Hudson Tunnel Project
Financial Plan

23 August 2019

Submitted by The Port Authority of New York and New Jersey
(Hudson Tunnel Project Sponsor as defined herein)

In partnership with:

The New Jersey Transit Corporation (Transit Operator);
The National Railroad Passenger Corporation (Amtrak); and
Gateway Program Development Corporation

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List of Acronyms

Amtrak	National Railroad Passenger Corporation
BCC	Baseline Capital Charge
BCI	Building Cost Index
CAA	Clean Air Act
CAGR	Compound Annual Growth Rate
CCI	Construction Cost Index
CCIP	Contractor Controlled Insurance Program
CE	Categorical Exclusion
CEO	Chief Executive Officer
CIG	Capital Investment Grant
CM	Construction Manager
CMAQ	Congestion Mitigation and Air Quality Improvement Program
Commission	Gateway Development Commission
Corporation	Gateway Program Development Corporation
CPI	Consumer Price Index
CRP	Credit Risk Premium
DEA	David Evans and Associates, Inc.
DEIS	Draft Environmental Impact Statement
DSCR	Debt Service Coverage Ratio
DVRPC	Delaware Valley Regional Planning Commission
EDA	Economic Development Authority
EPA	Environmental Protection Agency
ESB	Emergency Services Building
ESWA	Early Systems Work Agreement
FAST Act	Fixing American's Surface Transportation Act
FEIS	Final Environmental Impact Statement
FFGA	Full Funding Grant Agreement
FHWA	Federal Highway Administration
FMOC	Financial Management Oversight Contractor
FONSI	Finding of No Significant Impact
FRA	Federal Railroad Administration
FTA	Federal Transit Administration

FY	Fiscal Year
GAN	Grant Anticipation Notes
GC	General Contractor
HTP	Hudson Tunnel Project
HYCC	Hudson Yards Concrete Casing
LIRR	Long Island Rail Road
LONP	Letter of No Prejudice
MAP-21	Moving Ahead for Progress in the 21st Century
MBTA	Massachusetts Bay Transportation Authority
MLMU	Multilevel Multiple Units
MPO	Metropolitan Planning Organization
NEC	Northeast Corridor
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NJ TRANSIT	New Jersey Transit
NJDEP	New Jersey Department of Environmental Protection
NJDOT	New Jersey Department of Transportation
NJEDA	New Jersey Economic Development Authority
NJHA	New Jersey Highway Authority
NJTA	New Jersey Turnpike Authority
NJTPA	North Jersey Transportation Planning Authority
NJTTF	New Jersey Transportation Trust Fund
NJTTFA	New Jersey Transportation Trust Fund Authority
NYCDOT	New York City Department of Transportation
NYMTC	New York Metropolitan Transportation Council
NYSDOT	New York State Department of Transportation
O&M	Operations and Maintenance
OCIP	Owner Controlled Insurance Program
OMB	Office of Management and Budget
P&E	Planning and Expense
PAB	Private Activity Bond
PANYNJ	Port Authority of New York and New Jersey
Parkway	Garden State Parkway
PATH	Port Authority Trans-Hudson

PE	Preliminary Engineering
PIT	Personal Income Tax
PMOC	Project Management Oversight Contractor
PNB	Portal North Bridge
PPGRT	Petroleum Products Gross Receipts Tax
PRIIA	Passenger Rail Investment and Improvement Act of 2008
PSNY	Pennsylvania Station in New York City
RFI	Request for Information
RFP	Request for Proposal
ROD	Record of Decision
RRIF	Railroad Rehabilitation and Improvement Financing
SCC	Standard Cost Category
SEPTA	Southeastern Pennsylvania Transportation Authority
SJTPO	South Jersey Transportation Planning Organization
SOGR	State of Good Repair
STF	Special Transportation Fund
STIP	State Transportation Improvement Program
TFPLUD	Transit Friendly Planning, Land Use and Development
TIFIA	Transportation Infrastructure Finance and Innovation Act
TIGER	Transportation Investment Generating Economic Recovery
TIP	Transportation Improvement Program
TOD	Transit-oriented Development
Turnpike	New Jersey Turnpike
ULB	Useful Life Benchmark
USDOT	United States Department of Transportation
WRY	Western Rail Yard
WSY	LIRR West Side Yard
YOE	Year of Expenditure

1.0 INTRODUCTION

The purpose of this report is to document the separate and independent financial plans for Phase 1 of the Gateway Program, which form part of a comprehensive rail improvement program between Newark Penn Station in Newark, New Jersey and Pennsylvania Station New York in New York City, New York (PSNY):

- Phase 1A, the Portal North Bridge (PNB) Project; and
- Phase 1B, the Hudson Tunnel Project (HTP), including:
    - The construction of the new two-tube Hudson River Tunnel,
    - The construction of the Hudson Yards Concrete Casting (HYCC) - Section 3, and
    - The rehabilitation of the existing North River Tunnel.

Each of these projects are currently proceeding through the Federal Transit Administration (FTA) Capital Investment Grant (CIG) program with future construction and funding of each project to occur separately and concurrently in phases. The two projects and their respective financial plans are being submitted independently of each other for separate evaluation and rating. The financial plan for the PNB Project will be submitted to FTA on or before September 15, 2019.

For ease of review by the FTA, and given FTA's request that the financial plan and cash flow statement must include both projects, this document includes financial plans for both projects and is structured as follows:

- Chapter 1 of this report is divided into two parts to describe the elements of the separate and independent projects of Phase 1 of the Gateway Program. This chapter also explains the purpose and need for the projects, the current transit system, and the Project Sponsors' and Funding Partners' capability to fund the construction, operation, and maintenance of the projects. This chapter is organized into two sections:
    - The Phase 1A section introduces the PNB Project; and
    - The Phase 1B section introduces the HTP.
- Chapter 2 summarizes the financial plan for the PNB Project, documenting the proposed plan for funding the capital costs, commitment of funding sources, and operating plans.
- Chapter 3 summarizes the financial plan for the HTP, documenting the proposed plan for funding the capital costs, commitment of funding sources, and operating plans.
- Chapter 4 summarizes the agency-wide capital and operating plan for New Jersey Transit Corporation (NJ TRANSIT), as the Project Sponsor for the PNB and supporting partner for HTP, and includes the historical and forecasted capital and operating conditions at the system-wide level as required by the FTA. This chapter demonstrates that NJ TRANSIT, the public transportation operator utilizing the PNB and HTP, has sufficient capacity to continue to operate and maintain the existing transit system in a state of good repair during these construction activities and following incorporation of these new projects into the transit system.

These financial plans have been developed in consideration of FTA's *Guidance for Transit Financial Plans* issued in June 2000 and subsequent guidance at New Starts workshops, as well as the *Guidelines and*

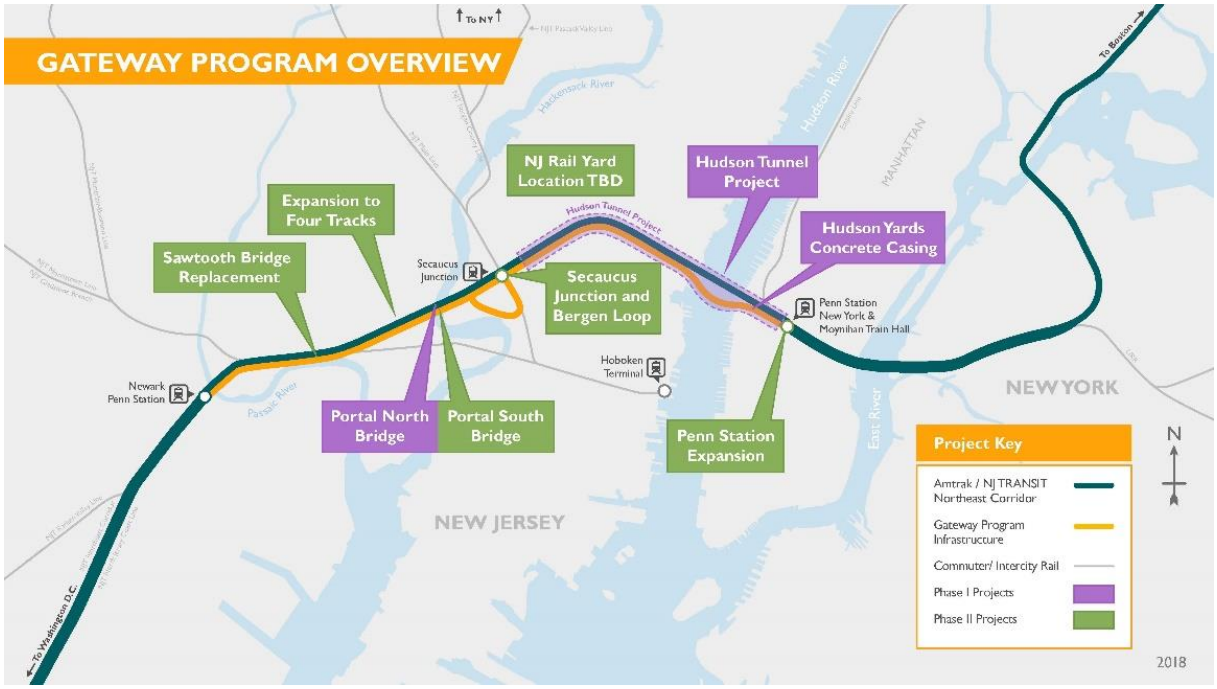
Standards for Assessing Local Financial Commitment, issued by FTA in June 2007, and *Final Interim Policy Guidance Capital Investment Grant Program,* issued by FTA in June 2016.

All dollar figures in this financial plan are presented in year-of-expenditure (YOE) dollars, unless stated otherwise. Further, unless stated otherwise, all figures are presented on the basis of the NJ TRANSIT fiscal year, which runs from July 1st through June 30th.

1.1 Gateway Program Overview

The Port Authority of New York and New Jersey (PANYNJ), NJ TRANSIT, the National Railroad Passenger Corporation (Amtrak), the Gateway Program Development Corporation (Corporation), and the State of New Jersey and the State of New York (collectively, the Project Partners) are dedicated to focusing on, implementing, and constructing the two Phase 1 projects to eliminate the most significant single points-of-failure in providing uninterrupted rail service along the Northeast Corridor (NEC). Because of the phased approach to the Gateway Program, the scopes and costs of projects in later phases will be evaluated in the future. Other major future elements of the Gateway Program in the later phases include the replacement of the Sawtooth Bridges in New Jersey, a rail yard and operational support facility in New Jersey, and the expansion of PSNY, Newark Penn Station, and Secaucus Junction Station. Figure 1-1 depicts Phase 1, including the two most critical, time-sensitive elements (in purple), and the other major elements of the Gateway Program to be addressed in a later phase (in green).

Figure 1-1 Gateway Program Map



1.2 Commitment of Project Partners

NJ TRANSIT is, and will continue to be, the Project Sponsor for the PNB Project. NJ TRANSIT has received a Record of Decision (ROD) from the Federal Railroad Administration (FRA) and FTA for the PNB Project.

PANYNJ has agreed to perform the role of CIG grant applicant and NEPA Project Sponsor, on behalf of the Project Partners for the HTP.

In July 2019, the States of New York and New Jersey created the Gateway Development Commission (Commission) through the enactment of the Gateway Development Commission Act. The Commission is a seven-member public authority and a government sponsored authority (with three Commissioners from the State of New York, three Commissioners from the State of New Jersey, and one Commissioner directly appointed by Amtrak) that is empowered to facilitate and coordinate activities and encourage the actions of others to effectuate the Gateway Program, in particular, Phase 1 of the Gateway program, the PNB Project and the HTP.

The Commission's enabling legislation states that the Commission is "intended to qualify for, be authorized and empowered to apply for and accept, financial assistance, loans, grants, or any other funding for such purposes under federal, state, or local laws, and to make application directly to the appropriate officials or agencies for the application for and receipt of federal, state or local assistance, loans, grants or any other funding in aid of any of the purposes of this act"[1] "at such times as it is appropriate to do so."[2]. Such provisions grant authority to the Commission to be exercised at its discretion, but do not alter or amend co-extensive authority that may extend to other state parties, such as NJ TRANSIT, to also seek and secure such forms of assistance.

NJ TRANSIT's PNB CIG application will not be affected in any way now or in the future by the Commission's formation and project development activities. Similarly, Amtrak's support of design and construction, provision of funding and other commitments to the PNB Project are not affected by the newly created Commission.

The completion of this legislative process to create the Commission is evidence of the strong commitment by the States of New Jersey and New York towards the HTP. The Project Partners intend for the Commission to carry out the lead role in the financing and development of the HTP as soon as it has been established and provided with the appropriate resources from the State of New Jersey, State of New York, and Amtrak.

[1] NYS S6372A, Section 3(c); NJS A5570, Section 4(3) ("Creation of the Commission; purposes").

[2] NYS S6372A, Section 6; NJS A5570, Section 7 ("Duties of the Commission").

Phase 1A: Portal North Bridge Project

1.3 Portal North Bridge Project Overview

The PNB Project will replace the existing Portal Bridge to support the high levels of current passenger demand on the NEC. In addition to increasing capacity to meet current and future demand for NJ TRANSIT commuter rail service and Amtrak service operating along the NEC, the PNB Project will improve service reliability and operational flexibility while minimizing conflicts with maritime traffic.

The PNB Project would replace, not rehabilitate, the existing Portal Bridge, with a new bridge type – a high-level fixed span, on a new rail alignment. The existing Portal Bridge's inefficient design and advanced age have a detrimental impact to service on the NEC, with frequent outages and resulting delays that have a cascading effect in the region and on the national rail network. The new bridge will have a clearance that accommodates current and forecasted maritime traffic, thereby eliminating the need for a movable bridge that results in interruptions to rail operations and delays due to mechanical failures. Additionally, the new bridge design will allow trains to cross at 90 mph, up from 60 mph today. The improved reliability achieved with a new fixed span PNB will provide NJ TRANSIT with greater certainty of being able to access longer platforms at PSNY, allowing for longer trains and multilevel passenger cars that will provide 10 percent more commuter rail passenger capacity in the peak hour.

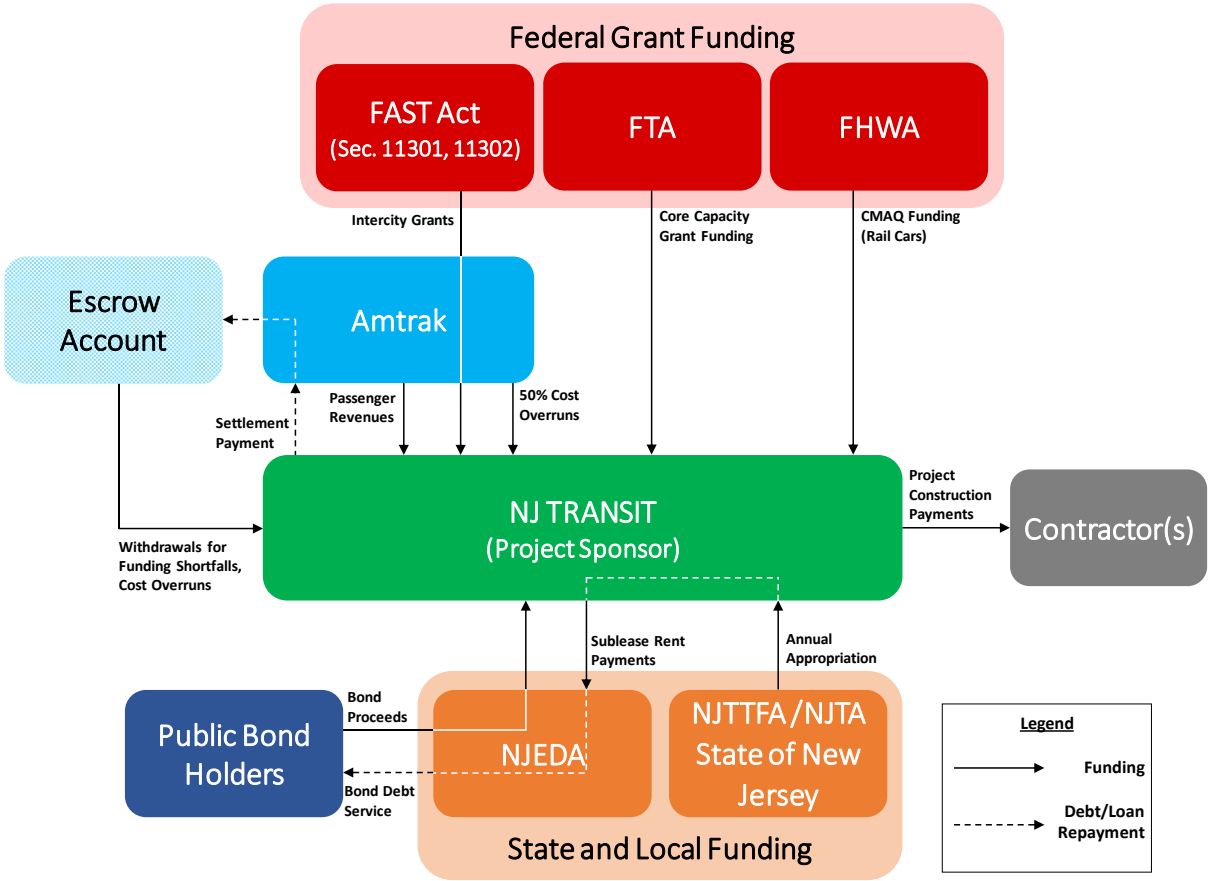
Planning and design of the new PNB has been advanced to completion by NJ TRANSIT under agreements with Amtrak. NJ TRANSIT has served as project lead and was responsible for completing the National Environmental Policy Act (NEPA) process and completing final design. The PNB Project received a Record of Decision (ROD) from the FRA on December 23, 2008. Upon a review of follow-up design changes being pursued by NJ TRANSIT and Amtrak, the FRA reaffirmed its ROD on March 30, 2011, and again on August 11, 2016. The FTA was a Cooperating Agency in the preparation of the PNB Project's Final Environmental Impact Statement (FEIS). Based upon the FTA's independent review and evaluation of the environmental record prepared under the auspices of the FRA for the PNB Project, the FTA issued a ROD for the PNB Project on July 25, 2017.

As noted above, NJ TRANSIT will continue to serve as the Project Sponsor for the PNB Project and will be responsible for procurement, construction and delivery, in cooperation with Amtrak. NJ TRANSIT will be the public transportation operator for the PNB and Amtrak will be the intercity rail operator for the PNB. NJ TRANSIT's PNB Project CIG application will not be affected in any way now or in the future by the Commission's formation and project development activities. Similarly, Amtrak's support of design and construction, provision of funding, and other commitments to the PNB Project are not affected by the addition to the Project Partners of the newly created Commission.

1.4 Description of the of the PNB Project Sponsor and Funding Partners

Entities serving as project sponsor, supporting partner, and funding partners are further described in subsections below. Figure 1-2 provides an overview of the organizational structure for the PNB Project.

Figure 1-2 Portal North Bridge Project Sponsor and Funding Partners



1.4.1 PNB Project Sponsor

1.4.1.1 NJ TRANSIT

NJ TRANSIT's statutory mission is to provide a safe, reliable, convenient and cost-effective transit service with a skilled team of employees, dedicated to serve customers' needs and committed to excellence. NJ TRANSIT is the nation's largest statewide public transportation system. In 2018, it provided an average of more than 900,000 weekday trips and more than 265 million annual trips on 251 bus routes, three light rail lines, 12 commuter rail lines, and Access Link paratransit service. It is the third largest transit system in the country, covering a service area of 5,325 square miles with 166 rail stations, 62 light rail stations and more than 18,778 bus stops linking major points in New Jersey, New York, and Philadelphia. Metro North Railroad contracts with NJ TRANSIT to operate commuter rail service west of the Hudson River in Orange and Rockland Counties, NY.

NJ TRANSIT oversees a fleet of 3,707 buses, minibuses and related vehicular passenger equipment, which 2,245 are owned and operated directly by the corporation. As part of the organization's multi-year plan, NJ TRANSIT is investing more than $700 million to replace 1,104 cruiser buses. The purchase of additional cruiser buses in FY 2020 will result in an average bus fleet age of 7.7 years, consistent with a

"Medium" rating for the "Current Capital and Operating Condition" sub-rating (average bus fleet age of under 8 years). By FY 2022, the average age of the bus fleet will be 5 years, consistent with a "High" rating for the "Current Capital and Operating Condition" sub-rating (average bus fleet age of under 6 years). NJ TRANSIT administers several publicly funded transit programs for people with disabilities, senior citizens and people living in the state's rural areas who have no other means of transportation. The agency provides support and equipment to privately-owned contract bus carriers as well.

NJ TRANSIT is the Project Sponsor for the PNB Project, and the public transportation operator that will utilize the PNB. NJ TRANSIT has experience handling projects with the size and complexity of the PNB Project as demonstrated by its successful completion and operation of the Hudson Bergen Light Rail System (funded with a New Starts Grant), the Secaucus Transfer Station (funded in part with FTA grant funds), and the South Jersey Light Rail System (funded solely with state funds). The State of New Jersey, through the New Jersey Economic Development Authority (NJEDA), will serve as the issuer of bonds for the purpose of financing the NJ TRANSIT contribution to the PNB Project. The New Jersey Transportation Trust Fund Authority (NJTTFA) serves as one of the entities that will provide funding, subject to appropriation by the New Jersey State Legislature, to NJ TRANSIT that will, in turn, be paid to the NJEDA for the repayment of the NJEDA Bonds. The New Jersey Turnpike Authority (NJTA) will also contribute to the PNB Project. The roles of these entities are described in Section 1.4.2.

1.4.2 PNB Funding Partners

1.4.2.1 State of New Jersey

The State of New Jersey is a funding partner to the PNB Project through NJTTFA, NJTA, and the NJEDA. The NJTTFA and the NJTA are independent agencies of the New Jersey state government, and NJEDA is an instrumentality of the State of New Jersey. NJEDA will serve as the issuer of bonds for the purpose of financing the NJ TRANSIT contribution to the PNB Project. The roles of these agencies are described below.

1.4.2.2 New Jersey Transportation Trust Fund Authority

The New Jersey Transportation Trust Fund (NJTTF), created in 1984 through the Transportation Trust Fund statute (N.J.S.A. 27:1B-1, et seq.), is currently NJ TRANSIT's significant source of capital funding. The NJTTF is financed by the NJTTFA, an independent agency of the New Jersey state government. The fund supports the New Jersey Department of Transportation (NJDOT), NJ TRANSIT, and local aid projects. Since its inception in FY 1985, the NJTTF has designated roughly 40 percent of its funds towards NJ TRANSIT. The NJTTF is described in greater detail in Chapter 2.0 of this financial plan.

In 2016, action was taken by the New Jersey Legislature to sustain and increase funding for the NJTTF. On October 7, 2016, the New Jersey State Legislature passed Assembly Bill 10 (A10) reauthorizing the NJTTF for an 8-year period at $16 billion over the reauthorization lifecycle. This reauthorization was partially funded by an increase of 23 cents per gallon in the state's petroleum products gross receipts tax and 4 cents per gallon in the diesel fuel tax. On November 8, 2016, a constitutional amendment dedicating all of the motor fuels tax revenues and petroleum products gross receipt tax revenues for the purposes of paying or financing the cost of planning, acquisition, engineering, construction, reconstruction, repair and rehabilitation of the transportation system in New Jersey was passed by New Jersey voters. The New Jersey Legislature annually appropriates such revenues to NJTTF. The strength of the security pledges supporting State of New Jersey and NJTTF debt issuances are demonstrated through credit ratings in the A category for State of New Jersey General Obligation bonds and credit ratings in the BBB+ to A category

for NJTTF bonds. In January 2019, NJTTFA successfully issued $750 million in Transportation Program Bonds.

1.4.2.3 New Jersey Turnpike Authority

The NJTA is a body corporate and politic of the State of New Jersey organized and existing by virtue of the New Jersey Turnpike Act of 1948, constituting Chapter 454 of the Laws of New Jersey of 1948, as amended and supplemented. Pursuant to the Act, the Authority has owned and operated the New Jersey Turnpike ("Turnpike") since the time the Turnpike opened for traffic in 1951. In July 2003, the New Jersey Highway Authority (NJHA) was abolished and NJTA assumed all of the powers, rights, obligations, assets, debts, liabilities and statutory responsibilities and duties of the NJHA, including the ownership and operation of the Garden State Parkway (the "Parkway").

NJTA owns and operates two well-established major toll roads (the Turnpike and the Parkway) in a densely populated and wealthy region of the country. They act as the "supply chain spine" and the "distribution platform" for the entire Northeast region. The Turnpike consists of a 122-mile mainline and two extensions. The Parkway is a 173-mile limited access toll road from Cape May, New Jersey to Spring Valley, New York. NJTA is committed to prudently managing its finances and operations to provide its customers with a safe, efficient, innovative and resilient toll road system, which facilitates mobility in New Jersey and the Northeast United States. In 2018, total toll transactions and total passenger car transactions on the Turnpike were the highest ever recorded. The 264.7 million total toll transactions and 230.5 million total passenger car transactions exceeded 2017 levels which were the previous highs. In addition, the 2018 commercial vehicle transactions of 34.3 million increased 5% from 2017, and is the highest level ever recorded since the pre-recession previous high, recorded in 2007. As documented in NJTA's 2018 comprehensive annual financial report, its credit rating is A2 Moody's, A+ S&P and A Fitch.

For the purposes of the PNB Project NJEDA bonds repayment, NJTA has committed funds in the amount of $25 million per year to the PNB Project through the final term of the NJEDA bonds.

1.4.2.4 New Jersey Economic Development Authority

NJEDA was created in 1974 by the New Jersey Legislature as a public body corporate and politic and an instrumentality of the State of New Jersey. It was created and operates pursuant to The New Jersey Economic Development Authority Act, P.L. 1974, c. 80, as amended and supplemented. The Act authorizes NJEDA to assist in various ways in financing the cost of acquiring, constructing, improving and equipping projects, including transportation projects.

NJ TRANSIT does not have statutory authorization to issue State appropriation-backed obligations on its own behalf. Instead, NJ TRANSIT may utilize NJEDA as a conduit entity to finance capital projects on its behalf, which is the mechanism proposed under the financial plan for the PNB Project.

NJEDA has previously entered into leases and contracts with NJ TRANSIT to secure the financing of various capital projects and programs in the state. Under the terms of these various agreements, NJEDA issues bonds to fund capital projects and enters into a lease/sublease arrangement with NJ TRANSIT. NJ TRANSIT makes rental payments to NJEDA equal to the debt service on, and other costs related to, the obligations sold to finance the projects, including any payments pursuant to the agreements. NJ TRANSIT's payments to NJEDA are drawn from funds received from NJTTF to NJ TRANSIT. NJTA has committed funds in the amount of $25 million per year to the PNB Project through the final term of the NJEDA bonds.

The annual NJTTFA capital project spending authorization enables NJ TRANSIT to make the required debt service payments for the capital projects.

Prior NJEDA/NJ TRANSIT/NJTTFA issuances are as follows:

- The $633mm 1999 financing of both the River Line ($486mm) and of Hudson Bergen Light Rail ($147mm). The bonds were refunded in 2003 and converted into auction rate bonds with a new money issuance of a further $35 million. The bonds were converted into fixed rate debt in August 2008 following the collapse of the auction rate market. Repayment of the bonds was made via a funding agreement whereby NJ TRANSIT pledged to the NJEDA NJTTFA appropriations in an amount not to exceed that year's debt service. The outstanding balance of $39.4 million matured on May 1, 2019.
- In January 2017, the NJEDA refinanced all of NJ TRANSIT's $563.595 million outstanding State of New Jersey Certificates of Participation (Series 2004A, 2008A and 2009A) and issued $65.4 million of new money for NJ TRANSIT projects (2017 Bonds). The final maturity of the 2017 Bonds is November 2027.

The complete documentation of the 2008 Series A NJEDA River Line refunding is provided as supporting document E-18 (listed in Appendix C).

NJEDA will issue publicly offered NJEDA bonds on behalf of NJ TRANSIT for the PNB Project. Funding for NJ TRANSIT's obligations to NJEDA for the NJEDA bonds will use the same structure successfully utilized for the 2017 Bonds described above. On June 12, 2018, the NJEDA Board passed a resolution authorizing a principal amount not to exceed $600 million in NJEDA bonds for financing the PNB Project. A similar resolution was passed by the NJ TRANSIT Board on June 13, 2018. Finally, a Funding Agreement by and between NJEDA and NJ TRANSIT, with the consent of the Commissioner of the NJDOT, was executed on June 18, 2018. Request for Proposals (RFPs) for underwriters and bond counsel to progress the NJEDA bonds were issued and awarded in June 2018.

Concurrent with financial close of the NJEDA bonds, NJ TRANSIT and NJEDA will enter into a lease/sublease arrangement in connection with NJ TRANSIT's commitment to provide the funding necessary to repay the NJEDA bonds. NJ TRANSIT will possess a real property interest in the PNB Project. NJ TRANSIT will lease that property interest to the NJEDA, which will in turn sublease the property interest back to NJ TRANSIT. NJ TRANSIT's rent payments under the sublease will be in an amount sufficient to pay and will be pledged to pay the debt service on the NJEDA bonds. The NJTTF is the source of funds for NJ TRANSIT to make such rent payments as described above. NJTA has committed funds in the amount of $25 million per year to the PNB Project through the final term of the NJEDA bonds

Additional information on the NJEDA, NJ TRANSIT, NJTTF, and NJTA funds will be provided in Chapter 2.0 of this financial plan.

1.4.2.5 Amtrak

Amtrak – America's Railroad® – is dedicated to connecting America in safer, greener and healthier ways. As the nation's intercity passenger rail service provider and high-speed rail operator, Amtrak has 21,000 route miles in 46 states, the District of Columbia and three Canadian provinces. Amtrak owns the majority of the 457-mile NEC, including the entire line south of New York City, and is responsible for its operations and maintenance. Carrying over 2,200 daily trains, including Amtrak, commuter, and freight trains, the NEC is the nation's most congested rail corridor and is among the highest volume rail corridors in the

world. As infrastructure owner of the NEC, Amtrak owns and dispatches trains over the existing Portal Bridge and North River Tunnel.

Amtrak is governed by a nine-member board of directors appointed by the President of the United States and confirmed by the U.S. Senate. Amtrak is organized as a federally-chartered, private, for-profit corporation in the District of Columbia.

Planning and design of the PNB was supported by a cooperative effort between NJ TRANSIT and Amtrak. NJ TRANSIT had the lead role in procuring and developing the project design in partnership with Amtrak.

Amtrak is a supporting partner and a funding partner to the PNB Project, and is the intercity rail transportation operator that will utilize the PNB. Amtrak will also be responsible for dispatching trains and maintaining the PNB. Amtrak has also pledged to cover 50 percent of any project cost overruns. The details of Amtrak's financial support for the PNB Project are provided in Section 2.2.2.1.

1.4.2.6 Federal Transit Administration

The FTA is a proposed funding partner for the PNB Project. The FTA administers a number of grant programs to support transit investments and operations carried out by local grantees. One of these programs is the discretionary Section 5309 CIG program, through which FTA can make grants for New Starts, Small Starts, and Core Capacity investments.

FTA obligates discretionary Section 5309 Core Capacity grants to state and local governments for substantial corridor-based capital investments in existing fixed guideway systems that increase capacity by not less than 10 percent in corridors that are at capacity today, or will be in five years.

FTA obligates discretionary Section 5309 New Starts grants to state and local governments for new fixed guideway projects or extensions to existing fixed guideway systems with a total estimated capital cost of $300 million or more, or that are seeking $100 million or more in Section 5309 CIG program funds.

To be eligible, projects applying for CIG funds must meet certain procedural requirements and a series of project justification and local financial commitment criteria mandated by the Fixing America's Surface Transportation Act (FAST Act). These requirements vary for New Starts, Small Starts, and Core Capacity investments.

Federal funding assistance from the FTA in the form of a CIG Core Capacity grant is assumed in the financial plan for the PNB Project.

1.4.2.7 Federal Railroad Administration

FRA is a proposed funding partner for the PNB Project. FRA has jurisdiction over passenger and freight railroads, and administers competitive grants, dedicated grants, and loan programs. The purpose of FRA's financial assistance programs is to support infrastructure projects which may improve safety, relieve congestion and enable the expansion of rail services. Recipients of financial assistance from the FRA may include commuter rail systems, and state and local governments and Amtrak.

The FRA is responsible for administering a dedicated capital grant program to Amtrak. Appropriated funds to Amtrak are divided by NEC and National Network accounts, and monitored by the FRA on a monthly basis.

1.5 Description of the Portal North Bridge Project

The existing Portal Bridge, a two-track, railroad swing-type bridge which crosses the Hackensack River in New Jersey, was built in 1910 as part of the Pennsylvania Railroad's extension from New Jersey to

Manhattan. The bridge is a vital element of the NEC—the most heavily used passenger rail line in the U.S., both in terms of ridership and service frequency. The NEC extends from Washington, D.C. in the south to Boston, Massachusetts in the north, in the densely populated northeast region, through eight states and Washington, D.C., including PSNY in New York City.

1.5.1 Portal North Bridge Project Identification

The proposed PNB Project will replace the existing two-track Portal Bridge with a new two-track fixed structure. The entire project will be approximately 2.3 miles long, which includes approximately 6,800 linear feet of elevated structures to be built on the east and west sides of the Hackensack River, as well as crossing directly over the Hackensack river, and approximately 6,100 feet of railroad embankment sections. The bridge span directly over the Hackensack River will have a clearance that accommodates current and forecasted maritime traffic, thereby eliminating the need for a movable span that interrupts rail operations and results in delays due to mechanical failures. The new bridge design will improve reliability, allowing NJ TRANSIT to operate longer and higher capacity trains. Additionally, trains will be able to cross the bridge at 90 mph, up from 60 mph today. The PNB Project scope therefore also includes the purchase of 25 multilevel cars (22+3 spares) which provide a greater than 10 percent increase in peak hour passenger capacity.

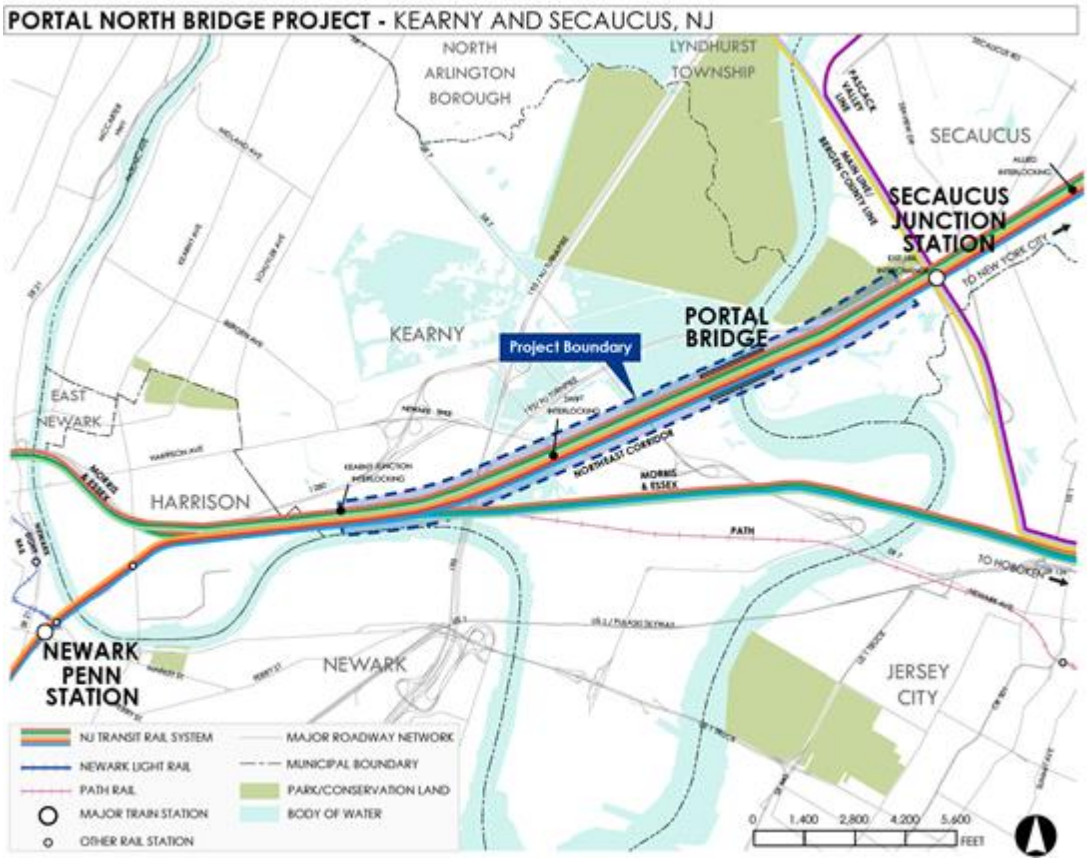
1.5.2 Portal North Bridge Setting

The PNB Project extends 2.3 miles east to west from Secaucus Junction Station, located in Secaucus, NJ, to Kearny Junction Interlocking located across the river in Kearny, NJ (illustrated in Figure 1-3). The existing Portal Bridge spans the Hackensack River and multiple NJ TRANSIT rail services throughout the state feed into and utilize the bridge, including NEC, North Jersey Coast Line, Morristown Line, Montclair-Boonton Line, Gladstone Branch, and Raritan Valley Line trains. Numerous Amtrak Intercity services also utilize the existing Portal Bridge, including Acela Express, Northeast Regional, Keystone, and multiple long-distance trains.

1.5.3 Portal Bridge Current Conditions

The existing Portal Bridge serves 349 NJ TRANSIT trains and 105 Amtrak trains daily, accommodating approximately 206,500 trips (184,600 NJ TRANSIT + 21,900 Amtrak) every weekday. There has been a prolonged trend of growth in NJ TRANSIT ridership. Ridership into PSNY has increased an average of 3.1 percent per year since 2005 (including during the recent economic recession) and increased 6.6 percent per year since 2013. Likewise, Amtrak NEC ridership over the existing Portal Bridge has increased at a compound average growth rate of 2.4 percent per year since 2005 and 3.3 percent per year since 2010. The existing NEC is nearly at capacity and ridership growth expected in the next five years will exacerbate this condition. Overall, demand vs. seating capacity on NJ TRANSIT trains in the peak hour remains at 98 percent, with 13 of 21 NJ TRANSIT trains operating over capacity, per FTA guidance on calculating passenger demand versus available seating. Trans-Hudson daily rail ridership is projected to grow at 1.5 percent each year over the next 5 years based on Metropolitan Planning Organization forecasts (equal to 7,100 trips). NJ TRANSIT rail service into PSNY is part of a comprehensive trans-Hudson public transit system for Midtown Manhattan where the other dominant transit mode, bus service, is also at capacity.

Figure 1-3 Portal North Bridge Project Location Map - Swift Interlocking to Secaucus Junction Station



The bridge's age and design limitations prevent Amtrak and NJ TRANSIT from making incremental investments in order to accommodate their growing ridership. The bridge was constructed over a century ago with a 23-foot clearance, low enough to require the bridge's swing-span to pivot open for crossing maritime traffic today. Opening the span closes the bridge to rail traffic, interrupting operations at a critical juncture on the NEC. The bridge's equipment also experiences frequent mechanical failures, resulting in delays that cascade up and down on one of the nation's busiest rail lines. The risk of continued and increasing unplanned outages due to malfunctioning of the obsolete bridge cannot be mitigated through maintenance. In October 2018, for example, the bridge swung open but failed to close—twice in the same day. The second failure occurred during rush hour when the bridge stayed open for more than an hour, causing a substantial delay to more than 80,000 passengers.

Significant maintenance is regularly performed but does not effectively extend the life of the bridge. "Miter rails," which allow the rails to disengage and the bridge to open and close, have been an ongoing problem since the existing Portal Bridge was constructed, and the connections have been replaced several times. These miter rails permanently restrict speeds on the existing Portal Bridge to 60 mph, while trains can operate at 90 mph on adjacent portions of the NEC, causing bottlenecks throughout the whole corridor. Furthermore, extensive maintenance of the bridge will not eliminate the need to open the bridge for maritime traffic, and the Coast Guard considers the bridge's central pier a navigational hazard.

In the 2014-2018 period, the existing Portal Bridge has experienced 18 "major incident" days (defined as a minimum of five hours of delay to Amtrak and/or NJ TRANSIT) involving the Portal Bridge, resulting in cumulative delays of ~780 hours. Over the same period, routine openings of Portal Bridge caused delays on 230 days, affecting 1,000 trains and causing 230 hours of train delay. Other critical incidents related to the bridge's age and condition have occurred periodically in recent years. For example, fires in 2005 and 2014 were due to the failure of the Portal Bridge's opening mechanism and the use of wooden fenders at the base of the bridge. In 1996, the failure of the bridge's swing span to close caused the derailment of a passing train, resulting in 40 passenger injuries.

The impact of insufficient passenger capacity and service delays up and down the NEC would be catastrophic. If the tens of thousands of commuters and travelers are not afforded a comfortable and efficient journey, or suffer unexpected, lengthy delays due to maritime traffic and system failures, they may choose other modes of travel and would add to already congested bridges, tunnels, and streets in both New Jersey and New York. The resulting congestion would do more harm than simply lengthening the daily commutes and intercity trips of trans-Hudson travelers. It would lead to a sizeable degradation of air quality throughout the region, with the movement of people and goods to and from the nation's largest regional economy becoming severely constrained.

1.5.4 Portal North Bridge Project Purpose

The purpose of the PNB Project is to replace the Portal Bridge, which was placed into service over 100 years ago in 1910, with the result of enhancing capacity on the NEC. In addition to increasing capacity to meet current and future demand along the NEC, the PNB Project will improve service reliability and operational flexibility while eliminating conflicts with maritime traffic.

The improved reliability achieved with a new fixed span PNB will provide NJ TRANSIT with greater certainty of being able to access longer platforms at PSNY, allowing for additional and regular scheduling of longer trains and multilevel passenger cars that provide approximately 11 percent more seats per train. At PSNY, NJ TRANSIT trains are almost exclusively assigned to Tracks 1–4 which are stub ended, accommodate limited train lengths, and have limited vertical access (Tracks 1–3 can accommodate an 8-car train and Track 4 a 9-car train). Tracks 5–16 can accommodate longer trainsets, and have more vertical access locations (including the extended West End Concourse).

Increasing train lengths and passenger capacity under the existing Portal Bridge movable configuration is impossible because of frequent infrastructure failures. In 2014, there were 131 bridge failure delays, resulting in over 1.9 million person-hours lost (note: this does not include delays to trains when the bridge normally opens for marine traffic). The unreliability of the bridge's current condition would not allow

NJ TRANSIT to run the longer trainsets to Tracks 5-16 and regular bridge incidents would require NJ TRANSIT to cancel or delay trains.

Under normal operating conditions, NJ TRANSIT operates 21 trains each AM peak weekday hour across the existing Portal Bridge. The proposed PNB Core Capacity project will allow for an 11.6 percent increase in available seating in the AM peak hour in the primary flow direction (eastbound) because NJ TRANSIT will be able to add cars to seven of its existing peak hour trains and utilize multilevel passenger cars on five others. The PNB Project would result in a capacity increase from 25,834 available seats (.95 x actual seating) in the eastbound am peak hour to 28,824, for a net gain of +2,990 seats. The number of new cars required was calculated by dividing the number of new seats (2,990) by 136 seats/car equals 22 cars plus 3 spare cars (13 percent) for a total of 25 cars.

The new PNB itself will further allow for an increase of two new trains in the peak hour on the bridge above the current 26 trains per hour capacity (21 NJ TRANSIT + 5 Amtrak). It is important to note that this increase in capacity cannot be realized until future Gateway Program elements (new tunnels and station capacity) are complete. Accordingly, these benefits are not quantified as a benefit of the PNB Project.

Although also not quantified as a benefit of the PNB Project for FTA Core Capacity assessment purposes, it is worth noting that Amtrak is also replacing the current Acela equipment with new trainsets that will provide the added seating it needs to satisfy future intercity travel demand. Between the use of these new trainsets and other actions to add equipment to other trains, Amtrak expects to increase its own seating capacity by more than the +10% threshold set by the FAST Act to demonstrate a project benefit.

1.5.5 Portal North Bridge Project Summary

The PNB Project is a critical, independent component of the Gateway Program, the comprehensive rail improvement program between Newark Penn Station, NJ and PSNY. The PNB Project meets all criteria for Core Capacity eligibility: ridership on the NEC commuter rail corridor currently at capacity and the PNB Project is a substantial, corridor-based investment within the existing NEC that will increase capacity by over 10 percent. The PNB Project is not rehabilitating the existing bridge but is to build a new high-level fixed span bridge on a new rail alignment. The PNB Project provides the reliability necessary for NJ TRANSIT to add capacity and is the result of many years of strategic planning to provide more reliable and operationally sound railroad infrastructure. Additionally, its functionality adheres to US Coast Guard requirements to eliminate interference with marine traffic.

Phase 1B: Hudson Tunnel Project

1.6 Hudson Tunnel Project Overview

The purpose of the HTP is to preserve the current functionality of Amtrak's NEC service and NJ TRANSIT's commuter passenger rail service between New Jersey and PSNY by repairing the deteriorating North River Tunnel; and to strengthen the NEC's resiliency to support reliable service by providing redundant capability under the Hudson River for Amtrak and NJ TRANSIT NEC trains between New Jersey and PSNY.

The HTP includes (1) the construction of a new two-track Hudson River rail tunnel from the Bergen Palisades in New Jersey to Manhattan that will directly serve PSNY; (2) the completion of the Hudson Yards Concrete Casing (HYCC); and (3) rehabilitation of the existing North River Tunnel. This will allow the existing North River Tunnel to be taken out of service for necessary and extensive rehabilitation. The existing tunnel presents reliability challenges due to age, intensive use, and significant and ongoing damage from Superstorm Sandy in 2012, resulting in significant delays when problems arise.

The HTP, for purposes of its FTA CIG New Starts Financial Plan, consists of the following specific elements:

1. **Hudson River Tunnel:** Two new surface tracks parallel to the south side of the NEC beginning at a realigned Allied Interlocking in Secaucus, New Jersey just east of NJ TRANSIT's Secaucus Junction Station, in conjunction with a new two-track Hudson River Tunnel, parallel to the North River Tunnel, beneath the Palisades (North Bergen and Union City) and the Hoboken waterfront area, and beneath the Hudson River to connect to the tracks in the A Yard at PSNY;
2. **HYCC – Section 3:** This includes the construction of the third and final rail right-of-way preservation section beneath the extensive overbuild project that is planned to be constructed on a platform above the rail complex in Manhattan (immediately west of PSNY) known as "Hudson Yards." The new Hudson River Tunnel would make use of the entire HYCC being constructed along the southern edge of the West Side Yard, which consists of the Eastern Rail Yard (ERY) and the Western Rail Yard (WRY), as divided by Eleventh Avenue. The completed HYCC will extend from the north side of West 30th Street to the west side of Tenth Avenue. Construction has been completed on HYCC-Section 1 (an 825-foot section of the HYCC within the ERY between Tenth and Eleventh Avenues, north of West 30th Street) and HYCC-Section 2 (a 105-foot-long portion beneath the viaduct that carries Eleventh Avenue over the West Side Yard). The overbuild project above HYCC-Section 1 and HYCC-Section 2 has completed construction above the platform in the Eastern Rail Yard and that portion of the development site opened on March 15, 2019. The final section, HYCC-Section 3, would be constructed from the western side of Eleventh Avenue to the north side of West 30th Street. The overbuild project above HYCC-Section 3 has not commenced construction of the platform in the Western Rail Yard, but it is expected that the private developers will begin construction of this platform in the not too distant future. HYCC-Section 3 is a right-of-way preservation measure and is included as part of this financial plan, though it is separate and apart from the current Environmental Impact Statement being prepared for the new Hudson River Tunnel and Rehabilitation of the existing North River Tunnel; and
3. **North River Tunnel:** The rehabilitation of the existing North River Tunnel that opened in 1910.

At the completion of the HTP, the NEC would have four tracks (two in the new Hudson River Tunnel and two in the North River Tunnel) between New Jersey and New York under the Hudson River,

which would provide operational flexibility and redundancy for Amtrak and NJ TRANSIT rail operations. No changes to PSNY platforms or platform tracks are proposed as part of the HTP; maintaining the current operational capacity of PSNY as is.

PANYNJ has agreed to perform the role of CIG grant applicant and NEPA Project Sponsor, on behalf of the Project Partners for the HTP. Planning and design of the new Hudson Tunnel and rehabilitation of the existing North River Tunnel is supported by a cooperative effort between Amtrak, NJ TRANSIT, PANYNJ, and the FRA. Amtrak, under agreement with the PANYNJ, has served as project manager and is responsible for completing preliminary design for the construction of the new Hudson River Tunnel and Rehabilitation of the North River Tunnel.

1.6.1 Status of Environmental Review

The Project Partners are awaiting USDOT's approval of the environmental review for the new Hudson River Tunnel and Rehabilitation of the North River Tunnel. The FRA is the Lead Federal Agency and NJ TRANSIT and the PANYNJ are joint lead agencies for the environmental review. FTA and the U.S. Army Corps of Engineers are the two Cooperating Agencies involved in the environmental review.

FRA and NJ TRANSIT jointly prepared a Draft Environmental Impact Statement (DEIS) to evaluate the new Hudson River Tunnel and rehabilitation of the existing North River Tunnel in July 2017. The draft FEIS was completed and provided on-schedule to FRA for their review in February 2018, 22 months from the Notice of Intent, which is less than half the time generally required for a project of this size and complexity. The Federal Infrastructure Projects Permitting Dashboard indicated that the target issuance date for the FEIS and ROD would be on March 30, 2018.

In October 2018, the FRA requested that the draft FEIS be updated to include the PANYNJ as NEPA Project Sponsor and set December 10, 2018 as the deadline for such modifications. On-schedule, the Project Partners provided a revised draft FEIS to FRA on December 10, 2018. Since a ROD is required from FTA to meet FTA CIG Program requirements, FRA provided FTA with the revised draft FEIS on December 11, 2018. At that time, neither FRA nor FTA provided a schedule for publishing the FEIS or ROD. On January 9, 2019, FTA, FRA, NJ TRANSIT, and PANYNJ were scheduled to meet to discuss the revisions with FTA. However, the meeting was cancelled due to the federal government lapse in appropriations (federal government shutdown). During the federal government shutdown, the Gateway Program Development Corporation requested that USDOT issue a ROD immediately under the "One Federal Decision" policy. After the federal government re-opened, the meeting was rescheduled and held on February 11, 2019. At that time, and at the time of this submittal, neither FRA nor FTA has provided any schedule and has not described what steps remain outstanding for issuing the FEIS or ROD. An FTA ROD is a prerequisite for requesting entry into the FTA CIG Program's Engineering Phase and commencing some early work activities.

The environmental review for the HYCC Right-of-Way Preservation project (which includes HYCC-Section 3 and the already constructed HYCC-Section 2) underwent a Supplemental Environmental Assessment in 2014 and received a Finding of No Significant Impact (FONSI) from FRA in November 2014. Since an environmental determination is required from FTA to meet FTA CIG Program requirements, and per the FTA's recommendation, the PANYNJ, on behalf of the Project Partners, requested a Categorical Exclusion from the FTA for HYCC-Section 3 on August 2, 2018. In December 2018, FTA requested supplemental materials that were provided to FTA by PANYNJ that same month. FTA has not provided a schedule as of this submission for issuing the Categorical Exclusion.

For the purposes of this financial plan submittal, the Project Partners have assumed the following:

- The FEIS for the new Hudson River Tunnel and rehabilitation of the North River Tunnel will be released by FRA for review shortly,
- The ROD for the new Hudson River Tunnel and rehabilitation of the North River Tunnel will be issued by FRA and FTA in calendar year 2019, and
- The Categorical Exclusion for HYCC-Section 3 will be issued by FTA in calendar year 2019.

The Project Partners will continue to cooperate fully and in a timely manner with USDOT to ensure these environmental review milestones are met. The completion of the environmental reviews in calendar year 2019 enables early work to progress during 2020 while procurement activities are underway to facilitate the notice-to-proceed date assumed as part of this financial plan submittal.

1.7 Description of the of the HTP Sponsor and Supporting Partners

Entities serving as project sponsor, and supporting partners/funding partners are further described in subsections below.

1.7.1 HTP Project Sponsor

1.7.1.1 Port Authority of New York and New Jersey

Founded in 1921, the PANYNJ builds, operates, and maintains many of the most important transportation and trade infrastructure assets in the country. The agency's network of aviation, ground, rail, and seaport facilities is critical to the New York/New Jersey region's trade and transportation, supporting more than 550,000 regional jobs, and generating more than $23 billion in annual wages and $80 billion in annual economic activity. These facilities include America's busiest airport system, marine terminals and ports, the Port Authority Trans-Hudson (PATH) rail transit system, 2 tunnels and 4 bridges between New York and New Jersey, the Port Authority Bus Terminal in Manhattan, and the World Trade Center.

The PANYNJ raises the necessary funds for the improvement, construction or acquisition of its facilities primarily on the basis of its own credit. The revenues of the PANYNJ are derived principally from the tolls, fares, take-off and landing fees, and dockage fee, rentals, and other charges for the use of, and privileges at, certain of its facilities. The diverse operation of critical infrastructure assets, strong demographics of the region, strong liquidity, and a conservative debt structure all contribute to the PANYNJ's strong credit profile.

The PANYNJ is also a funding partner for the HTP. Additional information on PANYNJ's scheduled debt service payments to the Corporation for the repayment of HTP RRIF loan proceeds is provided in Chapter 3. The PANYNJ has agreed to perform the role of CIG grant applicant and NEPA Project Sponsor, on behalf of the Project Partners for the HTP.

1.7.2 HTP Supporting Partners

1.7.2.1 Gateway Program Development Corporation (Corporation)

In November 2016, the Corporation was incorporated as a New Jersey Domestic Nonprofit Corporation for the purposes of "coordinating, developing, operating, financing, managing, owning or otherwise engaging in activities to effectuate" the entire Gateway Program. The Board of Trustees consists of individuals appointed by (1) the governing body of NJ TRANSIT, (2) the Commissioner of the New York State Department of Transportation (NYSDOT), and (3) Amtrak.

Based on extensive consultation among multiple federal, state and local stakeholders, the Corporation was established to serve a lead role in the financing and development of the Gateway Program, including acting as a federal grant and loan applicant as well as NEPA Project Sponsor. As discussed in the June 2018 progress report letter on the HTP submitted to the FTA, the Project Partners recognized that FTA had expressed the view that the Corporation, as it was constituted, was not eligible to serve as the CIG grant applicant and NEPA Project Sponsor for the HTP. In that progress report letter, the Project Partners also stated that the States of New Jersey and New York agreed to pursue legislative action in both states promptly within the framework of each state's legislative calendar that would enable the Commission to perform these financing and development functions for the HTP.

Since the June 2018 progress report letter, the States of New Jersey and New York have successfully fulfilled their commitment to create a Commission that is empowered to act as CIG grant applicant and NEPA Project Sponsor, as discussed in Section 1.7.2.2.

The Corporation will continue to coordinate and guide the work of the Project Partners until the Commission can assume that role.

1.7.2.2 Gateway Development Commission (Commission)

The Commission is a seven-member public authority and a government sponsored authority (three Commissioners from the State of New York, three Commissioners from the State of New Jersey, and one Commissioner directly appointed by Amtrak) that is empowered to facilitate and coordinate activities and encourage the actions of others to effectuate the Gateway Program, in particular, Phase 1 of the Gateway program, the PNB Project and the HTP.

The completion of this legislative process to create the Commission is evidence of the strong commitment by the States of New Jersey and New York towards the HTP. The Project Partners intend for the Commission to carry out the lead role in the financing and development of the HTP as soon as it has been established and provided with the appropriate resources from the State of New Jersey, State of New York, and Amtrak. The Commission is further discussed in Section 1.2.

1.7.2.3 NJ TRANSIT

NJ TRANSIT is the State of New Jersey's public transportation corporation (described in Section 1.4.1.1) and the public transportation operator utilizing the HTP. NJ TRANSIT is managing the environmental review of the new Hudson River Tunnel and the Rehabilitation of the North River Tunnel and will also manage the property acquisitions in the State of New Jersey for the HTP.

1.7.3 HTP Funding Partners

1.7.3.1 State of New Jersey

The State of New Jersey has committed to support borrowing for the HTP by the Corporation through a RRIF loan. This financial plan assumes that the Corporation will be the RRIF loan applicant and will enter into a funding agreement with the State of New Jersey, under the terms of which the State of New Jersey will commit to the Corporation to pay principal, interest, and certain fees and expenses.

1.7.3.2 State of New York

The State of New York has committed to support borrowing for the HTP by the Corporation through a RRIF loan. This financial plan assumes that the Corporation will be the RRIF loan applicant and will enter into a funding agreement with the State of New York, under the terms of which the State of New York will commit to the Corporation to pay principal, interest, and certain fees and expenses.

1.7.3.3 Amtrak

Amtrak – America's Railroad® – is dedicated to connecting America in safer, greener and healthier ways. As the nation's intercity passenger rail service provider and high-speed rail operator, Amtrak has 21,000 route miles in 46 states, the District of Columbia and three Canadian provinces. Amtrak owns the majority of the 457-mile NEC, including the entire line south of New York City, and is responsible for its operations and maintenance. Carrying over 2,200 daily trains, including Amtrak, commuter, and freight trains, the NEC is the nation's most congested rail corridor and is among the highest volume rail corridors in the world. As infrastructure owner of the NEC, Amtrak owns and dispatches trains over the existing Portal Bridge and North River Tunnel.

Amtrak is governed by a nine-member board of directors appointed by the President of the United States and confirmed by the U.S. Senate. Amtrak is organized as a federally-chartered, private, for-profit corporation in the District of Columbia.

Amtrak is a funding partner to the HTP and is the intercity rail transportation operator that will utilize the HTP. Amtrak will also be responsible for dispatching trains through the HTP, as part of Amtrak's NEC. Amtrak will also manage the property acquisitions in the State of New York for the HTP.

1.7.3.4 Federal Transit Administration

The FTA is a proposed funding partner for the HTP. The FTA administers a number of grant programs to support transit investments and operations carried out by local grantees. One of these programs is the discretionary Section 5309 CIG program, through which FTA can make grants for New Starts, Small Starts, and Core Capacity investments.

FTA obligates discretionary Section 5309 Core Capacity grants to state and local governments for substantial corridor-based capital investments in existing fixed guideway systems that increase capacity by not less than 10 percent in corridors that are at capacity today or will be in five years.

FTA obligates discretionary Section 5309 New Starts grants to state and local governments for new fixed guideway projects or extensions to existing fixed guideway systems with a total estimated capital cost of $300 million or more, or that are seeking $100 million or more in Section 5309 CIG program funds.

To be eligible, projects applying for CIG funds must meet certain procedural requirements and a series of project justification and local financial commitment criteria mandated by the FAST Act. These requirements vary for New Starts, Small Starts, and Core Capacity investments. Furthermore, FTA requires an FTA NEPA determination to provide federal funding assistance to a project.

Federal funding assistance from the FTA in the form of a CIG New Starts grant is assumed in the financial plan for the HTP.

FTA is a cooperating agency involved in the environmental review of the new Hudson River Tunnel and Rehabilitation of the North River Tunnel. Since a ROD is required from FTA to meet FTA CIG Program requirements, it is expected that FTA will issue a ROD for these elements of the HTP. Furthermore, since an environmental determination is required from FTA to meet FTA CIG Program requirements for Section 3 of the HYCC, a Categorical Exclusion is expected to be issued by the FTA for this element of the HTP in 2019.

1.7.3.5 Federal Railroad Administration

FRA is a proposed funding partner for HTP. FRA has jurisdiction over passenger and freight railroads, and administers competitive grants, dedicated grants, and loan programs. The purpose of FRA's financial

assistance programs is to support infrastructure projects which may improve safety, relieve congestion and enable the expansion of rail services. Recipients of financial assistance from the FRA may include commuter rail systems, and state and local governments.

The FRA is responsible for administering a dedicated capital grant program to Amtrak. Appropriated funds to Amtrak are divided by operating and capital expense accounts, and monitored by the FRA on a monthly basis.

The FRA is the Lead Federal Agency for the environmental review of the new Hudson River Tunnel and Rehabilitation of the North River Tunnel and it is expected that FRA will issue a FEIS and ROD for these elements of the HTP in 2019.

1.7.3.6 Build America Bureau

USDOT's Build America Bureau (the "Bureau") is responsible for driving transportation infrastructure development projects in the United States. The Bureau was created to streamline USDOT credit opportunities and grants, providing access to these programs with increased speed and transparency while also providing technical assistance and encouraging innovative best practices in project planning, financing, delivery, and monitoring. The Bureau combines the TIFIA and RRIF loan programs, Private Activity Bonds (PABs), and the INFRA grant program all within the Office of the Undersecretary for Transportation for Policy.

RRIF loan proceeds, repaid by local revenues, are anticipated to implement the HTP.

1.8 Description of the Hudson Tunnel Project

The North River Tunnel, a two-tube tunnel, which is the sole existing Hudson River crossing on the NEX, carrying Amtrak and NJ TRANSIT passenger rail service between New Jersey and PSNY, was opened in 1910 as part of the Pennsylvania Railroad's extension from New Jersey to Manhattan and was severely damaged during Superstorm Sandy in 2012. The North River Tunnel is a vital element of the NEC, the most heavily used passenger rail line in the U.S., both in terms of ridership and service frequency. Four of NJ TRANSIT's electrified rail lines - NEC, North Jersey Coast Line, Morris and Essex Lines, and Montclair-Boonton Line - provide direct, one-seat ride service into PSNY during peak and off-peak periods. NJ TRANSIT also operates off-peak Raritan Valley Line trains through the North River Tunnel to and from PSNY.

1.8.1 Hudson Tunnel Project Identification

For funding and financing purposes, the HTP consists of three project elements which are described below:

1. New Hudson River Tunnel: The construction of two new surface tracks parallel to the south side of the NEC beginning at a realigned Allied Interlocking in Secaucus, New Jersey just east of NJ TRANSIT's Secaucus Junction Station and a new two-track Hudson River Tunnel, parallel to the existing North River Tunnel, feeding into PSNY. This element is part of the on-going FRA NEPA Process (DEIS submitted 6/30/2017)[3]. An FTA NEPA determination is required to receive FTA CIG funding, as described in Section 1.6.1.
2. HYCC – Section 3: The construction of a concrete casing in the Western Rail Yard of LIRR's West Side Yard (Hudson Yards) in Manhattan, which preserves an underground ROW for the new tunnel; this

[3] http://www.hudsontunnelproject.com/deis.html

element has already received a FRA Finding of No Significance (FONSI for Supplemental Environmental Analysis 11/14/2014)[4]. An FTA NEPA determination is required to receive FTA CIG funding, as described in Section 1.6.1.

3. Rehabilitation of the Existing North River Tunnel: The rehabilitation of the existing North River Tunnel after the new tunnel has been constructed. This element is part of the on-going FRA NEPA Process (DEIS submitted 6/30/2017)[5]. An FTA NEPA determination is required to receive FTA CIG funding, as described in Section 1.6.1.

1.8.2 Hudson Tunnel Project Setting

The study area for the HTP extends along the NEC from Secaucus, New Jersey, beneath the Palisades (North Bergen and Union City) and the Hoboken waterfront area, and beneath the Hudson River to connect to the tracks in A Yard at PSNY.

The western terminus of the new tunnel and related tracks and infrastructure would be east of County Road in Secaucus, New Jersey, and the eastern terminus would be at approximately Ninth Avenue in Manhattan, New York. New ventilation shafts and associated fan plants would be located above the tunnel in New Jersey and New York for regular and emergency ventilation and emergency access (see Figure 1-4). The new tunnel would make use of the HYCC that is being constructed along the southern edge of the West Side Yard and extends from the north side of West 30th Street to the west side of Tenth Avenue. Two of the three right-of-way preservation sections have been completed. The third section, included in this submission, completes the rail right-of-way beneath the extensive overbuild project that is planned to be constructed on a platform above the rail complex, known as “Hudson Yards” (see Figure 1-5).

The proposed HTP will allow multiple NJ TRANSIT rail services throughout the state to feed into and utilize the tunnel and PSNY, including NEC, North Jersey Coast Line, Morristown Line, Montclair-Boonton Line, Gladstone Branch, and Raritan Valley Line trains. Numerous Amtrak Intercity services will also utilize the tunnel and PSNY, including Acela Express, Northeast Regional, Keystone, and multiple long distance trains.

[4] https://www.fra.dot.gov/eLib/details/L16101

[5] http://www.hudsontunnelproject.com/deis.html

Figure 1-4 Hudson Tunnel Project Location Map

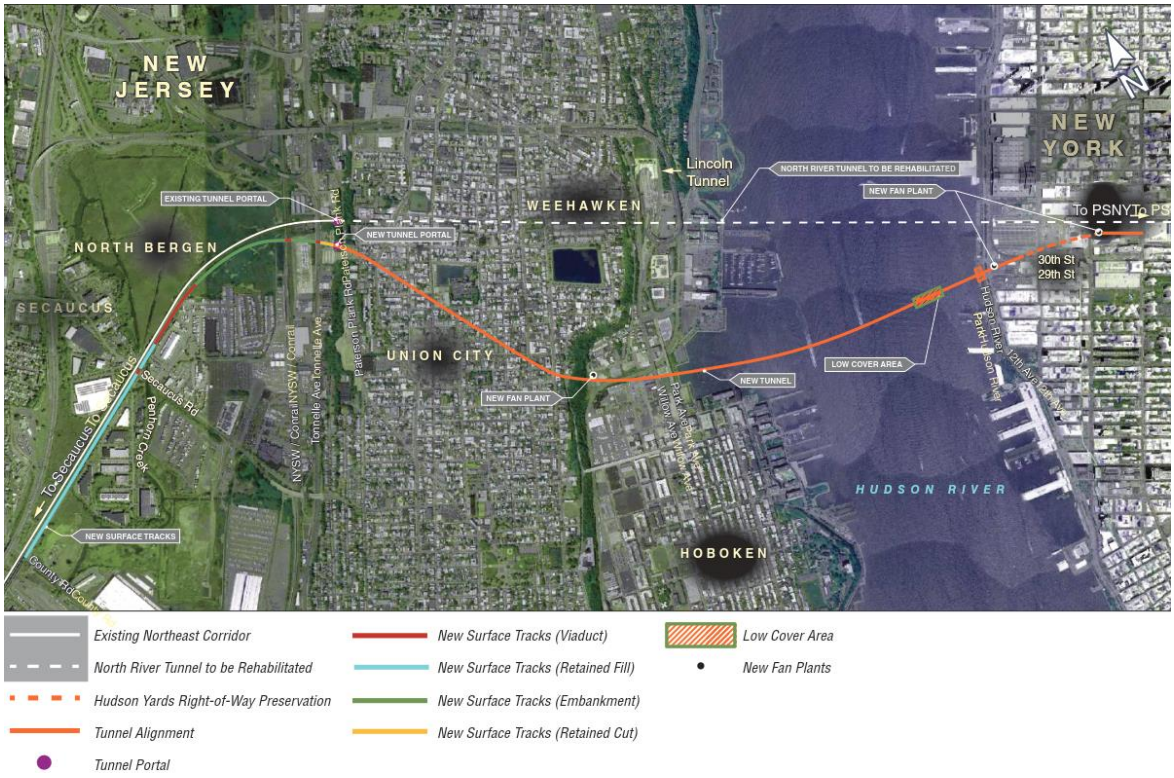
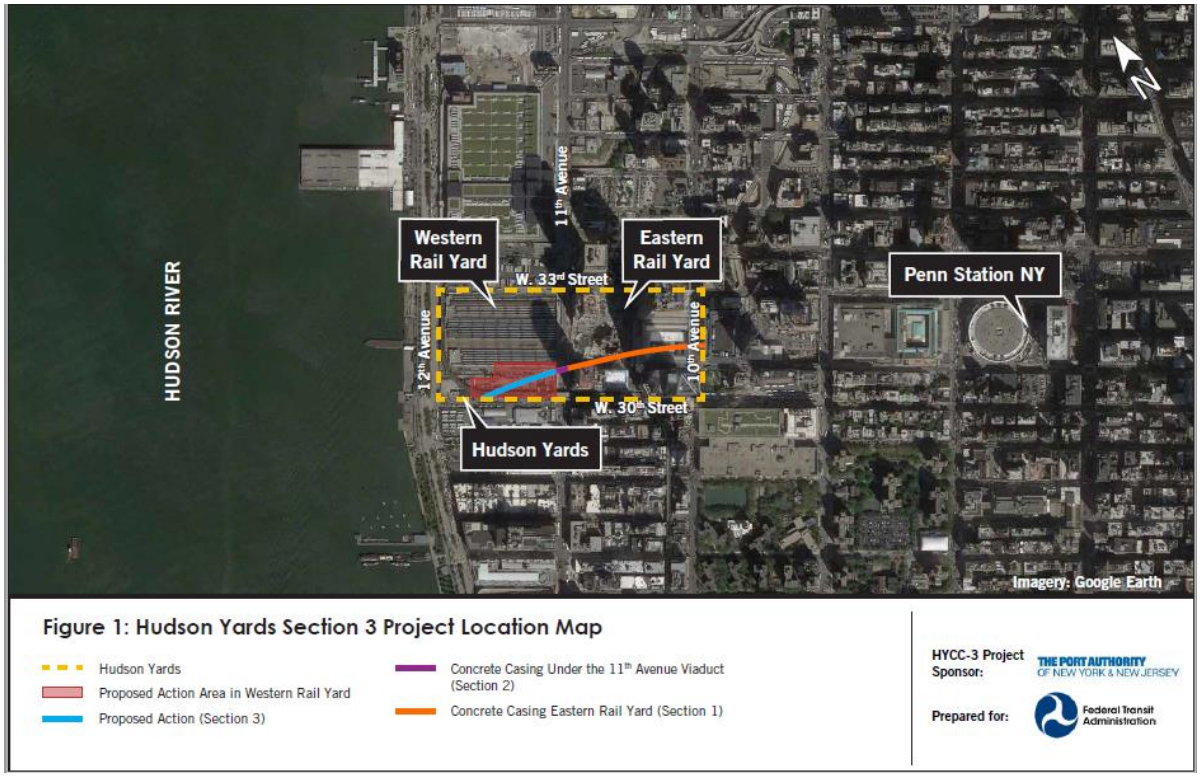


Figure 1-5 HYCC – Section 3 Location Map



1.8.3 Hudson Tunnel Project Current Conditions

The North River Tunnel, built in 1910 as part of the construction of PSNY, is more than 100 years old and was designed and built to early 20th century standards. Service reliability through the tunnel, already suboptimal because of the tunnel's age and antiquated design, has been further compromised because of the damage to tunnel components caused by Superstorm Sandy in 2012. The storm inundated both tubes of the tunnel with seawater above the height of the bench walls at the tunnel's lowest point, and deposited chlorides which remain in the tunnel's concrete liner (i.e., the inner lining of the tunnel), bench walls (the low walls on both sides of the track in each tube which provide walkways and contain utility conduits), and ballast, causing ongoing damage to tunnel components.

The North River Tunnel continues to have significant electrical and mechanical failures because of seawater inundation during Superstorm Sandy. Chlorides from the seawater remain throughout the tunnel's structural, mechanical, and electrical infrastructure, causing unpredictable damage resulting in disabled trains and significant delays. These important rail connections facilitate the movement of over 200,000 train passengers per day between New Jersey and New York and are currently single points-of-failure for the region whose economy drives 10% of America's gross domestic product[6]. Since Superstorm Sandy, Amtrak has been undertaking ongoing repairs to the tunnel. This involves scheduled work during evening off-peak periods as well as full closure of one tube each weekend for a 55-hour window beginning on Friday evening and ending early on Monday morning. These closures dramatically limit the number of trans-Hudson trains that can be operated on a given weekend day and constrain NJ TRANSIT's ability to serve current customer demand for weekend travel. Additional emergency maintenance, required when tunnel components fail, has been necessary with increasing frequency since Superstorm Sandy and this disrupts service for hundreds of thousands of rail passengers throughout the region.

According to analysis of NEC delay data performed by the staff of the NEC Commission at the request of Amtrak and NJ TRANSIT, there were 65 major infrastructure failure incident delay days between 2014 and 2018 causing more than five hours of total train delays for NJ TRANSIT and Amtrak passengers. Infrastructure issues caused 45 of those incidents, resulting in 2,500 delayed trains and 65,800 train delay minutes. Signal problems generated 13% of the delay minutes, including signal power or control issues and track occupancy light issues. Track occupancy light issues were more frequent since track circuits can be affected by broken rail, failed insulated joints, standing water or other defects in the signal circuit. Track conditions generated 31% of the delay minutes and 20 of the 65 days. Overhead power, including catenary or transmission power failures generated 35% of the delay minutes for the North River Tunnel. The existing 1-track-in, 1-track out system under the Hudson River for NJ TRANSIT and Amtrak provides no operational flexibility or redundancy, resulting in significant delays up and down the NEC when these incidents occur. That is, when an incident takes one tube out of service, traffic in and out of PSNY must use the one remaining tube resulting in significant delays that would be mitigated or eliminated by the new paths into and out of PSNY created by the two additional tubes to be constructed by the HTP.

The rehabilitation of the North River Tunnel by the HTP will comprehensively address the causes of unreliability and infrastructure failures of the existing tubes, bring them to a state of good repair (SOGR) and extend their service life well into the next century. In the meantime, Amtrak performs regular maintenance as described above that keeps the tubes safe and operational to the fullest extent possible without requiring long-term closure of the tubes. Amtrak has completed a structural inspection of all 6 subaqueous tubes serving PSNY and has compiled a catalog of designs for isolated repair details that

[6] https://nec.amtrak.com/resource/gateway-program-economic-benefits-report/

are being implemented on an as-needed basis to keep the tunnels safe and operational until a full rehabilitation outage. Amtrak has personnel, equipment and materials ready to address emergencies as they arise which has allowed Amtrak to successfully bring the tubes back into service quickly after incidents. This enhanced maintenance will continue to be diligently performed by Amtrak as owner and operator of the NEC while the HTP is constructed.

1.8.4 Hudson Tunnel Project Purpose

The purpose of the HTP is to preserve the current functionality of Amtrak's NEC service and NJ TRANSIT's commuter rail service between New Jersey and PSNY by repairing the deteriorating North River Tunnel; and to strengthen the NEC's resiliency to support reliable service by providing redundant capability under the Hudson River for Amtrak and NJ TRANSIT NEC trains between New Jersey and PSNY.

The HTP addresses a specific need stemming from the deterioration of the existing North River Tunnel and is considered independently from the capacity-enhancing projects analyzed in NEC FUTURE and proposed in Gateway Program planning documents.

The North River Tunnel Rehabilitation project element will address the causes of chronic unreliability and bring the tunnel to a state of good repair. It includes the following scope: bench wall and duct bank removal and reconstruction; replacement of the antiquated ballast track system to ballast-less track system; installation of new signal, communication, and power cables and associated components; and replacement of in-tunnel fire/life safety systems while maintaining all required systems and tunnel ventilation to protect construction workers during tunnel construction.

Deteriorating bench walls will be demolished to allow for detailed inspection and repair of the tunnel liner, reconfiguration of the replacement bench walls to better conform with current code and evacuation requirements via level disembarking from trains and unobstructed paths to safety, better and safer access to and segregation of tunnel systems to achieve maintenance efficiency and increased access to the undercarriage of trains to service disabled equipment or extinguish under-train fires, all of which are currently prohibited by the existing tunnel bench wall arrangement.

A ballast-less track system will eliminate the drainage-clogging and pump-fouling ballast fines from the tunnel environment; allow for expanded, open and accessible in-track drainage; mitigate stray current and rail corrosion issues by expediting drainage and elevating the running and third rail on new rubber-isolated blocks/pedestals; and fix the ideal rail profile and alignment without the periodic degradation and rail gage issues caused by wooden ties. A ballast-less track system will significantly reduce split rails from corrosion and wide gage from tie deterioration, two of the current leading causes of derailments in the tunnel and PSNY complex. The associated conventional, LiDAR and Amberg Trolley survey of all aspects of the existing tunnels will allow for a new optimized rail profile and alignment that better maximizes electrical clearances, in-track drainage, and dynamic train car body envelope clearances within the tight constraints of the historic tubes.

The new signal system will be fiber / microprocessor based (compatible with that installed elsewhere on the Northeast Corridor) that allows critical logic components to be relocated out of the tunnels leaving only easily swappable units in the tunnels to maximize recoverability from in-tunnel incidents. The signal system will be 'Rule 562' or 'cab-no-wayside' which removes all but one mid-river wayside signal (a physical signal located on the bench wall), conforming with modern operating procedures and removing the largest physical obstructions on the bench walls (signal masts and cabinets) for improved egress pathing and maintenance access.

Power cables which are subject to random failure after superstorm sandy (high voltage traction power feeders, high voltage facilities power feeders, signal power and low voltage power supply) will be replaced with modern equivalents and appropriately segregated to allow rapid maintenance with minimal personnel. The overhead catenary system will be replaced in its entirety, replacing the degrading historic connections to the existing tunnel liner and updating all arms and insulator assemblies.

Communications, security and fire/life safety components will be replaced and upgraded to a modern standard. (Amtrak, as part of a separate effort, is performing an in-tunnel Live Fire Detection Test program to drive design criteria development by testing multiple systems in the unique tunnel environment.) Security systems will be augmented with improved access control, full-tunnel camera monitoring and modern analytics/algorithms to detect intruders or events. All fire and life safety components will be integrated in a cohesive Supervisory Control and Data Acquisition system for remote operating, monitoring and control.

The existing tunnel concrete lining is structurally sound, but it is necessary to inspect hidden regions of the liner (below track and behind bench walls) and perform localized crack, leakage, and spall repairs to extend the core structural service life through the next century and beyond.

When finished, the rehabilitated tunnels will restore confidence in the NEC and the tunnel, provide more reliable service, improved resiliency from in-tunnel events, reduced maintenance costs and associated time the tunnel must be out of service, a much safer environment for maintenance workers, first responders and the public in the event of an evacuation and a comprehensive re-build that resets the service life of all aspects of the tunnel.

The HTP addresses resilience of the NEC Hudson River crossing and would not increase rail capacity. Although the HTP may be an element of a larger program to expand rail capacity in the future, it meets an urgent need to preserve existing service and is being evaluated accordingly. Ultimately, no increase in service between Newark Penn Station and PSNY could occur until other substantial infrastructure capacity improvements, such as those considered as part of NEC FUTURE, including the Gateway Program, are built in addition to expanded trans-Hudson capacity.

The HTP is critical to the regional and national economy and environmental well-being. Construction of the new Hudson River Tunnel avoids the looming disastrous scenario of a closure of one of the two tubes of the existing North River Tunnel prior to construction and completion of a new Hudson River Tunnel. Closure of one tube of the existing North River Tunnel could reduce train capacity by up to 75%. The 24 trains per hour that ordinarily use the existing tunnel would drop to as few as 6, which would cripple the region's economy and have impacts nationwide.

The new Hudson River Tunnel, together with a rehabilitated North River Tunnel, will result in the NEC having four tracks (two in the new Hudson River Tunnel and two in the existing North River Tunnel) between New Jersey and New York under the Hudson River, which would provide operational flexibility and redundancy for passenger and intercity rail operations. Furthermore, the HTP improves operational flexibility and resiliency to provide a more reliable rail travel experience through the following additional benefits:

- The four tubes of the HTP provide additional flexibility to route trains in and out of PSNY, reducing conflicts on the approach tracks to PSNY, thereby improving the utilization of platforms available to serve trains. This operational flexibility reduces congestion at PSNY and improves reliability for NJ TRANSIT and Amtrak riders;

- The additional two tubes constructed as part of the HTP allow operational flexibility for weekend service, which is currently severely restricted by single track operations through the North River Tunnel due to necessary maintenance (regular maintenance work to track, signal, electric traction systems), essential to keeping the systems in use, prior to any shut-downs for major, possibly emergency projects;
- The new tubes are designed to be fully compliant with National Fire Protection Association (NFPA) 130, the fire and safety code governing passenger rail systems;
- The HTP enables the region to mitigate impacts to infrastructure and service due to severe and extreme weather events. It provides a more resilient overall system that can withstand natural disasters, such as major storms and floods, since it is been designed to meet a higher flood design criterion that includes sea level rise;
- The continued deterioration of the existing tubes of the North River Tunnel will result in more frequent delays due to component failures within the tunnel. The lack of redundant capability across the Hudson River means that any service outage, either unplanned or for planned maintenance, results in substantial reductions to NEC reliability and on-time performance. Once the new tubes are constructed as part of the HTP, maintenance can take place without these service disruptions since having the new tubes in place will provide alternate train paths; and
- The HTP does not preclude any future phases of the Gateway Program and allows for connections to future capacity expansion projects. Building the new tubes gets the region one step closer to meeting future travel demands along the NEC for weekdays as well as weekend service.

1.8.5 Hudson Tunnel Project Summary

The HTP is the result of many years of strategic planning to provide more reliable and operationally sound railroad infrastructure.

Upon completion of the HTP, four tracks (two in the new Hudson River Tunnel and two in the North River Tunnel) will be available between New Jersey and New York under the Hudson River, which allow for operational flexibility and redundancy for Amtrak and NJ TRANSIT rail operations to maintain current capacity levels.

The HTP is critical as it supports commuter rail (public transportation), intercity, regional, and local mobility and associated economic benefits regionally and nationally, provides a more cost-effective transit system due to lower operation and maintenance costs, reduces commuter and intercity rail delays caused by unanticipated events or routine maintenance, and increases on-time performance.

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3.0 HUDSON TUNNEL PROJECT FINANCIAL PLAN

The purpose of this chapter is to document the separate and independent project financial plan for the Hudson Tunnel Project (HTP). Addressing the deteriorating state of the infrastructure that supports commuter passenger and intercity train service between Newark Penn Station in Newark, New Jersey, and Pennsylvania Station New York (PSNY) in New York City along the Northeast Corridor (NEC), the HTP includes:

- The construction of the new two-tube Hudson River Tunnel, to address the imminent failure of the existing tunnel;
- The construction of the Hudson Yards Concrete Casing – Section 3 (HYCC-Section 3); and
- The rehabilitation of the 108-year old existing North River Tunnel.

The Project Partners are committed to implementing the HTP (all three elements listed above) in full and this financial plan addresses the HTP in full.

The HTP will provide desperately needed trans-Hudson reliability, resiliency and redundancy, as well as increased rail capacity with the completion of other Gateway Program elements in the future.

The North River Tunnel continues to have significant electrical and mechanical failures because of seawater inundation during Superstorm Sandy in October 2012. Chlorides from the seawater remain throughout the North River Tunnel's structural, mechanical, and electrical infrastructure, causing unpredictable damage resulting in disabled trains and significant delays. These important rail connections facilitate the movement of over 200,000 train passengers per day between New Jersey and New York and are currently single points-of-failure for the region whose economy drives a sizable portion of America's gross domestic product – the New York regional economy and the Northeast corridor megaregion contribute 10% and 20%[7], respectively, of the nation's gross domestic product.

The HTP is critical to the regional and national economy and environmental well-being. Construction of the new Hudson River Tunnel avoids the looming disastrous scenario of a closure of one of the two tubes of the existing North River Tunnel prior to construction and completion of a new Hudson River Tunnel. Closure of one tube of the existing North River Tunnel could reduce train capacity by up to 75%. The 24 trains per hour that ordinarily use the existing tunnel in peak hours would drop to as few as 6, which would cripple the region's economy and have impacts nationwide.

The new Hudson River Tunnel, together with a rehabilitated North River Tunnel, will result in the NEC having four tracks (two in the new Hudson River Tunnel and two in the existing North River Tunnel) between New Jersey and New York under the Hudson River, which would provide operational flexibility and redundancy for passenger and intercity rail operations.

This financial plan includes all three elements of the HTP, which in total (excluding financing costs) is currently estimated to cost $11.286 billion in year of expenditure (YOE) dollars based on the assumed

[7] https://nec.amtrak.com/resource/gateway-program-economic-benefits-report/

timing of the issuance of the ROD for the rehabilitation of the North River Tunnel and construction of the new Hudson River Tunnel project elements in calendar year 2019 [8]:

- The construction of the new Hudson River Tunnel and HYCC-Section (together, these are the most immediate and time sensitive project elements), with a currently estimated total construction cost of $9.514 billion; and
- The rehabilitation of the existing North River Tunnel (construction commencing in 2029, after the completion of the new tunnel), with a currently estimated total construction cost of $1.772 billion.

The financial contributions from the Project Partners included in this financial plan from Amtrak, PANYNJ, the State of New Jersey, and the State of New York represent a significant commitment to the HTP. As further described, these commitments represent: 1) 99% of the non-CIG share of public transportation eligible project costs needed for the construction of the entire HTP[9] and 2) 100% of the non-CIG share of public transportation eligible project costs needed for construction of the new Hudson River Tunnel and HYCC-Section 3. In line with FTA's guidelines for classifying the level of commitment for each capital funding source, PANYNJ's commitment falls into the "Budgeted" or "Committed" category. PANYNJ funds required to support debt service payments of $2.7 billion on low-interest federal loans have been formally budgeted and programmed by inclusion in the 2017-2026 Capital Plan and subsequent June 2018 unanimous action by the PANYNJ Board for use on the HTP. With such a determination, 38.1% of the non-CIG share of public transportation eligible project costs would be considered Budgeted or Committed - greater than the 30% needed for a "Medium" rating. Refer to Sections 3.2.2.7 – 3.2.2.12 for more details on the local financial commitments.

For the purposes of this financial plan submittal, the Project Partners have assumed the following:

- The Final Environmental Impact Statement (FEIS) for the new Hudson River Tunnel and rehabilitation of the North River Tunnel will be released by FRA for review shortly;
- The Record of Decision (ROD) for the new Hudson River Tunnel and rehabilitation of the North River Tunnel will be issued by FRA and FTA in calendar year 2019; and
- The Categorical Exclusion (CE) for HYCC-Section 3 will be issued by FTA in calendar year 2019.

The Project Partners will continue to cooperate fully and in a timely manner with USDOT to ensure these environmental review milestones are met. The completion of the environmental reviews in calendar year 2019 enables early work to progress during 2020 while procurement activities are underway to facilitate the notice-to-proceed date assumed as part of this financial plan submittal. The status of these environmental reviews are further discussed in Sections 1.6.1 and 3.1.1.

[8] The HTP's capital cost, expenditures by year, and schedule are dependent on the timing of the issuance of the ROD for the rehabilitation of the North River Tunnel and construction of the new Hudson River Tunnel and the CE for the HYCC-Section 3. The Hudson River Tunnel construction costs are based on the draft 30% design, the HYCC Section-3 construction costs are based on a 100% design, and the North River Tunnel rehabilitation construction costs are based on a 10% design. The Hudson River Tunnel draft 30% design will not be approved until after the issuance of the ROD. See Section 3.2.4.1.4 for further discussion.

[9] 99% ($6.725B/$6.789B) is derived by adding Amtrak, PANYNJ, State of New Jersey, and State of New York existing commitments to construction and to the required FTA cost elements (financing costs incurred until substantial completion and financing costs incurred post-substantial completion until fulfilment of the CIG funding commitment is complete), and dividing by the total amount of non-CIG required during the CIG funding period. See

Table 3-4 for further details on Local Support for the HTP.

Upon completion in 2032, the HTP will realize savings of $7.5 million in operating and maintenance costs in YOE dollars during its first full year of operation compared to the status quo (further discussed in Section 3.3.1.2).

This Chapter 3.0 describes the HTP's capital and infrastructure operating costs and how they were derived.

3.1 Financial Plan Revisions since FTA Fiscal Year 2020 Rating

This version of the HTP financial plan includes revisions which address the FTA's recommendations and feedback documented in its fiscal year (FY) 2020 New Starts Financial Assessment, provides updates regarding the function of Project Partner entities, describes the anticipated approach to packaging and delivering elements of the HTP, and reflects revised cost estimates for the Hudson River Tunnel consistent with the draft 30% design stage:

- In July 2019, the States of New York and New Jersey created the Gateway Development Commission (Commission) through the enactment of the Gateway Development Commission Act. The Commission is a seven-member public authority and a government sponsored authority (with three Commissioners from the State of New York, three Commissioners from the State of New Jersey, and one Commissioner directly appointed by Amtrak) that is empowered to facilitate and coordinate activities and encourage the actions of others to effectuate the Gateway Program, in particular, Phase 1 of the Gateway Program, of which the HTP is a critical component.

  The Commission's enabling legislation states that the Commission is "intended to qualify for, be authorized and empowered to apply for and accept, financial assistance, loans, grants, or any other funding for such purposes under federal, state, or local laws, and to make application directly to the appropriate officials or agencies for the application for and receipt of federal, state or local assistance, loans, grants or any other funding in aid of any of the purposes of this act"[10] "at such times as it is appropriate to do so."[11]

  The completion of this legislative process to create the Commission is evidence of the strong commitment by the States of New Jersey and New York towards the HTP. The Project Partners intend for the Commission to carry out the lead role in the financing and development of the HTP as soon as it has been established and provided with the appropriate resources from the State of New Jersey, State of New York, and Amtrak.

- The Project Partners have undertaken a comprehensive value-for-money analysis – including risk, contract packaging, and delivery method analysis – comparing the relative advantages and disadvantages under different approaches. The analysis helped identify potential efficiencies from bundling expected contract scopes of work into larger, procurable packages for efficient execution and delivery and utilizing Design-Build procurement where appropriate to encourage innovative solutions. The specific goals of the analysis included: providing upfront cost-certainty and allowing for economies of scale to be achieved; optimizing the project schedule and sequencing for rapid construction completion; reducing interface risks and related costs and contingencies; attracting market competition; and delivering high technical performance and fostering innovation. The analysis also took into account feedback obtained from industry through a detailed market sounding process, which included Requests for Information (RFIs) in August

[10] NYS S6372A, Section 3(c); NJS A5570, Section 4(3) ("Creation of the Commission; purposes")

[11] NYS S6372A, Section 6; NJS A5570, Section 7 ("Duties of the Commission)

2017 and July 2018 and subsequent discussions with respondent firms. Each RFI attracted responses from numerous firms, including multinational, national and local contractors, designers, and financial entities. The result of this effort is a preliminary packaging and procurement plan that identifies four distinct contract packages for the construction of the new Hudson River Tunnel and HYCC-Section 3. The packaging and procurement plan for the rehabilitation of the North River Tunnel will be determined as the design and value-for-money analysis for that element of the HTP advances. See Section 3.2.1 for additional detail on the preliminary packages.

- In June 2019, an update to the estimated costs for the Hudson River Tunnel was completed based upon the draft 30% design and aligned to the packaging and procurement approach developed by the Project Partners. For the purpose of this financial plan submittal, the Project Partners have assumed that the FEIS will be released for review shortly and the ROD issued for the HTP in calendar year 2019. The 30% design will remain in draft form until issuance of the ROD, which is required for FRA to formally approve the 30% design (see Section 3.4.1.1for additional context regarding the criticality of ROD and CE issuance on HTP schedule and cost). In support of the schedule and cost update and as part of the value-for-money analysis, a detailed draft risk analysis was undertaken for the new Hudson River Tunnel and HYCC-Section 3 was collaboratively developed by the Project Partners. The updated budget reflects a reduction in estimated project capital expenditures (excluding financing costs) of $1.4 billion (11%) as compared to the FY 2020 Financial Plan submitted to FTA – from $12.7 billion to $11.3 billion. In general, as the design and engineering has advanced to incorporate additional data obtained and further design analysis performed, the level of uncertainty has been reduced.
- Amtrak's funding commitment to the HTP has substantially increased, from $704 million in the FY 2020 Financial Plan to $1.282 billion in the updated plan. This financial plan assumes that the additional $578 million will be applied toward the cost of right-of-way acquisition as well as other HTP costs.
- As a result of the reduced cost, and the increased Amtrak funding, the amount of grant funding requested from the FTA CIG program is substantially reduced – from $6.769 billion in the FY 2020 request to $5.339 billion in this financial plan, and the percentage of CIG funding requested has been substantially reduced from 49.4% of CIG-eligible public transportation project costs to 44.0% of CIG-eligible public transportation project costs (see Table 3-14). In addition, as it is assumed in this financial plan that the Amtrak contribution will be applied substantially towards right-of-way acquisition costs, the timing of the contributions will be brought forward to FY 2020 – FY 2021, compared to being contributed over the entire duration of the HTP, as was assumed in the FY 2020 Financial Plan. This improves the financial plan's efficiency by deferring loan drawdowns and reducing financing costs.
- The financial plan now reflects the Project Partners' intent to seek an Early Systems Work Agreement (ESWA) with FTA to advance a portion of the HTP. Such an arrangement would allow the largest and most critical of the anticipated construction contract packages to begin work while a Full Funding Grant Agreement (FFGA) is being concluded. Advancing construction work is beneficial to both the local and federal project stakeholders because it promotes ultimate completion of the HTP more rapidly and at less cost. The Project Partners intend to submit a request for the ESWA once the FRA and FTA have provided clarity on the expected issuance date for the FEIS and the ROD, as well as for the CE, which are prerequisites to executing an

ESWA. An ESWA is needed to begin the critical task of constructing the new Hudson River Tunnel and would both help the HTP minimize costly inflation on capital expenditures and reduce the risk of catastrophic failure by enabling the HTP to begin sooner. In addition, the work facilitated by the ESWA and matching local funding will help substantially de-risk the project, providing greater cost certainty for the remainder of the project cost. Further details are included in Section 3.2.2.2.1.

- The funding commitment from the local partners for HTP construction costs remains at $5.55 billion. With the reduction in Hudson River Tunnel construction costs associated with the draft 30% design level of the Hudson River Tunnel, a portion of the local funding commitments are now allocated to the rehabilitation of the North River Tunnel. Commitments from PANYNJ, the State of New Jersey, and the State of New York cover $884 million, or 93%, of the $947 million local share of rehabilitation costs. These commitments have substantially reduced the amount of remaining funding to be identified – from $787 million in the FY 2020 Financial Plan to $63 million in the current plan. The $63 million of funding to be identified represents less than 1% of the non-CIG share of public transportation eligible project costs, and will be rapidly finalized upon the HTP entering the Engineering phase.
- The financial plan now assumes maximum annual CIG appropriations of up to $600 million until the Hudson River Tunnel is complete in FY 2028, and annual CIG appropriations of up to $500 million thereafter. Any unused grant appropriations in a given year will be made available for disbursement in future years. Prior versions of the financial plan assumed that annual appropriations were sized to match the FTA CIG funding share in each year. The primary impact of this change is the need for a greater amount of non-CIG funding sources earlier in the construction period. This need has primarily been addressed through earlier utilization of the Amtrak contribution. In this financial plan, the CIG eligibility period is open through FY 2032, which ties to the substantial completion of the HTP.
- The financial plan replaces the NJ TRANSIT passenger fare surcharge on trans-Hudson rail use with a funding commitment from the State of New Jersey, as memorialized in the Gateway Development Commission Act.
- As a result of value for money analysis undertaken to reduce the risk of cost increases, including risk, contract packaging, and delivery method analysis, and the assumption of an ESWA to allow for a more rapid project completion, this financial plan represents a commitment from the State of New York, the State of New Jersey, and Amtrak to meet construction cost overruns up to 15% of the construction cost.

3.1.1 Status of Environmental Review

The Project Partners are awaiting USDOT's approval of the environmental review for the new Hudson River Tunnel and rehabilitation of the North River Tunnel. The FRA is the Lead Federal Agency and NJ TRANSIT and the PANYNJ are joint lead agencies for the environmental review. FTA and the U.S. Army Corps of Engineers are the two Cooperating Agencies involved in the environmental review.

FRA and NJ TRANSIT jointly prepared a Draft Environmental Impact Statement (DEIS) to evaluate the new Hudson River Tunnel and rehabilitation of the existing North River Tunnel in July 2017. The draft FEIS was completed and provided on-schedule to FRA for their review in February 2018, 22 months from the Notice of Intent, which is less than half the time generally required for a project of this size and

complexity. The Federal Infrastructure Projects Permitting Dashboard indicated that the target issuance date for the FEIS and ROD would be March 30, 2018.

In October 2018, the FRA requested that the draft FEIS be updated to include the PANYNJ as NEPA Project Sponsor and set December 10, 2018 as the deadline for such modifications. On-schedule, the Project Partners provided a revised draft FEIS to FRA on December 10, 2018. Since a ROD is required from FTA to meet FTA CIG Program requirements, FRA provided FTA with the revised draft FEIS on December 11, 2018. At that time, neither FRA nor FTA provided a schedule for publishing the FEIS or ROD. On January 9, 2019, FTA, FRA, NJ TRANSIT, and PANYNJ were scheduled to meet to discuss the revisions with FTA. However, the meeting was cancelled due to the federal government lapse in appropriations (federal government shutdown). During the federal government shutdown, the Gateway Program Development Corporation (Corporation) requested that USDOT issue a ROD immediately under the "One Federal Decision" policy. After the federal government re-opened, the meeting was rescheduled and held on February 11, 2019. At that time, and at the time of this submittal, neither FRA nor FTA has provided any schedule and has not described what steps remain outstanding for issuing the FEIS or ROD. An FTA ROD is a prerequisite for requesting entry into the FTA CIG Program's Engineering Phase and commencing some early work activities.

The environmental review for the HYCC Right-of-Way Preservation project (which includes HYCC-Section 3 and the already constructed HYCC-Section 2) underwent a Supplemental Environmental Assessment in 2014 and received a Finding of No Significant Impact (FONSI) from FRA in November 2014. Since an environmental determination is required from FTA to meet FTA CIG Program requirements, and per the FTA's recommendation, the PANYNJ, on behalf of the Project Partners, requested a CE from the FTA for HYCC-Section 3 on August 2, 2018. In December 2018, FTA requested supplemental materials that were provided to FTA by PANYNJ that same month. FTA has not provided a schedule as of this submission for issuing the CE. For the purposes of this financial plan submittal, the Project Partners have assumed the following:

- The FEIS for the new Hudson River Tunnel and rehabilitation of the North River Tunnel will be released by FRA for review shortly;
- The ROD for the new Hudson River Tunnel and rehabilitation of the North River Tunnel will be issued by FRA and FTA in calendar year 2019; and
- The CE for HYCC-Section 3 will be issued by FTA in calendar year 2019.

The Project Partners will continue to cooperate fully and in a timely manner with USDOT to ensure these environmental review milestones are met. The completion of the environmental reviews in calendar year 2019 enables early work to progress during 2020 while procurement activities are underway to facilitate the notice-to-proceed date assumed as part of this financial plan submittal.

3.2 Capital Plan

The capital plan for the HTP reflects the estimated cost and schedule for the HTP. It describes anticipated funding sources, amounts anticipated from each source, and the level of commitment of non-federal sources. Contingencies and mitigation measures for cost increases and revenue shortfalls are discussed in Section 3.4.

3.2.1 Preliminary Contract Packaging Approach

The Project Partners have undertaken a comprehensive value-for-money analysis – including risk, contract packaging and delivery method analysis – comparing the relative advantages and disadvantages under different approaches. The analysis helped identify potential efficiencies from bundling expected contract scopes of work into larger, procurable packages for efficient execution and delivery and utilizing Design-Build procurement solutions where appropriate to encourage innovative solutions. The specific goals of the analysis included: providing upfront cost-certainty and allowing for economies of scale to be achieved; optimizing the project schedule and sequencing for rapid construction completion; reducing interface risks and related costs and contingencies; attracting market competition; and delivering high technical performance and fostering innovation. The analysis also took into account feedback obtained from industry through a detailed market sounding process, which included Requests for Information (RFIs) in August 2017 and July 2018 and subsequent discussions with respondent firms. Each RFI attracted responses from numerous firms, including multinational, national and local contractors, designers and financial entities. The result of this effort is a preliminary packaging and procurement plan which identifies four distinct contract packages for the Hudson River Tunnel and HYCC-Section 3 project elements. Preliminary packages are described below, while a detailed description of project components independent of packaging considerations is provided in Section 3.2.3.1.

- Package 1, the largest of the packages, includes the tunneling and heavy civil work for the new Hudson River Tunnel and HYCC-Section 3 cut and cover tunnels. This portion of the HTP is anticipated to be carried out under an ESWA;
- Package 2 focuses on the fit-out work for the new Hudson River Tunnel including the internal concrete for the ventilation shafts; concrete for the track bed, benches and ventilation duct walls in the tunnels; fan plant building structures and fit-outs; traction power, communications and signal systems; and track work along the entire alignment;
- Package 3 is the New Jersey surface alignment work including retaining walls, embankments, and viaducts to support the track bed; and
- Package 4 is the construction of a new highway tunnel bridge at Tonnelle Avenue (this work may potentially be combined into Package 3).

The packaging and procurement plan for the rehabilitation of the North River Tunnel will be determined as that element advances design and value for money analysis. Each package will be separately procured through distinct, competitive processes. The most immediate, largest, and most critical of these packages ("Package 1"), includes the tunneling and heavy civil work for the new Hudson River Tunnel and HYCC-Section 3. The Project Partners intend to seek an ESWA for the HTP, which, together with the Amtrak and local contributions, is intended to support Package 1, ROW acquisition and related retained costs[12], allowing for ultimate completion of the HTP more rapidly and at less cost.

The anticipated schedule and cost of each package is shown in Table 3-1.

[12] Retained costs include project management, preliminary design and procurement costs

Table 3-1 Preliminary Project Packages

	HRT and HYCC-Section 3						NRT Rehabilitation	Total Hudson Tunnel Project
	Package 1	Package 2	Package 3	Package 4	Retained Costs[13]	Total HRT and HYCC-Section 3		
Description	Heavy civil work for new Hudson River Tunnel and HYCC-Section 3	New Hudson River Tunnel fit-out, fan plant, signals and track work	NJ surface alignment	Tonnelle Avenue overhead bridge	ROW, Force Account, Environmental Mitigation, Professional Services		North River Tunnel Rehabilitation	
Schedule	Feb 21 - Sept 25	Apr 22 - Feb 29	Dec 21 - Aug 25	May 20 - Oct 22	Jul 16 - Feb 29		Jul 16 - Mar 32	
Cost (YOE $M)	3,561.0	1,715.5	478.3	28.3	2,865.5	8,648.6	1,611.3	10,259.9
Full Unallocated Contingency (YOE $M)						864.9	161.1	1,026.0
Total (YOE $M)[14]						9,513.5	1,772.4	11,285.9

3.2.2 Capital Plan Sources of Funds

3.2.2.1 Summary of Capital Plan Sources of Funds

The construction of the HTP will leverage local funding from the PANYNJ, the State of New Jersey, and the State of New York and from non-local sources, including Amtrak contributions / FRA grants and FTA CIG grants.

The FTA's CIG Program funding may only be used to pay for public transportation projects, while the project elements will serve both NJ TRANSIT commuter rail and Amtrak intercity passenger rail. Therefore, separate funding approaches for the transit and intercity rail shares of project costs are defined. Based on existing weekday ridership counts, approximately 90 percent of all passengers crossing the North River Tunnel are travelling via commuter rail service, with the remainder of passengers travelling via intercity passenger rail.

Furthermore, per FTA's Financial Contractors' Guide for Conducting Financial Capacity Assessments for the Capital Investment Grants Program dated September 2017, "Finance charges must be included in the capital cost estimate of all CIG projects. Specifically, only finance charges that are expected to occur prior to either the revenue service date or the fulfillment of the CIG funding commitment in the construction grant, whichever occurs later in time, should be included"[15] [16]. As such, in order to comply with FTA CIG guidance, the enclosed capital plan sources of funds for the HTP includes certain financing costs during construction and after substantial completion of the HTP for the purposes of the CIG Program. Generally,

[13] Retained costs include project management, preliminary design and procurement costs

[14] Capital cost estimates reflect 100% design for HYCC-Section 3, draft 30% design for Hudson River Tunnel, and 10% for North River Tunnel rehabilitation.

[15] FTA's Financial Contractors' Guide for Conducting Financial Capacity Assessments for the Capital Investment Grants Program (September 2017) - https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/funding/grant-programs/capital-investments/115626/financial-contractor-guide-conducting-financial-capacity-assessments-cig-program-september-2017.pdf

[16] Financing costs include interest on borrowed principal, fees charged by a lender to keep a credit line active, and issuance or other handling fees associated with debt transactions such as a bond sale.

non-FTA projects undertaken by the PANYNJ, NJ TRANSIT, or Amtrak would not typically include any costs after substantial completion, such as financing costs. This submission is meant to provide details and transparency concerning the cost of the HTP to both the USDOT and the public-at-large. The Project Partners provide not only the information required by FTA, but also additional information that may help the public's understanding of the costs of the HTP. This will provide the opportunity for the public to understand the costs of the HTP in the context of other projects they may have encountered. The additional level of detail does not diminish, and is consistent with, the information necessary for FTA to undertake its review. For clarification, the Table 3-2 below summarizes the project cost described in this submittal.

Table 3-2 Project Costs applying FTA methodology (YOE $M)

	Through Substantial Completion			Through CIG Funding Period[17]		
	Public Transport.	Intercity Rail	Total Project	Public Transport.	Intercity Rail	Total Project
Construction Cost	**10,157**	**1,129**	**11,286**	**10,157**	**1,129**	**11,286**
Financing Charges[18]	1,354	0	1,354	1,970	0	1,970
Total Project Costs	11,511	1,129	12,640	12,127	1,129	13,256

Given the dual nature of the HTP, serving both public transportation (commuter) and intercity passenger rail uses, summarizing project costs with and without the intercity passenger rail portion is pertinent to understanding the full cost of the HTP, in base year or year-of-expenditure (YOE) dollars, and is consistent with various definitions of project costs summarized in the Standard Cost Categories spreadsheet. In addition, providing costs including financing charges only through substantial completion helps to appropriately communicate project costs to non-FTA stakeholders who may review this report who do not typically account for finance charges through the grant disbursement period as FTA does.

The new Hudson River Tunnel and HYCC-Section 3, the most immediate and time sensitive project elements, have a total construction cost of $9.514 billion. The total cost of this element, applying the FTA cost methodology (including financing charges during the grant disbursement period) is $11.361 billion.

The rehabilitation of the existing North River Tunnel, which would begin after the completion of the new Hudson River Tunnel and HYCC-Section 3, has a total construction cost of $1.772 billion. The total cost of this element, applying the FTA cost methodology (including financing charges during the grant disbursement period) is $1.895 billion.

Combined, the total cost of the HTP, applying the FTA cost methodology is $13.256 billion. The total project cost through substantial completion of the respective project elements is $12.640 billion.

FTA CIG Program funding is anticipated to cover 44.0 percent of the CIG-eligible public transportation project costs. Combining the FTA CIG Program grant amount for new Hudson River Tunnel and HYCC-Section 3 ($4.391 billion), and the FTA CIG Program grant amount for the rehabilitation of the existing North River Tunnel ($947 million), FTA CIG Program funding totals $5.339 billion for the entire HTP.

[17] The assumed CIG funding period is February 2021 – December 2031.

[18] Financing charges include interest expense, issuance fees, servicing and monitoring costs and credit risk premium. Principal repayments are not included in financing charges, as they are not grant eligible costs, however the financial plan includes principal repayments of $125m during the CIG period, resulting in total financing costs of $2,095m.

Following this overarching framework, the HTP Financial Plan anticipates the following federal and local components:

3.2.2.2 Summary: Federal Support

- The new Hudson River Tunnel & HYCC-Section 3 (the most immediate and time sensitive elements) – $5.673 billion
    - This submission applies for $4.391 billion from the FTA CIG Program.
    - This submission reflects $1.282 billion from Amtrak and FRA sources.
- The rehabilitation of the North River Tunnel – $947 million
    - This submission applies for $947 million from the FTA CIG Program.
    - This submission reflects no contribution from Amtrak and FRA sources.

Table 3-3 Federal Support for the Hudson Tunnel Project (YOE $M)

	Construction		Financing		Total	
Federal Support	HRT & HYCC-3	NRT Rehab.	HRT & HYCC-3	NRT Rehab.	HRT & HYCC-3	NRT Rehab.
FTA Capital Investment Grant	3,475	886	916	61	4,391	947
Amtrak Contribution/FRA Grant	1,282	-	-	-	1,282	-
Subtotal	**4,757**	**886**	**916**	**61**	**5,673**	**947**
Total		**5,643**		**978**		**6,621**

3.2.2.2.1 Early Systems Work Agreement

The Project Partners intend to seek an ESWA with FTA to advance the Package 1 scope of work, ROW acquisition and related retained costs[19] described in Section 3.2.1. Such an arrangement would allow the largest and most critical of the anticipated packages to begin work while a FFGA is being concluded, allowing for ultimate completion of the project more rapidly and at less cost.

Advancing Package 1, ROW acquisition and related scope of work is beneficial to both the local and federal project stakeholders because it expedites project completion and reduces overall costs by:

- Removing major risks faster;
- Increasing overall project cost certainty;
- Reducing the interface risks (the interactions between the various contractors);
- Optimizing schedule and construction sequencing; and
- Encouraging market competition.

An ESWA is needed to begin the critical task of constructing the new Hudson River Tunnel and HYCC–Section 3 and avoid the disastrous scenario of a closure of one of the two tubes of the existing North River Tunnel prior to construction and completion of a new Hudson River Tunnel. Closure of one tube of the existing North River Tunnel could reduce train capacity by up to 75%, which would cripple the region's economy and have impacts nationwide. The Project Partners' pursuit of an ESWA reflects the urgency

[19] Retained costs include project management, preliminary design and procurement costs

and need for the HTP, understanding that any further delays to starting construction puts the Northeast Region and the United States at risk of a failure of the existing 1910 tunnel and exposes the HTP to avoidable cost increases. Through an ESWA, together with contributions from Amtrak and local contributions, the tunneling and heavy civil work, which serve as the foundation of the subsequent packages, would avoid expensive and risky delays, which would cascade through the project schedule.

The Secretary may enter into an ESWA if a ROD/CE has been issued on the HTP and the Secretary finds there is reason to believe that (i) the HTP will ultimately secure an FFGA and (ii) that the use of an ESWA will promote ultimate completion of the HTP more rapidly and at less cost.[20] The Project Partners believe that the HTP will ultimately secure an FFGA and remain steadfast in their commitment to that goal. The New Starts submission, including this financial plan, describes the HTP's ability to meet the program's criteria. FTA has evaluated the HTP against several statutory criteria including cost effectiveness, mobility improvements, and congestion relief, earning the HTP a rating of Medium for Project Justification. The Project Partners' efforts to address FTA concerns and improve the HTP's local financial commitment rating to advance closer to an FFGA are documented in Section 3.1.

Without an ESWA, the project schedule would be substantially delayed and project costs would significantly increase. The current schedule assumes the existence of an ESWA – with significant project expenditures on land acquisition and other program costs beginning to occur in 2020. Without an ESWA (and the prerequisite ROD/CE), the HTP may be delayed until there is greater certainty regarding federal funding. Given the dependencies inherent in the sequencing of construction tasks, delays to these early works would result in delays throughout the entire schedule. For a project of this magnitude, any delay amounts to a major impact on project cost – each day of delay results in a construction cost increase of approximately $1 million – and delay achievement of and the ability to provide the HTP's significant benefits to the traveling public.

As these processes can take a significant amount of time to complete, an ESWA would both help the federal and local project stakeholders minimize costly inflation on capital expenditures and reduce the risk of catastrophic failure by enabling the HTP to begin sooner. The project cost (including financing components) for Package 1, ROW acquisition and related scope of work is $7.075 billion. Under the current financial plan, it is anticipated that Amtrak will contribute $1.282 billion, CIG funds will cover $2.248 billion, and the local contribution – which includes RRIF loan financing – will be $3.545 billion. The financial plan and underlying assumptions for Package 1, ROW acquisition and the related scope of work is consistent with the financial plan for the entire HTP.

3.2.2.3 Summary: Local Support

- The new Hudson River Tunnel & HYCC-Section 3 (the most immediate and time sensitive elements) – $5.688 billion
- The rehabilitation of the North River Tunnel – $947 million
- The Project Partners' existing commitments from locally generated revenues from PANYNJ, the State of New York, and the State of New Jersey represent 100% of the local funding share for the construction of the new Hudson River Tunnel and HYCC-Section 3. These existing commitments support borrowings of $2.350 billion, $1.907 billion, and $1.643 billion, respectively, as shown in Table 3-4 and

[20] USC 5309

- Table 3-5 below.
- The Project Partners are committed to identifying the balance of funding for the HTP in a future submission prior to signing a FFGA. Pursuant to the Gateway Development Commission Act, the State of New York and the State of New Jersey shall provide equal funding of the combined New Jersey-New York share of funding requirement for Phase 1. At present, the Financial Plan includes an assumption that additional local revenues are identified and leveraged through a RRIF loan ("RRIF Loan C") used to finance $63 million of the North River Tunnel's rehabilitation costs. The amount of remaining funding to be identified has been substantially reduced from $787 million in the FY 2020 Financial Plan. Commitments from PANYNJ, the State of New Jersey and the State of New York cover $884 million, or 93%, of the $947 million local share of rehabilitation costs. The $63 million of funding to be identified represents less than 1% of the non-CIG share of public transportation eligible project costs. Although the source of remaining funding has not been explicitly identified, the Project Partners do not view this small funding need as a funding gap, as there are numerous sources for this funding. For example, funding committed to capital costs are expected to be released as contingencies and major risks are reduced and cost certainty is increased as anticipated under the contract packaging / ESWA approach; funding committed to financing costs is conservative as it is based on interest rates that are approximately 200 basis points higher than current interest rates; and PANYNJ's $2.7bn commitment has not been fully utilized in this financial plan.

Table 3-4 Local Support for the Hudson Tunnel Project (YOE $M)

Sources	Construction Component	Financing Component until Substantial Completion	Total	Financing Component post-substantial completion until CIG commitment ends[21]	Total (as defined by FTA)
Hudson River Tunnel and HYCC-Section 3					
PANYNJ – RRIF Loan Support Payments	1,836	250	2,085	122	2,207
State of New York – RRIF Loan Support Payments	1,489	204	1,693	96	1,789
State of New Jersey – RRIF Loan Support Payments	1,397	177	1,575	82	1,657
PANYNJ Design Contribution	35	-	35	-	35
Hudson River Tunnel and HYCC-Section 3	*4,757*	*631*	*5,388*	*300*	*5,688*
North River Tunnel					
PANYNJ – RRIF Loan Support Payments	322	22	344	-	344
State of New York – RRIF Loan Support Payments	261	18	279	-	279
State of New Jersey – RRIF Loan Support Payments	245	16	261	-	261
Local Contribution – RRIF Loan Support Payments	58	5	63	-	63
North River Tunnel	*886*	*61*	*947*	*-*	*947*
Total Project Sources	**5,643**	**692**	**6,335**	**300**	**6,635**

- Capital Sources: The Corporation will use these revenue streams to support Railroad Rehabilitation and Improvement Financing (RRIF) loans. Access to low cost federal loan programs is critical to achieving the lowest possible financial cost for the HTP. The Corporation's revenue streams would be legally committed to repaying all such loans and would represent a Corporation/local obligation.
- Committed/Budgeted Funding: A key component of the FTA CIG application process requires the applicant to demonstrate the extent to which the non-CIG components of the public transportation portion of the FTA-defined project costs of the funding plan are "committed" and/or "budgeted." The Project Partners have met and exceeded the 30% non-CIG "Committed"/"Budgeted" threshold, as further discussed below in Section 3.2.2.12.

[21] The assumed CIG funding period is February 2021 – December 2031. Financing component includes interest expense, issuance fees, servicing and monitoring costs and credit risk premium less grant proceeds for financing costs. Principal repayments are not included, as they are not grant eligible costs, however the financial plan includes principal repayments of $125m during the CIG period, resulting in total financing costs of $2,095m.

Table 3-5 presents the proposed capital sources, followed by an explanation of each source.

Table 3-5 Project Capital Sources of Funds (YOE $M)

Project Sources	YOE $M	%
Amtrak Contribution/FRA Grant	1,282	9.6%
FTA Capital Investment Grant	5,339	39.9%
Local Financing (Net Proceeds + Capitalized Interest)[22]	*5,960*	*44.5%*
RRIF Loan A1 (PANYNJ)	2,350	17.6%
RRIF Loan A2 (NYS)	1,907	14.3%
RRIF Loan B (NJ)	1,643	12.3%
RRIF Loan C (Local)	61	0.5%
Local Contributions[23]	*800*	*6.0%*
PANYNJ[24]	236	1.8%
NYS	229	1.7%
NJ	333	2.5%
Local	3	0.0%
Total Project Sources	**13,381**	**100.0%**
Debt Service & Ongoing Fees Sources (Post-CIG Period)	**YOE $M**	**%**
PANYNJ	4,350	40.6%
NYS	3,353	31.3%
NJS	2,890	27.0%
Local	119	1.1%
Total Funds towards Debt Service & Ongoing Fees	**10,712**	**100.0%**

A brief description of each proposed source of funds is provided below.

3.2.2.4 FTA Capital Investment Grant Program – New Starts

Background: FTA's CIG Program is USDOT's largest discretionary funding source for major capital transit investments, authorized by the FAST Act at $2.3 billion per year through 2020. "New Starts" investments are available for projects which provide new fixed guideway; extensions to existing systems are eligible for CIG funding. Project costs should be equal to or greater than $300 million or total New Starts funding sought should be at least $100 million. CIG funding is provided under the terms of a FFGA which serves as a multi-year contract between FTA and a project sponsor to provide an established annual payout of CIG funding – subject to Congressional appropriations – in return for the delivery of a defined project scope within a set schedule and budget.

HTP Financial Plan: The financial plan assumes a total of $5.339 billion in CIG funding. CIG funding will cover 44.0 percent of CIG-eligible public transportation project costs. Of this amount, $2.248 billion is proposed to be utilized under an ESWA in respect of Package 1, ROW acquisition and related scope of work, representing 37.8% of Package 1, ROW acquisition and related scope of work CIG-eligible public

[22] RRIF Loan balances include: Loan A1 principal of $2,158m and Loan A1 capitalized interest of $193m; Loan A2 principal of $1,750m and Loan A2 capitalized interest of $157m; Loan B principal of $1,643m and Loan B capitalized interest of $0; and Loan C principal of $58m and Loan C capitalized interest of $3m

[23] Local contributions cover interest expense, issuance fees, servicing and monitoring costs and credit risk premium, reduced by grant proceeds for financing costs. Local contributions also include principal repayments during the CIG period of $125m.

[24] PANYNJ contribution includes the $35 million design contribution.

transportation project costs. The financial plan now assumes maximum annual CIG appropriations of up to $600 million until the Hudson River Tunnel is complete in FY 2028, and annual CIG appropriations of up to $500 million thereafter. Any unused grant appropriations in a given year will be made available for disbursement in future years. The Project Partners remain committed to identifying the remaining source of non-CIG funding for the HTP of $63 million, which is less than 1% of the non-CIG share of public transportation eligible project costs, before execution of the FFGA, per FTA guidance. The eligible costs include the public transportation portion of project cost starting FY 2017 as well as the public transportation portion of RRIF issuance costs, servicing and monitoring costs, credit risk premium (CRP), and interest, during construction and CIG disbursement period.

3.2.2.5 Amtrak Contributions

Of the total funds available and required for the HTP, the combination of grants described in Section 3.2.2.6 and other funding sources available to Amtrak is expected to provide up to $1.282 billion in contributions to the HTP, which is approximately 11.4 percent of the HTP construction costs, exceeding the 10 percent intercity portion of the HTP[25] (Table 3-6).

Table 3-6 Combined Amtrak Authorization – Potential Funding Sources

Amtrak Authorization ($M)	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Total
Amtrak Grants (FAST Act 11101)						
NEC	450	474	515	557	600	2,596
National Network	1,000	1,026	1,085	1,143	1,200	5.454
Consolidated Rail Infrastructure and Safety Improvement Program (FAST Act 11301)	98	190	230	255	330	1,103
Federal-State Partnership for State of Good Repair Program (FAST Act 11302)	82	140	175	300	300	997
Total	**1,630**	**1,830**	**2,005**	**2,255**	**2,430**	**10,150**

3.2.2.6 Other/FRA Grant/Amtrak Contributions for the Intercity Share of the HTP

The intercity rail share of project costs may be covered by any combination of FAST Act Amtrak NEC grants, Consolidated Rail Infrastructure and Safety Improvement Grants (Section 11301 of the FAST Act), Federal-State Partnership for State of Good Repair grants (Section 11302 (c)(2) of the FAST Act), other competitive grant programs, and Amtrak revenue from passenger fares or other net operating revenues, provided funds are appropriated to these programs by Congress and FRA awards the funding to Amtrak.

- Amtrak is authorized to receive up to $8.1 billion from FY 2016 - FY 2020[26] from Section 11101 of the FAST Act, Authorization of Grants to Amtrak, $2.5 billion of which is specifically allotted for the NEC, while the rest will go to the National Network. Amtrak may dedicate a portion of these grants to fund a share of HTP costs. FAST Act authorized funding for Amtrak's NEC and National Network, respectively, is summarized in Table 3-7 and Table 3-8 below. In addition, it is worth noting that Congress provided more than the authorized levels – $1,941 million ($650 million for

[25] Amtrak has also contributed $32.8 million for costs incurred in FY 2015 – FY 2016 for HYCC-Section 3 preliminary engineering and final design costs and North River Tunnel rehabilitation preliminary engineering costs. These costs were incurred prior to the Project Development phase, and as such, have not been included as CIG eligible project costs.

[26] In this section, all fiscal years are in reference to the Amtrak and federal government fiscal year, which is October 1 – September 30 annually

NEC and $1,241 million for National Network) in both FY 2018 and FY 2019, demonstrating their strong commitment to robust funding for Amtrak.

Table 3-7 Authorization of Grants to Amtrak - NEC

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Funding Level ($M)	450	474	515	557	600

Note: Amtrak/Federal Fiscal Year, October 1 – September 30 annually

Table 3-8 Authorization of Grants to Amtrak – National Network

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Funding Level ($M)	1,000	1,026	1,085	1,143	1,200

Note: Amtrak/Federal Fiscal Year, October 1 – September 30 annually

- Consolidated Rail Infrastructure and Safety Improvement Grants, Section 11301 of the FAST Act, authorizes the Secretary to issue grants to eligible recipients seeking to finance improvements to passenger and freight rail transportation systems, specifically with regard to safety, efficiency, or reliability. Authorized grant funding amounts under this program from FY 2016 – FY 2020 sum to approximately $1,103 million, beginning with $98 million in FY 2016 and increasing to $330 million in FY 2020. Congress appropriated $25 million for this grant program in FY 2016, $68 million in FY 2017, $593 million in FY 2018, and $57 million in FY 2019. FAST Act authorizations for this program are summarized in Table 3-9 below.

Table 3-9 Consolidated Rail Infrastructure and Safety Improvement Program (YOE $M)

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Funding Level ($M)	98	190	230	255	330

Note: Amtrak/Federal Fiscal Year, October 1 – September 30 annually

- The Federal-State Partnership for State of Good Repair, Section 11302 of the FAST Act, authorizes the Secretary to develop a program to issue competitive grants to applicants seeking to replace or rehabilitate railroad assets. Elements of the intercity rail component of the HTP would be eligible for this program. Section 11302 specifies that this competitive grant program may be used for "capital projects to replace existing assets with assets that increase capacity or provide a higher level of service," such as the Hudson Tunnels. The maximum federal share for this program is 80 percent. As summarized in Table 3-10 below, nearly $1 billion in funding is authorized for the program over the life of the bill, subject to annual appropriations by Congress. Since this funding is directed to critical assets such as the NEC, the Gateway Program - including the HTP - can be expected to be a strong contender for these funds. The FY 2016 Omnibus Appropriations Bill did not fund the program that fiscal year, however, Congress appropriated $25 million in FY 2017, $4,250 million in FY 2018, and $272 million in FY 2019. FAST Act authorizations for this program are summarized in Table 3-10 below.

Table 3-10 Federal-State Partnership for State of Good Repair Program (YOE $M)

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Funding Level ($M)	82	140	175	300	300

Note: Amtrak/Federal Fiscal Year, October 1 – September 30 annually

- Amtrak also has the option of using certain net operating revenues to fund part of the intercity rail portion of the HTP.
- Amtrak will confer with FRA to determine the optimal source of available funding for Amtrak's contribution to the costs of the HTP.

3.2.2.7 Gateway Program Development Corporation

The Corporation will utilize multiple local revenue sources to advance the HTP, including scheduled payments from the PANYNJ in support of the RRIF borrowings, scheduled payments from the State of New Jersey in support of the RRIF borrowings, and scheduled payments from the State of New York in support of the RRIF borrowings. The Corporation intends to apply for RRIF loans for the HTP following notification from USDOT regarding the anticipated ROD issuance date; availing itself of the provisions in the FAST Act to repay those loans on an interest-only basis for five years after construction completion for a portion of the RRIF loans, and then on a level debt service basis thereafter. As noted in Section 3.2.3.1 and shown in Table 3-15, it is currently anticipated that the Corporation will apply for multiple RRIF loans, based on the different credit profiles of the committed support payment sources. All of these payment sources will have an investment-grade credit profile.

3.2.2.8 PANYNJ Contribution to the Corporation

On June 28, 2018, the PANYNJ Board of Commissioners authorized the reallocation of the PANYNJ's PNB Project commitment to the HTP and confirmed the PANYNJ's $2.7 billion capital plan allocation for the HTP, to support the borrowing by the Corporation through a low-interest loan up to an aggregate principal amount of $2.7 billion (inclusive of associated fees, costs, or expenses). These funds have been Budgeted[27]. This commitment is provided as supporting documents B-15 and H-10.

On February 15, 2018, the Board of Commissioners authorized up to an additional $44 million for the Gateway Program, consisting of: (i) up to approximately $12.5 million for the potential relocation of certain facilities in connection with the HYCC and (ii) up to approximately $31.5 million for the Corporation's program management expenses for the first phase of the Gateway Program and for the Corporation's operations to be used period to December 31, 2021, which shall be provided by agreement, through contracted services on behalf of the Corporation, or through the provision of staff and in-kind support, exclusive of any expenditures or allocations in support of the Corporation as authorized by prior Board actions, conditional upon a commitment of like funds by Amtrak. On February 15, 2018, the Board of Commissioners certified the up to $44 million[28] in funds authorized by the Board in February 2018 as an additional facility of the PANYNJ. This $44 million contribution is included in the PANYNJ's $2.7 billion commitment. This $44 million in Committed[29] funds are currently programmed by the PANYNJ and are being expended by the PANYNJ as part of the Project Development phase. No further approvals (legislative or referendum) are required for the funds to be used. This commitment provided as supporting documents B-9.

On March 24, 2016, the Board of Commissioners authorized the Executive Director to enter into an agreement with Amtrak to reimburse Amtrak up to $35 million of preliminary engineering and planning

[27] These funds have been Budgeted as defined by FTA CIG guidelines.

[28] February 15, 2018, "Port Authority Gateway Support Program, Early Work – Facility Certification"; The Board of Commissioners certified (i) the up to $35 million in funds authorized by the Board in March 2016, and (ii) the up to $44 million in funds authorized by the Board in February 2018 (collectively, the "Gateway Early Work Program," as an additional facility of the PANYNJ.

[29] These funds have been Committed as defined by FTA CIG guidelines.

costs incurred by Amtrak for the design, development and construction of the HTP, and to advance environmental review and permitting for the HTP. On February 15, 2018, the PANYNJ Board certified the up to $35 million in funds authorized by the Board in March 2016 as an additional facility of the PANYNJ[28]. These Committed[29] funds have been expended by the PANYNJ as part of the Project Development phase and no further approvals (legislative or referendum) are required for the funds to be used. Together with the $2.7 billion commitment, the total PANYNJ commitment is $2.735 billion. This commitment is provided as supporting document B-15.

In line with FTA's guidelines for classifying the level of commitment for each capital funding source, PANYNJ's commitment falls into the "Budgeted"/"Committed" category. PANYNJ funds required to support debt service payments of $2.7 billion have been Budgeted (within the meaning of FTA's guidelines) through the adoption of the 2017 – 2026 Capital Plan by the PANYNJ Board of Commissioners and through the June 2018 Board Resolution confirmation of the Capital Plan allocation for the HTP. The PANYNJ's support, as outlined in the 2017 – 2026 Capital Plan, is subject to the conditions that the PANYNJ is not the primary obligor for the loans and is not liable for any construction completion, cost overrun or project funding risk in connection with the Gateway Program[30]. The June 2018 Board resolution mentions the following required steps:

- A facility certification – provided by the PANYNJ Board of Commissioners – is required before such agreement can be executed in support of any federal loan applied for by the Corporation. Before the PANYNJ can issue Consolidated Bonds or bonds sharing in the pledge of the General Reserve Fund in connection with an additional facility, it must first certify its opinion that such issuance will not, during a specific period, materially impair the sound credit standing of the PANYNJ or the investment status of Consolidated Bonds or the ability of the PANYNJ to fulfil its commitments. Therefore, facility certification for the remainder of the HTP cannot take place until the terms of a FFGA or any agreements necessary to support the borrowing by the Corporation through a RRIF loan are understood in detail. The PANYNJ's $35 million and $44 million contributions discussed above received facility certification in February 2018 and should be considered "Committed".
- PANYNJ's General Counsel shall render a legal opinion on whether payments to the Corporation for the HTP are authorized by the Port Compact of April 30, 1921, and the statutes governing PANYNJ activities. Such opinion will be issued concurrent with the Board resolution providing facility certification for the remainder of the HTP.

Under this authorization, the current financial plan reflects that the PANYNJ will support the borrowing by the Corporation through a RRIF loan that will provide $2.158 billion (net proceeds) towards the HTP's construction costs for a total commitment of $2.551 billion including interest, issuance costs, servicing and monitoring fees and CRP. Including the $35 million PANYNJ design contribution, the total PANYNJ contribution for the HTP is $2.586 billion. This financial plan assumes that the Corporation will be the RRIF loan applicant and enter into a funding agreement with the PANYNJ (PA/Corporation Funding Agreement), under the terms of which the PANYNJ will commit to pay the Corporation principal, interest, and certain fees and expenses—the "Funding Agreement Cashflow"—in connection with the RRIF Loans subject to the terms and conditions to be set out in the PA/Corporation Funding Agreement. The funding

[30] The Corporation will be the primary obligor for the RRIF loans and the State of New York, the State of New Jersey, and Amtrak are committed to cover 15% of construction cost overruns.

committed is PANYNJ revenues after payment of debt service on its Consolidated Bonds and other obligations in the waterfall of funds, as defined in its Consolidated Bond Resolution.

PANYNJ's commitment to the Corporation to pay amounts equivalent to scheduled debt service payments in HTP RRIF loan proceeds is estimated to be up to $96 million from FY 2029 to FY 2034 (interest-only period debt service) and up to $137 million annually starting in FY 2034 through FY 2067 (principal and interest period debt service).

PANYNJ Financial Information

The PANYNJ has a mature and diverse transportation asset base, including America's busiest airport system, marine terminals and ports, the Port Authority Trans-Hudson (PATH) rail transit system, two tunnels and four bridges between New York and New Jersey, the Port Authority Bus Terminal in Manhattan, and the World Trade Center, that provide critical service to the New York City metro area.

The PANYNJ raises the necessary funds for the improvement, construction or acquisition of its facilities primarily on the basis of its own credit. The revenues of the PANYNJ are derived principally from the tolls, fares, take-off and landing fees, and dockage fee, rentals, and other charges for the use of, and privileges at, certain of its facilities. The diverse operation of critical infrastructure assets, strong demographics of the region, strong liquidity, and a conservative debt structure all contribute to the PANYNJ's strong credit profile (evidenced by ratings of AA-/Aa3/AA- by /S&P/ Moody's /Fitch on its Consolidated Bonds and Notes as shown in Table 3-11).

Key strengths of the PANYNJ pertaining to its financial support of the HTP include:

- **Numerous, diverse assets mitigate risk:** The PANYNJ is one of the oldest, largest, and most diverse public authorities in the United States, with control over an array of critical infrastructure assets. A high volume of passengers and cargo moves through the Port District, the regional service area of New York/New Jersey. The geographical diversification within its regional district and the multiplicity of transportation modes, assets and locations helps to mitigate the risk of temporary losses or closure of any single asset.
- **Strong debt service coverage and reserve levels**: The PANYNJ has historically maintained a senior debt coverage ratio around 2.0 times along with a General Reserve Fund at 10% of outstanding debt service. The PANYNJ has proposed a $37.0 billion capital plan for the period 2017 – 2026 with funding anticipated to primarily come from cash flow generation, existing liquidity reserves and bond debt financing. Beginning in 2018, the PANYNJ began the process to reassess the 2017 – 2026 Capital Plan, as directed by the Board of Commissioners. On June 27, 2019, PANYNJ staff presented the Board of Commissioners with the proposed 2019 reassessment of, and changes to, the 2017 – 2026 Capital Plan. The proposed changes do not include any changes to the PANYNJ's support of debt service payments on up to $2.7 billion of Corporation low-cost borrowing for the HTP, subject to facility certification. The Board of Commissioners is expected to consider proposed changes at its September 26, 2019 meeting.

Table 3-11 PANYNJ Consolidated Bond Ratings

Credit Ratings	S&P	Moody's	Fitch
PANYNJ Consolidated Bonds	AA-	Aa3	AA-

- **Steady financial results:** The PANYNJ generated increases in gross operating revenues and net position over the 10-year fiscal period from 2009 to 2018. Gross operating revenues increased at a compound annual growth rate (CAGR) of 4.64%, from $3.55 billion in FY 2009 to $5.34 billion in FY 2018. Net position increased at a CAGR of 4.51% over the same period, from $10.68 billion in FY 2009 to $15.88 billion in FY 2018.

The supporting documents include the following schedules that further demonstrate the PANYNJ's historical financial strength from 2009-2018.

- Supporting document C-1: Revenues, Expenses, Capital Investment by Business
- Supporting document C-2: Revenues, Expenses, and Change in Net Position
- Supporting document C-3: Revenues and Reserves

3.2.2.9 State of New Jersey Contribution to HTP

Consistent with the Gateway Development Commission Act described in Sections 1.2 and 1.7.2.2, the current financing plan includes a commitment from the State of New Jersey to make payments to the Corporation in amounts sufficient to enable the Corporation to meet its financing obligations, through a RRIF loan supporting $1.643 billion in construction costs ($1.918 billion[31] in interest, issuance costs, servicing and monitoring fees, and credit risk premium). The Corporation will be the RRIF applicant and will enter into agreements with the State of New Jersey under the terms of which the State of New Jersey will commit to the Corporation to pay principal, interest, and certain fees and expenses. This commitment is evidenced by the new attached letter from the Governor of New Jersey, which is being submitted as part of this application. This commitment is provided as supporting document B-7.

Funds sufficient to fulfill the State of New Jersey's commitment for a portion of operating costs have been included in NJ TRANSIT's System-Wide Financial Plan (Chapter 4.0, Section 4.3.3, Forecast Operating Budget).

3.2.2.9.1 State of New Jersey Budgeting Process

The State of New Jersey's budgeting process[32] is designed to result in budget decisions that are informed by performance, with a focus on furthering agency core missions. Agencies prepare planning documents, which are reviewed with the Office of Management and Budget (OMB). Preliminary recommendations are agreed upon, which OMB then reviews with the State Treasurer, the Governor, and the Governor's staff. The planning portion of the budget process usually culminates with the submission of the Governor's budget message, representing the Governor's recommendations for allocating available resources, to the Legislature.

The annual review process for capital spending requests and recommendations, which runs somewhat parallel to the process described above, has several stages. All state departments requesting capital funding must submit a seven-year Capital Improvement Plan to the New Jersey Commission on Capital Budgeting and Planning. Each capital project request must include an operating impact statement. The

[31] The $1.918 billion figure excludes principal repayments during the CIG period of $58 million. Including these principal repayments, the State of New Jersey's commitment is $1.975 billion.

[32] https://www.nj.gov/treasury/omb/understandingthebudget.shtml

Commission schedules public hearings, analyzes the capital requests, and recommends projects to the Governor. The Governor, in turn, selects projects to be recommended in the annual budget message.

The Legislature reviews the Governor's budget and makes changes. The budget must then be approved by the Senate and the Assembly. After the Legislature passes the Appropriations Act, the bill is sent to the Governor. The Governor may sign it, conditionally veto it (returning it for changes) or veto it absolutely. The Governor also has the power to veto specific appropriations (line items) or appropriation language segments, some of which may have been added by the Legislature as a result of its review. The line-item veto allows the Governor to reshape the final Budget and ensure that appropriations do not exceed the certified level of revenues.

Throughout the course of the fiscal year, the Legislature has the authority to pass legislation that provides funding for programs and projects above and beyond those provided for in the Appropriations Act.

3.2.2.9.2 State of New Jersey Financial Information

During fiscal year 2018, State of New Jersey revenues totaled $62.5 billion, an increase of $2.2 billion compared to the prior fiscal year. This increase was primarily due to higher gross income tax collections, charges for services and miscellaneous revenue. General taxes totaled $32.7 billion and accounted for 52.3% of total state revenues. The three major taxes, gross income tax, sales and use tax and corporation business tax, comprised 82.7% of total general taxes. General taxes increased by $1.1 billion compared to the prior fiscal year.

The General Fund, the state's chief operating fund, totaled $5.6 billion at the end of fiscal year 2018, of which $990.6 million represented unassigned fund balance. [33]

Key strengths of the State of New Jersey pertaining to its financial support of the HTP include:

- **Large and diverse economic base:** New Jersey is the eleventh largest state by population. Per capita personal income is the fourth highest in the nation, which translates into an above-average ability to pay taxes. Gross domestic product per capita ranks eighth among the states. NJ has a low poverty rate, an unemployment rate equal to the national average and above average educational attainment, bolstered by a diverse economy with notable specialization in pharmaceuticals, information technology, and financial services. NJ is home to many corporate headquarters and international business offices reflecting the proximity to New York City as well as the importance of the state's extensive transportation and shipping infrastructure.[34] [35]
- **Improving financial results and budgetary control:** General Fund revenues have trended higher in the last two years, resulting in increases to both the General Fund total fund balance and the unassigned balance. The state is projecting back-to-back surplus balances for both FY 2019 and FY 2020.[36]
- **Importance of transportation funding:** Transportation capital spending accounts for about 84% of the state's FY 2019 capital program. In 2016, action was taken by the Legislature to sustain and increase funding for the NJTTF. On October 7, 2016, the Legislature passed Assembly Bill

[33] The State of New Jersey Comprehensive Annual Financial Report Fiscal Year Ended June 30, 2018

[34] Moody's Investors Service: Rating Action, 29 October 2018

[35] Kroll Bond Rating Agency, State GO Rating Report, January 7, 2019

[36] State of New Jersey FY 2020 Budget, Summaries of Revenues, Expenditures and Fund Balances

10 (A10) reauthorizing the NJTTF for an 8-year period at $16 billion over the reauthorization lifecycle. This reauthorization was partially funded by an increase of 23 cents per gallon in the state's petroleum products gross receipts tax and 4 cents per gallon in the diesel fuel tax. On November 8, 2016, a constitutional amendment dedicating all of the motor fuels tax revenues and petroleum products gross receipt tax revenues for the purposes of paying or financing the cost of planning, acquisition, engineering, construction, reconstruction, repair and rehabilitation of the transportation system in New Jersey was passed by New Jersey voters.[37]

- **Manageable State debt and liability burden:** Total Bonded Debt decreased to $45.2 billion at the end of fiscal year 2018 from $46.1 billion at the end of the prior fiscal year. Total Bonded Debt was 7.5% of New Jersey total personal income, which was a decrease from 8.2% for the prior fiscal year. General Obligation Bonds fell to $1.8 billion at the end of fiscal year 2018 from $2.0 billion at the end of the prior fiscal year. In 2017, to substantially reduce the state's pension plans' unfunded liability, the Lottery Enterprise was contributed to the retirement system to offset the state's pension payments by anticipated net lottery receipts. The 30-year, irrevocable contribution of the Lottery Enterprise to the state's three largest pension systems will increase funded ratios. In 2018 and 2019, the State contributed $2.509 billion and $3.213 billion, respectively, to the pension plan, and has a budgeted contribution of $3.8 billion for 2020. [38] [39] [40] [41]

Table 3-12 New Jersey General Obligation Bond Ratings

Credit Ratings	S&P	Moody's	Fitch
State of New Jersey GO Bonds	A-	A3	A

3.2.2.10 State of New York Contribution to HTP

Consistent with the Gateway Development Commission Act described in Sections 1.2 and 1.7.2.2, the current financing plan includes a commitment from the State of New York to make payments to the Corporation in amounts sufficient to enable the Corporation to meet its financing obligations through a RRIF loan to fund $1.75 billion in construction costs ($2.068[42] billion in interest, issuance costs, servicing and monitoring fees, and CRP). The Corporation will be the RRIF loan applicant and enter into a funding agreement with the State of New York (such agreement, the "State of New York Agreement") under the terms of which the State of New York will commit to the Corporation to pay principal, interest, and certain fees and expenses. The State of New York would satisfy scheduled payments on a loan consisting of construction costs and financing charges. This commitment is evidenced by the new attached letter from the Budget Director of the State of New York, which is being submitted as part of this application.

New York State commits to (i) propose in the State's executive budget an appropriation each year over a 35-year period to pay debt service on a $1.75 billion fixed-interest loan to the Corporation with a 35-year term under the USDOT RRIF loan program, which is to be used toward construction of a new tunnel, and

[37] Kroll Bond Rating Agency, State GO Rating Report, January 7, 2019

[38] The State of New Jersey Comprehensive Annual Financial Report Fiscal Year Ended June 30, 2018

[39] The State of New Jersey Comprehensive Annual Financial Report Fiscal Year Ended June 30, 2017

[40] State of New Jersey FY 2020 Budget

[41] Fitch Ratings, September 14, 2017

[42] The $2.068 billion figure excludes principal repayments during the CIG period of $67 million. Including these principal repayments, the State of New York's commitment is $2.135 billion.

(ii) use good faith efforts to obtain New York State legislative approval of these appropriations. The State expects to recoup its debt service costs from the new infrastructure revenues and offsets. New York's Division of Budget will follow the budget process described below to implement this commitment. This process is used for all state authority funding obligations that are subject to annual appropriation.

New York State's budget process uses an executive budget model. Under this system, the Executive is responsible for developing and preparing a comprehensive, balanced budget proposal, which the Legislature modifies and enacts into law. The Governor is required by the State Constitution to seek and coordinate requests from agencies of State government, develop a "complete" plan of proposed expenditures and the revenues available to support them (a "balanced budget"), and submit a budget to the Legislature along with the appropriation bills and other legislation required to carry out budgetary recommendations. The Governor is also required by the State Finance Law to manage the budget through administrative actions during the fiscal year.[43]

This commitment is provided as supporting document B-8.

3.2.2.10.1 New York State Financial Information

The State of New York's robust economy underpins its commitment to the HTP. Total General Fund Revenues of $70.5 billion in FY 2019 increased at a compound annual growth rate of 2.7 percent over the preceding five years.

The State of New York Agreement will ultimately establish the terms of New York State's contributions to support debt service for a portion of the project costs. It is anticipated that these contributions will be appropriated annually. The State maintains a range of fund types through which contributions to the HTP could be facilitated, including: General Fund; State Special Revenue Funds, which receive certain dedicated taxes, fees, and other revenues that are used for a specified purpose; Capital Projects Funds which account for costs incurred in the construction and rehabilitation of roads, bridges, and other infrastructure projects; and Debt Service Funds, which account for the payment of principal, interest, and related expenses of debt issued by State and its public authorities. Annual appropriation bills passed by the legislature authorize the expenditure of funds during the new fiscal year.

Key strengths of the State of New York pertaining to its financial support of the HTP include:

- The State of New York is a highly rated borrower and has never defaulted on a debt service payment.
- Table 3-13 presents the State of New York credit ratings.

Table 3-13 State of New York Credit Ratings

Credit Ratings	S&P	Moody's	Fitch
General Obligation	AA+	Aa1	AA+
NYS Personal Income Tax	AA+	Aa1	AA+
NYS State Sales Tax	AA+	Aa1	NR

[43] https://www.budget.ny.gov/citizen/process/process.html

3.2.2.11 Remainder of the Local Contribution to Gateway Program Development Corporation for the HTP

The Project Partners are committed to identifying the remainder of the funding for the HTP of $63 million, which is less than 1% of the non-CIG share of public transportation eligible project costs, in a future submission, prior to the signing of a FFGA, as permitted in FTA CIG guidance. The Gateway Development Commission Act (described in Sections 1.2 and 1.7.2.2) codifies this commitment to full funding of the local share, requiring the states of New York and New Jersey to provide equal funding for Phase 1 of the Gateway Program. At present, the Financial Plan includes an assumption that additional local revenues are identified and leveraged through a RRIF loan ("RRIF Loan C") used to finance $63 million of the North River Tunnel's rehabilitation costs. This amount has been substantially reduced from $787 million in the FY 2020 Financial Plan, due to commitments from PANYNJ, the State of New Jersey, and the State of New York to cover $884 million, or 93%, of the $947 million local share of the rehabilitation costs. Although the source of funding has not been explicitly identified, the Project Partners do not view this small funding need as a funding gap, as there are numerous sources for this funding. For example, funding committed to capital costs are expected to be released as contingencies and major risks are reduced and cost certainty is increased as anticipated under the contract packaging / ESWA approach; funding committed to financing costs is conservative as it is based on interest rates that are approximately 200 basis points higher than current rates; and PANYNJ's $2.7 billion commitment has not been fully utilized in this financial plan.

3.2.2.12 Summary of Local Financial Commitment

The Project Partners recognize that the FTA CIG Program guidelines define "Committed," "Budgeted," and "Planned"[44] sources of local financial commitment in a certain way for financial rating purposes. As shown in Table 3-14, the Project Partners are confident that of the significant committed funding by the local partners, approximately 38.1% of the non-CIG share of public transportation eligible project costs has been Committed and/or Budgeted for the purposes of FTA's rating process. Table 3-14 identifies the sources for funds for the intercity rail and public transportation portions of the HTP.

[44] FTA CIG Definition of "Planned:" "This category is for funds that are identified and have a reasonable chance of being committed, but are neither committed nor budgeted. Examples include proposed sources that require a scheduled referendum, reasonable requests for state/local grants, and proposed debt financing that has not yet been adopted in the agency's CIP."

Table 3-14 Committed/Budgeted Project Capital Sources of Funds (YOE $M)

	Total	Percent	Committed/ Budgeted		Planned	
			Total	Percent	Total	Percent
SOURCES OF FUNDS						
Intercity Rail						
Amtrak Contribution/FRA Grant	1,129	100.0%	-	-	1,129	100.0%
Local Financing						
RRIF Loan A1 (PANYNJ)	-	-	-	-	-	-
RRIF Loan A2 (NYS)	-	-	-	-	-	-
RRIF Loan B (NJ)	-	-	-	-	-	-
RRIF Loan C (Local)	-	-	-	-	-	-
Local Contributions						
PANYNJ	-	-	-	-	-	-
NYS	-	-	-	-	-	-
NJ	-	-	-	-	-	-
Local	-	-	-	-	-	-
Intercity Rail Sources of Funds	1,129	100.0%	-	-	1,129	100.0%
Public Transportation						
Amtrak Contribution	153	1.3%	-	-	153	1.3%
FTA Grant during CIG Period	5,339	44.0%	NA	NA	NA	NA
Local Financing[45]						
RRIF Loan A1 (PANYNJ)	2,350	19.4%	2,350	19.4%	-	-
RRIF Loan A2 (NYS)	1,907	15.7%	-	-	1,907	15.7%
RRIF Loan B (NJ)	1,643	13.5%	-	-	1,643	13.5%
RRIF Loan C (Local)	61	0.5%	-	-	61	0.5%
Local Contributions[46]						
PANYNJ	236	1.9%	236	1.9%	-	-
NYS	161	1.3%	-	-	161	1.3%
NJ	275	2.3%	-	-	275	2.3%
Local	3	0.0%	-	-	3	0.0%
Public Transportation Sources of Funds	12,127	100.0%	2,586	21.3%	4,203	34.7%
Less New Starts Grant Amount	(5,339)	-44.0%				
Non-CIG Share of the Public Transportation Portion of the FTA-Defined Project Cost	6,789		2,586	38.1%	4,203	61.9%
Total Project						
Total Source of Funds	**13,256**					

3.2.3 Capital Financing Strategy

The primary Corporation financings anticipated for Hudson River Tunnel and HYCC-Section 3 are based on the three different credit profiles of the three committed funding sources: (1) a RRIF loan backed by payments from PANYNJ, (2) a RRIF loan backed by payments from the State of New Jersey, and (3) a

[45] RRIF Loan balances include: Loan A1 principal of $2,158m and Loan A1 capitalized interest of $193m; Loan A2 principal of $1,750m and Loan A2 capitalized interest of $157m; Loan B principal of $1,643m and Loan B capitalized interest of $0; and Loan C principal of $58m and Loan C capitalized interest of $3m.

[46] Local contributions cover interest expense, issuance fees, servicing and monitoring costs and credit risk premium, reduced by grant proceeds for financing costs. Principal repayments during the CIG period of $125m have been excluded.

RRIF loan backed by payments from the State of New York. Additional RRIF financing will be utilized for the balance of the HTP which will be supported by local funding sources to be identified by the Project Partners in advance of the FFGA. The Corporation intends to enter into the RRIF loan application process once USDOT has provided greater clarity regarding timing for the issuance of the ROD.

3.2.3.1 RRIF Loans

A total of $5.960 billion in RRIF loans are anticipated for the HTP. It is anticipated that the Corporation will execute RRIF loan agreements, supported by funding from PANYNJ, the State of New Jersey, and the State of New York. Table 3-15 depicts the gross proceeds breakout of anticipated HTP financing.

Table 3-15 Gross Proceeds from Anticipated HTP Financing (YOE $M)

Debt Instrument	Net Proceeds	Capitalized Interest	Debt Service Reserve Fund	Gross Proceeds
RRIF Loan A1 (PANYNJ)	2,158	193	-	2,350
RRIF Loan A2 (NYS)	1,750	157	-	1,907
RRIF Loan B (NJ)	1,643	-	-	1,643
RRIF Loan C (Local TBD)	58	3	-	61
Total HTP Financing	5,608	352	-	5,960

The RRIF program's project readiness criteria requires that projects seeking credit assistance must be reasonably likely to have completed the NEPA process prior to loan closing. The uncertainty which persists regarding an anticipated date for the FRA and FTA's issuance of a ROD for the HTP prevents the Corporation from confidently assuming that it can meet the readiness criteria as stated. While USDOT was provided with the draft FEIS on February 22, 2018, its review of the document has extended far beyond the March 30, 2018, date originally anticipated by all stakeholders. Upon receiving a revised ROD issuance date, the Project Partners will be prepared to engage with USDOT on development of RRIF loan letters of interest and preliminary applications based upon a timeline which accounts for this critical criteria.

3.2.3.1.1 Credit Risk Premium

The RRIF loans are structured with expectation of an investment grade rating. The financial plan assumes $2 million in issuance cost paid for each issuance and a 3.5% CRP paid at loan drawdown. CRPs on RRIF loans have generally ranged from 0-5% of the loan amount[47]. The Corporation recognizes that the CRP will vary based on creditworthiness, and therefore the CRP for each RRIF loan will vary based on the source of funding to the Corporation. The 3.5% assumption is intended to represent a weighted average CRP across the various RRIF loans. Given the strong credit ratings on debt of the identified funding sources (NYS: AA+/Aa1/AA+ for General Obligation, Sales Tax, and Personal Income Tax Bonds; PANYNJ: AA-/Aa3/AA- for Consolidated Bonds; NJ: A-/ A3/A for General Obligation Bonds), 3.5% is a conservative assumption for the CRP. In the past, RRIF loans with credit ratings of A and AA supporting major transportation agency projects have resulted in CRPs close to 0%.

[47] U.S. Department of Transportation, Office of Inspector General, *Audit Report: Process Inefficiencies and Costs Discourage Participation in FRA's RRIF Program*, June 10, 2014, CR-2014-054, page 4, at https://www.oig.dot.gov/sites/default/files/RRIF%20final.pdf.

3.2.3.1.2 Interest Rates

The interest rate is assumed to be equal to 4.11 percent based on 30-year Treasury bond rate at year of execution, consistent with the FY 2020 Financial Plan (Source: Global Insight 05/18/16) with a 35-year maturity from substantial completion date. The interest rate assumption provides a healthy buffer since the current 30-year Treasury bond rate is 2.05 percent (08/21/2019). The RRIF Loans supported by funding from the PANYNJ assumes a five-year period of interest only payments after substantial completion followed by level annual debt service payments for 30 years, while the RRIF Loans supported by funding from the State of New Jersey and the State of New York assume level annual debt service payments for 35 years following substantial completion. The debt service cost includes all capitalized interest as well as annual debt servicing fees and credit monitoring costs. Interest on the RRIF loans is calculated semi-annually and any interest that is not paid current in each semi-annual period (utilizing local partner contributions and / or available grant funding) is capitalized into the loan balance, forming part of the loan balance on which interest costs are calculated in subsequent periods – ensuring that capitalized interest and, thus, financing costs are not understated.

The Corporation RRIF loans supported by payments from PANYNJ, the State of New Jersey, and the State of New York will have drawdown profiles that span from FY 2022 until FY 2029 (substantial completion of the new Hudson River Tunnel/HYCC-Section 3) and FY 2022 to FY 2032 (substantial completion for the rehabilitation of the North River Tunnel). Each loan will have an issuance cost of $2 million and will not have a debt service reserve. A CRP of 3.50% is assumed for each RRIF loan (specific amounts are indicated in Table 3-16).

The Corporation RRIF loan supported by payments committed to be identified by the Project Partners prior to the FFGA will have a drawdown profile that will span from FY 2022 until FY 2032 (substantial completion for rehabilitation of the North River Tunnel). This loan will have an issuance cost of $2 million and will not have a debt service reserve associated with it. The principal amount of this loan is substantially lower than the amount shown in the FY 2020 Financial Plan.

Table 3-16 below summarizes the funding stream specific RRIF loan assumptions. Later in the chapter, Table 3-24, Table 3-25, Table 3-26, and Table 3-27 provide annual sources and uses for RRIF Loan repayment.

Table 3-16 Funding Stream Specific RRIF Terms

Assumptions	PANYNJ Scheduled Payments	State of New Jersey Scheduled Payments	State of New York Scheduled Payments	Local Scheduled Payments
RRIF applicant	The Corporation or its designate will be applicant and repays loan debt service	The Corporation or its designate will be applicant and repays loan debt service	The Corporation or its designate will be applicant and repays loan debt service	The Corporation or its designate will be applicant and repays loan debt service
CRP	$82.3M (3.5%)	$57.5M (3.5%)	$66.7M (3.5%)	$2.1M (3.5%)
Interest Capitalized	During construction until FY 2029 for Hudson River Tunnel During construction until FY 2032 for North River Tunnel	N/A – current interest	During construction until FY 2029 for Hudson River Tunnel During construction until FY 2032 for North River Tunnel	During construction until FY 2032

3.2.4 Capital Plan Uses of Funds

The capital plan uses of funds is comprised of project capital costs, RRIF financing charges, and subsequent RRIF debt service. Capital plan uses of funds are summarized in Table 3-17.

Table 3-17 Project Capital Uses of Funds (YOE $M)

Project Uses[48]	YOE $M	%
Project Capital Cost	11,286	84.3%
RRIF Loan A1 (PANYNJ)		
Issuance Cost	4	0.0%
Servicing Fees during CIG Period	0	0.0%
Monitoring Fees during CIG Period	1	0.0%
Credit Risk Premium	82	0.6%
Capitalized Interest Payment	193	1.4%
Interest Payment during Drawdown Period	253	1.9%
Interest Payment after Drawdown Period, during CIG Period	248	1.9%
Principal Payment during CIG Period	-	-
RRIF Loan A2 (NYS)		
Issuance Cost	4	0.0%
Servicing Fees during CIG Period	0	0.0%
Monitoring Fees during CIG Period	1	0.0%
Credit Risk Premium	67	0.5%
Capitalized Interest Payment	157	1.2%
Interest Payment during Drawdown Period	205	1.5%
Interest Payment after Drawdown Period, during CIG Period	198	1.5%
Principal Payment during CIG Period	67	0.5%
RRIF Loan B (NJ)		
Issuance Cost	4	0.0%
Servicing Fees during CIG Period	0	0.0%
Monitoring Fees during CIG Period	1	0.0%
Credit Risk Premium	57	0.4%
Capitalized Interest Payment	0	0.0%
Interest Payment during Drawdown Period	314	2.3%
Interest Payment after Drawdown Period, during CIG Period	169	1.3%
Principal Payment during CIG Period	58	0.4%
RRIF Loan C (Local)		
Issuance Cost	2	0.0%
Servicing Fees during CIG Period	0	0.0%
Monitoring Fees during CIG Period	1	0.0%
Credit Risk Premium	2	0.0%
Capitalized Interest Payment	3	0.0%
Interest Payment during Drawdown Period	3	0.0%
Interest Payment after Drawdown Period, during CIG Period	-	-
Principal Payment during CIG Period	-	-
Total Project Uses	**13,381**	**100.0%**

[48] Uses of funds include principal repayments of $125m during the CIG period

Debt Service	YOE $M	%
RRIF Loan A1 (PANYNJ) Debt Service Post-CIG Period	4,343	40.6%
RRIF Loan A2 (NYS) Debt Service Post-CIG Period	3,345	31.3%
RRIF Loan B (NJ) Debt Service Post-CIG Period	2,883	27.0%
RRIF Loan C (Local) Debt Service Post-CIG Period	115	1.1%
Total Debt Service	**10,686**	**100.0%**
Ongoing Fees	**YOE $M**	**%**
RRIF Loan A1 (PANYNJ) Servicing & Monitoring Fees Post-CIG Period	7	28.2%
RRIF Loan A2 (NYS) Servicing & Monitoring Fees Post-CIG Period	7	28.2%
RRIF Loan B (NJ) Servicing & Monitoring Fees Post-CIG Period	7	28.2%
RRIF Loan C (Local) Servicing & Monitoring Fees Post-CIG Period	4	15.4%
Total Debt Administration Fees	**26**	**100.0%**

3.2.4.1 Project Capital Costs

The HTP is composed of three project elements:

- The construction of the new two tube Hudson River Tunnel;
- The construction of the HYCC-Section 3; and
- The rehabilitation of the existing North River Tunnel.

3.2.4.1.1 Hudson River Tunnel Capital Costs

The HTP includes the construction of a new Hudson River Tunnel in order to allow for the rehabilitation of the North River Tunnel without impacting existing passenger rail service. The new Hudson River Tunnel is being planned to be constructed south of the existing North River Tunnel, under the Palisades in New Jersey, the Hudson River, and connecting directly to PSNY. The scope of the HTP at the west end tunnel portal extends westward along the NEC to Secaucus, New Jersey and at the east end to Ninth Avenue in Manhattan, New York. No changes to Secaucus Junction Station in New Jersey or to PSNY platforms or platform tracks in New York are proposed as part of the HTP.

Major project components of the Hudson River Tunnel element would include:

- **New Jersey surface alignment**: Two new surface tracks would branch off from and run alongside and to the south of the existing NEC in New Jersey. The new tracks would begin at a realigned Allied Interlocking1 in Secaucus, New Jersey just east of NJ TRANSIT's Secaucus Junction Station. These tracks would be accessible for maintenance via new access roads. The surface tracks would be supported on retained fill placed adjacent to the existing NEC embankment between County Road and Secaucus Road, and to the east on a new viaduct structure adjacent to the existing NEC embankment through the Meadowlands.
- **New tunnel in New Jersey:** The new Hudson River Tunnel would have two tracks in two separate tubes that would begin at a new portal in the western slope of the Palisades near Tonnelle Avenue (U.S. Routes 1 and 9) in North Bergen, New Jersey, about 600 feet south of the North River Tunnel portal. The tunnel would extend 150 to 250 feet beneath the rock formation of the Palisades and then would continue about 60 to 75 feet below the surface beneath Hoboken.
- **New tunnel beneath Hudson River**: Beneath the Hudson River, the top (i.e., crown) of the tunnel would generally be located 25 to 50 feet below the river bottom for much of its length. In one area

near the Manhattan shoreline, the tunnel is at a shallower depth, which will require construction of ground improvements to increase ground stability prior to tunnel excavation.

- **New tunnel in Manhattan**: The new tunnel would continue through the foundation of the Manhattan Bulkhead below the river bottom and continue about 45 feet below the surface beneath Hudson River Park and Twelfth Avenue (New York State Route 9A); beneath the block between West 29th and West 30th Streets on the west side of Twelfth Avenue (Manhattan Block 675); and beneath West 30th Street. On the north side of West 30th Street, the alignment would meet the underground Hudson Yards Concrete Casing Project discussed in Section 3.2.4.1.2, above and would add new tracks and associated rail systems within the Hudson Yards Concrete Casing. From the end of the Hudson Yards Concrete Casing, the new Hudson River Tunnel would continue beneath Tenth Avenue to a tunnel portal east of Tenth Avenue, within the complex of tracks located beneath the existing building that spans the tracks on the east side of Tenth Avenue (450 West 33rd Street) and connect to the existing PSNY approach tracks in an area referred to as "A-Yard."

- **Ventilation shafts and fan plants**: The new Hudson River Tunnel would have a ventilation system designed to bring fresh air into the tunnel passively, through normal train movement.

  It would also have an active component, driven by fans, to remove hot air from the tunnel during congested (i.e., perturbed) conditions, when trains are stopped or moving slowly for extended periods, particularly during the summer. The active component would also be used to control and exhaust hot air and smoke during emergency conditions, such as a fire on a train in the tunnel. The fans would be used to move smoke so that smoke-free emergency routes are available for safe evacuation of passengers and fire-fighting operations.

  The ventilation system would have three fan plants housing large fans and other equipment. The shape and specific location of the fan plants is still being developed and will be refined during preliminary and final engineering. The three fan plants would be as follows:

  - **Hoboken fan plant**: An approximately 130-foot-diameter vertical ventilation shaft would connect to the tunnel at a site east of the Palisades. At the surface, a fan plant would house fans and other equipment, and provide street-level emergency egress from and access to the tunnel. The site is predominantly in Hoboken, New Jersey, but also includes small areas that are in Union City and Weehawken, New Jersey. This site is located on the south side of 18th Street, just north of the Hudson-Bergen Light Rail right-of-way, and adjacent to the eastern face of the Palisades.

  - **Twelfth Avenue fan plant**: An approximately 130-foot-diameter vertical ventilation shaft would connect to the tunnel at a site on the west end of Block 675 (the Manhattan block between West 29th and West 30th Streets and Eleventh and Twelfth Avenues) in New York City. The only available site for such a ventilation shaft is on Block 675, since the area west of that block is parkland and the area east of that block is currently either being developed with a large-scale development or is already developed. At the surface, a fan plant would house fans and other equipment, and provide street-level emergency egress from and access to the tunnel.

  - **A-Yard fan plant**: A fan plant would be located beneath the 450 West 33rd Street Building located on the east side of Tenth Avenue between 31st and 33rd Streets, which sits

above the section of rail right-of-way referred to as A-Yard. At this location, existing emergency access to the tunnel for first responders would be maintained; no street-level egress would be provided at this location.

As indicated in Table 3-18, the total capital cost of the Hudson River Tunnel element of the HTP is estimated at approximately $7.0 billion in 2019 fiscal year dollars, exclusive of unallocated contingency and finance costs. The total capital cost of the Hudson River Tunnel element of the HTP is estimated at approximately $8.2 billion in YOE dollars, exclusive of unallocated contingency and finance costs. The total cost of the Hudson River Tunnel element, including unallocated contingency and exclusive of finance costs, is estimated at approximately $9.0 billion in YOE dollars, and is a component of the $11.286 billion project capital construction cost.

An escalation factor of three and one-half percent (3.5 percent) compounded annually has been applied to calculate the YOE cost of this element of the HTP. The inflation rate forecast assumption, which is in line with historic data, is described in more detail in Section 3.4.1.1.1. The overall construction duration of the new Hudson River Tunnel is approximately eight years, unless unforeseen impediments arise during construction that might impact the advancement of the work.

The base cost estimate for the new Hudson River Tunnel was prepared by the Gateway Trans-Hudson Partnership ("GTHP", a joint venture of WSP USA Inc., STV Incorporated, and AECOM USA, Inc.) estimating staff and reviewed by the Corporation and Project Partners. The current estimated cost for the Hudson River Tunnel is developed based on the draft 30% level of design. The process in the preparation of the estimates started by review of the drawings and then developing list of items and quantities along with the incidental work elements specific to the local site condition and the work itself in place. Then, the estimated cost of each work element was developed by professional estimators and engineers by considering the applicable means and methods of construction as well as site specific conditions and constraints including loss of efficiency and premium pay for working off normal hour work hours.

Some of the major constraints include working along existing active railroads in New Jersey for construction of viaduct structures and bridges. And in New York City for the construction activities right above and adjacent to Amtrak "A-Yard." Other major impacts include transportation of tunneling equipment and materials into the staging sites and removal of muck and debris via access shafts where the daily production is impacted by constraints on physical site access and vehicular traffic volume in the surrounding neighborhoods.

The estimate has been delineated into several distinct proposed contract packages, in addition to railroad force account work, right of way acquisition, and professional services. The estimated costs will be presented in their respective "Hard Cost" and "Soft Cost" values. The Soft Cost shall be a cumulative of the following activities; Design Services, Project Management and Administrative costs, Construction Administration and Management Services, Insurance, Permits, Fees and Railroad Force Account support by Amtrak and Long Island Rail Road (LIRR) forces.

Additionally, Amtrak's Force Account personnel will be providing necessary construction services to the HTP. These services will cover a range of activities that will need to be undertaken to facilitate the cut-in of the two (2) new tracks at the existing Allied Inter-locking along the existing NEC in addition to "A-Yard" track reconfiguration. The scope of work includes all related electrification, communications, signal and other related railroad infrastructure systems as well as protection flagging support for construction activities being performed by third party contractors.

Several utilities have been identified that cross over or under the NEC and in the vicinity of the fan plants. Ownership of each of the utility lines has been identified and includes various communications cables, electric and gas lines, water and sanitary sewer lines owned by an assortment of companies. The relocation and/or protection of these utility lines, whether temporary or permanent, will be required to facilitate construction of the Hudson River Tunnel.

3.2.4.1.2 Hudson Yards Concrete Casing (HYCC) – Section 3 Capital Costs

The Hudson Yards Concrete Casing (HYCC) project is comprised of three sections with the purpose of preserving a rail right-of-way for a future trans-Hudson rail tunnel beneath the extensive overbuild project that is planned to be, or is currently being, constructed on platforms above the rail complex known as "Hudson Yards." The HTP would make use of the HYCC to connect to PSNY.

Construction of the first two sections has been completed. HYCC-Section 1 is located diagonally between 10th and 11th Avenues. HYCC-Section 2, the 11th Avenue Extension, is located diagonally below New York City Department of Transportation's 11th Avenue viaduct and above New York City Transit's Number 7 Line Tunnels. These project elements were designed by GTHP.

The Final Design of HYCC-Section 3 was completed on July 2, 2017, with some refinements thereafter in 2018. The limit of HYCC-Section 3 originates at the west side of 11th Avenue and travels diagonally beneath property owned by a private developer and the Long Island Rail Road (LIRR) West Rail Yard (WRY) and below the existing NYC Parks Department High Line Structure and terminates south of the High Line, within the WRY, along the north side of West 30th Street. There is an existing Emergency Services Building (ESB) and many utilities directly above the footprint of HYCC-Section 3, close to 11th Avenue viaduct. Utility relocation is required to allow for the construction of HYCC-Section 3. The utilities will be relocated and the ESB will be relocated. To allow awarding the construction contracts separately, there are two design packages for HYCC-Section 3: 1) ESB Utility Relocation and 2) the Section 3 underground casing structure.

As indicated in Table 3-18, the total cost of HYCC-Section 3 is estimated at approximately $421 million in 2019 fiscal year dollars, exclusive of unallocated contingency and finance costs. The total cost of HYCC-Section 3 is estimated at approximately $476 million in YOE dollars, exclusive of unallocated contingency and finance costs. The total cost of HYCC-Section 3, including unallocated contingency and exclusive of finance costs, is estimated at approximately $523 million in YOE dollars, and is a component of the $11.286 billion project capital construction cost.

The financial plan assumes that the presumed start of this element's "early-action" construction work, which includes the LIRR ESB Utility Relocation Project, is January 2020. The major underground structure construction activities are preliminarily set to commence by February 2021. An escalation factor of 3.5 percent compounded annually has been included in the calculation to determine the YOE cost of HYCC-Section 3. The inflation rate forecast assumption is described in more detail in Section 3.4.1.1.1. The overall construction duration (including "early action" work) is approximately 34 months.

The base cost estimate for HYCC-Section 3 was prepared in 2017 by GTHP under its contract with Amtrak and is comprised of two distinct contracts, in addition to allocations for railroad force account costs. The estimated costs will be presented in their respective "Hard Cost" and "Soft Cost" values. The Soft Cost shall be a cumulative of the following activities: Project Management and Administrative costs, Construction Administration and Management Services, Insurance, Permits, Fees and Railroad Force Account supported by Amtrak and LIRR. Excluding real estate acquisition and real estate costs, and

financing costs, the project financial plan applies a risk-adjusted project cost with a 90% probability accuracy (P-90) based on 100% design completion.

3.2.4.1.3 North River Tunnel Rehabilitation Capital Costs

The North River Tunnel Rehabilitation project element will address the causes of chronic unreliability and bring the tunnel to a state of good repair. It includes the following scope: bench wall and duct bank removal and reconstruction; replacement of the antiquated ballast track system to ballast-less track system; installation of new signal, communication, and power cables and associated components; and replacement of in-tunnel fire/life safety systems while maintaining all required systems and tunnel ventilation to protect construction workers during tunnel construction.

Deteriorating bench walls will be demolished to allow for detailed inspection and repair of the tunnel liner, reconfiguration of the replacement bench walls to better conform with current code and evacuation requirements via level disembarking from trains and unobstructed paths to safety, better and safer access to and segregation of tunnel systems to achieve maintenance efficiency and increased access to the undercarriage of trains to service disabled equipment or extinguish under-train fires, all of which are currently prohibited by the existing tunnel bench wall arrangement.

A ballast-less track system will eliminate the drainage-clogging and pump-fouling ballast fines from the tunnel environment; allow for expanded, open and accessible in-track drainage; mitigate stray current and rail corrosion issues by expediting drainage and elevating the running and third rail on new rubber-isolated blocks/pedestals; and fix the ideal rail profile and alignment without the periodic degradation and rail gage issues caused by wooden ties. A ballast-less track system will significantly reduce split rails from corrosion and wide gage from tie deterioration, two of the current leading causes of derailments in the tunnel and PSNY complex. The associated conventional, LiDAR and Amberg Trolley survey of all aspects of the existing tunnels will allow for a new optimized rail profile and alignment that better maximizes electrical clearances, in-track drainage, and dynamic train car body envelope clearances within the tight constraints of the historic tubes.

The new signal system will be fiber / microprocessor based (compatible with that installed elsewhere on the Northeast Corridor) that allows critical logic components to be relocated out of the tunnels leaving only easily swappable units in the tunnels to maximize recoverability from in-tunnel incidents. The signal system will be 'Rule 562' or 'cab-no-wayside' which removes all but one mid-river wayside signal (a physical signal located on the bench wall), conforming with modern operating procedures and removing the largest physical obstructions on the bench walls (signal masts and cabinets) for improved egress pathing and maintenance access.

Power cables which are subject to random failure after Superstorm Sandy (high voltage traction power feeders, high voltage facilities power feeders, signal power and low voltage power supply) will be replaced with modern equivalents and appropriately segregated to allow rapid maintenance with minimal personnel. The overhead catenary system will be replaced in its entirety, replacing the degrading historic connections to the existing tunnel liner and updating all arms and insulator assemblies.

Communications, security and fire/life safety components will be replaced and upgraded to a modern standard. (Amtrak, as part of a separate effort, is performing an in-tunnel Live Fire Detection Test program to drive design criteria development by testing multiple systems in the unique tunnel environment.) Security systems will be augmented with improved access control, full-tunnel camera monitoring and modern analytics/algorithms to detect intruders or events. All fire and life safety components will be

integrated in a cohesive Supervisory Control and Data Acquisition system for remote operating, monitoring and control.

The existing tunnel concrete lining is structurally sound, but it is necessary to inspect hidden regions of the liner (below track and behind bench walls) and perform localized crack, leakage, and spall repairs to extend the core structural service life through the next century and beyond.

When finished, the rehabilitated tunnel will restore confidence in the NEC and the tunnel, provide more reliable service, improved resiliency from in-tunnel events, reduced maintenance costs and associated time the tunnel must be out of service, a much safer environment for maintenance workers, first responders and the public in the event of an evacuation and a comprehensive re-build that resets the service life of all aspects of the tunnel.

As indicated in Table 3-18, the total cost of North River Tunnel Rehabilitation is estimated at approximately $1.122 billion in 2019 fiscal year dollars, exclusive of unallocated contingency and finance costs. The total cost of North River Tunnel Rehabilitation is estimated at approximately $1.611 billion in YOE dollars, exclusive of unallocated contingency and finance costs. The total cost of North River Tunnel Rehabilitation, including unallocated contingency and exclusive of finance costs, is estimated at approximately $1.772 billion in YOE dollars, and is a component of the $11.286 billion project capital construction cost.

The presumed start date of the element's "early-action" construction work, which includes site access and utility relocation activities, is in 2027. The major tunnel reconstruction activities are preliminarily set to commence by 2029. An escalation factor of 3.5 percent compounded annually has been included in the calculation to determine the YOE cost of the HTP. The inflation rate forecast assumption is described in more detail in Section 3.4.1.1.1. The overall construction duration is approximately three years.

The base cost estimate for North River Tunnel Rehabilitation was prepared in 2017 by the engineering firm JCMS under its contract with Amtrak, and led by engineering consultants Jacobs Engineering Group. The estimate has since been analyzed and revised by GTHP. The estimated costs will be presented in their respective "Hard Cost" and "Soft Cost" values. The Soft Cost shall be a cumulative of the following activities; Design Services, Project Management and Administrative costs, Construction Administration and Management Services, Insurance, Permits, Fees and Railroad Force Account support by both Amtrak and NJ TRANSIT forces.

Amtrak's Force Account personnel will be providing necessary construction services to the HTP. These services will cover a range of activities that will need to be undertaken in order to facilitate the rehabilitation of the North River Tunnel, including connection and commissioning of all related Electrification, Communications, Signaling and other related railroad infrastructure systems.

3.2.4.1.4 Total Hudson Tunnel Project Capital Costs

The partners applied an additional 10% unallocated contingency across all project elements.

Table 3-18 summarizes HTP capital costs by project element.

Table 3-18 Hudson Tunnel Project Capital Costs by Project Element

Project Element	2019 $M	YOE $M
Total Hudson River Tunnel and HYCC-Section 3	***8,121***	***9,514***
HYCC-Section 3	421	476
Unallocated Contingency (HYCC-Section 3)	42	48
Hudson River Tunnel (including ROW)	6,962	8,173
Unallocated Contingency (HRT)	696	817
Total North River Tunnel	***1,234***	***1,772***
North River Tunnel	1,122	1,611
Unallocated Contingency (NRT)	112	161
Phase 1B – Hudson Tunnel Project	**9,355**	**11,286**

As described in the June 29, 2018, Progress Update Letter, significant progress has been made on the HTP. The issuance of an Environmental Impact Statement (EIS) and ROD under the federal environmental review process await action by the USDOT. Work began in April 2016 on the required EIS for the new tunnel and rehabilitation of the existing North River Tunnel. This completion of this analysis in February 2018, in just 22 months, which is half the time typically required for a large-scale project, was a major milestone. USDOT was provided with the draft of the FEIS on February 22, 2018, and is currently reviewing the document.

The FEIS and ROD are critically important to the Project Partners in advancing the decision-making process, and continuing work on the HTP's financial plan and design, and preparing for right-of-way acquisition, procurement, and construction activities. The timetable for issuing the ROD has extended beyond the date of March 30, 2018, that was originally anticipated by all stakeholders. Delays in issuing the ROD directly delay the HTP's notice-to-proceed, which has the potential to add cost. The HTP's capital cost, expenditures by year, and schedule - per FTA's Standard Cost Category worksheets - are presented below (Table 3-19, Table 3-20, and Table 3-21). These assumptions are dependent on the issuance of the ROD in calendar year 2019.

Table 3-19 Hudson Tunnel Project Capital Costs – FTA Main Worksheet

MAIN WORKSHEET-BUILD ALTERNATIVE (Rev.21, June, 2019)

Port Authority of New York/New Jersey (Project Sponsor)		Today's Date	8/23/19
Hudson Tunnel Project, New York/New Jersey		Yr of Base Year $	2019
New Starts Rating Application		Yr of Revenue Ops	2032

	Quantity	Base Year Dollars w/o Contingency (Public Transportation + Intercity Passenger Rail) (X000)	Base Year Dollars Allocated Contingency (Public Transportation + Intercity Passenger Rail) (X000)	Base Year Dollars TOTAL (Public Transportation + Intercity Passenger Rail) (X000)	Public Transportation % (excluding Inter-City Passenger Rail)	Base Year Dollars w/o Allocated Contingency (Public Transportation Only)	Base Year Dollars Allocated Contingency (Public Transportation Only)	Total Base Year Dollars (Public Transportation Only)	Total Base Year Dollars Percentage of Construction Cost	Total Base Year Dollars Percentage of Total Project Cost	Base Year Dollars (New Starts Only) Percentage of Total Project Cost	YOE Dollars (Public Transportation +ICR) (X000)	YOE Dollars (Public Transportation Only)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**6.47**	3,517,611	969,587	**4,487,197**	90%	3,165,850	872,628	4,038,478	**84%**	**41%**	**37%**	**5,490,908**	**4,941,817**
10.01 Guideway: At-grade exclusive right-of-way				0	90%	0	0	0				0	**0**
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)				0	90%	0	0	0				0	**0**
10.03 Guideway: At-grade in mixed traffic				0	90%	0	0	0				0	**0**
10.04 Guideway: Aerial structure	0.22	159,728	31,001	190,729	90%	143,755	27,901	171,656				233,392	**210,053**
10.05 Guideway: Built-up fill	0.44	509	101	610	90%	458	91	549				747	**672**
10.06 Guideway: Underground cut & cover	0.13	468,717	63,073	531,790	90%	421,846	56,766	478,611				650,743	**585,668**
10.07 Guideway: Underground tunnel	4.87	2,643,379	811,261	3,454,640	90%	2,379,041	730,135	3,109,176				4,227,385	**3,804,647**
10.08 Guideway: Retained cut or fill	0.81	120,378	24,075	144,453	90%	108,340	21,668	130,008				176,765	**159,088**
10.09 Track: Direct fixation	11	100,577	32,205	132,782	90%	90,519	28,984	119,504				162,483	**146,235**
10.10 Track: Embedded				0	90%	0	0	0				0	**0**
10.11 Track: Ballasted	2	7,699	1,540	9,239	90%	6,930	1,386	8,315				11,306	**10,175**
10.12 Track: Special (switches, turnouts)		16,623	6,330	22,953	90%	14,961	5,697	20,658				28,087	**25,278**
10.13 Track: Vibration and noise dampening				0	90%	0	0	0				0	**0**
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**0**	0	0	**0**	90%	0	0	0	**0%**	**0%**	**0%**	**0**	**0**
20.01 At-grade station, stop, shelter, mall, terminal, platform				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
20.02 Aerial station, stop, shelter, mall, terminal, platform				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
20.03 Underground station, stop, shelter, mall, terminal, platform				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
20.05 Joint development				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
20.06 Automobile parking multi-story structure				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
20.07 Elevators, escalators				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	6.47	44,516	19,359	**63,874**	90%	40,064	17,423	57,487	**1%**	**1%**	**1%**	**76,123**	**68,511**
30.01 Administration Building: Office, sales, storage, revenue counting				0	90%	0	0	0				0	**0**
30.02 Light Maintenance Facility				0	90%	0	0	0				0	**0**
30.03 Heavy Maintenance Facility				0	90%	0	0	0				0	**0**
30.04 Storage or Maintenance of Way Building				0	90%	0	0	0				0	**0**
30.05 Yard and Yard Track		44,516	19,359	63,874	90%	40,064	17,423	57,487				76,123	**68,511**
40 SITEWORK & SPECIAL CONDITIONS	6.47	179,507	88,610	**268,117**	90%	161,557	79,749	241,305	**5%**	**2%**	**2%**	**335,814**	**302,233**
40.01 Demolition, Clearing, Earthwork		8,503	4,251	12,754	90%	7,652	3,826	11,479				15,974	**14,377**
40.02 Site Utilities, Utility Relocation		46,794	28,076	74,870	90%	42,115	25,269	67,383				93,774	**84,397**
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments		89,958	41,979	131,937	90%	80,962	37,781	118,743				165,250	**148,725**
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		11,649	5,849	17,498	90%	10,484	5,264	15,748				21,916	**19,724**
40.05 Site structures including retaining walls, sound walls				0	90%	0	0	0				0	**0**
40.06 Pedestrian / bike access and accommodation, landscaping				0	90%	0	0	0				0	**0**
40.07 Automobile, bus, van accessways including roads, parking lots				0	90%	0	0	0				0	**0**
40.08 Temporary Facilities and other indirect costs during construction		22,604	8,455	31,059	90%	20,343	7,609	27,953				38,901	**35,011**
50 SYSTEMS	6.47	370,023	132,747	**502,770**	90%	333,021	119,472	452,493	**9%**	**5%**	**4%**	**668,894**	**602,004**
50.01 Train control and signals		220,785	75,907	296,692	90%	198,706	68,316	267,023				394,724	**355,252**
50.02 Traffic signals and crossing protection				0	90%	0	0	0				0	**0**
50.03 Traction power supply: substations		43,924	17,570	61,494	90%	39,532	15,813	55,345				81,813	**73,631**
50.04 Traction power distribution: catenary and third rail		65,100	22,094	87,194	90%	58,590	19,885	78,475				116,005	**104,404**
50.05 Communications		29,324	11,730	41,054	90%	26,391	10,557	36,948				54,619	**49,157**
50.06 Fare collection system and equipment				0	90%	0	0	0				0	**0**
50.07 Central Control		10,890	5,446	16,336	90%	9,801	4,901	14,702				21,733	**19,560**
Construction Subtotal (10 - 50)	6.47	4,111,657	1,210,302	**5,321,959**		3,700,491	1,089,272	4,789,763	**100%**	**49%**	**44%**	**6,571,739**	**5,914,565**
60 ROW, LAND, EXISTING IMPROVEMENTS	6.47	902,408	303,415	**1,205,823**	90%	812,168	273,073	1,085,241		**11%**	**10%**	**1,275,204**	**1,147,684**
60.01 Purchase or lease of real estate		902,408	303,415	1,205,823	90%	812,168	273,073	1,085,241				1,275,204	**1,147,684**
60.02 Relocation of existing households and businesses				0	90%	0	0	0				0	**0**
70 VEHICLES (number)	**0**	0	0	**0**	90%	0	0	0		**18%**	**0%**	**0**	**0**
70.01 Light Rail				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
70.02 Heavy Rail				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
70.03 Commuter Rail				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
70.04 Bus				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
70.05 Other				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
70.06 Non-revenue vehicles				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
70.07 Spare parts				0	90%	0	0	0				#DIV/0!	**#DIV/0!**
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	6.47	1,546,467	430,728	**1,977,195**	90%	1,391,820	387,655	1,779,476	**37%**	**18%**	**16%**	**2,412,951**	**2,171,656**
80.01 Project Development		84,672		84,672	90%	76,205	0	76,205				103,333	**93,000**
80.02 Engineering		272,753	80,348	353,101	90%	245,478	72,314	317,791				430,922	**387,829**
80.03 Project Management for Design and Construction		440,229	129,684	569,914	90%	396,207	116,716	512,922				695,517	**625,966**
80.04 Construction Administration & Management		319,445	94,103	413,549	90%	287,501	84,693	372,194				504,691	**454,222**
80.05 Professional Liability and other Non-Construction Insurance		262,618	77,363	339,981	90%	236,356	69,627	305,983				414,910	**373,419**
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		126,236	37,187	163,423	90%	113,613	33,468	147,081				199,440	**179,496**
80.07 Surveys, Testing, Investigation, Inspection				0	90%	0	0	0				0	**0**
80.08 Start up		40,513	12,042	52,555	90%	36,461	10,838	47,299				64,137	**57,724**
Subtotal (10 - 80)	6.47	6,560,532	1,944,445	**8,504,977**		5,904,479	1,750,000	7,654,479		**97%**	**71%**	**10,259,894**	**9,233,905**
90 UNALLOCATED CONTINGENCY				**850,498**	90%			765,448				**1,025,989**	**923,390**
Subtotal (10 - 90)	6.47			**9,355,475**				8,419,927				**11,285,884**	**10,157,295**
100 FINANCE CHARGES				**1,473,048**				1,473,048				**1,969,927**	**1,969,927**
Total Project Cost (10 - 100)	6.47			**10,828,522**				9,892,975				**13,255,810**	**12,127,222**

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Table 3-20 Hudson Tunnel Project Capital Costs – FTA Inflation Worksheet

INFLATION WORKSHEET (Rev.21, June, 2019)

Port Authority of New York/New Jersey (Project Sponsor)	Today's Date	**8/23/19**
Hudson Tunnel Project, New York/New Jersey	Yr of Base Year $	2019
New Starts Rating Application	Yr of Revenue Ops	2032

Insert comments, notes, etc.

BASE YEAR DOLLARS (X$000)	Base Yr Dollars (PT+ICR)	Double-Check Total (PT+ICR)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
10 GUIDEWAY & TRACK ELEMENTS (route miles)	4,487,197	4,487,197	0	0	0	0	0	0	0	0	0	0	0	0	0	156	27,196	464,293	1,226,564	1,102,390	392,092	419,573	282,859	95,029	10,647	173,769	266,923
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	63,874	63,874	0	0	0	0	0	0	0	0	0	0	0	0	0	2	432	7,373	19,527	17,599	6,227	6,663	4,492	1,509	49	0	0
40 SITEWORK & SPECIAL CONDITIONS	268,117	268,117	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1,448	24,725	65,459	58,999	20,897	22,360	15,063	5,061	1,026	19,773	30,373
50 SYSTEMS	502,770	502,770	0	0	0	0	0	0	0	0	0	0	0	0	0	11	1,838	31,383	83,087	74,886	26,502	28,360	19,119	6,423	3,900	84,677	130,060
60 ROW, LAND, EXISTING IMPROVEMENTS	1,205,823	1,205,823	0	0	0	0	0	0	0	0	0	0	0	0	42,778	371,471	791,574	0	0	0	0	0	0	0	0	0	0
70 VEHICLES (number)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	1,977,195	1,977,195	0	0	0	0	0	0	0	0	0	0	41,843	17,514	7,550	21,693	85,144	205,672	240,074	281,660	317,795	254,935	213,583	219,100	44,329	0	15,422
90 UNALLOCATED CONTINGENCY	850,498	850,498	0	0	0	0	0	0	0	0	0	0	4,184	1,751	5,033	39,334	90,763	73,345	163,471	153,553	76,351	73,189	53,512	32,712	5,995	27,822	44,278
100 FINANCE CHARGES	1,473,048	1,473,048	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21,682	19,761	95,442	150,658	145,612	163,850	167,200	157,908	152,737	153,624	165,358
Total Project Cost (10 - 100)	10,828,522	10,828,522	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**46,027**	**19,265**	**55,361**	**432,676**	**1,020,078**	**826,551**	**1,893,624**	**1,839,746**	**985,476**	**968,932**	**755,827**	**517,742**	**218,683**	**459,665**	**652,414**
Inflation Rate			0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Compounded Inflation Factor			1.511	1.460	1.411	1.363	1.317	1.272	1.229	1.188	1.148	1.109	1.071	1.035	1.000	1.035	1.071	1.109	1.148	1.188	1.229	1.272	1.317	1.363	1.411	1.460	1.511

YEAR OF EXPENDITURE DOLLARS (X$000)	YOE Dollars (PT+ICR)		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
10 GUIDEWAY & TRACK ELEMENTS (route miles)	5,490,908														0	162	29,133	514,770	1,407,511	1,309,294	481,981	533,814	372,471	129,515	15,018	253,698	403,339
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	0														0	0	0	0	0	0	0	0	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	76,123														0	3	463	8,175	22,408	20,903	7,654	8,477	5,915	2,057	69	0	0
40 SITEWORK & SPECIAL CONDITIONS	335,814														0	9	1,551	27,413	75,116	70,072	25,688	28,449	19,835	6,897	1,447	28,868	45,895
50 SYSTEMS	668,894														0	11	1,969	34,795	95,344	88,941	32,578	36,082	25,176	8,754	5,501	123,627	196,530
60 ROW, LAND, EXISTING IMPROVEMENTS	1,275,204														42,778	384,473	847,954	0	0	0	0	0	0	0	0	0	0
70 VEHICLES (number)	0														0	0	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	2,412,951												39,061	16,921	7,550	22,452	91,208	228,032	275,490	334,523	390,651	324,349	281,248	298,611	62,531	0	23,303
90 UNALLOCATED CONTINGENCY	1,025,989												3,906	1,692	5,033	40,711	97,228	81,318	187,587	182,373	93,855	93,117	70,464	44,583	8,457	40,619	66,907
100 FINANCE CHARGES	1,969,927												0	0	0	0	23,226	21,909	109,521	178,934	178,994	208,463	220,170	215,212	215,451	224,286	249,868
Total Project Cost (10 - 100)	13,255,810		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**42,967**	**18,614**	**55,361**	**447,820**	**1,092,733**	**916,412**	**2,172,977**	**2,185,041**	**1,211,402**	**1,232,751**	**995,279**	**705,630**	**308,474**	**671,097**	**985,842**

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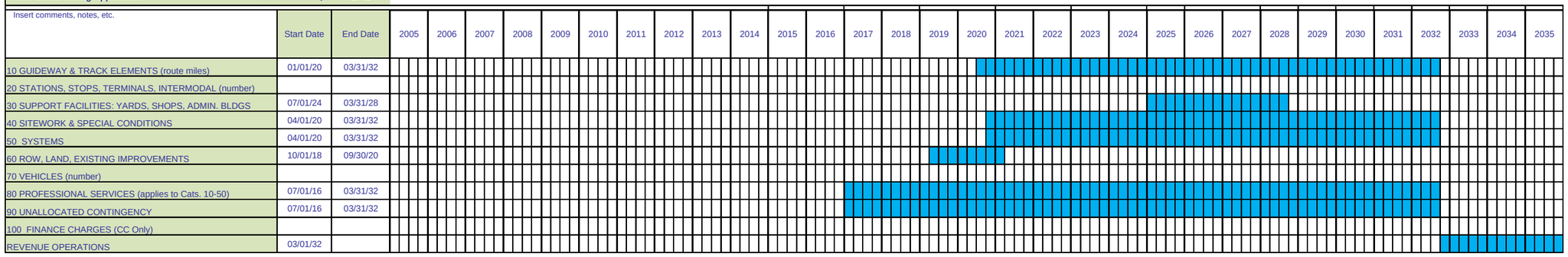
Table 3-21 Hudson Tunnel Project Schedule by Calendar Year

SCHEDULE		(Rev.21, June, 2019)
Port Authority of New York/New Jersey (Project Sponsor	Today's Date	**8/23/19**
Hudson Tunnel Project, New York/New Jersey	Yr of Base Year $	2019
New Starts Rating Application	Yr of Revenue Ops	2032

Insert comments, notes, etc.	Start Date	End Date
10 GUIDEWAY & TRACK ELEMENTS (route miles)	01/01/20	03/31/32
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)		
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	07/01/24	03/31/28
40 SITEWORK & SPECIAL CONDITIONS	04/01/20	03/31/32
50 SYSTEMS	04/01/20	03/31/32
60 ROW, LAND, EXISTING IMPROVEMENTS	10/01/18	09/30/20
70 VEHICLES (number)		
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	07/01/16	03/31/32
90 UNALLOCATED CONTINGENCY	07/01/16	03/31/32
100 FINANCE CHARGES (CC Only)		
REVENUE OPERATIONS	03/01/32	



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3.2.4.2 Financing Charges

As described in Section 3.2.3.1, four RRIF Loans will be entered into at financial close in 2021, coinciding with an ESWA / FFGA, which will result in an upfront issuance cost of $8 million. RRIF financing charges include issuance cost, CRP, capitalized interest, servicing and monitoring fees, and interest payments during construction and capital investment grant disbursement period. The interest rate is assumed to be equal to 4.11 percent based on 30-year Treasury bond rate at year of execution, consistent with the FY 2020 Financial Plan (Source: Global Insight 05/18/16). The current 30-year Treasury bond rate is 2.05 percent per annum (08/21/2019).

Interest on the RRIF loans is calculated semi-annually. Any interest that is not paid current in each semi-annual period (utilizing local partner contributions and / or available grant funding) is capitalized into the loan balance, forming part of the loan balance on which interest costs are calculated in subsequent periods – ensuring that capitalized interest and, thus, financing costs are not understated. Table 3-22 provides a summary of the financing charges.

Table 3-22 Capital Investment Grant Financing Charges (YOE $M)

Financing Charges during CIG Period[49]	Public Transportation	Total
RRIF Loan A1 (PANYNJ)		
Issuance Costs, Servicing & Monitoring Fees	6	6
Credit Risk Premium	82	82
Capitalized Interest during Drawdown Period	193	193
Interest Payment during CIG Period	501	501
RRIF Loan A2 (NYS)		
Issuance Costs, Servicing & Monitoring Fees	6	6
Credit Risk Premium	67	67
Capitalized Interest during Drawdown Period	157	157
Interest Payment during CIG Period	402	402
RRIF Loan B (NJ)		
Issuance Costs, Servicing & Monitoring Fees	6	6
Credit Risk Premium	57	57
Capitalized Interest during Drawdown Period	-	-
Interest Payment during CIG Period	484	484
RRIF Loan C (Local)		
Issuance Costs, Servicing & Monitoring Fees	3	3
Credit Risk Premium	2	2
Capitalized Interest during Drawdown Period	3	3
Interest Payment during CIG Period	3	3
Total Financing Charges	**1,970**	**1,970**

Intercity Rail costs are covered by Amtrak contributions. Amtrak is anticipated to make direct contributions, with no associated financing. Therefore, all of the financing charges are attributable to the public transportation portion.

[49] Financing charges include interest expense, issuance fees, servicing and monitoring costs and credit risk premium. Principal repayments are not included in financing charges, as they are not grant eligible costs, however the financial plan includes principal repayments of $125m during the CIG period, resulting in total financing costs of $2,095m.

Financing charges for the four loans amounts occur during two periods of time: 1) During construction until substantial completion ($692 million) and 2) After construction until the end of the FTA CIG New Starts disbursement period ($300 million).

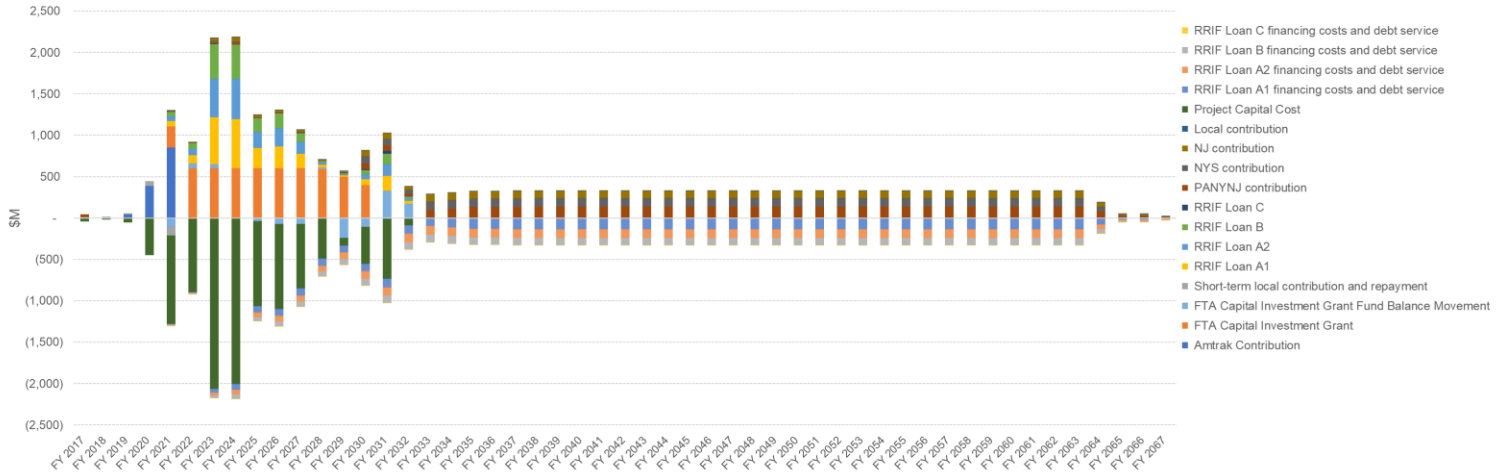
3.2.4.3 Debt Service

Please refer to Section 3.2.3, Capital Financing Strategy. The debt service for the RRIF Loans are summarized in Table 3-24, Table 3-25, Table 3-26, and Table 3-27.

3.2.5 Capital Sources and Uses of Funds

Figure 3-1 on the following page illustrates the project sources and uses of funds through FY 2067. Table 3-23 presents HTP sources and uses of funds between FY 2017 and FY 2032. The financial plan assumes annual CIG appropriations of up to $600 million until the Hudson River Tunnel is complete in FY 2028, and annual CIG appropriations of up to $500 million thereafter. Any unused grant appropriations in a given year will be made available for disbursement in future years. Contributions are summarized in Appendix B. Table 3-24, Table 3-25, Table 3-26, and Table 3-27 present debt service through FY 2067.

Figure 3-1 Project Capital Sources and Uses of Funds Projected Cash Flows[50]



Capital Sources	*$YOE M*	*%*
Amtrak Contribution	1,282	5.3%
FTA Capital Investment Grant	5,339	22.2%
Short-Term Local Contribution and Repayment	(0)	-0.0%
RRIF Loan A1 (PANYNJ)	2,350	9.8%
RRIF Loan A2 (NYS)	1,907	7.9%
RRIF Loan B (NJ)	1,643	6.8%
RRIF Loan C (Local)	61	0.3%
PANYNJ contribution	4,586	19.0%
NYS Contribution	3,581	14.9%
NJ Contribution	3,223	13.4%
Local Contribution	122	0.5%
Total Capital Sources	**24,093**	**100.0%**

Capital Uses	*$YOE M*	*%*
Project Capital Cost	11,286	46.8%
RRIF Loan A1 (PANYNJ) financing costs and debt service	5,131	21.3%
RRIF Loan A2 (NYS) financing costs and debt service	4,051	16.8%
RRIF Loan B (NJ) financing costs and debt service	3,495	14.5%
RRIF Loan C (Local) financing costs and debt service	130	0.5%
Total Capital Uses	**24,093**	**100.0%**

[50] RRIF Loan balances include: Loan A1 principal of $2,158m and Loan A1 capitalized interest of $193m; Loan A2 principal of $1,750m and Loan A2 capitalized interest of $157m; Loan B principal of $1,643m and Loan B capitalized interest of $0; and Loan C principal of $58m and Loan C capitalized interest of $3m. Local contributions cover interest expense, issuance fees, servicing and monitoring costs and credit risk premium, reduced by grant proceeds for financing costs. Local contributions also include principal repayments during the CIG period of $125m. PANYNJ contribution includes the $35 million design contribution.

Table 3-23 Capital Investment Grant Eligibility Period Sources & Uses of Funds (YOE $M)[51]

	Total	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032
Sources of Funds																	
Amtrak Contribution	1,282	-	-	43	385	854	-	-	-	-	-	-	-	-	-	-	-
FTA Capital Investment Grant during CIG Period	5,339	-	-	-	-	250	600	600	600	600	600	600	590	500	399	-	-
Short-Term Local Contribution and Repayment	(0)	8	19	13	63	(102)	-	-	-	-	-	-	-	-	-	-	-
RRIF Loan A1 (PANYNJ)	2,350	-	-	-	-	69	96	572	596	245	266	176	36	16	70	175	33
RRIF Loan A2 (NYS)	1,907	-	-	-	-	56	78	464	484	198	216	143	30	13	57	142	26
RRIF Loan B (NJ)	1,643	-	-	-	-	52	70	418	416	160	185	110	15	12	51	130	25
RRIF Loan C (Local)	61	-	-	-	-	0	0	4	0	0	0	4	2	(0)	13	31	6
PANYNJ contribution	236	35	-	-	-	6	3	20	21	7	9	6	1	2	74	69	(19)
NYS Contribution	229	-	-	-	-	6	3	16	17	6	8	5	1	13	81	78	(5)
NJ Contribution	333	-	-	-	-	6	6	31	51	29	23	26	12	10	72	70	(3)
Local Contribution	3	-	-	-	-	2	0	0	0	0	0	0	0	0	0	1	(1)
FTA Capital Investment Grant Fund Balance Movement	(0)	-	-	-	-	(107)	60	47	-	(34)	(74)	(74)	19	(238)	(105)	332	175
Total Source of Funds	**13,381**	**43**	**19**	**55**	**448**	**1,093**	**916**	**2,173**	**2,185**	**1,211**	**1,233**	**995**	**706**	**328**	**712**	**1,028**	**235**
Uses of Funds																	
Project Capital Cost	11,286	43	19	55	448	1,070	895	2,063	2,006	1,032	1,024	775	490	93	447	736	90
RRIF Loan A1 (PANYNJ)																	
Issuance costs, servicing / monitoring fees	6	-	-	-	-	4	0	0	0	0	0	0	0	0	0	0	0
Credit risk premium	82	-	-	-	-	2	3	20	21	9	9	6	1	1	2	6	1
Capitalized interest during drawdown period	193	-	-	-	-	0	5	23	50	34	23	31	17	0	4	4	0
Interest payment during CIG period	501	-	-	-	-	1	0	-	-	28	50	50	67	85	83	89	48
DSRF deposit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Principal payment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RRIF Loan A2 (NYS)																	
Issuance costs, servicing / monitoring fees	6	-	-	-	-	4	0	0	0	0	0	0	0	0	0	0	0
Credit risk premium	67	-	-	-	-	2	3	16	17	7	8	5	1	0	2	5	1
Capitalized interest during drawdown period	157	-	-	-	-	0	4	18	40	28	19	26	14	0	3	4	0
Interest payment during CIG period	402	-	-	-	-	1	0	-	-	23	40	40	54	69	67	70	38
DSRF deposit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Principal payment	67	-	-	-	-	-	-	-	-	-	-	-	-	11	22	23	12
RRIF Loan B (NJ)																	
Issuance costs, servicing / monitoring fees	6	-	-	-	-	4	0	0	0	0	0	0	0	0	0	0	0
Credit risk premium	57	-	-	-	-	2	2	15	15	6	6	4	1	0	2	5	1
Capitalized interest during drawdown period	0	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	-
Interest payment during CIG period	484	-	-	-	-	1	4	17	36	44	52	57	59	59	60	64	33
DSRF deposit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Principal payment	58	-	-	-	-	-	-	-	-	-	-	-	-	9	19	20	10
RRIF Loan C (Local)																	
Issuance costs, servicing / monitoring fees	3	-	-	-	-	2	0	0	0	0	0	0	0	0	0	0	0
Credit risk premium	2	-	-	-	-	0	0	0	0	0	0	0	0	(0)	0	1	0
Capitalized interest during drawdown period	3	-	-	-	-	-	0	0	0	0	0	0	0	0	1	1	0
Interest payment during CIG period	3	-	-	-	-	0	-	-	-	-	-	-	0	0	0	1	1
DSRF deposit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Principal payment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Uses of Funds	**13,381**	**43**	**19**	**55**	**448**	**1,093**	**916**	**2,173**	**2,185**	**1,211**	**1,233**	**995**	**706**	**328**	**712**	**1,028**	**235**

FTA Capital Investment Grant Fund Balance BEG	-	-	-	-	-	-	107	47	-	-	34	108	182	164	401	507	175
FTA Capital Investment Grant appropriations	5,339	-	-	-	-	250	600	600	600	600	600	600	590	500	399	-	-
FTA Capital Investment Grant Uses	5,339	-	-	-	-	143	660	647	600	566	526	526	609	262	294	332	175
FTA Capital Investment Grant Fund Balance END	-	-	-	-	-	107	47	-	-	34	108	182	164	401	507	175	0
FTA Capital Investment Grant Fund Balance Movement	**(0)**	**-**	**-**	**-**	**-**	**(107)**	**60**	**47**	**-**	**(34)**	**(74)**	**(74)**	**19**	**(238)**	**(105)**	**332**	**175**

NOTE: Table includes principal payment during CIG period.

	Total	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032
Intercity City Rail Construction Cost	1,129	-	-	12	263	854	(0)	0	0	0	0	0	0	0	0	0	0
Public Transportation Construction Cost	10,157	43	19	44	185	215	895	2,063	2,006	1,032	1,024	775	490	93	447	736	90
Project Construction Cost	11,286	**43**	**19**	**55**	**448**	**1,070**	**895**	**2,063**	**2,006**	**1,032**	**1,024**	**775**	**490**	**93**	**447**	**736**	**90**
Cumulative Project Construction Cost	**-**	**43**	**62**	**117**	**565**	**1,634**	**2,529**	**4,592**	**6,598**	**7,631**	**8,655**	**9,430**	**9,921**	**10,014**	**10,460**	**11,196**	**11,286**
Financing Charges during CIG period excluding principal payment	1,970	-	-	-	-	23	22	110	179	179	208	220	215	215	224	250	124
Portion of new construction financing charges applicable to public transportation portion	100.0%																
Portion of rehab financing charges applicable to public transportation portion	100.0%																
Effective Financing charges applicable to public transportation portion	100.0%																
Financing charges applicable to public transportation portion	1,970	-	-	-	-	23	22	110	179	179	208	220	215	215	224	250	124
Financing charges applicable to intercity rail portion	0	-	-	-	-	0	-	0	-	-	0	0	0	0	0	0	0
Total Project Cost applicable to Public Transportation excluding principal payment	12,127	43	19	44	185	238	916	2,173	2,185	1,211	1,233	995	706	308	671	986	213

[51] Refer to footnote for Figure 3-1

Table 3-24 RRIF Loan A1 (PANYNJ) Debt Service Sources & Uses (YOE $M)

	Total	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038	FY 2039	FY 2040	FY 2041	FY 2042
RRIF Loan A1 (PANYNJ) Debt Service Uses of Funds																											
Interest	2,686	-	-	-	-	1	5	23	50	62	73	81	84	85	87	93	96	96	96	95	94	92	91	89	87	85	82
Principal	2,350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	36	37	42	46	48	50	52	55
RRIF Loan A1 (PANYNJ) Debt Service Uses of Funds	5,036	-	-	-	-	1	5	23	50	62	73	81	84	85	87	93	96	96	114	131	131	134	137	137	137	137	137
RRIF Loan A1 (PANYNJ) Debt Service Sources of Funds																											
FTA CIG match	336	-	-	-	-	1	0	-	-	28	50	50	67	83	12	22	23	-	-	-	-	-	-	-	-	-	-
PANYNJ contribution	4,508	-	-	-	-	-	-	-	-	-	-	-	-	2	71	67	74	96	114	131	131	134	137	137	137	137	137
RRIF Loan A1 (PANYNJ) capitalized interest	193	-	-	-	-	0	5	23	50	34	23	31	17	0	4	4	0	-	-	-	-	-	-	-	-	-	-
RRIF Loan A1 (PANYNJ) Debt Service Sources of Funds	5,036	-	-	-	-	1	5	23	50	62	73	81	84	85	87	93	96	96	114	131	131	134	137	137	137	137	137

	Total	FY 2043	FY 2044	FY 2045	FY 2046	FY 2047	FY 2048	FY 2049	FY 2050	FY 2051	FY 2052	FY 2053	FY 2054	FY 2055	FY 2056	FY 2057	FY 2058	FY 2059	FY 2060	FY 2061	FY 2062	FY 2063	FY 2064	FY 2065	FY 2066	FY 2067
RRIF Loan A1 (PANYNJ) Debt Service Uses of Funds																										
Interest	2,686	80	78	75	73	70	67	64	61	58	55	52	48	44	41	37	32	28	24	19	14	9	4	2	1	0
Principal	2,350	57	59	62	64	67	70	72	75	79	82	85	89	92	96	100	104	109	113	118	123	128	75	18	19	10
RRIF Loan A1 (PANYNJ) Debt Service Uses of Funds	5,036	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	78	20	20	10
RRIF Loan A1 (PANYNJ) Debt Service Sources of Funds																										
FTA CIG match	336	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PANYNJ contribution	4,508	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	78	20	20	10
RRIF Loan A1 (PANYNJ) capitalized interest	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RRIF Loan A1 (PANYNJ) Debt Service Sources of Funds	5,036	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	78	20	20	10

Table 3-25 RRIF Loan A2 (NYS) Debt Service Sources & Uses and Fund Balance (YOE $M)

	Total	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038	FY 2039	FY 2040	FY 2041	FY 2042
RRIF Loan A2 (NYS) Debt Service Uses of Funds																											
Interest	2,065	-	-	-	-	1	4	18	40	51	59	66	68	69	70	74	76	75	73	72	71	70	68	67	65	64	62
Principal	1,907	-	-	-	-	-	-	-	-	-	-	-	-	11	22	23	26	28	30	31	32	34	35	36	38	39	41
RRIF Loan A2 (NYS) Debt Service Uses of Funds	3,972	-	-	-	-	1	4	18	40	51	59	66	68	80	92	97	101	103	103	103	103	103	103	103	103	103	103
RRIF Loan A2 (NYS) Debt Service Sources of Funds																											
FTA CIG match	271	-	-	-	-	1	0	-	-	23	40	40	54	67	9	18	18	-	-	-	-	-	-	-	-	-	-
NYS contribution	3,544	-	-	-	-	-	-	-	-	-	-	-	-	13	79	75	83	103	103	103	103	103	103	103	103	103	103
RRIF Loan A2 (NYS) capitalized interest	157	-	-	-	-	0	4	18	40	28	19	26	14	0	3	4	0	-	-	-	-	-	-	-	-	-	-
RRIF Loan A2 (NYS) Debt Service Sources of Funds	3,972	-	-	-	-	1	4	18	40	51	59	66	68	80	92	97	101	103	103	103	103	103	103	103	103	103	103

	Total	FY 2043	FY 2044	FY 2045	FY 2046	FY 2047	FY 2048	FY 2049	FY 2050	FY 2051	FY 2052	FY 2053	FY 2054	FY 2055	FY 2056	FY 2057	FY 2058	FY 2059	FY 2060	FY 2061	FY 2062	FY 2063	FY 2064	FY 2065	FY 2066	FY 2067
RRIF Loan A2 (NYS) Debt Service Uses of Funds																										
Interest	2,065	60	59	57	55	53	51	49	46	44	41	39	36	33	31	28	24	21	18	14	11	7	3	1	1	0
Principal	1,907	43	45	46	48	50	52	55	57	59	62	64	67	70	73	76	79	82	85	89	93	96	56	14	14	7
RRIF Loan A2 (NYS) Debt Service Uses of Funds	3,972	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	59	15	15	7
RRIF Loan A2 (NYS) Debt Service Sources of Funds																										
FTA CIG match	271	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NYS contribution	3,544	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	59	15	15	7
RRIF Loan A2 (NYS) capitalized interest	157	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RRIF Loan A2 (NYS) Debt Service Sources of Funds	3,972	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	59	15	15	7

Table 3-26 RRIF Loan B (NJ) Debt Service Sources & Uses and Fund Balance (YOE $M)

	Total	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038	FY 2039	FY 2040	FY 2041	FY 2042
RRIF Loan B (NJ) Debt Service Uses of Funds																											
Interest	1,782	-	-	-	-	1	4	17	36	44	52	57	59	59	60	64	65	64	63	62	61	60	59	58	56	55	53
Principal	1,643	-	-	-	-	-	-	-	-	-	-	-	-	9	19	20	22	25	26	27	28	29	30	31	33	34	35
RRIF Loan B (NJ) Debt Service Uses of Funds	3,424	-	-	-	-	1	4	17	36	44	52	57	59	68	79	83	87	89	89	89	89	89	89	89	89	89	89
RRIF Loan B (NJ) Debt Service Sources of Funds																											
FTA CIG match	235	-	-	-	-	1	0	-	-	20	35	35	47	58	8	15	15	-	-	-	-	-	-	-	-	-	-
NJ contribution	3,189	-	-	-	-	0	4	17	36	24	16	22	12	10	70	68	72	89	89	89	89	89	89	89	89	89	89
RRIF Loan B (NJ) capitalized interest	0	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-
RRIF Loan B (NJ) Debt Service Sources of Funds	3,424	-	-	-	-	1	4	17	37	46	54	59	61	67	73	76	84	89	89	89	89	89	89	89	89	89	89

	Total	FY 2043	FY 2044	FY 2045	FY 2046	FY 2047	FY 2048	FY 2049	FY 2050	FY 2051	FY 2052	FY 2053	FY 2054	FY 2055	FY 2056	FY 2057	FY 2058	FY 2059	FY 2060	FY 2061	FY 2062	FY 2063	FY 2064	FY 2065	FY 2066	FY 2067
RRIF Loan B (NJ) Debt Service Uses of Funds																										
Interest	1,782	52	50	49	47	46	44	42	40	38	36	34	31	29	26	24	21	18	15	12	9	6	2	1	1	0
Principal	1,643	37	38	40	42	43	45	47	49	51	53	55	58	60	62	65	68	71	73	77	80	83	49	12	13	6
RRIF Loan B (NJ) Debt Service Uses of Funds	3,424	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	51	13	13	7
RRIF Loan B (NJ) Debt Service Sources of Funds																										
FTA CIG match	235	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NJ contribution	3,189	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	51	13	13	7
RRIF Loan B (NJ) capitalized interest	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RRIF Loan B (NJ) Debt Service Sources of Funds	3,424	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	51	13	13	7

Table 3-27 RRIF Loan C (Local) Debt Service Sources & Uses and Fund Balance (YOE $M)

	Total	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038	FY 2039	FY 2040	FY 2041	FY 2042
RRIF Loan C (Local) Debt Service Uses of Funds																											
Interest	60	-	-	-	-	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2	2
Principal	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	1	1	1
RRIF Loan C (Local) Debt Service Uses of Funds	121	-	-	-	-	0	0	0	0	0	0	0	0	0	1	2	3	3	3	3	3	3	3	3	3	3	3
RRIF Loan C (Local) Debt Service Sources of Funds																											
FTA CIG match	3	-	-	-	-	0	-	-	-	-	-	-	0	0	0	1	1	-	-	-	-	-	-	-	-	-	-
Local contribution	115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	3	3	3	3	3	3	3	3	3
RRIF Loan C (Local) capitalized interest	3	-	-	-	-	-	0	0	0	0	0	0	0	0	1	1	0	-	-	-	-	-	-	-	-	-	-
RRIF Loan C (Local) Debt Service Sources of Funds	121	-	-	-	-	0	0	0	0	0	0	0	0	0	1	2	3	3	3	3	3	3	3	3	3	3	3

	Total	FY 2043	FY 2044	FY 2045	FY 2046	FY 2047	FY 2048	FY 2049	FY 2050	FY 2051	FY 2052	FY 2053	FY 2054	FY 2055	FY 2056	FY 2057	FY 2058	FY 2059	FY 2060	FY 2061	FY 2062	FY 2063	FY 2064	FY 2065	FY 2066	FY 2067
RRIF Loan C (Local) Debt Service Uses of Funds																										
Interest	60	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
Principal	61	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	2
RRIF Loan C (Local) Debt Service Uses of Funds	121	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2
RRIF Loan C (Local) Debt Service Sources of Funds																										
FTA CIG match	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Local contribution	115	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2
RRIF Loan C (Local) capitalized interest	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RRIF Loan C (Local) Debt Service Sources of Funds	121	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2

3.3 Operating Plan

This section describes the operating and maintenance (O&M) costs and revenues associated with the operation of the HTP from FY 2019 through FY 2038. A risk allocation for O&M risk will be developed, and this analysis will help the Project Partners determine who should maintain the new tunnel. The Project Partners are investigating different procurement solutions for lifecycle maintenance of civil works, and has engaged with the private sector via an RFI process, as discussed in detail in Section 3.4.3. Given the critical nature of the new Hudson River Tunnel, the Corporation and the Project Partners intend the asset to have a useful life of at least 100 years. Civil works lifecycle maintenance refers to the various influences on the lifetime of the tunnel and associated on-going maintenance requirements to ensure that the civil works are maintained in accordance with good industry practice.

In addition to accomplishing critical safety improvements, the HTP will provide a substantial financial benefit and reduce operating delays. Upon completion in 2032, the HTP is expected to yield savings of $7.5 million in operating and maintenance costs in YOE dollars during its first full year of operation compared to the status quo – creating new capacity to address other critical needs of the Project Partners.

While Chapter 4.0 is provided as the system-wide financial plan for NJ TRANSIT, NJ TRANSIT will only bear a portion of the costs associated with operations and maintenance activities at the new and refurbished tunnels – just as it shares responsibility with Amtrak for operating and maintenance costs at the existing North River Tunnel. This section includes a description of the existing and expected approach to cost allocation and risk sharing as a component of the overall operating plan.

3.3.1 Infrastructure Operating Plan

3.3.1.1 Operating Sources of Funds

Infrastructure operations and maintenance costs on the NEC are governed by a standard formula that was developed by the Northeast Corridor Infrastructure and Operations Advisory Commission (NEC Commission), as required by Section 212 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA). Under the NEC Commuter and Intercity Rail Cost Allocation Policy dated September 17, 2016, all service providers are committed to covering the costs of their respective uses of NEC infrastructure–based on their respective uses. The charge allocated to each user is calculated by using a formula for the operating costs and maintenance of way. The resulting charge is used to maintain the NEC in a state of good repair and to ensure that the essential rail services they provide continue.

To allocate costs associated with operating and maintenance activities, the policy divides the NEC into geographic segments and measures the proportion of train movements over that segment. For the segment in which the existing and reconstructed North River Tunnel is located, NJ TRANSIT accounts for approximately 77.5 percent of train movements and Amtrak 22.5 percent. Thus, NJ TRANSIT and Amtrak are responsible for these shares of the operating and maintenance costs for that segment. Table 3-28 shows Amtrak's NEC net operating revenues for FY 2012-2018. NJ TRANSIT's share of funds for the HTP are incorporated in the system-wide financial plan.

Table 3-28 Amtrak Northeast Corridor Spine Net Operating Revenues ($ millions)

FY	FY12	FY13	FY14	FY15	FY16	FY17*	FY18
Northeast Corridor Spine	288.6	364.1	478.2	439.8	478.7	435.9	494.6*

*Reflects methodology for Northeast Corridor accounting under FAST Act.
Note: Amtrak/Federal Fiscal Year is October 1-September 30

3.3.1.2 Operating Uses of Funds

The O&M costs for the HTP are composed of three project elements:

- The new two tube Hudson River Tunnel
- The HYCC-Section 3
- Rehabilitated North River Tunnel

These three elements and their respective O&M cost estimation process is described below.

3.3.1.2.1 Hudson River Tunnel

The O&M cost estimation methodology used in this section is based on a preliminary model using available information from other peer studies with comparable scope and size. These data sources include:

- NJ TRANSIT System-wide Rail Infrastructure Maintenance Costs
- NEC Future Project
- California High Speed Rail

The preliminary O&M methodology discussed in this section for the new Hudson River Tunnel element of the HTP focuses on annual infrastructure maintenance costs, including: Track/Structures, Signals, Communications, AC Catenary / Substations, and MEPC/tunnel ventilation systems. While a full O&M methodology would consider all categories of O&M costs (including Train Operations and Dispatching, Traction Power, Equipment Maintenance, Yard and Station Maintenance, and other functions), the primary interest with regard to the tunnel alternative being studied is infrastructure maintenance costs. It is anticipated that with the implementation of the selected alternative, there will be no or negligible differences in Train Operations and Dispatching, Traction Power, Equipment Maintenance, and other Administrative functions; further, there are no Stations or Yards included in the HTP.

NJ TRANSIT System-wide Rail Infrastructure Maintenance Costs

The Access to the Region's Core (ARC) Project O&M cost estimate included a total annual infrastructure maintenance cost of $60 million (in 2007 dollars); allocating these costs over the 563 track miles and 268 AC track miles in the NJ TRANSIT system yields an annual unit cost of $126,000 (in 2007 dollars) per track mile.

To escalate this unit cost to current year 2019 dollars, the project escalation rate of 3.5% per year was applied. This results in a unit cost of $190,000 per track mile in 2019 dollars for infrastructure maintenance costs annually.

Finally, the unit cost was converted to a per-route-mile unit cost to follow the format of the other data sets. It was estimated that there are approximately 1.73 track miles for every route mile on NJ TRANSIT's commuter rail network. Applying this factor provides a final infrastructure maintenance unit cost of $329,000 per route mile annually in 2019 dollars ($464,000 per route mile annually in 2029 dollars).

NEC Future

The NEC Future O&M Cost Estimate presented more limited information on O&M costs in the summary report. NEC Future reports a total infrastructure maintenance cost for the No-Action Alternative of $188.2M (in 2015 dollars). Allocating these costs over the 517 route miles of the NEC network (457 miles NEC, 60 miles Springfield Line), a unit cost of $364,000 (in 2015 dollars) per route mile was derived.

To escalate this unit cost to current year 2019 dollars, the project escalation rate of 3.5% per year was applied. This results in a unit cost of $418,000 per route mile annually in 2019 dollars ($590,000 per route mile annually in 2029 dollars) for infrastructure maintenance costs.

California High Speed Rail

The California high Speed Rail O&M cost estimate only provides a simple high-level unit cost for infrastructure maintenance based on global peer projects: $200,000 per route mile (in 2009 dollars).

To escalate this unit cost to current year 2019 dollars, the project escalation rate of 3.5% per year was applied. This results in a unit cost of $282,000 per route mile annually in 2019 dollars ($398,000 per route mile annually in 2029 dollars) for infrastructure maintenance costs.

Preliminary O&M Cost Estimate

Averaging the three unit costs derived above, a unit cost of $343,000 per route mile (2019 dollars) was used in developing a preliminary O&M cost estimate for the selected alternative. The selected alternative has a total route length of 4.34 miles, resulting in an estimated annual infrastructure O&M cost of $1,490,000 in 2019 dollars ($2,100,000 in 2029 dollars) for the Hudson River Tunnel element of the HTP.

It is important to note that this estimate only includes infrastructure maintenance costs and does not include costs associated with operations, dispatching, traction power, equipment maintenance and other non-infrastructure related costs. While it is anticipated that these other O&M costs will be approximately equal or less when service moves from the current alignment to the planned new alternative, the costs should be estimated separately to understand the full cost of operating and maintaining rail services through the HTP. In the long run, when rail service expands to utilize both the current and proposed tunnels, O&M costs would be expected to increase further. The O&M funding approach will evolve to address these issues in a manner consistent with the requirements of the users, RRIF lenders, and rating agencies. The purpose of the HTP is to have both tunnels available for use after project completion.

Table 3-29 presents the Hudson River Tunnel projected O&M costs in YOE dollars. The infrastructure O&M costs are anticipated to be incurred after FY 2029, following the completion of the tunnel.

Table 3-29 Hudson River Tunnel Projected O&M Costs (YOE$)

Year	O&M Costs
FY 2029	$2,100,000
FY 2030	$2,173,500
FY 2031	$2,249,573
FY 2032	$2,328,308
FY 2033	$2,409,798
FY 2034	$2,494,141
FY 2035	$2,581,436
FY 2036	$2,671,786
FY 2037	$2,765,299
FY 2038	$2,862,084

3.3.1.2.2 Hudson Yards Concrete Casing - Section 3

HYCC-Section 3 O&M activities include an inspection and maintenance program and power for pumps, lights, and ventilation. Construction work for HYCC-Section 3 will commence in FY 2021 through FY 2024, during which the O&M costs are covered under contractor construction costs. After FY 2024 and until FY 2029, due to active fit-out operations under the new Hudson River Tunnel construction, HYCC-Section 3 O&M costs are covered under contractor construction costs for the Hudson River Tunnel element of the HTP. Costs from FY 2029 onward are incorporated under the Hudson River Tunnel portal-to-portal forecast. Therefore, HYCC-Section 3 O&M activities are not anticipated to incur additional costs beyond the costs reflected in the Hudson River Tunnel O&M costs discussed in Section 3.3.1.2.1.

3.3.1.2.3 North River Tunnel

Over the period FY 2012 – FY 2018, Amtrak has spent an annual average of $7.5 million to operate, maintain and rehabilitate the existing North River Tunnel, excluding power costs. This value is inflated by the occurrence of Superstorm Sandy in 2012 which caused a spike in repair and maintenance costs for Amtrak in FY 2013. The "non- catastrophic" annual average maintenance cost from FY 2012 to FY 2018 is $4.9 million.

Amtrak performs regular inspection and maintenance that keeps the tubes safe and operational to the fullest extent possible without requiring long-term closure of the tubes. Amtrak has completed a structural inspection of all 6 subaqueous tubes that serve PSNY and has compiled a catalog of designs for isolated repair details that are implemented on an as-needed basis to keep the tunnels safe and operational until the tubes can be closed for comprehensive rehabilitation. Amtrak has personnel, equipment and materials ready to address emergencies as they arise, which has allowed Amtrak to successfully bring the tubes back into service quickly after incidents. This enhanced maintenance will continue to be diligently performed by Amtrak as owner and operator of the NEC while the HTP is constructed.

The reconstructed North River Tunnel is expected to be significantly less expensive to maintain due to various factors including:

- The proposed new Low Vibration Track (LVT) Direct Fixation Track System will remove the existing ballasted track system which will reduce stray current (a significant source of present rail deterioration), facilitate drainage and minimize sediment (eliminating a current source of pump deterioration as well as the electrolytic path for stray current as well as Insulated Joint failures), and remove the "perishable" ballast from the maintenance schedule, which slowly pulverizes and requires periodic replacement.
- A significant portion of the main Signals system components will be removed from the tunnel, thereby facilitating equipment replacement, minimizing tunnel outages for repairs, and leaving relatively plug-and-play modular equipment within the tunnels for rapid recovery from in-tunnel events.
- The more modern benchwall configuration will reduce emergency manpower and equipment costs by reducing downtime and increasing response capability for in-tunnel equipment failures and hence providing currently unavailable access to the underside of equipment. It is also core to this effort that the historic cabling systems, many of which have only been spliced and repaired as needed over their lifetime, will be completely replaced, essentially restarting the maintenance timetable for these operations-critical conduits. Maintenance outages which are currently required on an ever-decreasing interval, will be significantly reduced.

Table 3-30 below summarizes Amtrak's historic costs to maintain North River Tunnel.

Table 3-30 Amtrak Historic Costs of Maintaining the North River Tunnel (both tubes included)*

Year*	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
O&M Costs	$8,718,666	$19,790,240**	$3,507,916	$4,721,299	$8,892,426	$4,250,951	$2,861,511

* Amtrak Fiscal Year is October 1 – September 30.
** Superstorm Sandy maintenance cost spike

Looking forward, the anticipated O&M costs associated with the reconstructed tunnel primarily include the ongoing cost of annual inspections of the tunnel as well as inspection and maintenance of the pumping, ventilation and electric traction systems. If the existing North River Tunnel were to be maintained in its current condition, O&M costs would not only continue at a higher rate but likely accelerate as the limitations of spot repairs fail to keep up with the increasing occurrence of system failures. In lieu of arbitrarily projecting the likely spikes of spending to accommodate a higher frequency of system failures that would cause large and costly outages, the future maintenance costs were forecast to continue by matching existing average spend levels escalated at 3.5 percent per year for inflation but with a slowly-advancing (0.25 percent year-over-year) "hyper-escalation" to account for the increasing incidence, scope and cost of repairs as the tunnel ages and degrades further.

To estimate the O&M costs for the "Status Quo" scenario, assuming that the tunnel will be maintained in its current condition, the "non- catastrophic" annual average maintenance cost of $4.9 million in 2018 dollars, is inflated at a rate of 3.5% per year plus a 0.25% year-over-year rate, to yield a base O&M cost of $5.1 million in 2019 dollars.

In the "Reconstruct" scenario, the maintenance costs are halved during the construction period (FY 2029-FY 2032) while one line is taken out of service for reconstruction. When commissioned, the new tunnel is assumed to be maintained at 20% of its previous level from FY 2032 and onward, a conservative estimate based on prior projects.

In Table 3-31 below, these costs are estimated to rise 3.5 percent per year with inflation. Cost are assumed following commissioning of each tube. While the escalation rate for both "Status Quo" and "Reconstruct" scenarios is set at 3.5% per year plus a 0.25% year-over-year rate, after FY 2026, for the "Reconstruct" scenario, the escalation rate is assumed to be only 3.5% per year, considering that increasing incidence, scope and cost of repairs due to the tunnel age and degradation are not issues.

Table 3-31 North River Tunnel Projected O&M Costs – "Reconstruct" / "Status Quo" Scenarios (YOE$)

Year	O&M Costs		
	Status Quo	Reconstruct	Increase / (Decrease)
*FY 2029	$8,437,301	$4,218,651	($4,218,651)
FY 2030	$8,985,726	$4,492,863	($4,492,863)
**FY 2031	$9,592,262	$4,796,131	($4,796,131)
FY 2032	$10,263,721	$5,131,860	($5,131,860)
***FY 2033	$11,007,841	$1,062,295	($9,945,545)
FY 2034	$11,833,429	$1,099,475	($10,733,953)
FY 2035	$12,750,519	$1,137,957	($11,612,562)
FY 2036	$13,770,561	$1,177,786	($12,592,775)
FY 2037	$14,906,632	$1,219,008	($13,687,624)
FY 2038	$16,173,696	$1,261,673	($14,912,022)

* North River Tunnel tube outage #1 begins (FY 2029)
** North River Tunnel tube outage #2 begins (FY 2031)
*** Annual O&M is now "reconstructed tunnel" status and escalates at 3.5% (FY 2033)
Note: Costs in Amtrak Fiscal Year (October 1 – September 30); Positive values indicate costs and negative values indicate savings.

3.3.1.2.4 Phase 1B – Hudson Tunnel Project Infrastructure O&M Summary

Table 3-32 below forecasts costs to maintain all projects elements of the HTP. The total O&M costs of the HTP over the FY 2019 to FY 2038 period is estimated to be $113.7 million in YOE dollars.

Table 3-32 Hudson Tunnel Project Projected O&M Costs (YOE$)

Year	HYCC-Section 3	North River Tunnel	Hudson River Tunnel	Total O&M Costs
FY 2019	$-	$5,119,703	$-	$5,119,703
FY 2020	$-	$5,324,491	$-	$5,324,491
FY 2021	$-	$5,550,782	$-	$5,550,782
FY 2022	$-	$5,800,567	$-	$5,800,567
FY 2023	$-	$6,076,094	$-	$6,076,094
FY 2024	$-	$6,379,899	$-	$6,379,899
FY 2025	$-	$6,714,844	$-	$6,714,844
FY 2026	$-	$7,084,160	$-	$7,084,160
FY 2027	$-	$7,491,500	$-	$7,491,500
FY 2028	$-	$7,940,989	$-	$7,940,989
FY 2029	$-	$4,218,651	$2,100,000	$6,318,651
FY 2030	$-	$4,492,863	$2,173,500	$6,666,363
FY 2031	$-	$4,796,131	$2,249,573	$7,045,704
FY 2032	$-	$5,131,860	$2,328,308	$7,460,168
FY 2033	$-	$1,062,295	$2,409,798	$3,472,093
FY 2034	$-	$1,099,475	$2,494,141	$3,593,617
FY 2035	$-	$1,137,957	$2,581,436	$3,719,393
FY 2036	$-	$1,177,786	$2,671,786	$3,849,572
FY 2037	$-	$1,219,008	$2,765,299	$3,984,307
FY 2038	$-	$1,261,673	$2,862,084	$4,123,758
Total	**$-**	**$89,080,731**	**$24,635,926**	**$113,716,657**

3.3.1.2.5 The Cost of Inaction

The difference in annual O&M costs between maintaining the existing tunnel (status quo) and maintaining the HTP is estimated to save approximately $67.5 million in the FY 2019 to FY 2038 period. Further, it is projected that after the completion of the HTP, the reconstructed tunnel will save approximately $9.6 million per year in the post FY 2032 period, saving over $192.3 million over a 20-year forecast period (FY 2033 to FY 2053).

Table 3-33 Hudson Tunnel Project Projected O&M Costs – Build vs. Status Quo Scenarios

	Status Quo	Hudson Tunnel Project	Incremental O&M Costs / (Savings)
FY 2019	$5,119,703	$5,119,703	$-
FY 2020	$5,324,491	$5,324,491	$-
FY 2021	$5,550,782	$5,550,782	$-
FY 2022	$5,800,567	$5,800,567	$-
FY 2023	$6,076,094	$6,076,094	$-
FY 2024	$6,379,899	$6,379,899	$-
FY 2025	$6,714,844	$6,714,844	$-
FY 2026	$7,084,160	$7,084,160	$-
FY 2027	$7,491,500	$7,491,500	$-
FY 2028	$7,940,989	$7,940,989	$-
FY 2029	$8,437,301	$6,318,651	$(2,118,651)
FY 2030	$8,985,726	$6,666,363	$(2,319,363)
FY 2031	$9,592,262	$7,045,704	$(2,546,559)
FY 2032	$10,263,721	$7,460,168	$(2,803,553)
FY 2033	$11,007,841	$3,472,093	$(7,535,747)
FY 2034	$11,833,429	$3,593,617	$(8,239,812)
FY 2035	$12,750,519	$3,719,393	$(9,031,126)
FY 2036	$13,770,561	$3,849,572	$(9,920,989)
FY 2037	$14,906,632	$3,984,307	$(10,922,325)
FY 2038	$16,173,696	$4,123,758	$(12,049,938)
Total	**$181,204,719**	**$113,716,657**	**$(67,488,062)**

Note: Positive values indicate costs and negative values indicate savings.

3.3.2 Rail Service Operating Plan

NJ TRANSIT system wide operating plan in Chapter 4, Section 4.3.3 includes the project rail service O&M as a part of the plan. Both the NJ TRANSIT and Amtrak project related train capacity and ridership projections used to develop the operating plan used as the basis of the operating period in this financial plan are discussed below.

3.3.2.1 NJ TRANSIT Train Capacity and Ridership

In 2015, there were 44.5 million annual linked trips on NJ TRANSIT trains that use the existing Portal Bridge. They are transported on 349 revenue trains traveling to and from PSNY each day. In the AM peak period in the eastbound direction, the 21 NJ TRANSIT trains operated accommodate about 25,300 trips. Comparing this level of use against the current train seating for all 21 trains yields a demand to capacity ratio - using the FTA means of determining available seating - of approximately 98 percent.

Growth rates for Portal Bridge project-level and system-wide boardings were derived from travel demand forecasting models using approved MPO demographics. The forecasting models utilize the regionally approved forecasts of population, households, employment and labor force generated by the New York Metropolitan Transportation Council (NYMTC), NJTPA, Delaware Valley Regional Planning Commission (DVRPC) and South Jersey Transportation Planning Organization (SJTPO). These forecasts are applied to survey-derived trip tables to generate future year base trip tables. The regional models then assign the future year trips to various travel modes based on total impedance, a factor which combines weighted values of cost, in vehicle time, out of vehicle time and other considerations.

To generate the specific growth rates used for the PNB Project analysis, scenarios were run in the regional models at five year intervals, generating forecasts for 2015, 2020, 2025, 2030 and 2035 for the peak period and all day. The relevant growth rates between 2015 and the desired future year (either at PSNY or system-wide by mode) were then calculated and annualized, producing an average annual growth rate as shown in Table 3-35. These growth rates were applied to 2015 ridership from counts and ticket sale data to create a future year forecast for ridership. Regional CPI 1970-2045, Long-US Economic Forecast 2005-2037, and NYNJ Regional Forecast 2005-2045 provided in supporting document Section D of Appendix C.

Table 3-34 2015-2035 PSNY Ridership Forecast by Time Period

Year	Annual Total (both directions)
2015	51,695,840
2035	68,047,964
2015-2035 Annual % Growth	1.38%

It is useful to note that actual NJ TRANSIT commuter rail use into PSNY has been growing at a much faster rate than suggested by the MPO forecasts. For the period from 2005 until 2015, the annual average growth rate for rail trips using PSNY was +3.1 percent per year. The 2014-15 period saw especially strong growth, as ridership increased by +6.6 percent per year. The MPO forecasts for population and employment for the next five years indicate an average annual rate of growth is +1.5 percent. The reasons for the differences between the factors derived from the MPO forecasts and what is actually occurring include:

- The trans-Hudson bus system comprised of the Route 495 Exclusive Bus Lane, Lincoln Tunnel and PANYNJ Bus Terminal is currently functioning at capacity. Where it is feasible and convenient, new trans-Hudson travelers seek out the rail services, especially for trips to Midtown Manhattan locations.
- The MPOs NJ TRANSIT works with are in the process of updating their demographic forecasts.
- NJ TRANSIT rail services are benefiting from an unparalleled boom in Transit-Oriented Development (TOD) projects near many of its stations, especially those stations with rail service to Midtown Manhattan.

However, NJ TRANSIT's rail service to and from Manhattan is constrained in the AM and PM peak demand periods, for approximately two hours in the AM and two hours in the PM, by the capacity limits of the platforms and tracks at PSNY. This capacity constraint limits the ability of NJ TRANSIT's trains to handle an unconstrained forecast[52] of future passenger demand in the out years unless a means is found to permit

[52] An unconstrained forecast assumes that the capacity can be provided to accommodate the projected future demand. But the reality is that the number of trains able to sit at a platform to load and unload and the platform passenger handling capacity are constrained at PSNY, especially at platforms 1 and 2, tracks 1-4, which are only used by NJ TRANSIT trains.

more trains to be operated. Accounting for these capacity constraints, the NJ TRANSIT ridership over the PNB into PSNY is capped at 20 percent over 2015 levels.

3.3.2.2 Amtrak Train Capacity and Ridership Growth

In 2015, 7.2 million riders travelled between PSNY and Newark Penn Station, the NEC segment including Portal Bridge and NRT.

Although FTA's primary focus is on commuter rail, it is useful to note the level of use by riders on the intercity trains operated by Amtrak. Within the peak hour, approximately 7:30 to 8:30 AM, in the primary flow direction (eastbound), Amtrak operates three trains: one Acela train, one Regional and one Keystone. Amtrak is now taking action to replace the current Acela equipment with new trainsets that will provide added seating. Between the use of these new trainsets and other actions to add equipment to other trains, Amtrak is positioned to increase its seating capacity by more than 10 percent. It is expected that with this ability to add seating, Amtrak will be able to satisfy future demand.

In the financial plan, Amtrak's historic 10 year CAGR (2005-2015) was used to forecast ridership until 2020. Additionally, separate growth rates for Acela and other Amtrak riders were provided by Amtrak to account for the increase in Acela ridership due to the new trainsets.

3.4 Risks and Uncertainties

This section identifies and discusses the primary risks and uncertainties surrounding the key assumptions, and mitigations related thereto.

Discussion of Major Sources of Risk and Uncertainty

As with any large infrastructure project, the HTP includes several sources of risks and uncertainties, which, without mitigation, could potentially affect the capital and operating financial plans.

The estimated cost, schedule and budget has undergone a preliminary but extensive evaluation by the members of GTHP team members and the review team that was formed by Amtrak, PANYNJ, the Corporation, and NJ TRANSIT, to review the engineering and construction issues surrounding the HTP.

In identifying the risks associated with building the HTP, multiple potential "risk" areas were highlighted, including but not limited to the following;

- The scope of the HTP and the physical geographic environment within which the HTP is to be built;
- The availability and adequacy of labor, equipment, and material;
- Differences in actual subsurface conditions compared to conditions estimated from available geotechnical data;
- Work restrictions; procurement approvals; Project Partner decision-making protocols; impacts with other on-going projects;
- Potential for conflicts at interfaces between multiple active construction contracts;
- Adverse weather; productivity; contract phasing; permitting; timeliness of funding; and
- Timing of property acquisition and property access agreements, including utilities identification and relocation.

In particular, the following activities are being undertaken for specific project elements:

Hudson River Tunnel

GTHP is providing the HTP with a draft risk assessment to establish a level of confidence in the Hudson River Tunnel element's schedule and cost estimate and identify the most significant risks for subsequent treatment. The risk assessment follows ISO 31000: 2018 "Risk Management-Principles and Guidelines" and is augmented as appropriate by the "Practice Standard for Project Risk Management" (2009) published by the Project Management Institute (PMI). In addition, the GTHP is familiar with performing risk assessments for numerous FTA Grantees and with the FTA requirements for these assessments. As such, GTHP is conducting the draft risk assessment consistent with the intent of FTA Oversight Procedure 40c "Risk and Contingency Review". The methodology presented in ISO 31000:2018 and OP 40c is in close alignment regarding risk identification, cost and schedule development, risk analysis, and risk mitigation.

HYCC-Section 3

During the design phase for HYCC-Section 3, a risk register was developed for underground structure package by GTHP. This risk register was updated in conjunction with development of the detailed risk register described above – which included considerations for HYCC-Section 3. The majority of risk and uncertainty for HYCC-Section 3 have been mitigated by completing 100% design of this project element.

North River Tunnel

Successfully completing the North River Tunnel Rehabilitation within the estimated cost, schedule and budget has undergone a preliminary but extensive evaluation by Amtrak, PANYNJ and coordinating design consultants, to review the engineering and construction issues surrounding the Rehabilitation. By concentrating on the above noted risk areas, the North River Tunnel's preliminary "Risk Register" will be developed as design progresses. Knowledge from Amtrak inspections of the North River Tunnels as well as findings of damage caused by Superstorm Sandy to concrete behind bench walls on the PATH rail system was utilized for cost estimating, and appropriate allowances were included.

Capital Plan risks are associated with the capital cost and revenue components of the financial plan. From a capital cost perspective, they include inflationary risks, the project construction schedule, and the project scope.

The following sections describe the aforementioned risks, outline risk mitigation measures that can be implemented should one of the aforementioned events occur, and provide sensitivity analyses that identify the impact of several risk scenarios. The allocation of these risks will conform to FTA project management guidance, as well as being allocated in a manner consistent with obtaining investment grade ratings on any federal loans. Risk allocation will also reflect the Project Partners' goal to procure and deliver the HTP in a manner that achieves the best value for money for the Project Partners, including FTA.

3.4.1 Capital Plan

3.4.1.1 Capital Cost Risks

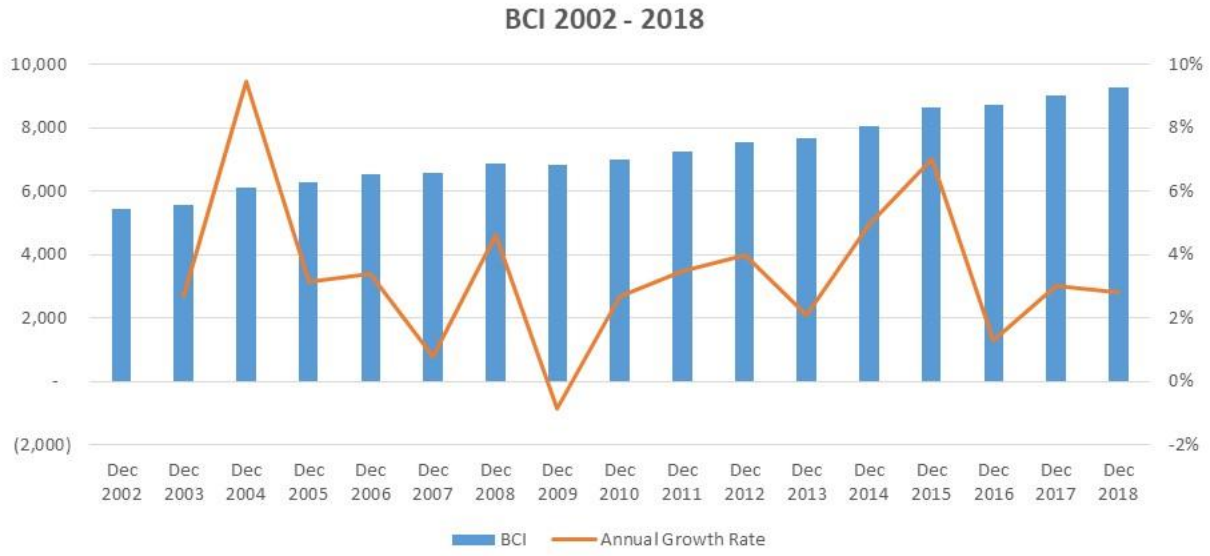
3.4.1.1.1 Inflation

Inflation is a key risk for mega-projects, as it typically represents a large share of the capital cost when project development is stretched over several years. Cost inflation is beyond the control of the project partners, it is driven by macroeconomic factors at global and regional levels, as well as local factors such as competition for local labor and materials.

The capital cost estimate reasonably assumes that the rate of inflation will increase by 3.5 percent annually. This assumes a gradual increase in economic growth in the region. This forecasted rate is based on historical Building Cost Index (BCI) and Construction Cost Index (CCI) data as published by ENR magazine for the New York area. It is a CAGR over the past fifteen years consisting of the peaks of 2003 to 2005 and valleys of 2008 to 2010 of the construction economy. This historical information over a long period of time, such as fifteen years, is considered a reliable indicator of escalation for the future years by construction cost estimators.

BCI represents relatively a more accurate forecasting of inflation in the construction industry. The basic difference between BCI and CCI is in the number and type of labor hours that make up the index. CCI uses 200 hours of common labor that represents highway construction and BCI uses 68 hours of skilled labor. For materials components, both indexes use materials that include cement, structural steel and lumber. The BCI is more suited for the construction of HTP than the CCI as the majority of the project cost is attributed to heavy construction with high skilled labor component and building material including cement, structural steel and lumber. Over the last fifteen years (December 2003 – December 2018), the BCI grew at a CAGR of 3.4% and over the last year (December 2017 – December 2018), the BCI grew at a rate of 2.8%. As described above, the longer fifteen-year period averages out the peaks and valleys of the construction economy, which can be seen in Figure 3-2.Therefore, the cost escalation rate assumption of 3.5 percent is reasonable due to historic BCI data.

Figure 3-2 Building Cost Index History



The Project Partners expect that FTA will subject the HTP scope, schedule, and budget to its own comprehensive risk assessment within the next several months as part of FTA's CIG Engineering Phase. The risk assessment process will evaluate the forecasted cost escalation rates in more detail and evaluate different escalation rates for different commodity types, such as steel and crude oil, which tend to be particularly sensitive to global economic pressures.

Right-of-way costs are highly correlated with property values. Many observers anticipate that the commercial real estate market may continue to be relatively strong in New York City markets. This, along with site-specific

factors that can influence the cost of acquisitions, creates a considerable deal of uncertainty regarding right-of-way costs.

Although it is not anticipated to be an issue, the availability of qualified labor is another potential source of capital cost inflation. If there is insufficient qualified labor, capital cost escalation can occur through unit cost increases (due to insufficient competition or the need to bring qualified labor into the region) and/or schedule delays. Force Account labor must be available as well, both from Amtrak and LIRR, when required to maintain schedule. Amtrak and LIRR forces are in great demand due to other capital projects such as State-of-Good Repair and Infrastructure Renewal Projects and MTA's East Side Access Project.

Mitigation: All of the above aspects of cost escalation risk can be mitigated by issuance of the ROD in 2019 and procuring the HTP as quickly as possible through the utilization of an ESWA and adhering to the different construction schedules of the new Hudson River Tunnel, HYCC-Section 3, and Rehabilitation of the North River Tunnel. Inflation is an important motivation for commencing early work activities on the new Hudson River Tunnel. Mitigation for right-of-way cost uncertainties includes provision of significant allocated and unallocated (10 percent of the entire project cost including ROW and professional services) contingencies, as well as acquiring the required right-of-way at the beginning of the HTP prior to the notice-to-proceed date. As a parallel work stream, the Project Partners are advancing a comprehensive value for money analysis, including risk, contract packaging, and delivery method analysis. The analysis helped identify potential efficiencies from bundling expected contract scopes of work into larger, procurable packages for efficient execution and delivery and utilizing Design-Build procurement where appropriate to encourage innovative solutions. The goal of the proposed procurement strategy is to minimize any delay between ROD and procurement launch (see Section 3.2.1 for description of packaging approach). In addition, as the HTP's risk allocation analysis proceeds, the Project Partners anticipate allocating inflation risk to third party contractors – for example, through fixed price Design-Build contracts – where it is determined to be good value for money to do so.

3.4.1.1.2 Schedule

Scheduling delays can lead to cost increases that may impact the financial plan for a project, both in additional cost escalation and increased professional services costs. Schedule changes might result from scope changes, local permitting and construction-related approval processes, right-of-way acquisition, the availability of qualified labor, commercial close delays, and construction delays. As a project becomes more complex, tasks become larger and they often have more dependencies. Task durations can be dependent on many factors, some of which are beyond a project manager's control.

The FEIS and ROD are critically important to the Project Partners in advancing the decision-making process and continuing work on the HTP's financial plan and design, and preparing for right-of-way acquisition, procurement, and construction activities. The timetable for issuing the ROD has extended beyond the date of March 30, 2018, which was originally anticipated by all stakeholders. Delays in issuing the ROD directly delays the HTP's notice-to-proceed, which has the potential to add cost. The status of these environmental reviews are further discussed in Sections 1.6.1 and 3.1.1.

Following are specific project elements related schedule considerations:

Hudson River Tunnel

The Project Partners are committed to reducing the impact of risks of the following activities on the Hudson River Tunnel's preliminary schedule and/or cost projections: 1) Federal Funding Authorizations; 2) Procurement Strategy Delays; 3) Corporation Resourcing and Project Partner Decision Making; 4)

Adequate Architectural and Engineering Support during construction; 5) Logistic Constraints and/or Limitations; and 6) Schedule Planning.

The Project Partners are also committed to reducing the impact of the risks of the following activities on the Hudson River Tunnel's preliminary schedule and/or cost projections: 1) Major Market Upsets / Fuel; 2) Upsets from the procurement of the Owner Controlled Insurance Program (OCIP), if applicable; 3) Upsets from Property Acquisitions; 4) Agency Concurrence; and 5) Acts of God.

The Project Partners are committed to identifying and reducing Construction Contract uncertainties and the impact of risks on the following: 1) Unforeseen Site Conditions; 2) Soil Stability Issues; 3) Delays due to materials supplies issues; 4) Lack of qualified and available bidders for specialized tunnel work; 5) Community and political objections to the disruption of public spaces; 6) Environmental Delays / Cost; and 7) Force Account Support.

Mitigation: The Project Partners shall be mitigating these schedule risks by continuing to refine the comprehensive risk allocation analysis and using that analysis to inform its procurement methodology to ensure a rapid procurement that facilitates expeditious construction and value for money. As the HTP's risk allocation analysis proceeds, the Project Partners anticipate allocating a substantial number of the abovementioned risks to third party contractors – for example, through fixed price, date-certain Design-Build contracts – where it is determined to be good value for money to do so. In addition, the Corporation has provided data to, and received feedback from, the private sector early in the process, in order to reduce unknown risks. For example, the Corporation, acting on feedback received from the private sector during an extensive Request for Information (RFI) process, launched an innovative Pre-Procurement Virtual Data Room to allow industry to, among other things, better understand the geotechnical characteristics of the Hudson River and New Jersey Palisades, in order to reduce unknown risks and associated schedule and cost risks, and to request additional geotechnical investigations. Incorporating input from industry, GTHP has developed a supplemental geotechnical investigation program covering the entire project alignment, to obtain additional geotechnical data with the objective of reducing construction risk. The program is configured to focus on elements of the HTP that have been identified as having the highest potential construction risk. The Corporation is currently advancing this program.

HYCC-Section 3

The Project Partners are committed to reducing the impacts of risks of the following activities: 1) Federal Funding Authorizations; 2) Procurement Strategy Delays; 3) Logistic Constraints and/or Limitations; 4) Schedule Planning (the actual construction schedule may take longer due to complexity of the project and multiple involved stakeholders), and; 5) Disruption and delays due to concurrent ongoing construction projects in the area and limited available staging area.

The Project Partners are also committed to reducing the impact of risks of the following activities on the HYCC-Section 3 preliminary schedule and/or cost projections: 1) Design Change Requests by Stakeholders such as Related Companies and LIRR; 2) Obtaining approvals from stakeholders such as Related Companies, LIRR, etc.; 3) Community objections to construction of the project; 4) Long lead procurement items for the LIRR Emergency Services Building Utility Relocation; 5) Variations in subsurface conditions such as top of rock and quality of the rock 6) Major Market Upsets / Fuel; 7) Upsets from the procurement of the Owner Controlled Insurance Program (OCIP); 8) Upsets from Property Acquisitions, 9) Agency Concurrence, and; 10) Acts of God.

The Project Partners are committed to identifying and reducing Construction Contract uncertainties and the impact of risks on the following: 1) Unforeseen Site Conditions; 2) Soil Stability Issues; 3) Delays due

to Steel Supplier / Fabricator Issues; 4) Environmental Delays / Cost – Chromium Removal, and; 5) Force Account Support.

Mitigation: The HYCC-Section 3 is 100% designed and construction may begin on this right-of-way preservation element after receiving the required NEPA finding by the FTA. However, value-for-money analysis – incorporating risk, contract packaging, and delivery method analysis – has identified potential benefits (e.g., economies of scale and opportunity for innovation) from bundling this work with portions of the Hudson River Tunnel project which would require a ROD to proceed. The Project Partners anticipate that a substantial number of the abovementioned risks will be allocated to a private contractor pursuant to comprehensive fixed-price, date-certain contract.

North River Tunnel

The Project Partners are committed to reducing the impact of risks on the North River Tunnel's preliminary schedule and/or cost projections: 1) Federal Funding Authorizations; 2) Precursor Project Completion; 3) Procurement Strategy Delays; 4) Adequate Architectural and Engineering Support during construction; 5) Logistic Constraints and/or Limitations, and; 6) Schedule Planning.

The Project Partners are committed to reducing the impacts of risks on the Project's preliminary schedule and/or cost projections: 1) Major Market Upsets / Fuel; 2) Upsets from the procurement of the Owner Controlled Insurance Program (OCIP); 3) Agency Concurrence, and; 4) Acts of God.

The Project Partners are committed to identifying and reducing Construction Contract uncertainties and impact of risks on the following: 1) Unforeseen Site Conditions; 2) Soil Stability Issues; 3) Delays due to Steel Supplier / Fabricator Issues; 4) Environmental Delays / Cost, and; 5) Force Account Support.

Mitigation: The rehabilitation of the existing North River Tunnel is preliminarily viewed by the contractor market, based on the Corporation's RFI feedback, as having a significantly different risk profile to the new construction components of the HTP, with the major risks being in the general categories of the very long period until construction can commence (2029, after the completion of the new Hudson River Tunnel), and the existing condition risk. The Project Partners expect to mitigate these risks by further study of the condition of the existing North River Tunnel, as we get much closer to this element's procurement, and ensuring procurement of a contractor for undertaking this work closer to when the work is anticipated to be performed, per procurement best practices.

3.4.1.1.3 Project Scope

Risks pertaining to the specific scope of each HTP element include the following:

Hudson River Tunnel: The risk of project scope change is moderate because the Hudson River Tunnel is still in the early stage of preliminary design. In March 2018, 30% design documents for the Hudson River Tunnel were submitted to FRA for their review. Final approval is expected after FRA's issuance of the ROD. Project Partners have identified the need for a clarity of roles and timely and clear decision-making as key requirements for project success.

Cost increases could occur because unexpected subsurface conditions and geotechnical issues, the need for unexpected utility relocations, unanticipated groundwater and other environmental impacts and mitigation measures, means and method of construction, and advancement of design that can change the estimated costs. The current cost estimate includes substantial allocated and unallocated contingencies to cover these and other potential changes. In addition, extensive geotechnical investigation programs with associated field and laboratory testing have been performed to obtain additional detail on geotechnical conditions over the entire alignment to reduce the risk of encountering differing ground

conditions during underground construction. This work is being supplemented by an additional geotechnical investigation program developed with input from industry to focus on areas of the HTP with relatively higher levels of construction risk.

HYCC-Section 3: The risk of project scope change is limited if there are no new scope change requests from stakeholders, such as Related Companies and LIRR, since the Final Design for the underground package was completed in June 2017 with updates in August 2018, and the LIRR ESB Utility Relocation Project is at 100 percent design as of August 2018.

Cost increases could occur as a result of unexpected soil conditions and geotechnical issues, the need for unexpected utility relocations, or the presence of tar sands, unanticipated groundwater and other environmental impacts and mitigation measures, can change the estimated costs. The current cost estimate includes contingencies to cover these and other potential changes.

Rehabilitation of the North River Tunnel: The risk of project scope change is moderate because the North River Tunnel Rehabilitation is only 10 percent designed.

The identification of risks will continue as these project segments proceed through the various stages of project delivery. During engineering and design, the current risk management plan will be expanded to ensure risks are reviewed and managed, and procedures are developed to reduce or eliminate their impacts. Risks which remain will be allocated in part or in whole through the contractual arrangements and bidding process, conscious always that risks should be assigned and owned by the party best able to manage that risk.

3.4.1.1.4 Interest Rates

As in any capital project requiring the issuance of debt, the HTP is subject to uncertainty associated with fluctuations in interest rates. Variations in interest rates could affect the interest earned on cash balances and the interest paid on any outstanding debt, as well as the size of the debt requirements to finance the HTP. Fluctuations in interest rates are influenced by external market risks and will affect the cost of all financing (including federal loans) through financial close.

RRIF loans are envisioned to finance portions of the HTP. Among its many benefits, such as lower interest rates and flexible repayment terms, RRIF loans will also allow the project sponsor to lock in an interest rate even without a need to draw on the loan for several years.

Mitigation: The HTP is exposed to interest rate risk up until financial close. The best way of managing this risk is to procure the HTP as quickly as possible, adhering to the different construction schedules of the three project elements. This is another important motivation for commencing construction on the new Hudson River Tunnel as soon as possible. For modeling purposes, the financial plan takes a conservative approach to interest rate assumptions, with the assumed rates of 4.11 percent, approximately 200 bps higher than current low-rate market conditions.

3.4.1.2 Capital Revenue Risks

3.4.1.2.1 Federal Funds

The HTP financial plan assumes certain levels of federal funds through FTA's CIG program. The passage of the five-year, $305 billion FAST Act provides some long-term funding certainty. However, it does not cover the entire analysis period of the financial plan. Subsequent to the FAST Act, a continuing resolution or a new federal authorizing legislation could go into effect, resulting in changes in existing grant programs that may, depending on the program, create new funding opportunities and eliminate others, change the amount of funds available, or impose new rules on project eligibility.

New Starts funding is also subject to appropriation uncertainties. The amount of the CIG contribution is to be identified in the FFGA. The FFGA will also identify the amount to be made available each year, subject to annual appropriations legislation. Although history has shown that Congress ultimately honors and appropriates the full amount spelled out in an FFGA, Congress could delay funding for the HTP by reducing or stretching out the annual appropriations. Any delay might necessitate reprogramming of non-CIG funds or additional borrowing.

Amtrak will work with the FRA to determine the optimal mix of funding for this share of project funding. These funding sources may be covered by any combination of FAST Act Amtrak NEC grants, Consolidated Rail Infrastructure and Safety Improvement Grants (Section 11301 of the FAST Act), Federal-State Partnership for State of Good Repair (Section 11302 (c)(2) of the FAST Act) and Amtrak revenue from passenger fares or other net operating revenues, provided funds are appropriated to these programs by Congress and FRA awards the funding to Amtrak.

Mitigation: Certainty of funding has been identified by the Corporation's Request for Information market sounding respondents as one of the major risks facing bidders for opportunities in the HTP. Given that it is in the interests of all stakeholders to progress the procurement of the HTP as quickly as possible, the Project Partners have provided commitments supporting the 100% of the non-CIG share of public transportation eligible project costs required for the new Hudson River Tunnel and HYCC-Section 3 and 99% of the non-CIG share of public transportation eligible project costs for the entire HTP (see Table 3-14 for a summary of capital contributions). The Project Partners anticipate working closely with its federal partners to achieve the same certainty with respect to the CIG-share within the required timeframe of the procurement. In addition, the FY 2021 Financial Plan assumes annual CIG appropriations of up to $600 million until the Hudson River Tunnel is complete in FY 2028, and annual CIG appropriations of up to $500 million thereafter.

3.4.1.2.2 RRIF Loans

The timetable for issuing the ROD has extended beyond the date of March 30, 2018, that was originally anticipated by all stakeholders. After receiving a revised ROD issuance date, the Project Partners will revise the HTP's capital cost, expenditures by year, and schedule, accordingly and work with Build America Bureau to develop an updated timeframe for progressing the RRIF Loans. Delays in issuing the ROD directly delay the HTP's notice-to-proceed, which has the potential to add cost. The assumptions for the RRIF Loans are dependent on the timing of the issuance of the ROD.

The percentage share of eligible costs attributable to RRIF (45.0%) is far below both the statutory maximum of 100% and recent precedent. In 2019, Dallas Area Rapid Transit closed a $908 million RRIF loan equal to 82.5% of year-of-expenditure capital costs for the Cotton Belt Corridor Regional Rail Project. In 2018, the MBTA closed $382 million in federal loans ($220 million RRIF and $162 million TIFIA), equal to 73.9% of estimated capital costs.

3.4.1.2.3 PANYNJ Contribution to Gateway Program Development Corporation

Estimates of PANYNJ's contributions to the Corporation presented in this financial plan are based on PANYNJ's support to the Program as identified in PANYNJ's 10-year 2017-2026 Capital Plan and provided as supporting document H-10. On June 28, 2018, the PANYNJ Board of Commissioners authorized the reallocation of the PANYNJ's Portal North Bridge Project commitment to the HTP and confirmed the PANYNJ's $2.7 billion capital plan allocation for the HTP. Under this authorization, the PANYNJ will support the borrowing by the Corporation through a RRIF loan that will provide $2.158 billion (net proceeds) towards the HTP's construction costs for a total commitment of $2.551 billion in interest, issuance costs, servicing and monitoring costs and CRP.

3.4.1.2.4 State of New Jersey Contribution to Gateway Program Development Corporation

Estimates of the State of New Jersey's contributions to the Corporation presented in this financial plan are based on the State's commitment as secured in the Gateway Development Commission Act (Sections 1.2 and 1.7.2.2). The current financing plan contemplates that the State of New Jersey will make payments to the Corporation in amounts sufficient to enable the Corporation to meet its financing obligations, through a RRIF loan supporting $1.643 billion in construction costs ($1.918 billion[53] in interest, issuance costs, servicing and monitoring costs and CRP). The Corporation will be the RRIF applicant and will enter into agreements with the State of New Jersey that would satisfy the Corporation's related financial obligations. This commitment is anticipated to be fully implemented prior to entering into the ESWA / FFGA with the FTA.

3.4.1.2.5 State of New York Contribution to Gateway Program Development Corporation

Estimates of the State of New York's contributions to the Corporation presented in this financial plan are based on the State's commitment as secured in the Gateway Development Commission Act (Sections 1.2 and 1.7.2.2). The current financing plan contemplates that the State of New York will make payments to the Corporation in amounts sufficient to enable the Corporation to meet its financing obligations. The State of New York has committed to support borrowing by the Corporation through a RRIF loan to fund $1.75 billion in construction costs ($2.068 billion[54] in interest, issuance costs, servicing and monitoring costs and CRP). The Corporation will be the RRIF loan applicant and enter into a funding agreement with the State of New York (such agreement, the "State of New York Agreement") under the terms of which the State of New York will commit to the Corporation to pay principal, interest, and certain fees and expenses. This commitment is anticipated to be fully implemented prior to entering into the ESWA / FFGA with the FTA.

3.4.1.2.6 Remainder of Local Contribution to Gateway Program Development Corporation

The Project Partners are committed to identifying the balance of funding for the HTP in a future submission prior to signing a FFGA. Pursuant to the Gateway Development Commission Act, the State of New York and the State of New Jersey shall provide equal funding of the combined New Jersey-New York share of funding requirement for Phase 1. At present, the Financial Plan includes an assumption that additional local revenues are identified and leveraged through a RRIF loan ("RRIF Loan C") used to finance $63 million of the North River Tunnel's rehabilitation costs. The amount of remaining funding to be identified has been substantially reduced from $787 million in the FY 2020 Financial Plan. Commitments from PANYNJ, the State of New Jersey and the State of New York cover $884 million, or 93%, of the $947 million local share of rehabilitation costs. The $63 million of funding to be identified represents less than 1% of the non-CIG share of public transportation eligible project costs. Although the source of remaining funding has not been explicitly identified, the Project Partners do not view this small funding need as a funding gap, as there are numerous sources for this funding. For example, funding committed to capital costs are expected to be released as contingencies and major risks are reduced and cost certainty is increased as anticipated under the contract packaging / ESWA approach; funding committed to financing costs is conservative as it is based on interest rates that are approximately 200 basis points higher than current interest rates; and PANYNJ's $2.7bn commitment has not been fully utilized in this financial plan.

[53] The $1.918 billion figure excludes principal repayments during the CIG period of $58 million. Including these principal repayments, the State of New Jersey's commitment is $1.975 billion.

[54] The $2.068 billion figure excludes principal repayments during the CIG period of $67 million. Including these principal repayments, the State of New York's commitment is $2.135 billion.

3.4.2 Operating and Maintenance Plan

3.4.2.1 Operating and Maintenance Cost Risks

3.4.2.1.1 Cost Escalation

In general, O&M costs are subject to many macroeconomic factors, including fuel prices, commodity prices, and labor contracts. These factors are all subject to the macroeconomic environment and are largely out of the hands of Amtrak and thus are all potential risks that may have impacts on operating costs, either negative or positive. Considering the reduction in operating and maintenance costs compared to current levels, this risk is considered to be fairly manageable.

3.4.2.1.2 Operating and Maintenance Revenue Risks

Under the NEC Commuter and Intercity Rail Cost Allocation Policy, all service providers are committed to covering the costs of their respective uses of NEC infrastructure–including a formula charge for the operating costs and maintenance of way–to maintain the NEC in a state of good repair and to ensure that the essential rail services they provide continue.

3.4.3 Mitigation Strategies

In the event that any of the cost or schedule risks described above were to materialize, the Project Partners have risk mitigation strategies available.

The Project Partners are undertaking a comprehensive risk allocation analysis and using that analysis to inform its procurement methodology to ensure a rapid procurement that facilitates expeditious construction and value for money. It is anticipated that a substantial number of the abovementioned risks will be allocated to third party contractors – for example, through fixed price, date certain Design-Build contracts – where it is determined to be good value for money to do so – that support an investment grade credit rating of the Corporation's debt obligations.

Prior to procurement, the Corporation's partners and advisors, which each have extensive experience with major construction programs, have prepared conservative estimates of construction costs. In addition to significant allocated contingencies on each element of the HTP, the project cost estimate includes a $1.026 billion unallocated contingency, or 10 percent of the entire project cost including ROW and professional services. Further, a 10 percent allowance for "extra & net cost work" has also been added to the construction costs.

Additionally, private sector involvement is being evaluated as method of managing any cost increase. On August 10, 2017, the Corporation issued a Request for Information (RFI) to solicit private sector interest to deliver the proposed HTP and HYCC-Section 3, as approved by the Corporation Board on June 1, 2017. Response to the RFI was robust and in October 2017, the Corporation invited respondents to one-on-one meetings to further discuss their responses to refine the Gateway Program's financial strategy, procurement methodology, and approach to project delivery.

On July 10, 2018, the Corporation issued further questions based on the 2017 feedback, as a continuation of the RFI initiative. Response from the private sector continues to be robust. As part of this continued market engagement, the Corporation hosted a successful Industry Information Session that attracted approximately 200 individuals from over 100 firms. Additional one-on-one meetings with RFI respondents to discuss their 2018 responses were held in late 2019 through early 2019. This feedback is helping to inform the Corporation's risk allocation analysis, along with contract packaging and procurement methodology. The RFI has been provided as supporting document B-16.

In February 2019, acting on feedback received from the private sector during the RFI process, the Corporation launched the HTP Pre-Procurement Virtual Data Room to provide industry an opportunity to review project data and comment on the proposed plan for the Supplemental Phase 2 Geotechnical Boring Program and suggest additional geotechnical investigations. The Corporation received clear feedback from the private sector that providing them with project data, including geotechnical data, prior to the start of the formal procurement process would be helpful. Private industry stated that providing project data early would allow all relevant parties to, among other things, better understand the geotechnical characteristics of the Hudson River and New Jersey Palisades, reduce unknowns, and reduce risk. The Corporation received significant feedback from the private sector on the proposed plan for the Supplemental Phase 2 Geotechnical Boring Program and suggested additional geotechnical investigations. The Corporation and the Project Partners have incorporated this feedback into the Supplemental Phase 2 Geotechnical Boring Program and are advancing these investigations.

In addition, financing described in this report is anticipated to be rated investment grade by at least two rating agencies, meaning that the risks described in this section will need to be allocated in a manner consistent with achieving such ratings. As the HTP proceeds, the Project Sponsor will continue to review and revise the financial plan to take into account cost and schedule changes, federal funding opportunities, and financial market conditions. When appropriate during the CIG process, the Project Partners will engage in the risk assessment process with FTA and its Project Management Oversight Contractor, which will result in revised contingency levels and a detailed risk management plan to be implemented during final design and construction.

3.4.4 Sensitivity Analysis

An FTA CIG Program grant submission is required to demonstrate that the project has access to funds to cover cost increases or funding shortfalls. The HTP meets that requirement.

As in any reasonable financial plan, once a NEPA ROD and remaining non-local funding is obtained, the Project Partners will use procurement practices, such as Design-Build, that substantially mitigate the risk of such cost increases or funding shortfalls occurring. The Project Partners have engaged, and continue to engage, in extensive dialogue with the private sector throughout 2017, 2018, and 2019 via a comprehensive RFI process to help ensure that the HTP has a successful procurement that provides best value for money. The RFI process is further described in Section 3.4.3.

As part of determining the best value for money approach to implementing the HTP, a risk analysis, contract packaging comparison, and procurement methodology comparison have been undertaken by the Project Partners which is expected to make the likelihood of a cost increase or funding shortfall less likely. The contract packaging plan (as described in Section 3.2.1) was developed to:

- Increase upfront cost certainty,
- Reduce contract prices and lifecycle costs,
- Reduce contingencies and retained risks (including interface risk between contractors),
- Optimize schedule and construction sequencing,
- Deliver high technical performance, and
- Attract market competition.

Furthermore, the inclusion of an ESWA will promote ultimate completion of the Project more rapidly and at less cost.

3.4.4.1 Cost Overrun Coverage

Therefore, the State of New York, the State of New Jersey, and Amtrak confirm they are committed to cover 15% of construction cost overruns. Such funding sources may include measures that generate revenue such as train usage or access fees.

- As described in Section 3.2.2.9, the State of New Jersey's support to the HTP is underpinned by expanded revenue sources, and strong public and legislative support for funding transportation projects. The State of New Jersey has credit ratings in the A category.
- As described in Section 3.2.2.10, the State of New York's support to the HTP is underpinned by credit ratings in the AA category, high debt service coverage ratios and sufficient headroom for additional debt service.
- As described in Section 3.2.2.5, Amtrak has identified several different potential funding sources for the HTP, with total potential funding sources exceeding $10 billion over the FY 2016 – FY 2020 period.

The GDC Act (described in Sections 1.2 and 1.7.2.2) passed by the states of New York and New Jersey further minimizes risk of a funding shortfall. The GDC Act, and the New York-New Jersey funding MOU it requires, commits the states to provide equal funding for the combined New Jersey-New York share of the funding requirement for Phase 1 of the Gateway Program.

As discussed in Section 3.4, the HTP has undertaken a draft risk assessment to establish a level of confidence in the HTP's schedule and cost estimate and to identify the most significant risks for subsequent treatment. Additionally, the advancement of design and engineering on the new Hudson River Tunnel from 10% to 30%, as well as on the HYCC-Section 3 from 90% to 100%, has provided the Project Partners with greater cost certainty. The Project Partners are committed to enacting cost containment measures as a primary tool to maintain the HTP's capital cost within the established budget. In addition, the Corporation will pursue risk allocation consistent with achieving an investment grade rating on debt and attracting private capital if private capital is determined to help achieve best value for money.

3.4.4.2 Sensitivity Results

This section presents an analysis of how a 15 percent increase in project capital costs might be addressed. The project costs already include unallocated contingency of 10 percent of the cost of construction, right-of-way/real estate acquisition, and professional services (SCC categories 10-80). The increase in cost starts in FY 2021. This scenario leads to a $1.693 billion increase in the total project capital cost estimate (Table 3-35). For this sensitivity analysis scenario, local borrowing is assumed to cover the cost increase for the HTP and results in additional financing charges of $883 million during the CIG period.

Table 3-35 Capital Investment Grant Eligibility Period Sources & Uses of Funds for sensitivity case (YOE $M)[55]

	Total	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032
Sources of Funds																	
Amtrak Contribution	1,282	-	-	43	385	854	-	-	-	-	-	-	-	-	-	-	-
FTA Capital Investment Grant during CIG Period	5,339	-	-	-	-	250	600	600	600	600	600	600	590	500	399	-	-
Short-Term Local Contribution and Repayment	-	8	19	13	63	(102)	-	-	-	-	-	-	-	-	-	-	-
RRIF Loan A1 (PANYNJ)	2,350	-	-	-	-	69	96	572	596	245	266	176	36	16	70	175	33
RRIF Loan A2 (NYS)	1,907	-	-	-	-	56	78	464	484	198	216	143	30	13	57	142	26
RRIF Loan B (NJ)	1,643	-	-	-	-	52	70	418	416	160	185	110	15	12	51	130	25
RRIF Loan C (Local)	61	-	-	-	-	0	0	4	0	0	0	4	2	(0)	13	31	6
PANYNJ contribution	236	35	-	-	-	6	3	20	21	7	9	6	1	2	74	69	(19)
NYS Contribution	229	-	-	-	-	6	3	16	17	6	8	5	1	13	81	78	(5)
NJ Contribution	333	-	-	-	-	6	6	31	51	29	23	26	12	10	72	70	(3)
Local Contribution	3	-	-	-	-	2	0	0	0	0	0	0	0	0	0	1	(1)
FTA Capital Investment Grant Fund Balance Movement	(0)	-	-	-	-	(107)	60	47	-	(34)	(74)	(74)	19	(238)	(105)	332	175
Cost Overrun Facility - Bond Proceeds	1,701	-	-	-	-	247	135	311	302	156	154	118	74	14	67	110	13
Partners Contribution to Cost Overrun	874	-	-	-	-	6	22	39	58	74	86	95	108	110	110	110	55
Total Source of Funds	**15,956**	**43**	**19**	**55**	**448**	**1,346**	**1,073**	**2,523**	**2,545**	**1,442**	**1,473**	**1,209**	**887**	**452**	**889**	**1,249**	**304**
Uses of Funds																	
Project Capital Cost	12,979	43	19	55	448	1,315	1,029	2,373	2,307	1,187	1,178	891	564	107	514	846	103
RRIF Loan A1 (PANYNJ)																	
Issuance costs, servicing / monitoring fees	6	-	-	-	-	4	0	0	0	0	0	0	0	0	0	0	0
Credit risk premium	82	-	-	-	-	2	3	20	21	9	9	6	1	1	2	6	1
Capitalized interest during drawdown period	193	-	-	-	-	0	5	23	50	34	23	31	17	0	4	4	0
Interest payment during CIG period	501	-	-	-	-	1	0	-	-	28	50	50	67	85	83	89	48
DSRF deposit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Principal payment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RRIF Loan A2 (NYS)																	
Issuance costs, servicing / monitoring fees	6	-	-	-	-	4	0	0	0	0	0	0	0	0	0	0	0
Credit risk premium	67	-	-	-	-	2	3	16	17	7	8	5	1	0	2	5	1
Capitalized interest during drawdown period	157	-	-	-	-	0	4	18	40	28	19	26	14	0	3	4	0
Interest payment during CIG period	402	-	-	-	-	1	0	-	-	23	40	40	54	69	67	70	38
DSRF deposit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Principal payment	67	-	-	-	-	-	-	-	-	-	-	-	-	11	22	23	12
RRIF Loan B (NJ)																	
Issuance costs, servicing / monitoring fees	6	-	-	-	-	4	0	0	0	0	0	0	0	0	0	0	0
Credit risk premium	57	-	-	-	-	2	2	15	15	6	6	4	1	0	2	5	1
Capitalized interest during drawdown period	0	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	-
Interest payment during CIG period	484	-	-	-	-	1	4	17	36	44	52	57	59	59	60	64	33
DSRF deposit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Principal payment	58	-	-	-	-	-	-	-	-	-	-	-	-	9	19	20	10
RRIF Loan C (Local)																	
Issuance costs, servicing / monitoring fees	3	-	-	-	-	2	0	0	0	0	0	0	0	0	0	0	0
Credit risk premium	2	-	-	-	-	0	0	0	0	0	0	0	0	(0)	0	1	0
Capitalized interest during drawdown period	3	-	-	-	-	-	0	0	0	0	0	0	0	0	1	1	0
Interest payment during CIG period	3	-	-	-	-	0	-	-	-	-	-	-	0	0	0	1	1
DSRF deposit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Principal payment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cost Overrun Facility - Bond Issuance Costs	9	-	-	-	-	2	1	2	1	1	-	2	-	-	-	-	-
Cost Overrun Facility - Bond Debt Service	874	-	-	-	-	6	22	39	58	74	86	95	108	110	110	110	55
Total Uses of Funds	**15,956**	**43**	**19**	**55**	**448**	**1,346**	**1,073**	**2,523**	**2,545**	**1,442**	**1,473**	**1,209**	**887**	**452**	**889**	**1,249**	**304**
FTA Capital Investment Grant Fund Balance BEG	-	-	-	-	-	-	107	47	-	-	34	108	182	164	401	507	175
FTA Capital Investment Grant appropriations	5,339	-	-	-	-	250	600	600	600	600	600	600	590	500	399	-	-
FTA Capital Investment Grant Uses	5,339	-	-	-	-	143	660	647	600	566	526	526	609	262	294	332	175
FTA Capital Investment Grant Fund Balance END	-	-	-	-	-	107	47	-	-	34	108	182	164	401	507	175	0
FTA Capital Investment Grant Fund Balance Movement	**(0)**	**-**	**-**	**-**	**-**	**(107)**	**60**	**47**	**-**	**(34)**	**(74)**	**(74)**	**19**	**(238)**	**(105)**	**332**	**175**

[55] An FTA CIG Program grant submission is required to demonstrate that the project has access to funds to cover cost increases or funding shortfalls. The HTP meets that requirement. This section presents an analysis of how a 15 percent increase in project capital costs might be addressed. For this sensitivity analysis scenario, local borrowing is assumed to cover cost increase for the HTP.

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4.0 NJ TRANSIT SYSTEM-WIDE FINANCIAL PLAN

This chapter documents the system-wide capital and operating financial capacity of NJ TRANSIT, which will operate commuter rail public transportation services across the new PNB, the rehabilitated North River Tunnel, and the new Hudson River Tunnel.

4.1 Introduction

This version of the NJ TRANSIT system-wide financial plan includes revisions which address FTA's recommendations and feedback documented in its FY 2020 Core Capacity Financial Assessment. Key revisions include the following:

- The average age of NJ TRANSIT bus fleet is forecasted to decrease from 9.3 years to approximately 5.0 years by 2022 as demonstrated in Figure 6 of the 2018 Bus Fleet Plan (provided as supporting document J-2), and documented in Section 4.4.1 below.
- A significant portion of NJ TRANSIT's non-federal and non-local capital funding is obtained through NJTTFA. The revenues available from this source are for NJ TRANSIT projects and the repayment of its debt obligations. Section 4.4.2 describes the financial stability of NJTTFA.
- NJ TRANSIT performed an analysis comparing NJ TRANSIT's current asset to current liability ratio with entities that have approximately the same range in assets and liabilities, demonstrating that its finances are stable relative to comparable transit agencies. This analysis does not include current assets, such as the FTA or NJTTFA funds that will fund projected future liabilities, as discussed in Section 4.4.3.
- Capital sources and uses for the period FY 2010 – FY 2018 reflect a slight decrease of 0.2 percent negative compound annual growth rate, as discussed in Section 4.2. The NJ TRANSIT FY 2019 Capital Program documented in Section D, supporting documents E-10 and E-14, shows a 14% increase compared to the FY 2018 amount (excluding competitive resiliency projects), including a 45% increase in the rail infrastructure improvements budget and a 72% increase in the system-wide improvements budget, reflecting the state's commitment to meet the system's needs. The forecast capital sources is assumed to grow at only a 0.1 percent compound annual growth rate and forecast capital uses is assumed to grow at only a 0.2 percent compound annual growth rate. The capital sources and uses for the system-wide plan reflects a relatively flat forecast.
- Operating sources and uses are estimated to increase at a compound annual growth rate of 2.4 percent, which is just slightly lower than the historic FY 2010 – FY 2018 compound annual growth rate of 2.6 percent reflecting a conservative assumption, as discussed in Section 4.3.1 and Section 4.3.2. This forecast reflects a more recent focus on identifying cost efficiencies and maximizing non-fare revenue alternatives.
- Operating fare revenue forecast generally reflects historic trends, as documented in Section 4.3.1.1.1.
- Section 4.3.3.1 describes the methodology for forecasting state and federal reimbursements and operating assistance to NJ TRANSIT, substantiating the increases in the forecasted level of funding compared to historical values.
- The passenger fare surcharge on Trans-Hudson rail use for the Gateway Program was removed from Section 4.3.3.1 and NJ TRANSIT's operating plan. As noted in supporting document B-7, a passenger fare surcharge is not the source of repaying the RRIF loan, so it has been removed from the operating plan.

4.2 Capital Plan

This section discusses NJ TRANSIT's historic and forecast capital sources and uses of funds. Capital plans for FY 2010 through FY 2020 for NJ TRANSIT can be found supporting documents E-1 to E-11.

4.2.1 Historic Capital Plan Sources of Funds

NJ TRANSIT's agency-wide historical capital sources of funds from FY 2010-FY 2018 are summarized in Table 4-1. System-wide capital sources can be categorized as Federal FTA and Federal Highway Administration (FHWA) funds, Federal Resiliency Funding (Sandy Funds), NJTTF and State Resiliency funds, and other sources.

The purpose of the agency's Capital Program is to provide NJ TRANSIT with the authority to secure capital funding in support of the various individual projects and programs authorized by the NJ TRANSIT Board of Directors throughout the year. The majority of the agency's budget is derived from the NJTTF, which is the common term used to refer to the State of New Jersey's Transportation Capital Program. NJTTF is funded in part by taxes imposed on gasoline, blended fuel that contains gasoline, liquefied petroleum gas and aviation fuel. NJTTF is administered by the NJTTFA, an independent agency of New Jersey state government whose stated mission is to finance the cost of "planning, acquisition, engineering, construction, reconstruction, repair, and rehabilitation of the state's transportation system."

At the federal level, NJ TRANSIT receives funding from the FTA pursuant to the FAST Act which was signed into law in December, 2015. The FAST Act supports transit funding through fiscal year 2020 for projects or programs that improve mobility, streamline capital project construction and acquisition, and increase the safety of public transportation systems across the country. The FAST Act's predictable formula funding program enables transit agencies to better manage long-term assets and address the backlog of SOGR needs. Additionally, the FAST Act includes funding for new competitive grant programs for buses and bus facilities, innovative transportation coordination, workforce training, and public transportation research activities.

Another significant source of federal funding is flexed funds from the FHWA through the NJDOT. The balance of NJ TRANSIT's capital funding is comprised of other sources such as casino revenue and the NJTA.

Total capital sources of funds decreased at a compound annual growth rate of 0.2 percent between FY 2010 and FY 2018. (The compound annual growth rate (CAGR) is computed between FY 2010 and FY 2018 specifically because additional unprecedented Superstorm Sandy Resiliency funds were received in FY 2016 and FY2017). Federal funding increased at a compound annual growth rate of 0.2 percent from FY 2010 to FY 2018 and state funding decreased at a compound annual growth rate of 0.3 in the same period. On average federal and state funds account for approximately 54% and 43% of capital sources of funds from FY 2010 to FY 2018 respectively. Other sources of capital funding decreased at a compound annual growth rate of 2.7 percent between FY 2010 and FY 2018. On average other sources account for approximately 3% of capital sources of funds from FY 2010 to FY 2018.

Table 4-1 Historic Capital Sources of Funds (YOE $M)

Capital Sources of Funds	FY 10 Budget	FY 11 Budget	FY 12 Budget	FY 13 Budget	FY 14 Budget	FY 15 Budget	FY 16 Budget	FY 17 Budget	FY 18 Budget
Total Federal Funds	**637**	**700**	**497**	**530**	**695**	**695**	**1,558**	**1,075**	**646**
FTA	425	449	396	396	468	468	467	513	508
FHWA Flex and CMAQ	151	251	101	134	228	228	220	169	138
Federal Resiliency	-	-	-	-	-	-	871	393	-
Federal Earmark	61	-	-	-	-	-	-	-	-
*Annual Growth Rate**	*0.0%*	*9.9%*	*-29.0%*	*6.5%*	*31.3%*	*0.0%*	*-1.2%**	*-0.7%**	*-5.3%**
CAGR (FY10-FY18)									*0.2%*
Total State Funds	**692**	**600**	**622**	**590**	**496**	**471**	**504**	**583**	**676**
NJTTF	692	600	622	590	496	471	462	554	676
NJTTF Resiliency	-	-	-	-	-	-	42	29	-
*Annual Growth Rate**	*0.0%*	*-13.3%*	*3.7%*	*-5.2%*	*-15.9%*	*-5.0%*	*-1.8%**	*19.9%**	*22.0%**
CAGR (FY10-FY18)									*-0.3%*
Other Sources	**56**	**50**	**45**	**33**	**38**	**38**	**38**	**25**	**45**
Annual Growth Rate	*0.0%*	*-10.7%*	*-10.0%*	*-26.7%*	*14.2%*	*0.0%*	*0.0%*	*-33.7%*	*80.0%*
CAGR (FY10-FY18)									*-2.7%*
Total Capital Sources of Funds (including Sandy Resiliency Funds)	**1,385**	**1,350**	**1,164**	**1,152**	**1,228**	**1,203**	**2,100**	**1,683**	**1,367**
Total Capital Sources of Funds (excluding Sandy Resiliency Funds)	**1,385**	**1,350**	**1,164**	**1,152**	**1,228**	**1,203**	**1,187**	**1,261**	**1,367**
Annual Growth Rate*	***0.0%***	***-2.5%***	***-13.8%***	***-1.0%***	***6.6%***	***-2.0%***	***-1.4%****	***6.3%****	***8.4%****
CAGR (FY10-FY18)									***-0.2%***

*Note: Annual Growth Rate excludes Sandy Resiliency Funds

4.2.2 Historic Capital Plan Uses of Funds

NJ TRANSIT's Capital Program is evolving from a program reactive to deadlines and repair needs affecting agency costumers to a more metric-based program that prioritizes projects based on lifecycle costs and criticality. System-wide capital uses are grouped into two major categories: capital preservation and capital expansion. Total capital uses of funds decreased by a compound annual growth rate of 0.2 percent between FY 2010 and FY 2018. Table 4-2 summarizes NJ TRANSIT's historical capital uses of funds.

Table 4-2 Historic Capital Uses of Funds (YOE $M)

Capital Uses of Funds Capital Preservation Costs	FY 10 Budget	FY 11 Budget	FY 12 Budget	FY 13 Budget	FY 14 Budget	FY 15 Budget	FY 16 Budget	FY 17 Budget	FY 18 Budget
Operations, Maintenance and Debt Service	714	738	653	654	691	674	673	594	601
Pass-Through	121	81	64	52	50	51	51	47	42
Rail Infrastructure Improvements	116	85	217	115	132	180	116	200	201
Rail Rolling Stock Improvements	-	-	-	88	53	104	87	105	109
Rail Station Improvements	34	11	42	16	37	46	82	64	47
Bus/Light Rail Improvements	62	85	125	164	195	76	85	186	168
Sandy Competitive Resiliency Projects	-	-	-	-	-	-	913	422	80
System-wide Improvements	52	53	64	63	69	55	92	65	86
Total Capital Preservation	**1,099**	**1,053**	**1,165**	**1,152**	**1,227**	**1,186**	**2,099**	**1,683**	**1,334**
Annual Growth Rate	*75.3%*	*-4.2%*	*10.6%*	*-1.1%*	*6.5%*	*-3.3%*	*77.0%*	*-19.8%*	*-20.7%*
CAGR (FY10-FY18)									*2.5%*
System Expansion									
Total System Expansion	**287**	**296**	**0**	**0**	**1**	**17**	**0**	**0**	**33**
Annual Growth Rate	*-4.1%*	*3.1%*	*-*	*-*	*-*	*-*	*-*	*-*	*-*
CAGR (FY10-FY18)									*-23.7%*
Total Capital Uses of Funds									
Total Capital Uses of Funds	**1,386**	**1,349**	**1,165**	**1,152**	**1,228**	**1,203**	**2,099**	**1,683**	**1,367**
Annual Growth Rate	***49.6%***	***-2.7%***	***-13.6%***	***-1.1%***	***6.6%***	***-2.0%***	***74.5%***	***-19.8%***	***-18.8%***
CAGR (FY10-FY18)									***-0.2%***

4.2.2.1 Capital Preservation

Capital preservation costs are expenses associated with rehabilitation, reconstruction, and any improvements to existing assets, such as rail SOGR, bus/light rail SOGR expenses, rail station improvements, park & ride improvements, rail rolling stock improvements, and Superstorm Sandy resiliency projects. Capital preservation costs have also consisted of operations, maintenance, debt service payments. Between FY 2010 and FY 2018 capital preservation costs increased at a rate of 2.5 percent, which is consistent with the organization's emphasis on SOGR activities for infrastructure and facility assets.

4.2.2.2 System Expansion

Capital costs associated with system expansion relate to new projects. Although system expansion has been somewhat limited since 2012, NJ TRANSIT is undertaking significant projects to expand operations where there is critical need. For instance, the Capital Program is investing in two light rail expansion projects. The Hudson-Bergen Light Rail Northern Branch Extension project will reintroduce rail service between Englewood in Bergen County and North Bergen in Hudson County. In addition, the Glassboro to Camden Line will provide new light rail passenger service to communities in Camden and Gloucester Counties in South New Jersey along an existing freight rail line.

4.2.3 Forecast Capital Plan Sources of Funds

NJ TRANSIT's system-wide capital plan covers State FY 2019 to FY 2038 including the PNB Project and the HTP. The sources of funds projected over the next 20 years are based on a continuation of the FY 2019

levels of funding received by NJ TRANSIT from various federal programs, the NJTTF, casino revenue funds and other smaller fund sources. Both federal and state funding was assumed to increase periodically at a nominal rate. The capital plan also identifies funds from State FY 2018 and prior years that have not yet been drawn down and are thus available for State FY2019 expenditures and beyond. The forecast capital funding sources is presented in Table 4-3.

The capital sources are estimated to increase at a compound annual growth rate of 0.16 percent over the FY 2019 to FY 2038 period. This is a relatively flat growth rate assumption compared to the historic decrease of 0.1 percent compound annual growth rate for the FY 2010 to FY 2018 period.

On December 27, 2018, Amtrak and NJ TRANSIT executed the "Funding and Coordination Agreement", which is included as supporting document B-17. The Agreement settles outstanding disputes between NJ TRANSIT and Amtrak and provides an additional source of funding to NJ TRANSIT. As documented in section 2.4 of the Agreement, from FY 2018 to FY 2030, NJ TRANSIT is scheduled to receive a total of $290 million in scheduled credits against its annual Baseline Capital Charge (BCC) Program payments due to Amtrak under the Agreement for Capital Obligations between Amtrak and NJ TRANSIT. However, these credits are pending approval by the NEC Commission, whose vote is imminent. Since the NEC Commission has not yet approved the scheduled credits, NJ TRANSIT has conservatively not accounted for these funds in this capital plan. Approval of these scheduled credits will further improve NJ TRANSIT's system-wide capital plan.

Table 4-3 Forecast Sources of Funds: FY 2019 – 2038 (YOE $M)

Sources of funds	Prior Years	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038	Total
		Budget	Budget	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.	
Federal Funding		$ 518	$ 528	$ 541	$ 541	$ 541	$ 541	$ 541	$ 554	$ 554	$ 554	$ 554	$ 554	$ 568	$ 568	$ 568	$ 568	$ 568	$ 582	$ 582	$ 582	**$ 11,107**
Federal Resiliency Funding		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
Federal Flex and CMAQ Funding		$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	**$ 1,520**
State TTF		$ 810	$ 760	$ 760	$ 760	$ 760	$ 760	$ 767	$ 767	$ 767	$ 767	$ 786	$ 786	$ 786	$ 786	$ 786	$ 806	$ 806	$ 806	$ 806	$ 806	**$ 15,638**
Others		$ 61	$ 34	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	**$ 474**
Others - Portal North Bridge Project		$ -	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	**$ 475**
Prior Year Funding	$ 5,062	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 5,062**
Total Sources of Funds	**$ 5,062**	**$ 1,464**	**$ 1,422**	**$ 1,423**	**$ 1,423**	**$ 1,423**	**$ 1,423**	**$ 1,430**	**$ 1,443**	**$ 1,443**	**$ 1,443**	**$ 1,462**	**$ 1,462**	**$ 1,476**	**$ 1,476**	**$ 1,476**	**$ 1,496**	**$ 1,496**	**$ 1,510**	**$ 1,510**	**$ 1,510**	**$ 34,276**
CAGR (FY19-FY38)																					*0.16%*	**-**

4.2.4 Forecast Capital Plan Uses of Funds

For years FY 2019 – FY 2038, Capital Program expenditures are presented project by project for the near term and include escalation for future years. Beyond those specific projects, an allowance for various project types is indicated, such as station projects, bridge projects, etc. These allowances will be allocated to specific projects as each annual budget is developed. An allowance for future rail and bus rolling stock expenditures is included and is consistent with the NJ TRANSIT fleet plans.

Table 4-4 on the following page summarize projected use of capital funds including the PNB Project, and the HTP. The Capital uses are estimated to increase at a compound annual growth rate of 0.13 percent for the FY 2019 to FY 2038 period. This is a relatively flat growth assumption compared to the historic decrease of 0.2 percent compound annual growth rate for the FY 2010 to FY 2018 period.

NJ TRANSIT is increasing its commitment to the FY 2019 Capital Program (documented in Section D, supporting documents E-10 and E-14) through a 14% increase compared to the FY 2018 amount (excluding competitive resilience projects), including a 45% increase in rail infrastructure improvements and 72% increase in system-wide improvements budget reflecting the state's commitment to meet the system's needs.

Table 4-5 depicts the combined system-wide sources and uses of funds for the forecast period. It is assumed that NJ TRANSIT will use a portion of its NJTTF appropriations as well as additional NJTA funding to provide payments to NJEDA in amounts equal to the scheduled annual debt service associated with NJEDA bond financing for the PNB Project. The annual debt service amount included in the 20-year capital plan uses of funds, reflects the debt service required to repay $600 million in NJEDA bond proceeds. Chapter 2, Section 2.2.2.4.1 provides more detail on NJEDA bond proceeds for the PNB Project. The debt service schedule provided in Table 4-5 reflects the strength and resilience of the NJ TRANSIT capital plan for bond repayment.

As depicted in the capital plan sources and uses, the cumulative project cash flow decreases from $4,891 million in FY 2019, to $425 million in FY 2038. This significant balance of available funds, on average represents approximately 139 percent of NJ TRANSIT's total annual capital uses for the FY 2019 to FY 2038 period. The forecast capital plan demonstrates the stability and availability of additional capital sources and uses at the system-wide level for the 20-year forecast period.

Table 4-4 Forecast Uses of Funds: Twenty Year Forecast FY 2019 – FY 2038 (YOE $M)

Uses of funds	Prior Years	FY 2019 Budget	FY 2020 Budget	FY 2021 Proj.	FY 2022 Proj.	FY 2023 Proj.	FY 2024 Proj.	FY 2025 Proj.	FY 2026 Proj.	FY 2027 Proj.	FY 2028 Proj.	FY 2029 Proj.	FY 2030 Proj.	FY 2031 Proj.	FY 2032 Proj.	FY 2033 Proj.	FY 2034 Proj.	FY 2035 Proj.	FY 2036 Proj.	FY 2037 Proj.	FY 2038 Proj.	Total
Planned Expenditures																						
On Going Programs	-	$ 742	$ 745	$ 755	$ 770	$ 830	$ 827	$ 820	$ 820	$ 828	$ 831	$ 831	$ 831	$ 831	$ 831	$ 831	$ 831	$ 831	$ 831	$ 831	$ 831	$ 16,285
Resiliency	-	$ 385	$ 389	$ 431	$ 312	$ 164	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,682
Construction Projects	-	$ 172	$ 204	$ 73	$ 49	$ 154	$ 120	$ 128	$ 128	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 2,472
Rolling Stock	-	$ 326	$ 335	$ 480	$ 629	$ 639	$ 684	$ 689	$ 689	$ 689	$ 686	$ 686	$ 686	$ 686	$ 686	$ 686	$ 686	$ 686	$ 686	$ 686	$ 686	$ 12,701
Portal North Bridge Project	**-**	**$ 10**	**$ 5**	**$ -**	**$ 55**	**$ 37**	**$ 37**	**$ 87**	**$ 37**	**$ 40**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 712**
Portal Bridge Early Works (TIGER Match)	-	$ 4	$ 5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9
Portal Bridge Contribution	-	$ 6	$ -	$ -	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 632
Portal Bridge Vehicle Purchase	-	$ -	$ -	$ -	$ 18	$ -	$ -	$ 50	$ -	$ 4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 71
Total Uses of Funds	**-**	**$ 1,635**	**$ 1,678**	**$ 1,739**	**$ 1,814**	**$ 1,825**	**$ 1,667**	**$ 1,724**	**$ 1,674**	**$ 1,678**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 33,851**
CAGR (FY19-FY38)																					*0.13%*	**-**
Project Cash Flow	**$ 5,062**	**$ (171)**	**$ (255)**	**$ (316)**	**$ (391)**	**$ (402)**	**$ (245)**	**$ (294)**	**$ (231)**	**$ (235)**	**$ (231)**	**$ (212)**	**$ (212)**	**$ (198)**	**$ (198)**	**$ (198)**	**$ (178)**	**$ (178)**	**$ (164)**	**$ (164)**	**$ (164)**	**$ 425**
Cumulative Project Cash Flow	**$ 5,062**	**$ 4,891**	**$ 4,636**	**$ 4,320**	**$ 3,929**	**$ 3,527**	**$ 3,283**	**$ 2,988**	**$ 2,757**	**$ 2,523**	**$ 2,292**	**$ 2,080**	**$ 1,868**	**$ 1,670**	**$ 1,472**	**$ 1,274**	**$ 1,096**	**$ 918**	**$ 754**	**$ 590**	**$ 425**	

Table 4-5 Forecast Twenty-Year Capital Plan FY 2019 – FY 2038 (YOE $M)

Sources of funds	Prior Years	FY 2019 Budget	FY 2020 Budget	FY 2021 Proj.	FY 2022 Proj.	FY 2023 Proj.	FY 2024 Proj.	FY 2025 Proj.	FY 2026 Proj.	FY 2027 Proj.	FY 2028 Proj.	FY 2029 Proj.	FY 2030 Proj.	FY 2031 Proj.	FY 2032 Proj.	FY 2033 Proj.	FY 2034 Proj.	FY 2035 Proj.	FY 2036 Proj.	FY 2037 Proj.	FY 2038 Proj.	Total
Federal Funding		$ 518	$ 528	$ 541	$ 541	$ 541	$ 541	$ 541	$ 554	$ 554	$ 554	$ 554	$ 554	$ 568	$ 568	$ 568	$ 568	$ 568	$ 582	$ 582	$ 582	$ 11,107
Federal Resiliency Funding		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Federal Flex and CMAQ Funding		$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 76	$ 1,520
State TTF		$ 810	$ 760	$ 760	$ 760	$ 760	$ 760	$ 767	$ 767	$ 767	$ 767	$ 786	$ 786	$ 786	$ 786	$ 786	$ 806	$ 806	$ 806	$ 806	$ 806	$ 15,638
Others		$ 61	$ 34	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21	$ 474
Others - Portal North Bridge Project		$ -	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 25	$ 475
Prior Year Funding	$ 5,062	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,062
Total Sources of Funds	**$ 5,062**	**$ 1,464**	**$ 1,422**	**$ 1,423**	**$ 1,423**	**$ 1,423**	**$ 1,423**	**$ 1,430**	**$ 1,443**	**$ 1,443**	**$ 1,443**	**$ 1,462**	**$ 1,462**	**$ 1,476**	**$ 1,476**	**$ 1,476**	**$ 1,496**	**$ 1,496**	**$ 1,510**	**$ 1,510**	**$ 1,510**	**$ 34,276**

Uses of Funds	Prior Years	FY 2019 Budget	FY 2020 Budget	FY 2021 Proj.	FY 2022 Proj.	FY 2023 Proj.	FY 2024 Proj.	FY 2025 Proj.	FY 2026 Proj.	FY 2027 Proj.	FY 2028 Proj.	FY 2029 Proj.	FY 2030 Proj.	FY 2031 Proj.	FY 2032 Proj.	FY 2033 Proj.	FY 2034 Proj.	FY 2035 Proj.	FY 2036 Proj.	FY 2037 Proj.	FY 2038 Proj.	Total
Planned Expenditures																						
On Going Programs		$ 742	$ 745	$ 755	$ 770	$ 830	$ 827	$ 820	$ 820	$ 828	$ 831	$ 831	$ 831	$ 831	$ 831	$ 831	$ 831	$ 831	$ 831	$ 831	$ 831	$ 16,285
Resiliency		$ 385	$ 389	$ 431	$ 312	$ 164	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,682
Construction Projects		$ 172	$ 204	$ 73	$ 49	$ 154	$ 120	$ 128	$ 128	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 2,472
Rolling Stock		$ 326	$ 335	$ 480	$ 629	$ 639	$ 684	$ 689	$ 689	$ 689	$ 686	$ 686	$ 686	$ 686	$ 686	$ 686	$ 686	$ 686	$ 686	$ 686	$ 686	$ 12,701
Portal North Bridge Project		**$ 10**	**$ 5**	**$ -**	**$ 55**	**$ 37**	**$ 37**	**$ 87**	**$ 37**	**$ 40**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 37**	**$ 712**
Portal Bridge Early Works (TIGER Match)		$ 4	$ 5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9
Portal Bridge Contribution		$ 6	$ -	$ -	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 37	$ 632
Portal Bridge Vehicle Purchase		$ -	$ -	$ -	$ 18	$ -	$ -	$ 50	$ -	$ 4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 71
Total Uses of Funds		**$ 1,635**	**$ 1,678**	**$ 1,739**	**$ 1,814**	**$ 1,825**	**$ 1,667**	**$ 1,724**	**$ 1,674**	**$ 1,678**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 1,674**	**$ 33,851**
Project Cash Flow	**$ 5,062**	**$ (171)**	**$ (255)**	**$ (316)**	**$ (391)**	**$ (402)**	**$ (245)**	**$ (294)**	**$ (231)**	**$ (235)**	**$ (231)**	**$ (212)**	**$ (212)**	**$ (198)**	**$ (198)**	**$ (198)**	**$ (178)**	**$ (178)**	**$ (164)**	**$ (164)**	**$ (164)**	**$ 425**
Cumulative Project Cash Flow	**$ 5,062**	**$ 4,891**	**$ 4,636**	**$ 4,320**	**$ 3,929**	**$ 3,527**	**$ 3,283**	**$ 2,988**	**$ 2,757**	**$ 2,523**	**$ 2,292**	**$ 2,080**	**$ 1,868**	**$ 1,670**	**$ 1,472**	**$ 1,274**	**$ 1,096**	**$ 918**	**$ 754**	**$ 590**	**$ 425**	**-**
Percent of Total Uses of Funds		299%	276%	248%	217%	193%	197%	173%	165%	150%	137%	124%	112%	100%	88%	76%	65%	55%	45%	35%	25%	-

4.3 Operating Plan

This section describes the system-wide operating historical and forecast sources and uses for NJ TRANSIT operations. The operating budgets for FY 2010 through FY 2020 can be provided as supporting documents E-1 to E-11.

4.3.1 Historic Operating Sources of Funds

System-wide operational sources of funds are categorized as operating revenues and operating assistance. Between FY 2010 – FY 2018, overall sources of funds increased at a compound annual growth rate of 2.6 percent. Table 4-6 summarizes NJ TRANSIT's historical sources of revenue and operating assistance.

Table 4-6 Historic Sources of Operating Funds (YOE $M)

Operating Sources of Funds	FY 10 Actual	FY 11 Actual	FY 12 Actual	FY 13 Actual	FY 14 Actual	FY 15 Actual	FY 16 Actual	FY 17 Actual	FY 18 Actual
Operating Revenues									
Passenger Revenues	757.6	863.8	884.8	874.9	906.2	929.3	990.3	986.4	968.1
Other Revenues	94.5	101.6	106.1	147.2	152.6	106.1	108.3	121.0	103.6
Total Operating Revenues	**852.1**	**965.4**	**990.9**	**1,022.1**	**1,058.8**	**1,035.4**	**1,098.6**	**1,107.4**	**1,071.7**
Annual Growth Rate	*1.2%*	*13.3%*	*2.6%*	*3.1%*	*3.6%*	*-2.2%*	*6.1%*	*0.8%*	*-3.2%*
CAGR (FY10 - FY18)									*2.9%*
Operating Assistance									
State Operating Assistance	261.5	276.2	395.0	363.2	353.4	368.2	390.3	427.0	427.0
Other State and Federal Reimbursements	247.7	80.5	103.2	173.8	213.8	191.4	225.6	183.6	170.0
State and Federal Capital Transfers	471.4	535.5	400.4	468.5	461.2	480.4	518.3	409.5	585.4
Total Operating Assistance	**980.6**	**892.2**	**898.6**	**1,005.5**	**1,028.4**	**1,040.0**	**1,134.2**	**1,020.1**	**1,182.4**
Annual Growth Rate	*7.7%*	*-9.0%*	*0.7%*	*11.9%*	*2.3%*	*1.1%*	*9.1%*	*-10.1%*	*15.9%*
CAGR (FY10 - FY18)									*2.4%*
Total Operating Sources of Funds	**1,832.7**	**1,857.6**	**1,889.5**	**2,027.6**	**2,087.2**	**2,075.4**	**2,232.8**	**2,127.5**	**2,254.1**
Annual Growth Rate	*4.6%*	*1.4%*	*1.7%*	*7.3%*	*2.9%*	*-0.6%*	*7.6%*	*-4.7%*	*6.0%*
CAGR (FY10 - FY18)									*2.6%*

4.3.1.1 Operating Revenues

Operating revenues are driven by user fees and other non-fare revenue sources. From FY 2010 to FY 2018, overall revenue contributions increased at a compound annual growth rate of 2.9 percent. These revenues are categorized under passenger or other revenues as shown in Table 4-6.

4.3.1.1.1 Passenger Revenues

NJ TRANSIT generates passenger fare revenue through two types of modes: directly operated transportation and purchased transportation. Modes directly operated by NJ TRANSIT include commuter rail, light rail, and motor bus, while purchased transportation modes include demand response service, light rail, motor bus, and hybrid rail. Passenger revenues have shown steady increases from FY 2010 to FY 2018, growing at a compound annual growth rate of 3.1 percent. In recent years, passenger fare revenue growth has been attributed to the addition of the Meadowlands and Liberty Corridor Bus services; two passenger fare rate

increases since FY 2010; and a steady growth in system-wide ridership trends and employment since FY 2013.

NJ TRANSIT does not follow a biennial fare increase model thereby moderate fare increases are levied every two years. Rather, NJ TRANSIT's historical fare increases since 2000 reflect large increases every two to four years (as demonstrated in Table 4-7):

Table 4-7 NJ TRANSIT Historic Fare Increases

Date	Increase
March 2002	10.00%
July 2005	11.50%
June 2007	9.60%
May 2010	22.00%
October 2015	9.00%

Growth rates for system-wide boardings were derived from travel demand forecasting models using approved MPO forecasts of population, households, employment and labor force generated by NYMTC, NJTPA, DVRPC and SJTPO. These forecasts are applied to survey-derived trip tables to generate future year base trip tables. The regional models then assign the future year trips to various travel modes based on total impedance, a factor which combines weighted values of cost, in-vehicle time, out-of-vehicle time and other considerations. Table 4-8 presents NJ TRANSIT ridership projections for its primary modes for three horizon years, both with and without the Core Capacity improvements provided by the PNB Project. It should be noted that the "Build" scenario in Table 4-8 refers to system-wide ridership after the PNB Project is completed, and the "No-Build" scenario refers to continuation of existing condition, without the PNB Project.

Table 4-8 New Jersey Transit Ridership Comparisons for PNB "No-Build" and "Build" Scenarios

Ridership	FY 2015		FY 2025		FY 2035	
	No Build	Build	No Build	Build	No Build	Build
Rail Total	87,628,300	87,628,300	99,336,777	100,597,134	111,712,075	111,970,458
Bus Total	162,227,000	162,227,000	174,941,679	174,311,500	188,281,601	188,152,409
Light Rail Total	22,531,400	22,531,400	25,448,897	25,448,897	28,781,814	28,781,814
Total System	**272,386,700**	**272,386,700**	**299,727,353**	**300,357,531**	**328,775,489**	**328,904,681**

Note that the PNB "No-Build" scenario experiences a 1.26 percent compound annual growth rate from 2015-2025 (the year of project opening), whereas the "Build" scenario has a compound annual growth rate of 1.39 percent from 2015-2025. However, forecasts from 2015-2035 show comparable annual ridership growth for both scenarios (1.22 percent in the "No-Build" and 1.23 percent in the "Build" scenario). These results are explained by the 20 percent cap for an increase in capacity as discussed previously in this financial plan. When the PNB Project is completed, the annual rail ridership growth rate is expected to initially increase rapidly primarily due to the increased capacity of the PNB, but once the cap is reached ridership will stabilize over time.

4.3.1.1.2 Other Revenues

Other revenue sources can be broken down into the following categories: transportation funds, auxiliary transportation funds, and non-transportation funds. Transportation funds have consistently included park and ride fees. Historically, transportation funds have also included Metro North-Interline revenue and special service revenue. Auxiliary transportation funds account for concessions, advertising revenue, Interline

commissions, ticket sales commissions, contract revenue, and special services revenue. Expansion of the NJ TRANSIT advertising program has been a consistent driver in growing commercial revenues annually. Non-transportation funds comprise vehicle rental revenues, rental income from buildings and other properties, parking lot rental, parking permit revenue, investment income, and transit-oriented development initiatives. Note that in 2011 the additional asset value for parking assets developed through public-private partnerships created a new source of revenue. Further, in 2013, $50 million was collected in insurance for Superstorm Sandy. Other revenue contributions have grown at a compound annual growth rate of 1.2 percent from FY 2010 to FY 2018.

4.3.1.2 Total Operating Assistance

Total operating assistance increased at a compound annual growth rate of 2.4 percent from FY 2010 to FY 2018. Operating assistance is classified as state, federal funds, or other assistance from quasi-governmental entities. State operating assistance alone increased at a compound annual growth rate of 6.3 percent from FY 2010 to FY 2018. The decline in state and federal reimbursements is directly tied to expenses and is largely due to a drop in planning and expense (P&E) initiatives, which are supported by reimbursements from state, federal and other third-party entities. For example, the historical decline in funding from New Jersey's Casino Revenue Fund in support of NJ TRANSIT's Transportation Assistance for Senior Citizens and Disabled Residents Program has contributed to the decline in reimbursements and related expenses.

State and federal reimbursements collectively decreased at a compound annual growth rate of 4.6 percent from FY 2010 to FY 2018. State and federal capital transfers increased at a compound annual growth rate of 2.7 percent from FY 2010 to FY 2018. These state and capital transfers represent both federal and NJTTF capital funds used to support eligible and non-routine operating expenses that help to extend the useful life of the assets being repaired. These operating expenses include, but are not limited to, engine repairs, axel replacements, and transmission rehabilitation. The specific categories making up total operating assistance sources of funds are also described below.

4.3.1.2.1 State Assistance

State assistance can be categorized as state operating assistance, state reimbursements, and state capital transfers. In the recent past, consistent sources of state assistance have included direct subsidies from the State of New Jersey, pass-through funding from the NJTA and State Clean Energy Fund, resources from the New Jersey Casino Revenue Fund, and other project reimbursements from other governmental and third-party entities.

4.3.1.2.2 Federal Assistance

Federal assistance can be categorized as federal reimbursements and federal capital transfers. Historically, federal sources of assistance have been comprised of FTA Urbanized and Rural Area Formula Program funds, FTA Special Needs of Elderly Individuals and Individuals with Disabilities Formula Program (5310) funds, and other small programs which were eliminated under the Moving Ahead for Progress in the 21st Century Act (MAP-21) in 2012. Additionally, in some years NJ TRANSIT has received federal operating grants through FHWA CMAQ funding, the US Department of Labor, and the FRA.

4.3.2 Historic Operating Uses of Funds

System-wide operational uses of funds are categorized as follows: labor and fringe, services, fuel and power, materials and supplies, purchased transportation, and other expenses. Operational uses increased at a compound annual growth rate of 2.7 percent between FY 2010 to FY 2018. Table 4-9 summarizes the historic uses of operating funds.

Table 4-9 Historic Uses of Operating Funds (YOE $M)

Operating Uses of Funds	FY 10 Actual	FY 11 Actual	FY 12 Actual	FY 13 Actual	FY 14 Actual	FY 15 Actual	FY 16 Actual	FY 17 Actual	FY 18 Actual
Labor and Fringes	1020.7	1060.8	1048.7	1099	1147.9	1174	1298.4	1207.9	1296.8
Services	109.3	107.6	114.3	200	174.6	149.9	171.8	158.3	164.5
Fuel & Power	128	146.6	162	151.3	158.1	152.4	131.9	94.3	97.7
Materials and Supplies	144.8	151	175.6	179.5	188.9	165.1	170	177	172.3
Purchased Transportation	195.5	200.2	197.2	212.1	218.7	221.9	223.5	212.5	245.3
Other	210.7	169.4	184.9	187.1	217.5	211.6	259.7	282.9	256.4
Total Operating Uses of Funds	**1,809.0**	**1,835.6**	**1,882.7**	**2,029.0**	**2,105.7**	**2,074.9**	**2,255.3**	**2,132.9**	**2,233.0**
Annual Growth Rate	*0.4%*	*1.5%*	*2.6%*	*7.8%*	*3.8%*	*-1.5%*	*8.7%*	*-5.4%*	*4.7%*
CAGR (FY10 - FY18)									*2.7%*

4.3.2.1 Labor and Fringe

Labor and fringe expenses include expenses related to current contractual labor agreements and costs for other non-union staff. These costs are due to salaries, wages, health care, and pension payments for operators and others. Changes in these costs are related to changes in the volume of laborers. Increases may be related to the addition of a new transit service which requires new staff to operate. Diminishing costs may result from lowering pension contributions or reducing the amount of staffed positions. Recently, departments throughout NJ TRANSIT have been effectively managing labor costs by strategically evaluating positions and tasks. Labor and fringe expenses increased at a rate of 3.0 percent from FY 2010 to FY 2018.

4.3.2.2 Services

Costs associated with services grew at a rate of 5.2 percent from FY 2010 to FY 2018.

4.3.2.3 Fuel and Power

Changes in fuel and power costs are related to usage and market prices of diesel and electricity as well as changes in service volume. Over the last four years, causes of the decrease in fuel and power spending are a result of a combination of declining fuel prices and NJ TRANSIT's ability to initiate timely fuel hedges. The overall decline in fuel prices has been slightly offset by growth in electric propulsion costs, the addition of a bus detour mitigation and other service adjustments, purchase of reimbursable local/county shuttle vehicles, and corresponding additional diesel and lubricant use Fuel and power costs overall decreased at a compound annual growth rate of 3.3 percent from FY 2010-FY 2018.

4.3.2.4 Materials and Supplies

Costs associated with materials and supplies are dependent on supply contracts. Examples of materials and supplies are tubes, tires, and metal. Expenses due to materials and supplies increased at a rate of 2.2 percent between FY 2010 and FY 2018.

4.3.2.5 Purchased Transportation

Increases in purchased transportation costs in recent history are primarily attributed to growth in existing Light Rail, Access Link, and Private Carrier Bus contracts. Historically, reductions in purchased transportation costs have resulted from reductions in related service and administration costs. Purchased transportation costs increased at a rate of 2.9 percent from FY 2010 to FY 2018.

4.3.2.6 Other Expenses

Alternate operational costs incurred by NJ TRANSIT include costs of utilities, funding for outside services, claims and insurance expenses, tolls, and trackage fees. Historically, increases in other expenses have been related to increases in credit card processing fees related to mobile ticketing and ticket vending machine use, higher utilities costs, and higher payments to Amtrak with regard to the Passenger Rail Investment and Improvement Act. Miscellaneous operational expenses increased at a rate of 2.5 percent between FY 2010 and FY 2018.

4.3.3 Forecast Operating Budget

NJ TRANSIT's operating budget is the result of an annual process involving both internal personnel and other state agencies. Within NJ TRANSIT, development of the operating budget is an agency-wide effort involving all departments. The operating budget process typically begins in the late summer with departments asked to prepare a proposed budget based upon new service needs, staffing requirements and mandates. It begins with meetings between the Budget department and all departments individually. Growth and reduction items are presented with proper justification through documentation of the full impact for the upcoming fiscal year as well as any impacts to the next three fiscal years. These items are discussed with the requesting department at length by NJ TRANSIT budget analysts. The Budget department works with all the departments to establish a balanced budget while prioritizing the needs of customers and being more efficient. After the Budget department consolidates the agency's needs and provides recommendations, the President and Chief Executive Officer (CEO) of NJ TRANSIT then reviews the proposed budget for required modifications.

After the President and CEO's approval, the budget is reviewed by the NJDOT and the State Office of Management and Budget (OMB). If OMB suggests that the anticipated levels of funding from revenues/state and federal sources or revenue projections appear unrealistic, NJ TRANSIT will modify the revenue/expense numbers after consulting with these three parties.

The agreed upon budget forms the basis of the Governor's Budget Message for the upcoming State fiscal year, which is usually delivered in February. In the spring, the NJDOT and NJ TRANSIT appear before the State Senate and Assembly Transportation Committees to answer questions about the proposed budget.

As changes to the budget can occur even at this late stage, NJ TRANSIT must be prepared to modify its proposal based upon the final shaping of the State budget which is finalized with the passage of the entire budget by both the Assembly and the Senate and the subsequent signing by the Governor.

Once the State budget has been approved, the NJ TRANSIT Board adopts its budget for the forthcoming fiscal year.

Because NJ TRANSIT functions with a balanced budget and given the funding challenges in the future, for this set of projections, NJ TRANSIT did not include any increase in service frequencies or expansion of services, beyond FY 2020. NJ TRANSIT has in recent years placed more intense attention on greater efficiency in the delivery of transit services, evidenced in the use of rail and bus vehicles which handle more persons per vehicle than had been the case previously. Service patterns are reviewed periodically and equipment and staff reallocated to reflect changing customer needs. These actions allow existing or improved services to be delivered while not causing increases in the overall agency budget.

NJ TRANSIT prepared its 20-year financial plan utilizing various assumptions. These assumptions are developed by expert budget analysts who work on each department's budget in detail. They monitor actual costs versus budgeted costs on both a monthly and annual basis. The assumptions developed on the

financial plan include both revenue and expenses. Many of the assumptions are based on historical trend growth factoring out any anomalies for that period.

NJ TRANSIT has summarized the growth factors applied to the base budgets by each category of revenue and expense with explanations. Note that historical trend data includes costs that are reimbursable and/or related to emergency or one-time events. For example, during the past several years, NJ TRANSIT has incurred higher than anticipated costs for Hurricane Irene, Superstorm Sandy, Department of Homeland Security and other event costs. Some of these costs were reimbursed by Federal Emergency Management Agency, FTA, and Department of Homeland Security funding. In other instances, expense costs may be reimbursed by other revenue sources such as the NJTTF or federal grants. The forecast makes no assumptions regarding one-time events similar to the ones mentioned above.

4.3.3.1 Forecast Operating Sources of Funds

The forecast of operating sources reflects projections of NJ TRANSIT's passenger revenues, state operating assistance, federal operating assistance, and other funding assistance. Table 4-10 summarize total operating sources assumed in the financial plan over the FY 2019 to FY 2038 period including the PNB Project and HTP's operating impacts. Total funding for future operating sources of funds includes: passenger revenues, other revenues, state operating assistance, state and federal reimbursements, other reimbursements, and state and federal capital transfers. System-wide operational sources are estimated to increase at a compound annual growth rate of 2.4 percent for the forecast period which is just slightly lower than the historic FY 2010 to FY 2018 compound annual growth rate of 2.6 percent reflecting a conservative assumption.

System-wide ridership is assumed to grow at an average annualized rate of just under 1 percent per year from FY 2019 to FY 2038. The fare revenue forecast includes a fare increase of approximately 3 percent, inclusive of a ridership diversion of 0.1 percent. It is anticipated that the first of these fare increases will occur in FY 2022, and every other even year thereafter. NJ TRANSIT's policy is to satisfy the public hearing and comment period, and seek Board approval before each fare increase. Given that on average fares increased by 3.7 percent per year between 2002 to 2019, the forecast fare increase assumption is considered to be consistent, if not somewhat conservative.

Overall Passenger revenues are estimated to increase at a compound annual growth rate of 3.0 percent for the forecast period with expanded efforts in transit-oriented development projects. This forecast is slightly less than the historical rate of 3.1 percent from FY 2010 to FY 2018. Other commercial revenue increases are assumed to be 1.9 percent compound annual growth rate. Therefore, overall operating revenues are estimated to increase at a compound annual growth rate of 2.9 percent, very similar to the historic operating revenue growth. It should be noted that the passenger fare surcharge on Trans-Hudson rail use for the Gateway Program (described in the December 13, 2017 letter from NJ TRANSIT submitted in the September 2018 financial plan) was removed from the passenger revenue forecasts of NJ TRANSIT's operating plan in this section. As noted in supporting document B-7, a passenger fare surcharge is not the source of repaying the RRIF loan, so it has been removed from the operating plan.

State operating assistance comprises proceeds from the Clean Energy Fund, NJTA, and a general state operating subsidy. The Clean Energy Fund is projected to remain constant throughout the forecast period, at FY 2020 budgeted level of $82.1 million. The proceeds from NJTA are assumed to stay constant at the current FY 2020 budgeted level of $129 million. The general state operating subsidy is projected to increase as necessary, in order to balance the budget and partially support a preliminary plan to reduce NJ TRANSIT's reliance on the annual capital transfers. The FY 2020 general state operating subsidy amount is $457.5.

Both the state and federal reimbursements have been combined in Table 4-10. These reimbursements are driven by certain expenses, which are largely indicative of the number of P&E initiatives in a given year. NJ TRANSIT budgets P&E projects based on history, but ultimately, if those planned expenses do not materialize, there's no subsequent reimbursement or net impact on the operating budget. Vice versa, if more than expected P&E projects occur, NJ TRANSIT would bring in more reimbursements than budgeted in order to cover those increased expenses. Total state and federal reimbursements come from a variety of state, federal and third-party sources. As an example, NJ TRANSIT provides funding to New Jersey counties for the Transportation Assistance for Senior Citizens and Disabled Residents Program. Because these expenses are fully supported by reimbursements provided from the State of New Jersey's Property Tax Relief Fund, actual reimbursements will comport to the same level of spending in that year, which may differ from the initial budget. Therefore, these types of changes can create large fluctuations in state and federal reimbursements year-over-year.

State and federal capital transfers are projected to decrease at a compound annual growth rate of 2.9 percent from $511 million in 2019 to $293 million in 2038. The current O&M forecast includes a preliminary plan to reduce the reliance on these capital transfers over time, allowing more of those capital dollars to be invested on infrastructure.

Total operating assistance is estimated to increase at a compound annual growth rate of 2.0 percent for the forecast period, which is a conservative assumption compared to the historical compound annual growth rate of 2.4 percent per year.

4.3.3.2 Forecast Operating Uses of Funds

Operating uses are estimated to increase at a compound annual growth rate of 2.4 percent for the forecast period which is just slightly lower than the historic FY 2010 – FY 2018 compound annual growth rate of 2.7 percent. This decline in the forecasted annual growth rate, when compared to the historic growth rate, is largely attributable to a more recent focus on cost efficiencies. These efforts include the streamlining of certain job functions in order to avoid the need for new positions where applicable and recent health benefit reforms reflecting a shift to the National Preferred Formulary and implementation of compound drug controls. NJ TRANSIT will continue these efforts in order to maximize efficiencies.

In developing the projections for the forecast period, core inflation is assumed to be 2.7 percent per year on claims and insurance, purchased transportation, and miscellaneous expenses, and 2.5 percent per year on labor and fringes. Core inflation on services, fuel & power, and materials and supplies were assumed to be 2.1 percent per year, 0.7 percent per year, and 2.0 percent per year respectively. Table 4-11 summarizes the 20-year forecasts for operating uses of funds for the forecast period. NJ TRANSIT will continue to look at ways to become more efficient and realize cost savings by getting the most out of existing resources.

Table 4-10 Forecast Sources of Operating Funds: FY 2019 – FY 2038 (YOE $M)

Operating Sources of Funds	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035	FY2036	FY2037	FY2038
Operating Revenues	**Budget**	**Budget**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**
Passenger Revenues	$ 986	$ 986	$1,022	$1,037	$1,064	$1,099	$1,123	$1,167	$1,194	$1,237	$1,268	$1,325	$1,351	$1,419	$1,445	$1,507	$1,546	$1,602	$1,633	$1,715
Other Revenues	$ 118	$ 118	$ 121	$ 126	$ 127	$ 129	$ 133	$ 136	$ 139	$ 142	$ 143	$ 145	$ 150	$ 151	$ 156	$ 157	$ 162	$ 164	$ 167	$ 168
Total Operating Revenues	**$1,103**	**$1,103**	**$1,142**	**$1,162**	**$1,190**	**$1,228**	**$1,255**	**$1,303**	**$1,333**	**$1,379**	**$1,411**	**$1,469**	**$1,501**	**$1,570**	**$1,601**	**$1,664**	**$1,708**	**$1,766**	**$1,800**	**$1,883**
Annual Growth Rate		*0.0%*	*3.5%*	*1.8%*	*2.4%*	*3.2%*	*2.2%*	*3.8%*	*2.3%*	*3.4%*	*2.4%*	*4.1%*	*2.1%*	*4.6%*	*2.0%*	*4.0%*	*2.6%*	*3.4%*	*1.9%*	*4.6%*
CAGR (FY2019-FY2038)																				*2.9%*
Operating Assistance																				
State Operating Assistance	$ 544	$ 669	$ 695	$ 723	$ 752	$ 782	$ 813	$ 844	$ 878	$ 913	$ 949	$ 987	$1,027	$1,049	$1,090	$1,127	$1,172	$1,219	$1,268	$1,288
Other State and Federal Reimbursemen	$ 158	$ 158	$ 159	$ 161	$ 162	$ 163	$ 167	$ 168	$ 172	$ 173	$ 173	$ 174	$ 178	$ 179	$ 181	$ 182	$ 183	$ 184	$ 185	$ 186
State and Federal Capital Transfers	$ 511	$ 461	$ 449	$ 440	$ 431	$ 422	$ 412	$ 403	$ 394	$ 385	$ 376	$ 366	$ 357	$ 348	$ 339	$ 329	$ 320	$ 311	$ 302	$ 293
Total Operating Assistance	**$1,213**	**$1,288**	**$1,304**	**$1,325**	**$1,345**	**$1,367**	**$1,393**	**$1,415**	**$1,443**	**$1,470**	**$1,498**	**$1,528**	**$1,562**	**$1,575**	**$1,610**	**$1,639**	**$1,676**	**$1,714**	**$1,755**	**$1,766**
Annual Growth Rate		*6.2%*	*1.2%*	*1.6%*	*1.5%*	*1.6%*	*1.9%*	*1.6%*	*2.0%*	*1.9%*	*1.9%*	*2.0%*	*2.2%*	*0.9%*	*2.2%*	*1.8%*	*2.2%*	*2.3%*	*2.4%*	*0.7%*
CAGR (FY2018-FY2037)																				*2.0%*
Total Operating Sources of Funds	**$2,316**	**$2,391**	**$2,446**	**$2,487**	**$2,536**	**$2,595**	**$2,648**	**$2,718**	**$2,776**	**$2,849**	**$2,910**	**$2,997**	**$3,062**	**$3,145**	**$3,211**	**$3,303**	**$3,383**	**$3,480**	**$3,555**	**$3,649**
Annual Growth Rate		*3.2%*	*2.3%*	*1.7%*	*2.0%*	*2.4%*	*2.0%*	*2.6%*	*2.2%*	*2.6%*	*2.1%*	*3.0%*	*2.2%*	*2.7%*	*2.1%*	*2.9%*	*2.4%*	*2.9%*	*2.1%*	*2.7%*
CAGR (FY2019-FY2038)																				*2.4%*

Table 4-11 Forecast Uses of Operating Funds: FY 2019 – FY 2038 (YOE $M)

Operating Uses of Funds	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035	FY2036	FY2037	FY2038
Operating Costs	**Budget**	**Budget**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**	**Proj.**
Labor and Fringes	$1,394	$1,466	$1,496	$1,516	$1,545	$1,577	$1,616	$1,656	$1,698	$1,740	$1,784	$1,837	$1,878	$1,925	$1,968	$2,022	$2,076	$2,133	$2,182	$2,242
Services	$ 155	$ 155	$ 163	$ 166	$ 170	$ 174	$ 177	$ 181	$ 185	$ 189	$ 191	$ 196	$ 200	$ 205	$ 209	$ 214	$ 216	$ 222	$ 225	$ 231
Fuel & Power	$ 107	$ 107	$ 108	$ 109	$ 110	$ 111	$ 111	$ 112	$ 113	$ 115	$ 115	$ 116	$ 117	$ 118	$ 119	$ 120	$ 120	$ 122	$ 122	$ 123
Materials and Supplies	$ 184	$ 184	$ 188	$ 193	$ 197	$ 201	$ 203	$ 209	$ 210	$ 215	$ 219	$ 225	$ 230	$ 236	$ 242	$ 248	$ 253	$ 259	$ 265	$ 270
Purchased Transportation	$ 252	$ 252	$ 260	$ 268	$ 274	$ 282	$ 288	$ 297	$ 304	$ 313	$ 320	$ 331	$ 339	$ 351	$ 358	$ 370	$ 382	$ 395	$ 407	$ 415
Other	$ 222	$ 225	$ 231	$ 236	$ 240	$ 250	$ 252	$ 263	$ 267	$ 277	$ 281	$ 293	$ 298	$ 310	$ 317	$ 329	$ 336	$ 349	$ 355	$ 369
Total Operating Uses of Funds	**$2,316**	**$2,391**	**$2,446**	**$2,487**	**$2,536**	**$2,595**	**$2,648**	**$2,718**	**$2,776**	**$2,849**	**$2,910**	**$2,997**	**$3,062**	**$3,145**	**$3,211**	**$3,303**	**$3,383**	**$3,480**	**$3,555**	**$3,649**
Annual Growth Rate		*3.2%*	*2.3%*	*1.7%*	*2.0%*	*2.4%*	*2.0%*	*2.6%*	*2.2%*	*2.6%*	*2.1%*	*3.0%*	*2.2%*	*2.7%*	*2.1%*	*2.9%*	*2.4%*	*2.9%*	*2.1%*	*2.7%*
CAGR (FY2019-FY2038)																				*2.4%*

4.4 New Jersey Transit Risks and Uncertainties

This section of the financial plan discusses the current state of NJ TRANSIT as it relates to system-wide risks and uncertainties considering fleet age, stability of funding sources, and NJ TRANSIT liquidity.

4.4.1 Bus and Rail Fleet Age

NJ TRANSIT's objective is to create a consistently reliable system that will meet the needs of every customer. Modernizing its bus and rail fleet is a priority in NJ TRANSIT's state-wide Capital Program. As part of the organization's multi-year plan, NJ TRANSIT is investing more than $700 million to replace 1,104 cruiser buses. Cruiser buses are designed to serve longer distance routes primarily to employment centers in New York City and Philadelphia; they feature overhead and underfloor luggage areas, a single entry/exit at the front, and high back seats for longer trips. Additionally, the NJ TRANSIT Board recently authorized a contract for the acquisition of 85 60-foot articulated buses. These buses are designed to serve shorter distance routes primarily within New Jersey's towns and cities; the buses are characterized by ease of boarding and deboarding as well as more areas to stand for short trips.

Upon completion of NJ TRANSIT's bus acquisition program, it is anticipated that the average age of the fleet will decrease to 5.0 years by 2022, resulting in the organization's youngest bus fleet since 2005 as demonstrated in Table 4-12. The purchase of additional cruiser buses in FY 2020 will result in an average bus fleet age of 7.7 years, consistent with a "Medium" rating for the "Current Capital and Operating Condition" sub-rating (average bus fleet age of under 8 years). By FY 2022, the average age of the bus fleet will be 5 years, consistent with a "High" rating for the "Current Capital and Operating Condition" sub-rating (average bus fleet age of under 6 years).

Currently, the average age of the NJ TRANSIT's bus fleet is 8.5 years, which is significantly less than the Useful Life Benchmark calculated based on FTA's 2016 Final Rule on Transit Asset Management[56]. The metric of Useful Life Benchmark (ULB) was established in the Rule where transit operators determine the Useful Life expectancy of their buses, and then measure what percentage of their fleet meets or exceeds (that is, buses older than) the ULB. NJ TRANSIT has proposed their ULB for cruiser buses to be 14 years of service, 12 years for articulated buses, and 13 years for suburban and transit model buses consistent with the policy noted above, for the purposes of Transit Asset Management.

The 2018 Bus Fleet Plan provided as supporting documents J-1 and J-2 presents ongoing changes to the bus fleet due to retirements, maintenance, and purchases of new equipment that will result in a modernized fleet sized to meet increasing customer demands for inter- and intra-state bus service. The plan calls for 1,610 new cruiser buses to be in service by 2021, followed by an estimated 1,409 new transit buses to be in service by 2026. A commensurate number of older buses would be retired during the planning period through 2030.

Table 4-12 Bus Fleet Age and Planned Purchases

Bus Fleet Conditions	2017	2018	2019	2020	2021	2022
Bus Purchases (Actual and Planned)	187	185	183	200	200	180
Average Bus Age	9.3	9.4	8.5	7.7	6.2	5.0

Source: NJ TRANSIT 2018 Bus Fleet Plan, December 2018

[56] 49 CFR Parts 625 and 630, Transit Asset Management, https://www.govinfo.gov/content/pkg/FR-2016-07-26/pdf/2016-16883.pdf

The average age of the commuter rail fleet is 19.6 years, which is relatively consistent with the industry average age of 18.6 years[57]. The 2018 Rail Fleet Plan provided as supporting documents K-1 and K-2, presents ongoing changes to the rail fleet due to retirements, maintenance, overhauls and purchases of new equipment that will result in a modernized fleet sized to the expected customer demands within the constraints of existing and expected railway infrastructure.

NJ TRANSIT will acquire 113 next-generation Multilevel III railcars, enabling the agency to retire 40-year-old Arrow III cars. The railcars will incorporate customer-requested amenities such as two-by-two seating and charging outlets. Additionally, seating capacity will increase by over 10 percent. It is projected that NJ TRANSIT will be in receipt of a new rail car by 2022, and the remaining cars will be delivered starting in 2023 through 2025. Separately, NJ TRANSIT is overhauling HVAC components on 360 out of the 550 Comet V railcars and 350 Multilevels. The overhaul will improve efficiency and reliability of the affected railcars.

4.4.2 NJTTF Financial Stability

NJ TRANSIT's significant source of funding is the NJTTF, created in 1984 through the Transportation Trust Fund statute (N.J.S.A. 27:1B-1, et seq.) and has been periodically reauthorized since its inception. [58]. The NJTTF is financed by the NJTTFA, an independent agency of the State of New Jersey. The fund supports the NJDOT, NJ TRANSIT, and local aid projects. Since its inception in FY 1985, the NJTTF has designated roughly 40 percent of its funds towards NJ TRANSIT. NJ TRANSIT's annual NJTTF allocation outlined in this financial plan may be considered the minimum amount of NJTTF funding NJ TRANSIT is likely to receive. Since 2000, NJ TRANSIT has received an average annual NJTTF allocation of approximately 43 percent of the total available NJTTF funds, and not lower than 34 percent in any one year.

In 2016, action was taken by the New Jersey Legislature to sustain and increase funding for the NJTTF. On October 7, 2016, the New Jersey State Legislature passed Assembly Bill 10 (A10) reauthorizing the NJTTF for an unprecedented 8-year period at $16 billion over the reauthorization lifecycle. This reauthorization was partially funded by a 23 cent per gallon increase on the state's petroleum products gross receipts tax and 4 cents per gallon on the diesel fuel tax. On November 8, 2016, a constitutional amendment dedicating all of the motor fuels tax revenues and petroleum products gross receipt tax revenues for the purposes of paying or financing the cost of planning, acquisition, engineering, construction, reconstruction, repair and rehabilitation of the transportation system in New Jersey was passed by New Jersey voters. The New Jersey Legislature annually appropriates such revenues to the Transportation Trust Fund. A copy of New Jersey Assembly Bill 10, legislation to revise the New Jersey Transportation Trust Fund Authority Act, as passed by the New Jersey House and Senate on October 7, 2016, and approved by the Governor of New Jersey on October 14, 2016 is provided as supporting documentation F-4.

The health and future of the NJTTF is strong, as demonstrated through the October 2016 increase in the petroleum products gross receipts tax (PPGRT) and the most recent incremental increase in October 2018. As authorized in paragraph three of subsection c of section 3 under P.L.2016, c. 57, the State Treasurer and Legislative Budget and Finance Officer are required to determine annually, by August 15th, if the State is collecting enough PPGRT revenue to support authorized NJTTF-funded projects. If it is determined that PPGRT collections are below the amount needed to support such NJTTF projects (i.e., the highway fuel cap), the State Treasurer, in consultation with the Legislative Budget and Finance Officer, is authorized to raise

[57] American Public Transportation Association (APTA) 2019 Fact Book, Figure 15: Transit Fleet Age Compared to FTA Minimum Useful Life Guidelines (https://www.apta.com/wp-content/uploads/APTA_Fact-Book-2019_FINAL.pdf).

[58] The following link provides brief description of the NJTTF, demonstrating that the NJTTF has always been reauthorized since its inception: www.state.nj.us/ttfa/about/legislation.shtm

the tax accordingly, effective at the start of October of that calendar year. This helps to protect those constitutionally dedicated PPGRT revenues against volatility in fuel consumption that may be caused by the use of more fuel efficient or electric vehicles and migration to mass transit. Vice versa, if PPGRT collections go above the highway fuel cap, the tax is adjusted downward.

Table 4-13 presents the constitutionally dedicated revenues for the NJTTFA for the FY 2015 to FY 2019 period. The total available revenues increased at a 5.7 percent compound annual growth rate from FY 2015 to FY 2019. The substantial revenues available for repayment of debt obligations of NJTTFA, which have experienced strong year-over-year growth, constitutes a reasonable and reliable funding source for repayment of the NJEDA bonds for the PNB Project.

More information on the history and solvency of the NJTTF can be found in the NJTTF History document, which is provided as supporting documentation F-7. Additional information regarding funding allocations from the NJTTF included within the PNB capital budget resource chart is provided as supporting documentation F-9.

Table 4-13 Constitutionally Dedicated Revenues for the NJTTFA: FY 2015 – FY 2019 ($M)

Revenue Source	2015	2016	2017	2018	2019 (estimated)
Motor Fuels Tax	$535.6	$554.5	$532.9	$512.5	$500.7
PPGR Tax	$215.1	$214.8	$862.4	$1374.1	$1,360.5
Sales and Use Tax (1)	$8,875.1	$9,203.3	$9,448.4	$619.2	$10,136.1
Totals	**$9,625.8**	**$9,972.6**	**$10,843.7**	**$11,505.8**	**$11,997.3**
(CAGR FY 15-FY19)					*5.7%*

(1) Note: The dedicated revenues available from the Sales and Use Tax are also utilized by the State's General Fund to make certain appropriations, including to pay debt service for certain New Jersey General Obligation bonds, Garden State Preservation Trust Bonds and other State appropriation-backed obligations. Amounts shown reflect estimated net collections of Sales and Use Tax.

Figure 4-1 illustrates the multiple mechanisms through which the NJTTF supports NJ TRANSIT commitments and activities. First, any debt service for NJ TRANSIT program debt is backed by both: (i) substantial, constitutionally dedicated sources – Motor Fuels Tax, Petroleum Products Gross Receipts Tax, and General Sales and Use Tax – which are appropriated annually; and (ii) sources dedicated by statute. After fulfilling debt service commitments, any remaining appropriations are added to available debt proceeds and cash balances to be deployed as pay-as-you-go funding for NJ TRANSIT/NJDOT capital project payments. This pay-as-you-go portion may be further supplemented by appropriations from the State's toll road authorization.

Key strengths of the NJTTF pertaining to its financial support of NJ TRANSIT includes:

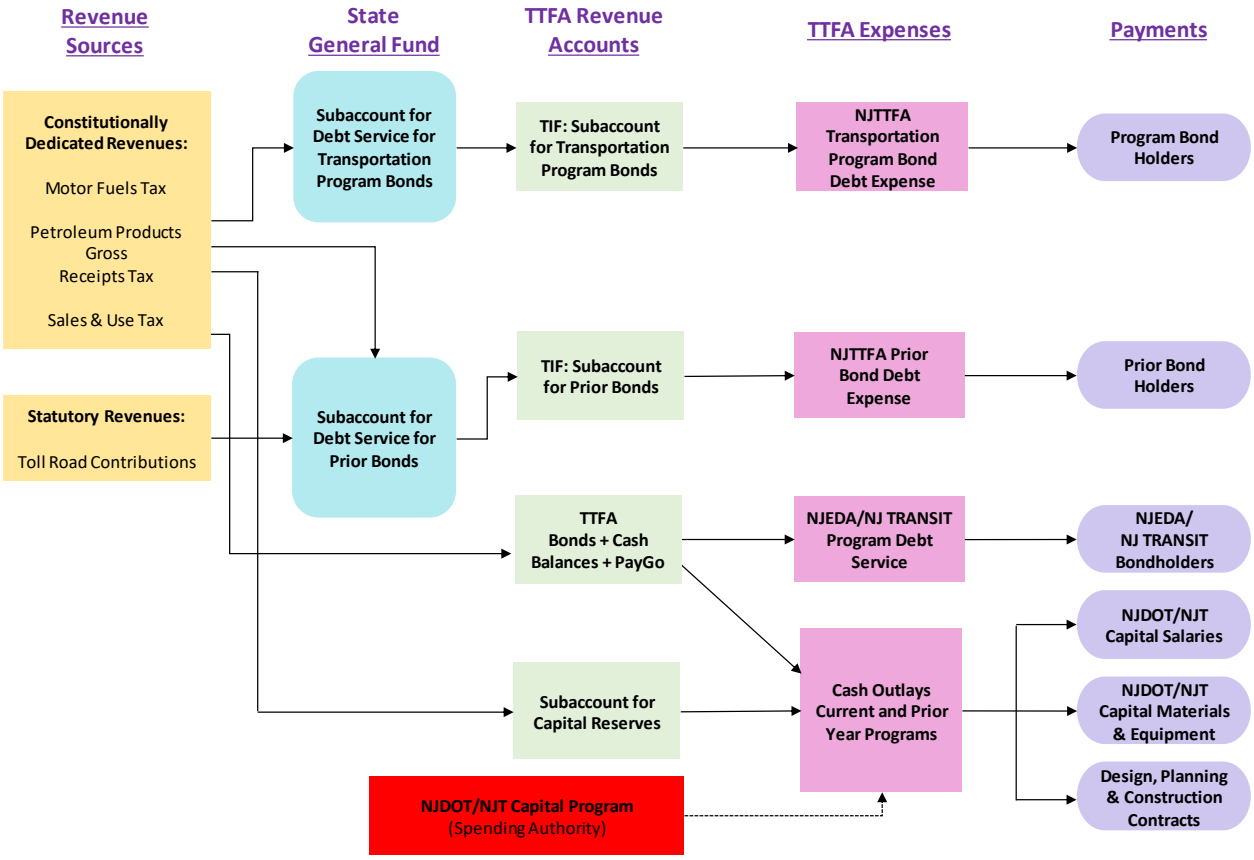
- **Expanded revenue sources.** The 2016 reauthorization of the NJTTFA's enabling legislation provided a new "pay-as-you-go" funding source in support of statewide transportation capital projects with the establishment of the Transportation Trust Fund Sub-Account for Capital Reserves, funded from excess constitutionally dedicated Petroleum Products Gross Receipts tax revenues not needed to satisfy current year debt service obligations. Beginning in FY 2017, annual revenues from the increased tax dedication significantly exceed the appropriations. It is anticipated that the Sub-Account for Capital Reserves will provide an estimated $1.3 billion in new "pay-as-you-go" funding from fiscal years 2017 through 2024.

- **Debt issued for NJ TRANSIT is secured by the NJTTF, not NJ TRANSIT revenues:** NJTTFA manages the NJTTF and does not maintain and operate transportation systems. The state legislature annually appropriates revenue dedicated by statute and the constitution for transportation to fund the NJTTF. Over 40 percent of 2010-2019 appropriations have been dedicated to NJ TRANSIT.
- **Strong public and legislative support for funding transportation projects.** Through amendments and other legislative action, revenues dedicated and appropriated to the NJTTF have increased continuously and significantly with each reauthorization since its creation in 1984 (from $249 million in 1985 to $2,050 million in 2019). A voter-approved amendment of the New Jersey State Constitution in November 2016 dedicated additional tax revenues to transportation, reflecting public support for the funding.
- **The NJTTFA debt rating is linked to the State rating.** The debt of the NJTTFA is funded by state appropriations. The debt is rated one notch below the State General Obligation rating shown in Table 4-14. The official statement from the last bond issue by the NJTTFA, 2019 Series AA in January 2019, is provided as supporting documentation F-13.

Table 4-14 NJTTFA Bond Ratings

CREDIT RATINGS	S&P	Moody's	Fitch	KBRA
State of New Jersey GO Bonds	A-	A3	A	A
NJTTFA Bonds	BBB+	Baa1	A-	A-

Figure 4-1 NJTTF Financing Process



4.4.3 NJ TRANSIT Liquidity

NJ TRANSIT's ratio has increased by 22% over the last seven years –a 3.3% compound annual growth rate between 2012 to 2018 – primarily driven by growth in current assets. Based on NJ TRANSIT's audited June 30, 2018 financial statements, the ratio is now at 93%. NJ TRANSIT's current ratio, based upon its annual financial statements includes amounts due within one year on long-term notes (principal portion of the Grant Anticipation Notes and the NJEDA Bonds) but does not include the FTA, NJTA or NJTTFA funds that will make those future payments. The principal payments on the federal and state obligations are due annually on September 15 and May 1, respectively.

In addition, the current ratio includes amount due under NJ TRANSIT's $300 million line of credit. Repayment of the $75 million outstanding at June 30, 2018 was made once reimbursements for eligible expenses were received.

An analysis was performed comparing NJ TRANSIT's current asset to current liability ratio with that of MBTA and SEPTA. The results of this analysis reveal that NJ TRANSIT's ratio is 4% higher than SEPTA's, but slightly lower (11%) than MBTA's. Both entities have approximately the same dollar value in assets and liabilities which provides a more accurate comparison, as summarized in Table 4-15.

Table 4-15 Current Assets to Current Liabilities Ratios Comparison (NJT, SEPTA, and MBTA)

Agency	Assets/ Liabilities/ Ratios	2012	2013	2014	2015	2016	2017	2018	CAGR (2012-2018)
NJ TRANSIT	Current Assets	$527,818	$743,998	$699,348	$743,186	$723,493	$547,878	$863,622	8.6%
	Current Liabilities	$691,359	$868,631	$841,993	$919,102	$896,768	$622,721	$929,386	5.1%
	Current Ratio	76%	86%	83%	81%	81%	88%	93%	3.3%
SEPTA	Current Assets	$465,038	$439,493	$449,093	$489,970	$518,110	$571,983	$600,886	4.4%
	Current Liabilities	$506,883	$504,206	$519,866	$499,345	$584,093	$548,530	$672,584	4.8%
	Current Ratio	92%	87%	86%	98%	89%	104%	89%	-0.4%
MBTA	Current Assets	$510,761	$516,770	$546,963	$597,039	$552,489	$573,534	$922,305	10.4%
	Current Liabilities	$796,017	$835,324	$830,934	$851,966	$863,840	$949,630	$882,596	1.7%
	Current Ratio	64%	62%	66%	70%	64%	60%	104%	8.5%

Note: MBTA stands for Massachusetts Bay Transportation Authority and SEPTA stands for Southeastern Pennsylvania Transportation Authority

Yearly fluctuations in the detailed accounts that make up the ratio can be seen in Table 4-16. This analysis details the components and their fiscal year-end balances. The timing of accruals in certain line items can have a dramatic effect on the ratio. In 2018, for example, NJ TRANSIT financials reported a significant increase in the Liability; Advance Funds to State line item, which increased from $4.8 million in 2017 to $102.6 million in 2018. This increase was due to an additional borrowing of $99.9 million of state preventative maintenance funds that had to be paid back to the NJTTF. Had the "Advance Funds to State" line item remained consistent with the two prior years, the NJ TRANSIT current ratio would be at 105% as of June 30, 2018.

Table 4-16 Detailed Breakdown of the NJ TRANSIT Current Assets to Current Liabilities Ratio (in thousands of dollars)

Assets/Liabilities/Ratios	2012	2013	2014	2015	2016	2017	2018
Current Assets:							
Cash and Cash Equivalents	$ 114,810	$ 38,775	$ 183,133	$ 72,817	$ 72,902	$ 106,594	$ 80,654
Restricted Cash and Cash Equivalents	-	19,402	39,623	-	-	-	-
Investments	30,477	32,394	36,804	40,553	44,087	48,875	54,139
Due from Federal Government	124,258	359,431	141,792	325,926	281,227	75,923	284,413
Due from State of New Jersey	93,743	125,068	120,352	123,959	132,934	130,884	250,718
Materials and Supplies	114,531	122,919	125,992	125,570	134,568	135,392	122,998
Other	49,999	46,009	51,652	54,361	45,016	44,865	46,585
Derivative Instrument Asset	-	-	-	-	12,759	5,345	24,115
Total Current Assets	527,818	743,998	699,348	743,186	723,493	547,878	863,622
Current Liabilities:							
Accounts Payable	140,130	241,685	188,161	171,897	191,850	174,445	327,524
Accrued Payroll and Benefits	112,566	121,202	162,144	189,334	197,564	154,752	126,657
Current Installments Under Capital Leases	87,206	80,556	65,301	61,365	42,538	17,057	53,671
Short-term Notes and Line-of-Credit payable	195,705	204,955	213,975	161,878	357,105	178,570	188,960
Other:							
Advance Funds- State/Port Authority	50,900	120,800	117,200	238,200	7,800	4,800	102,600
NEC Obligations -Amtrak	-	-	-	-	-	-	54,500
Injury and Damage Claims	34,300	35,500	38,000	39,600	42,400	44,500	43,100
Retainage on Construction Projects	15,000	8,000	6,800	9,000	8,800	8,600	8,000
Pollution Remediation Obligations	4,000	9,900	4,200	3,100	3,300	8,100	7,900
ARC Settlement Payable	19,000	19,000	19,000	19,000	-	-	-
ARC Insurance Refunds Payable	1,100	1,100	-	-	-	-	-
Other	31,452	25,933	27,212	25,728	45,411	31,897	16,474
Total Current Liabilities	$ 691,359	$ 868,631	$ 841,993	$ 919,102	$ 896,768	$ 622,721	$ 929,386
Current Assets to Current Liabilities Ratio	**76%**	**86%**	**83%**	**81%**	**81%**	**88%**	**93%**

NJ TRANSIT's ability to cover its current liabilities is dependent on timing of accruals and appropriations from NJTTFA, it should be noted that the NJTTFA has an extremely high current ratio, which has remained high over the past three fiscal years – between 91x and 250x. NJTTFA's current assets are restricted in use for payment of state transportation costs and bond issued outstanding (as shown Table 4-17).

Table 4-17 NJTTFA Current Ratio (in millions of dollars)

Assets/Liabilities/Ratio	2016	2017	2018
Current Assets	$16,922	$22,210	$20,608
Current Liabilities	$123	$89	$225
Current Ratio	137x	250x	91x

Appendix A – SUMMARY OF REGIONAL ECONOMIC FORECASTS

Overview

This section presents a summary of historic and projected economic conditions of the New York – Jersey City region according to the following four economic indicators: population, employment, personal income, and inflation. These indicators provide additional information for evaluating the cost and revenue growth rates assumed in the financial plan, and are consistent with the assumptions utilized in the forecasts of ridership, service levels, and revenue growth in this financial plan.

In general, the forecasts for the New York – Jersey City region represent slow and moderate growth during the planning horizon. Future growth rates are generally assumed to be lower than the rates experienced over the past ten years.

Population Growth Estimates

Table A-1 summarizes historic and forecasted population growth rates for the New York – Jersey City region from 2005 to 2040. For the purposes of the population and employment figures, the New York – Jersey City region includes the Counties of Bergen, Hudson, Passaic, Middlesex, and Monmouth in New Jersey State, as well New York, Bronx, Kings, Queens, Richmond, Orange, Rockland, and Westchester in New York State.

The region's population historic and forecast data were obtained from IHS Markit Economic Analytics, a company which provides economic forecasts to local and national governments.

As shown in Table A-1, population growth in the New York – Jersey City region is forecasted to grow approximately 0.18 percent from 2015 to 2040. This rate is highly conservative relative to the growth experienced from 2005 to 2015, which is equal to 0.4 percent.

Table A-1. 2005 to 2040 Population Growth for the New York – Jersey City Region

Year	Population - New York - Jersey City Region Total (000s)	5-Yr. Growth Rate
2005	13,579	
2010	13,912	2.45%
2015	14,423	3.67%
2020	14,742	2.22%
2025	14,928	1.26%
2030	15,042	0.77%
2035	15,087	0.29%
2040	15,085	-0.01%
2005 to 2015 CAGR	0.40%	
2015 to 2040 CAGR	0.18%	

Source: IHS Markit Economic Analytics, 2016

Employment Growth Estimates

Table A-2 presents the historic and forecasted employment growth for the New York – Newark region from 2005 to 2040. The employment forecast is from IHS Markit Economic Analytics.

Table A-2: 2005 to 2040 Employment for the New York – Jersey City Region

Year	Employment - New York - Jersey City Region Total (000s)	5-Yr. Growth Rate
2005	6,022	
2010	6,043	0.34%
2015	6,701	10.90%
2020	6,981	4.17%
2025	7,148	2.39%
2030	7,231	1.16%
2035	7,291	0.83%
2040	7,345	0.74%
2005 to 2015 CAGR	0.71%	
2015 to 2040 CAGR	0.37%	

Source: IHS Markit Economic Analytics, 2016

From 2015 to 2040, employment in the New York - Newark region is forecast to increase at a compound annual growth rate (CAGR) of 0.37 percent. This rate is more conservative than the growth experienced from 2005 to 2015, which is equal to 0.71 percent.

Personal Income

Table A-3 summarizes historic and forecasted personal income and per capita personal income for the New York- Newark region from 2005 to 2040. The region's historic and forecasted personal income data was obtained from IHS Markit Economic Analytics.

Table A-3: 2005 to 2040 Personal Income for the New York-Jersey City Region

Year	Personal Income - New York-Jersey City Region ($ M) Total	5-Yr. Growth Rate	Personal Income Per Capita - New York - Jersey City Region Total	5-Yr. Growth Rate
2005	616,931		45,433	
2010	744,260	20.64%	53,497	17.75%
2015	898,624	20.74%	62,307	16.47%
2020	1,118,844	24.51%	75,894	21.81%
2025	1,380,334	23.37%	92,469	21.84%
2030	1,679,032	21.64%	111,619	20.71%
2035	2,038,906	21.43%	135,145	21.08%
2040	2,474,729	21.38%	164,055	21.39%
2005 to 2015 CAGR	2.54%		2.13%	
2015 to 2040 CAGR	4.14%		3.95%	

Source: IHS Markit Economic Analytics, 2016

Personal income and per capita personal income is forecasted to grow at a higher rate than the historical 2005 to 2015 CAGR.

Inflation Rate Forecasts

The New York-New Jersey region's historic and forecasted consumer price index (CPI) from 2005 to 2040 is shown in Table A-4. The historic and forecast CPI data were obtained from IHS Markit Economic Analytics.

Table A-4: 2005 to 2040 CPI for the New York-Jersey City Region

Year	CPI – New York – Jersey City Region	
	CPI	5-Yr. Growth Rate
2005	213	-
2010	241	13.24%
2015	261	8.18%
2020	292	11.91%
2025	331	13.37%
2030	370	12.01%
2035	416	12.28%
2040	467	12.45%
2005 to 2015 CAGR	1.36%	
2015 to 2040 CAGR	2.37%	

Source: IHS Markit Economic Analytics, 2016

Within the New York – Jersey City Region, the CPI is forecast to increase at a CAGR of 2.37 percent from 2015-2040. This is consistent with the CPI growth rate assumed in the cash flow projections in this financial plan.

Additionally, the 30-year Treasury bond yield rate from 2005 to 2035 is shown in Table A-5 on the next page. This data was obtained from IHS Markit Economic Analytics. This rate was used for the GANs interest rate in developing the financial analysis for the PNB Project.

Table A-5 Yield on 30-year Treasury Bonds

Year	Yield on 30-year Treasury bonds
2005	4.56
2010	4.25
2015	2.84
2020	4.11
2025	4.11
2030	4.11
2035	4.11

Source: IHS Markit Economic Analytics, 2016

Appendix B – **PANYNJ FINANCIAL INFORMATION**

Appendix B-1: Revenues, Expenses, Capital Investment by Business (in thousands) (Pursuant to GAAP)

Appendix C-1	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Gross Operating Revenues:										
Tunnels, Bridges and Terminals	$ 1,009,313	$ 1,009,891	$ 1,078,977	$ 1,258,125	$ 1,369,559	$ 1,447,896	$ 1,599,575	$ 1,742,028	$ 1,739,552	$ 1,737,458
PATH	106,063	109,704	121,102	134,382	150,804	168,668	184,560	191,261	202,880	203,800
Port Commerce	205,861	223,095	236,461	249,609	262,526	248,443	270,263	300,569	295,851	310,637
Aviation	2,043,091	2,124,955	2,221,157	2,276,018	2,321,300	2,479,106	2,537,233	2,646,213	2,682,523	2,762,279
Development	98,603	89,457	100,800	87,521	29,492	51,077	26,561	25,956	24,967	25,632
World Trade Center	89,189	76,704	41,816	44,107	50,087	85,942	207,634	260,665	274,029	303,995
Other (a)	123	217	167	254	471	680	756	682	787	207
Total	$ 3,552,243	$ 3,634,023	$ 3,800,480	$ 4,050,016	$ 4,184,039	$ 4,481,812	$ 4,826,582	$ 5,167,374	$ 5,220,389	$ 5,344,008
Operating Expenses: (b)										
Tunnels, Bridges and Terminals	$ 436,796	$ 437,775	$ 460,960	$ 468,263	$ 493,429	$ 510,383	$ 499,873	$ 509,529	$ 525,862	$ 524,212
PATH	300,874	385,686	322,133	329,663	338,926	401,273	389,276	415,251	423,384	447,552
Port Commerce	127,240	163,424	185,053	190,043	176,459	172,545	175,976	167,724	160,495	166,405
Aviation	1,306,078	1,317,749	1,385,582	1,410,070	1,466,692	1,623,190	1,557,926	1,612,470	1,693,563	1,754,801
Development	85,246	77,200	82,637	79,620	15,497	15,737	13,659	10,853	12,399	11,786
World Trade Center	158,348	116,797	106,277	76,149	94,312	192,789	258,748	293,864	312,242	333,848
Other (c)	24,088	99,926	22,327	35,639	10,953	7,337	5,194	3,396	4,973	3,711
Total	$ 2,438,670	$ 2,598,557	$ 2,564,969	$ 2,589,447	$ 2,596,268	$ 2,923,254	$ 2,900,652	$ 3,013,087	$ 3,132,918	$ 3,242,315
Capital Investment: (d)										
Tunnels, Bridges and Terminals	175,392	149,803	168,759	233,637	413,946	961,854	956,231	1,179,307	885,311	931,539
PATH (including WTC Transportation Hub)	741002	752486	720797	743136	559104	512415	268428	454031	274429	340635
Port Commerce	174,459	302,858	228,747	184,750	180,760	210,496	93,729	133,874	106,455	146,153
Aviation	658,292	518,545	243,995	351,535	468,319	715,456	791,805	584,996	772,520	989,693
Development	23,237	29,297	(26,556)	140	527	1,977	2,110	1,569	893	3,682
World Trade Center	903,220	1,091,464	2,087,741	1,802,009	1,373,328	1,674,030	904,787	846,597	311,122	314,472
Other (a)	44,953	133,229	9,464	6,767	3,221	3,822	3,144	290	150,409	39,547
Total	$ 2,720,555	$ 2,977,682	$ 3,432,947	$ 3,321,974	$ 2,999,205	$ 4,080,050	$ 3,020,234	$ 3,200,664	$ 2,501,139	$ 2,765,721

(a) Includes FerryTransportation Facilities, Access to the Regions Core, and Regional Facilities and Programs.
(b) Amounts include all direct operating and allocated expenses.
(c) Includes FerryTransportation Facilities, Access to the Regions Core, Regional Facilities and Programs and administrative expenses related to PAICE.
(d) Capital investment includes contributed capital amounts and write-offs related to capital construction.

Appendix B-2: Revenues, Expenses, and Change in Net Position (in thousands) (Pursuant to GAAP)

Appendix C-2	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Revenues, Expenses and Changes in Net Position:										
Gross operating revenues:										
Tolls and fares	$ 1,068,105	$ 1,069,785	$ 1,148,061	$ 1,337,372	$ 1,462,957	$ 1,553,625	$ 1,718,770	$ 1,865,481	$ 1,873,622	$ 1,865,384
Rentals (a)	1,115,652	1,144,709	1,150,569	1,208,730	1,228,491	1,300,818	1,446,980	1,564,527	1,618,439	1,673,994
Aviation fees	839,327	872,774	895,356	904,666	934,459	1,058,416	1,063,902	1,112,436	1,128,352	1,192,454
Parking and other	316,005	321,257	339,131	338,178	315,111	321,760	359,631	399,178	377,421	384,088
Utilities	140,817	154,041	154,810	152,945	139,835	149,052	144,580	138,987	139,502	149,008
Rentals - Special Project Bonds Projects	72,337	71,457	112,553	108,125	103,186	98,141	92,719	86,755	83,053	79,080
Gross operating revenues	3,552,243	3,634,023	3,800,480	4,050,016	4,184,039	4,481,812	4,826,582	5,167,364	5,220,389	5,344,008
Operating expenses:										
Employee compensation, including benefits	974,154	1,022,195	1,037,681	1,038,243	1,114,397	1,187,877	1,178,967	1,290,334	1,342,943	1,338,277
Contract services	683,418	630,438	726,883	749,106	684,411	797,516	833,903	852,926	880,331	934,821
Rents and amounts in-lieu-of taxes (PILOT)	276,830	272,002	280,237	304,020	301,582	362,627	356,162	352,293	390,576	396,048
Materials, equipment and other	263,682	418,639	219,183	215,937	220,859	277,174	252,071	264,977	252,533	298,121
Utilities	168,249	183,826	188,432	174,016	171,833	199,919	186,830	165,802	183,482	195,968
Interest on Special Project Bonds	72,337	71,457	112,553	108,125	103,186	98,141	92,719	86,755	83,053	79,080
Operating expenses	2,438,670	2,598,557	2,564,969	2,589,447	2,596,268	2,923,254	2,900,652	3,013,087	3,132,918	3,242,315
Net revenue/(expense) related to the events of September 11, 2001	202,978.00	53,051.00	-	-	-	-	-	-	-	-
Net revenue/(expense) related to the events of Superstorm Sandy	-	-	-	(30,000)	28,229	53,530	123	-	18,323	-
Depreciation of facilities	(712,331)	(789,011)	(852,727)	(884,239)	(875,979)	(932,149)	(1,124,383)	(1,173,747)	(1,231,139)	(1,329,283)
Amortization of costs for regional programs	(74,617)	(76,504)	(77,537)	(77,719)	(64,275)	(64,484)	(64,665)	(64,765)	(44,164)	(41,874)
Income from operations	529,603	223,002	305,247	468,611	675,746	615,455	737,005	915,765	830,491	730,536
Income on investments (including fair value adjustment)	146,561	4,435	(46,898)	39,661	8,608	38,100	30,978	30,554	35,326	89,304
Interest expense on bonds and other asset financing	(501,892)	(501,607)	(559,110)	(658,313)	(623,353)	(666,244)	(909,603)	(935,442)	(908,343)	(937,983)
Net gain(loss) on disposition of assets	27,125	-	-	(4)	4,423	19,043	-	-	-	-
Pass-through grant program payments	(1,120)	(2,166)	(11,507)	(56,446)	(176,848)	(107,606)	(51,429)	(10,695)	(19,717)	(1,438)
4 WTC associated payments	-	-	8,343	65,293	36,660	6,128	36,766	41,521	65,293	65,293
Grants in connection with operating activities	10,613	11,708	23,727	52,161	188,409	207,898	101,074	64,315	39,845	24,006
Contributions in aid of construction	382,978	358,268	767,010	997,441	689,898	700,267	586,295	674,950	187,473	252,225
Passenger facility charges	201,737	210,387	214,456	222,614	224,301	233,172	248,707	264,363	275,785	286,395
1 WTC LLC/WTC Retail LLC insurance proceeds	50,813	42,814	-	3,525	-	-	-	-	-	-
Increase in net position December 31,	$ 846,418	$ 346,841	$ 701,268	$ 1,134,543	$ 1,027,844	$ 1,046,213	$ 779,793	$ 1,045,331	$ 506,153	$ 508,338
Net position is comprised of										
Net investment in capital assets	$ 8,415,993	$ 9,200,077	$ 10,020,306	$ 9,273,213	$ 9,442,138	$ 10,402,894	$ 11,810,573	$ 12,746,144	$ 13,179,105	$ 14,190,682
Restricted	211,725	222,871	294,460	392,389	454,467	470,857	456,429	567,443	760,912	500,610
Unrestricted	2,050,064	1,601,675	1,411,125	3,034,881	3,831,722	3,900,789	3,262,561	3,261,307	3,141,030	1,187,102
Net Position, December 31,	10,677,782	11,024,623	11,725,891	12,700,483	13,728,327	14,774,540	15,529,563	16,574,894	17,081,047	15,878,394

(a) Commencing in 2014, Rentals include the recognition of unearned income related to the transfer of the Port Authority's interests

Appendix B-3: Revenues and Reserves (in thousands)

Appendix C-3	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Gross operating revenues:										
Tolls and fares	1,068,105	1,069,785	1,148,061	1,208,730	1,228,491	1,294,199	1,439,229	1,555,958	$ 1,873,622	$ 1,865,384
Rentals	$ 1,115,652	$ 1,144,709	$ 1,150,569	$ 1,337,372	$ 1,462,957	$ 1,553,625	$ 1,718,770	$ 1,865,481	$ 1,609,179	$ 1,664,734
Aviation fees	839,327	872,774	895,356	904,666	934,459	1,058,416	1,063,902	1,112,436	1,128,352	1,192,454
Parking and other	316,005	321,257	339,131	338,178	315,111	321,760	359,631	399,178	377,421	384,088
Utilities	140,817	154,041	154,810	152,945	139,835	149,052	144,580	138,987	139,502	149,008
Rentals - Special Project Bonds Projects	72,337	71,457	112,553	108,125	103,186	98,141	92,719	86,755	83,053	79,080
Total gross operating revenues	3,552,243	3,634,023	3,800,480	4,050,016	4,184,039	4,475,194	4,818,831	5,158,795	5,211,129	5,334,748
Operating expenses:										
Employee compensation, including benefits	974,154	1,022,195	1,037,681	1,038,243	1,114,397	1,187,877	1,178,967	1,290,334	1,342,943	1,338,277
Contract services	683,418	630,438	726,883	749,106	684,411	797,516	833,903	852,926	880,331	934,821
Rents and amounts in-lieu-of taxes	276,830	418,639	280,237	304,020	301,582	362,627	356,162	352,293	390,576	396,048
Materials, equipment and other	263,682	272,002	219,183	215,937	220,859	277,173	252,071	264,977	252,533	298,121
Utilities	168,249	183,826	188,432	174,016	171,833	199,919	186,830	165,802	183,482	195,968
Interest on Special Project Bonds	72,337	71,457	112,553	108,125	103,186	98,141	92,719	86,755	83,053	79,080
Total operating expenses	2,438,670	2,598,557	2,564,969	2,589,447	2,596,268	2,923,254	2,900,652	3,013,087	3,132,918	3,242,315
Amounts in connection with operating asset obligations	55,058	46,561	29,580	27,956	25,908	23,734	50,000	-	-	-
Expenses related to the events of September 11, 2001	(202,978)	(53,051)	-	-	-	-	-	18,871	-	12,921
Net (revenue)/expense related to Superstorm Sandy	-	-	-	30,000	(28,229)	(53,530)	(123)	-	16,050	-
Amounts in connection with operating asset obligations	-	-	-	-	-	-	21,387	-	(18,323)	-
Net operating revenues	1,261,493	1,041,956	1,205,931	1,402,613	1,590,092	1,581,736	1,846,915	2,126,837	2,080,484	2,079,512
Financial Income:										
Interest Income	62,396	55,835	48,026	26,970	23,464	17,637	18,370	6,746	47,711	77,287
Net increase in fair value of investments	78,740	(56,735)	(101,296)	2,151	(26,428)	(2,950)	(14,290)	(11,530)	(14,137)	8,963
Contributions in aid of construction	382,978	358,268	487,296	570,261	529,185	465,152	272,335	293,770	173,253	198,173
Allocated Passenger Facility Charges	205,164	207,122	215,645	110,015	175,421	652,103	66,963	77,869	-	-
Application of 1WTC LLC/WTC Retail LLC Insurance Proceed	266,676	61,468	57,340	17,962	-	221,156	273,721	229,921	285,335	433,326
Application of 4 WTC associated payments	-	-	8,343	65,293	36,660	6,128	36,766	41,520	65,293	65,293
Restricted Net Operating Revenues - PAICE	3,177	(102)	644	2,710	4,305	-	-	-	-	-
Grants	10,613	11,708	23,727	52,161	188,409	207,898	101,074	64,315	39,845	24,006
Pass-through grant program payments	(1,120)	(2,166)	(11,507)	(56,446)	(176,848)	(107,606)	(51,429)	(10,695)	(19,717)	(1,438)
Net revenues available for debt service and reserves	2,270,117	1,877,354	1,934,149	2,193,690	2,344,260	3,041,255	2,550,425	2,818,753	2,658,067	2,885,122
Debt service:										
Interest on bonds and other asset financing obligations	436,322	444,202	518,325	627,200	595,513	646,804	876,817	906,187	928,264	971,566
Debt maturities and retirements	147,370	178,095	140,390	169,770	204,000	226,205	259,315	268,520	300,905	319,090
Debt retirement acceleration			6,100	54,635	-	-	-	-	-	8,300
Repayment of asset financing obligations	13,525	30,062	20,258	16,514	15,701	105,562	51,928	(6,669)	1,276	188
Total debt service	597,217	652,359	685,073	868,119	815,214	978,571	1,188,060	1,168,038	1,230,445	1,299,144
Debt service - operations:										
Interest on bonds and other asset financing obligations (b)	(427,384)	(436,622)	(480,623)	(539,436)	(556,824)	(635,262)	(810,356)	(824,586)	(858,694)	(868,510)
Times, interest earned (a/b)	5.31	3.84	4.02	4.07	4.21	4.79	3.15	3.42	3.10	3.32
Debt maturities and retirements (c)	(147,370)	(178,095)	(140,390)	(169,770)	(204,000)	(226,205)	(259,315)	(268,520)	(300,905)	(319,090)
Times, debt service earned [a/(b+c)]	3.95	2.73	3.11	3.09	3.08	3.53	2.38	2.58	2.29	2.43
Transfers to reserves	-	-	-	-	-	-	-	-	-	-
Revenues after debt service and transfers to reserves	1,672,900	1,024,995	1,249,076	1,325,571	1,529,046	2,062,684	1,362,365	1,650,715	1,427,622	1,585,978
Direct investment in facilities	(1,522,096)	(1,375,008)	(742,001)	(691,079)	(1,059,756)	(1,473,432)	(1,949,785)	(1,132,915)	(1,623,347)	(1,771,900)
Change in appropriations for self-insurance	6,463	(3,971)	1,949	37,547	10,414	28,100	-	-	-	-
Acceleration of unamortized brokerage commissions *	-	-	-	-	(46,863)	-	-	-	-	-
Increase (decrease) in reserves	157,267	(353,984)	509,024	672,039	432,841	617,352	(587,420)	517,800	(195,725)	(185,922)
Reserve balances, January 1	2,392,729	2,549,996	2,196,012	2,705,036	3,377,075	3,809,916	4,427,267	3,839,847	4,357,647	4,161,922
Reserve balances, December 31	2,549,996	2,196,012	2,705,036	3,377,075	3,809,916	4,427,267	3,839,847	4,357,647	4,161,922	3,976,000

Appendix C – LIST OF SUPPORTING DOCUMENTS

A) Supporting Financial Model Documentation

A-1. PNB Base Case and Sensitivity Supporting Spreadsheet - ***UPDATE***
A-2. Portal Bridge Infrastructure O&M Historic - ***UPDATE***
A-3. Portal Bridge Infrastructure O&M Forecast - ***UPDATE***
A-4. NJ TRANSIT System-wide 20-year Forecast – ***UPDATE***
A-5. HTP Base Case and Sensitivity Supporting Spreadsheet ***– UPDATE***
A-6. Hudson Tunnel Project Infrastructure O&M Forecast ***– UPDATE***

B) Local Financial Commitment

B-1. Gateway MOU
B-3. CMAQ for Railcar Procurement Documentation: NJTPA TIP 2016-2019 – Rail Rolling Stock Procurement – Relevant Page
B-5. Certificate of Incorporation of Gateway Program Development Corporation
B-6. Gateway Emerging Projects Agreement
B-7. State of New Jersey's Governor Commitment Letter for the Hudson Tunnel Project (2019) ***- NEW***
B-8. State of New York's Division of the Budget Commitment Letter for Hudson Tunnel Project (2019) ***- NEW***
B-9. Port Authority Board Resolution (02/15/2018) – 7) Gateway Program – Authorization of Funds for Gateway Program Early Work – Relocation of Infrastructure and Program Management Services for The Gateway Program Development Corporation AND 8) Port Authority Gateway Support Program, Early Work – Facility Certification
B-10. NJEDA Early Approval 6 12 18 Meeting
B-11. NJEDA Preliminary Resolution - June 2018 Adopted
B-12. NJT Board Item 1806-44 Portal Bridge
B-13. NJT Early Approval Letter 6 13 18 Meeting
B-14. NJT-NJEDA Funding Agreement (fully executed)
B-15. Port Authority Board Resolution (06/28/2018) - Confirmation of Capital Plan Allocation for the Hudson Tunnel Project
B-16. Request for Information – Industry Session & Project Overview - Hudson Tunnel Project & Hudson Yards Concrete Casing – Section 3
B-17. Funding and Coordination Agreement between Amtrak and NJ TRANSIT ***- NEW***
B-18. MOU between Amtrak and NJ TRANSIT ***- NEW***
B-19. State of New Jersey Act 5570 establishing the Gateway Development Commission ***- NEW***
B-20. State of New York Act 6372-A establishing the Gateway Development Commission ***– NEW***

C) Inflation Rate Forecasts

C-1. Interest and Inflation Rates 2005-2038
C-2. US Construction Indices 2005-2031
C-3. Historic Building Cost Index (BCI) and Construction Cost Index (CCI) for New York ***– NEW***

D) Regional Economic Conditions

D-1. Regional CPI 1970-2045
D-2. Long-Range US Economic Forecast 2005-2037
D-3. NYNJ Regional Forecast 2005-2045

E) NJ TRANSIT Documents

E-1. FY 2010 NJ TRANSIT Capital and Operating Budget
E-2. FY 2011 NJ TRANSIT Capital and Operating Budget
E-3. FY 2012 NJ TRANSIT Capital and Operating Budget

E-4. FY 2013 NJ TRANSIT Capital and Operating Budget
E-5. FY 2014 NJ TRANSIT Capital and Operating Budget
E-6. FY 2015 NJ TRANSIT Capital and Operating Budget
E-7. FY 2016 NJ TRANSIT Capital and Operating Budget
E-8. FY 2017 NJ TRANSIT Capital and Operating Budget
E-9. FY 2018 NJ TRANSIT Capital and Operating Budget
E-10. FY 2019 NJ TRANSIT Capital and Operating Budget - ***NEW***
E-11. FY 2020 NJ TRANSIT Capital and Operating Budget - ***NEW***
E-12. FY 2017 NJ TRANSIT/NJDOT Transportation Capital Program
E-13. FY 2018 NJ TRANSIT/NJDOT Transportation Capital Program
E-14. FY 2019 NJ TRANSIT/NJDOT Transportation Capital Program - ***NEW***
E-15. DRAFT FY2020 NJ TRANSIT/NJDOT Transportation Capital Program - ***NEW***
E-16. HTP New Starts Fare Policy and Level of Service
E-17. FY 2018-2027 Statewide Transportation Improvement Program – NJ Transit Relevant Page
E-18. NJEDA 2008 Series A Closing Documents
E-19. NJEDA 2017 Series Official Statement
E-20. DRAFT FY 2020-2029 Statewide Transportation Improvement Program - ***NEW***
E-21. Letter to FTA for comments on DRAFT FY2020-2029 STIP – ***NEW***

F) Financial Condition of Public Transportation Provider

F-1. NJ TRANSIT 2013 Annual Report
F-2. NJ TRANSIT 2014 Annual Report
F-3. NJ TRANSIT 2015 Annual Report
F-4. New Jersey Assembly Bill 10
F-5. New Jersey Assembly Bill 10 Legislative History
F-6. Official Statement for New Jersey Transportation Trust Fund Authority Transportation Program Bond 2015 Series AA
F-7. New Jersey Transportation Trust Fund Authority History - ***UPDATE***
F-8. New Jersey 2016 Public Question 2 Ballot Measure
F-9. New Jersey Transportation Trust Fund Funding Allocations - ***UPDATE***
F-10. NJ TRANSIT 2016 Annual Report
F-11. NJ TRANSIT 2017 Annual Report
F-12. NJ TRANSIT 2018 Annual Report – ***NEW***
F-13. Official Statement for New Jersey Transportation Trust Fund Authority Transportation Program Bond 2019 Series AA - ***NEW***
F-14. NJTTFA 2016 Audited Financial Statements - ***NEW***
F-15. NJTTFA 2017 Audited Financial Statements - ***NEW***
F-16. NJTTFA 2018 Audited Financial Statements - ***NEW***

G) Amtrak Documents

G-1. FY 2013 Amtrak Annual Report
G-2. FY 2014 Amtrak Annual Report
G-3. FY 2013 Amtrak Audited Consolidated Financial Statements
G-4. FY 2014 Amtrak Audited Consolidated Financial Statements
G-5. FY 2015 Amtrak Audited Consolidated Financial Statements
G-6. Amtrak Northeast Corridor Five-Year Capital Plan 2016-2020
G-7. Amtrak Commitment Documentation: FRA Grant Agreement (FR-AMT-0008-16-01-02), Statement of Work, Attachment 2a, Task 9 – Gateway Projects
G-8. FY 2015 Amtrak Annual Report

G-9. FY 2016 Amtrak Audited Consolidated Financial Statements
G-10. Amtrak Northeast Corridor Capital Investment Plan 2018-2022 UPDATE
G-11. Amtrak FY 2018 Full-Year Funding Grant Amendment
G-12. FY 2017 Amtrak Audited Consolidated Financial Statements
G-13. FY 2018 Amtrak Audited Consolidated Financial Statements – ***NEW***
G-14. Amtrak Passenger Revenues Letter of Commitment – ***NEW***

H) PANYNJ Documents

H-1. FY 2013 PANYNJ Annual Report
H-2. FY 2014 PANYNJ Annual Report
H-3. FY 2015 PANYNJ Annual Report
H-4. FY 2013 PANYNJ Audited Financial Statements
H-5. FY 2014 PANYNJ Audited Financial Statements
H-6. FY 2015 PANYNJ Audited Financial Statements
H-7. PANYNJ Proposed Capital Plan Summary 2014-2023
H-8. FY 2016 PANYNJ Annual Report
H-9. FY 2016 PANYNJ Audited Financial Statements
H-10. PANYNJ Capital Plan 2017-2026
H-11. FY 2017 PANYNJ Annual Report
H-12. FY 2017 PANYNJ Audited Financial Statements
H-13. FY 2018 PANYNJ Annual Report – ***NEW***
H-14. FY 2018 PANYNJ Audited Financial Statements – ***NEW***

I) Planning Documents

I-1. NJ State Rail Plan 2015 – Relevant Pages
I-2. Board action to approve the Locally Preferred Alternative for the Portal North Bridge

J) NJ TRANSIT Bus Fleet Management Plan

J-1. NJ TRANSIT Bus Fleet Plan 2014-2020
J-2. NJ TRANSIT Bus Fleet Plan 2018 - ***NEW***

K) NJ TRANSIT Rail Fleet Management Plan

K-1. NJ TRANSIT Rail Fleet Plan 2014-2020
K-2. NJ TRANSIT Commuter Rail Fleet Plan 2018 - ***NEW***