter Parking Capacity..... over 18,900

Bus Maintenance Facilities..... 18

Maintenance Facilities..... 16  
 Heavy Maintenance Facilities..... 2

Bus Layover Areas (Loops Owned and Maintained)..... 10

## RAIL OPERATIONS

Commuter Rail Lines..... 12  
 (NJ TRANSIT also operates service for MTA's Port Jervis Line)

NJ Municipalities with Rail Service..... 116

	Avg. Weekday	Avg. Saturday	Avg. Sunday
Rail Daily Revenue Trains .....	704	382	382

Rail Network Directional Route Miles ..... 1,001.8

Rail Network Actual Annual Vehicle Revenue Miles..... 63.1 million

### Rail Fleet

	Owned and Operated by NJ	Owned by Metro-North Operated by NJ	Total
Locomotives.....	238	0	238
Diesel Locomotives .....	106	0	106
Electric Locomotives .....	97	0	97
Dual Mode Locomotives .....	35	0	35
Cars .....	1,162	0	1,162
Electric Multiple Units .....	160	0	160
Push-Pull Rail Cars .....	1,002	0	1,002

<b>Rail Non-Revenue Maintenance Fleet</b>	
Railroad and Construction Equipment.....	165
Rail Non- Revenue Equipment Cars.....	72
Rail Non- Revenue Diesel Locomotives.....	9

<b>Rail Passenger Facilities</b>	
Stallions.....	165
Commuter Parking Capacity.....	over 64,900

<b>Rail Layover Yards and Maintenance Facilities.....</b>	<b>16</b>
Storage Yards Owned and Used by NJT.....	12
Non-NJT Owned Storage Yards Used.....	3
Maintenance Facilities.....	1

<b>Rail Infrastructure</b>	
Undergrade Bridges.....	572
Overhead Bridges.....	103
Moveable Bridges.....	12
Track Miles Maintained (Not Including Amtrak's Northeast Corridor).....	544.4
Interlockings.....	106
Signals.....	1,336
Grade Crossings.....	318
Switches.....	1,290
Miles of Catenary.....	264
Substations.....	52

## LIGHT RAIL OPERATIONS

<b>Light Rail Lines.....</b>	<b>3</b>
<b>NJ Municipalities with Light Rail Service.....</b>	<b>22</b>
Hudson-Bergen Light Rail.....	6
Newark Light Rail.....	3
River LINE.....	13

	Avg. Weekday	Avg. Saturday	Avg. Sunday
<b>Light Rail Revenue Trains.....</b>	<b>1,065</b>	<b>437</b>	<b>403</b>
Hudson-Bergen Light Rail.....	507	238	238
Newark Light Rail.....	460	122	98
River LINE.....	98	77	67

<b>Light Rail Network Directional Route Miles.....</b>	<b>116.2</b>
Hudson-Bergen Light Rail.....	34.1
Newark Light Rail.....	12.4
River LINE.....	69.7

<b>Light Rail Actual Annual Vehicle Revenue Miles.....</b>	<b>3.7 million</b>
Hudson-Bergen Light Rail.....	1,866,693
Newark Light Rail.....	522,772
River LINE.....	1,299,746

	Owned and Operated by NJT	Owned by NJT Operated via Contract
<b>Light Rail Fleet</b>		
Hudson-Bergen Light Rail.....	0	52
Newark City Subway.....	21	0
River LINE.....	0	20
<b>Total Cars.....</b>	<b>21</b>	<b>72</b>

<b>Light Rail Non-Revenue Maintenance Fleet</b>	
Light Rail Railroad and Construction Equipment.....	11

<b>Light Rail Passenger Facilities</b>	
Stations.....	62
Commuter Parking Capacity.....	over 7,900

<b>Light Rail Layover Yards and Maintenance Facilities.....</b>	<b>5</b>
---	----------

<b>Light Rail Infrastructure</b>	
Undergrade Bridges.....	35
Overhead Bridges.....	52
Moveable Bridges.....	0
Track Miles Maintained.....	108
Interlockings.....	52
Signals.....	293
Grade Crossings.....	120
Switches.....	282
Miles of Catenary.....	51
Substations.....	22

## OPERATING BUDGET & CAPITAL PROGRAM

### FY15 Actual Operating Revenue and Expenses

<b>System-wide</b>	<i>(In \$ millions)</i>
<b>Total System Generated Revenue.....</b>	<b>\$1,035</b>
<b>Total Expenses.....</b>	<b>\$2,075</b>
<b>Revenue Recovery Ratio.....</b>	<b>49.9%</b>

Based on all system generated revenues and total costs including all administrative costs.

### FY16 Board Approved Operating Budget *(In millions)*

<b>Resources.....</b>	<b>\$2,116</b>
Passenger Fares.....	\$1,005
Other Revenue.....	\$115
State Operating Assistance.....	\$33
Capital Transfer—Operating/Maintenance.....	\$0
Other State/Federal Reimbursements.....	\$962
<b>Expenses.....</b>	<b>\$2,116</b>
Labor & Fringes.....	\$1,256
Fuel, Power & Materials.....	\$342
Purchased Transportation.....	\$238
Other*.....	\$280

\* Other expenses include claims, insurance, tolls, trackage fees, services, utilities, leases, etc.

### FY16 Board Approved Capital Program *(In millions)*

<b>Resources.....</b>	<b>\$2,099</b>
Federal Transit Administration*.....	\$1,558
NJ Transportation Trust Fund.....	\$503
Other.....	\$38
<b>Expenditures.....</b>	<b>\$2,099</b>
Operating Maintenance/Debt Service.....	\$673
Pass-Through.....	\$51
Rail Infrastructure Improvements.....	\$116
Rail Rolling Stock Improvements.....	\$87
Rail Station Improvements.....	\$82
Bus/Light Rail Improvements.....	\$85
Systemwide Improvements.....	\$92
Sandy Competitive Resiliency Projects.....	\$913

\* Resources in this category include Federal Highway and Flex Funding.

<b>Employees.....</b>	<b>11,401</b>
Agreement (union).....	9,531
Non-Agreement (non-union).....	1,870

## DIVERSITY STATEMENT & FACTS

NJ TRANSIT is committed to the inclusion of disadvantaged and small businesses in our contracting opportunities, non-discrimination in our policies and practices, equity in the provision of our services, and the value of diversity and inclusion in our workforce. This corporation promotes a culture of respect and inclusion throughout all of our operations, our customer interactions, our projects, communications and partnerships. NJ TRANSIT aims to create an inclusive, respectful and equitable environment that reflects the diverse communities we are part of, and serve.

- In FY15 Disadvantaged Business Enterprises were awarded 24.64% and Small Business Enterprises were awarded 17.35% of NJ TRANSIT's federal and state contract dollars respectively.
- 59.8% of the workforce is minorities and 21.2% are women.

### NOTES:

- 1) This sheet provides NJ TRANSIT facts for the fiscal year ending June 30, 2015, except where noted. Analysts should contact NJ TRANSIT directly for specific data requests to ensure understanding of underlying assumptions.
- 2) Sums of categories may not add to the totals shown due to rounding

ID Number: 2080  
www.njtransit.com  
One Penn Plaza, East  
Newark, NJ 07102-2246

# New Jersey Transit Corporation (NJ TRANSIT)

Executive Director: Ms. Veronique Hahm  
(973) 481-8074

## General Information

Unincorporated Area (UZA) Statistics - 2010 Census  
New York-Newark, NY-NJ-CT  
Square Miles: 18,351,295

Service Consumption  
Annual Passenger Miles: 3,445,470,328  
Annual Unlinked Trips: 284,273,715  
Average Weekly Unlinked Trips: 901,578  
Average Sunday Unlinked Trips: 427,144  
Average Sunday Unlinked Trips: 298,821

Service Area Statistics  
Square Miles: 3,450  
Population: 18,351,295

Service Supplied  
Annual Vehicle Revenue Miles: 158,805,887  
Annual Vehicle Revenue Hours: 8,465,153  
Vehicles Operated in Maximum Service: 3,794  
Vehicles Available for Maximum Service: 4,449  
Base Period Requirement: 1,621

## Financial Information

Fare Revenues Earned  
Sources of Operating Funds Expended

Fare Revenues: \$680,179,625  
Local Funds: \$680,179,625  
Federal Assistance: \$680,179,625  
Other Funds: \$680,179,625

Total Operating Funds Expended: \$680,179,625  
Sources of Capital Funds Expended: \$680,179,625  
Local Funds: \$680,179,625  
Federal Assistance: \$680,179,625  
Other Funds: \$680,179,625

Total Capital Funds Expended: \$680,179,625  
Sources of Operating Funds Expended: \$680,179,625  
Local Funds: \$680,179,625  
Federal Assistance: \$680,179,625  
Other Funds: \$680,179,625

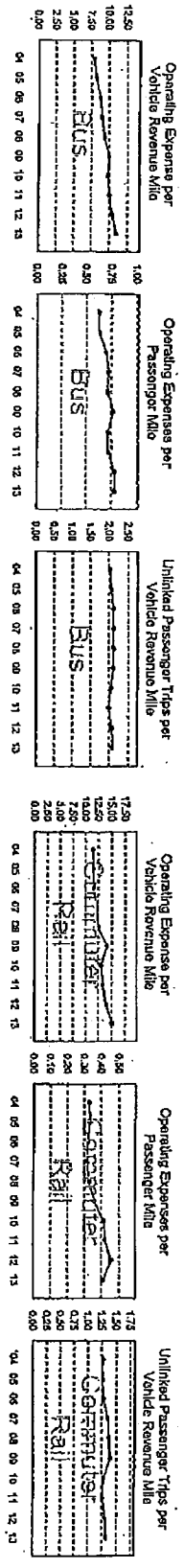
## Vehicles Operated in Maximum Service and Uses of Capital Funds

Mode	Directly Operated	Purchased Transportation	Revenue	Systems and Guidelines	Facilities and Stations	Other	Total
Bus	1,848	181	\$140,011,093	\$72,476,909	\$2,580,880	\$3,241,245	\$78,300,107
Commuter Rail	1,133	0	\$194,134,163	\$64,494,921	\$42,601,239	\$7,270,349	\$114,397,391
Light Rail	14	42	\$0	\$46,116,314	\$42,949,382	\$301,715	\$89,367,391
Demand Response	0	360	\$42,788	\$738,941	\$390,858	\$425,716	\$1,566,304
Hybrid Rail	0	15	\$0	\$0	\$0	\$0	\$0
Vanpool	0	189	\$0	\$0	\$166,550	\$196,658	\$363,208
Total	2,987	797	\$334,186,047	\$202,817,005	\$88,638,889	\$11,435,883	\$537,079,704



Mode	Operating Expenses <sup>1</sup>	Fare Revenue <sup>1</sup>	Uses of Capital Funds	Annual Passenger Miles	Annual Vehicle Revenue	Annual Vehicle Revenue	Unlinked Trips	Annual Vehicle Revenue	Unlinked Trips	Annual Vehicle Revenue	Unlinked Trips	Annual Vehicle Revenue	Unlinked Trips	Annual Vehicle Revenue	Unlinked Trips	Annual Vehicle Revenue	Unlinked Trips
Bus	\$546,693,268	\$562,088,581	\$218,280,107	1,085,458,401	77,462,581	60,753,208	161,252,458	5,676,458	1,782,128	1,001.8	1,380	16.7	1,135	1.93	1.58	22%	19%
Commuter Rail	\$917,139,258	\$491,448,121	\$328,480,984	55,592,033	2,491,683	12,104,396	18,189,507	173,759	46.5	1,380	1.2	16.7	1,135	1.58	22%	19%	22%
Light Rail	\$100,684,938	\$19,484,408	\$30,387,991	\$1,588,804	7,441,121	12,104,396	1,186,188	688,083	N/A	360	4.3	11.0	360	4.3	11.0	33%	33%
Demand Response	\$73,440,383	\$2,251,051	\$0	41,231,146	1,230,205	790,148	2,859,160	49,742	N/A	20	3.4	199	N/A	N/A	2%	2%	2%
Hybrid Rail	\$33,542,235	\$2,359,152	\$0	30,761,456	4,603,754												
Vanpool	\$11,825,804	\$2,508,332	\$383,208														

Mode	Operating Expenses per Vehicle Revenue Mile	Fare Revenue per Vehicle Revenue Mile	Operating Expenses per Vehicle Revenue Mile	Annual Passenger Miles	Annual Vehicle Revenue	Annual Vehicle Revenue	Unlinked Trips	Annual Vehicle Revenue	Unlinked Trips	Annual Vehicle Revenue	Unlinked Trips	Annual Vehicle Revenue	Unlinked Trips	Annual Vehicle Revenue	Unlinked Trips	Annual Vehicle Revenue	Unlinked Trips
Bus	\$10.93	\$10.93	\$10.93	1,085,458,401	77,462,581	60,753,208	161,252,458	5,676,458	1,782,128	1,001.8	1,380	16.7	1,135	1.58	22%	19%	19%
Commuter Rail	\$15.10	\$15.10	\$15.10	55,592,033	2,491,683	12,104,396	18,189,507	173,759	46.5	1,380	1.2	16.7	1,135	1.58	22%	19%	22%
Light Rail	\$41.07	\$41.07	\$41.07	\$1,588,804	7,441,121	12,104,396	1,186,188	688,083	N/A	360	4.3	11.0	360	4.3	11.0	33%	33%
Demand Response	\$8.07	\$8.07	\$8.07	41,231,146	1,230,205	790,148	2,859,160	49,742	N/A	20	3.4	199	N/A	N/A	2%	2%	2%
Hybrid Rail	\$27.25	\$27.25	\$27.25														
Vanpool	\$2.57	\$2.57	\$2.57														



<sup>1</sup> Excludes data for purchased transportation reported separately

**ADDITIONAL APPENDIX MATERIALS**  
**SUBMITTED TO THE**  
**SENATE LEGISLATIVE OVERSIGHT COMMITTEE**  
*and*  
**ASSEMBLY JUDICIARY COMMITTEE**  
*for the*  
**OCTOBER 21, 2016**  
**JOINT COMMITTEE MEETING**

**Senate Legislative Oversight and Assembly Judiciary Committees:**

Emma G. Fitzsimmons and Patrick McGeehan, “New Jersey Transit, a Cautionary Tale of Neglect,” *The New York Times*, October 13, 2016.

Christopher Maag, “Hoboken crash renews focus on NJ Transit’s issues,” *The Record*, October 4, 2016, ©2016 North Jersey Media Group.

Michael R. Sisak, David Porter, Michael Balsamo, “NJ Transit tops list of accidents, safety fines,” *APNewsBreak*, October 13, 2016.