

A photograph of an NJ TRANSIT train traveling on tracks. The train is silver and blue, with the number 4518 visible on the front. The tracks are surrounded by trees with yellow and orange autumn foliage. A blue rectangular overlay covers the top half of the image, containing the title and subtitle. A large white 'N' logo is in the bottom right corner.

# NJ TRANSIT

## A 5-Year Capital Plan

June 2020 | An Unconstrained Vision for NJ TRANSIT





# EXECUTIVE SUMMARY

NJ TRANSIT is the largest state-wide transit system in the country, providing mobility to the residents of the nation's most densely populated state. In addition to delivering affordable, efficient access to jobs, schools, health care, stores, entertainment and other destinations for our customers (see Figure I-1), NJ TRANSIT creates health and environmental benefits for the entire State by reducing vehicle miles traveled by automobiles and associated air pollution. The future of NJ TRANSIT has been laid out in our 10-Year Strategic Plan, NJT2030.

The NJT2030 vision is dependent on infrastructure and equipment maintained to a state of good repair. If the transit system is not maintained in a state of good repair, the quality and reliability of service will suffer and directly impact our customers. With proper planning and investment, NJ TRANSIT's infrastructure and equipment can support improvements in operational business performance, enhance the customer experience, improve safety in operations, and make the system more resilient to extreme weather. Capital investment allows for a continuous state of good repair, and targeted expansion of the system and is essential for a safe and cost-effective transit system that performs to the level that our customers expect. Over a decade of disinvestment in these assets threatens current and future system reliability. Current capital funding levels leave NJ TRANSIT struggling to keep up with the growth of New Jersey, instead of leading the way as the engine of economic growth. Significant investment is required to restore the value of the capital assets, bring them back to a state of good repair, and advance initiatives that support the safety, customer experience, resilience, and sustainability goals of NJT2030.

## NJT2030 STRATEGIC GOALS



**Goal 1:** Ensure the reliability and continued safety of our transit system



**Goal 2:** Deliver a high-quality experience for all our customers, with their entire journey in mind



**Goal 3:** Power a stronger and fairer New Jersey for all communities in the region



**Goal 4:** Promote a more sustainable future for our planet

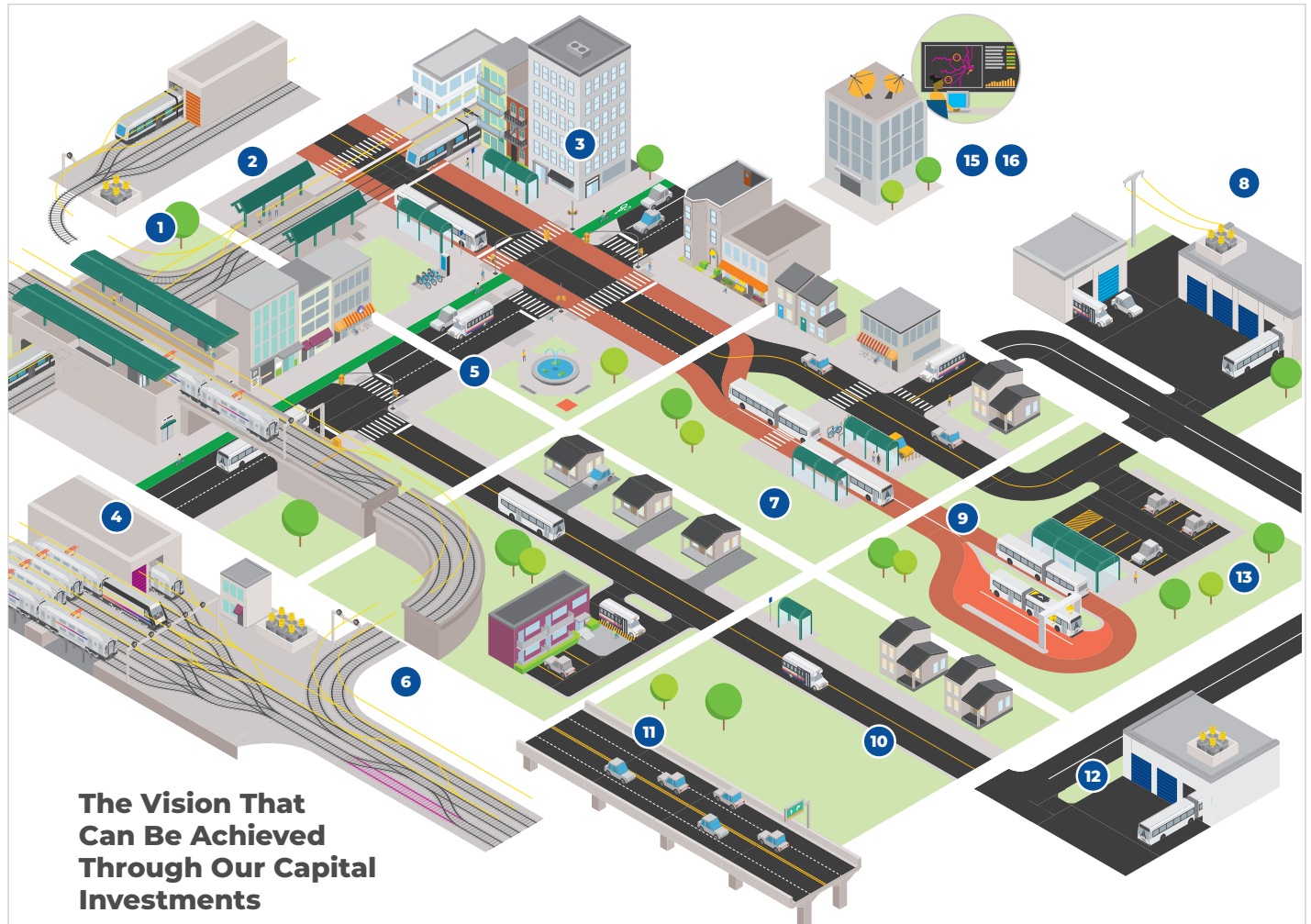


**Goal 5:** Build an accountable, innovative and inclusive organization that delivers for New Jersey

# FIGURE I-1: REGIONAL ECONOMIC CLUSTERS AND SERVICE AREAS

Source: American Community Survey  
2017 5-year averages





## The Vision That Can Be Achieved Through Our Capital Investments

- 1 Improve the transportation network's accessibility & usability for all.
- 2 A reliable light rail system improves local connectivity.
- 3 Less congested roadways in city centers facilitate pedestrian-focused communities that are healthier (less noise & air pollution), safer, and improve community development and economic competitiveness.
- 4 Expanded yard facilities allow for a larger, more modern fleet with higher carrying capacity to improve system reliability.
- 5 Integrated public transportation network reduces the need for additional parking and allows for mixed-use, pedestrian-friendly development.
- 6 The improved rail system is more flexible in responding to delays and system issues to provide a more reliable service.
- 7 Communities from the city to the suburbs to the rural regions are better connected and see improved travel times regardless if you drive, ride, bike, or walk.
- 8 Expanded bus garage facilities improves reliability, comfort, cleanliness, and reduce crowding of operations allowing for a more reliable and comfortable ride.
- 9 Explore opportunities for Bus priority and Bus Rapid Transit (BRT) to reduce congestion on local roads and improve on-time performance.
- 10 Suburban communities are strengthened by stronger transportation networks and are competitive in attracting new residents to drive the local economy.
- 11 Improved rail network alleviates congestion on critical highways reducing strain on these arteries.
- 12 Modernization of our bus fleet, including the transition to larger articulated buses, improves carrying capacity and system reliability.
- 13 Suburban and exurban communities are provided additional links to major centers of economic activity, improving community development.
- 14 Innovative IT investments include improved mobile Apps that provide you with access to timely information on a your mobile phone and allow you to purchase tickets, plan your trip, and interact with other transportation options without touching anything but your own device.
- 15 Upgrade asset management and business systems so that the agency can more efficiently address state of good repair concerns, reduce maintenance delays, expeditiously upgrade software systems, and increase resiliency by enabling staff to work remotely.
- 16 New IT systems that dispatch and monitor buses would allow for the deployment of emerging technologies that improve public health, such as zero-emission buses and contactless fare payment.





## CAPITAL INVESTMENTS THAT ADVANCE NEW JERSEY

The Capital Plan is a comprehensive capital investment strategy that describes what NJ TRANSIT can achieve with sustained and dependable funding over an extended period. NJ TRANSIT embarked on the capital planning effort to identify, develop, and vet potential future capital projects targeted to achieve the vision and goals identified in NJT2030. By providing an unconstrained view of funding needs, the Capital Plan provides a path forward to a vastly improved customer experience and a future of healthy, inclusive, and sustainable communities throughout New Jersey.

As the State of New Jersey advances Governor Murphy's "Road Back" plan for recovery from the COVID-19 pandemic, investment in NJ TRANSIT's infrastructure will help power New Jersey's resurgence: creating new jobs and direct investment at a time when New Jersey needs it most.





## IDENTIFYING, PRIORITIZING AND IMPLEMENTING A RANGE OF TRANSIT IMPROVEMENTS

NJ TRANSIT began the capital planning process by developing performance indicators that drive the evaluation and implementation of a package of infrastructure projects and programs supporting the NJT2030 strategic goals. The performance indicators translate the Strategic Plan's goals into metrics applicable to capital projects. The five performance indicators are:

### **State of Good Repair**

Repair or rehabilitate facilities so that they can operate at a safe and efficient level of performance or modernize facilities to meet current industry standards.

### **Customer Experience**

Provide customers with a positive transit experience by being responsive to their ever-changing needs and expectations.

### **Safety**

Provide a safe environment for customers and employees by incorporating industry best practices for safety and security at transit facilities and on-board transit vehicles.

### **Resiliency**

Ensure NJ TRANSIT is a dependable and resilient transportation network by investing in adaptable solutions for the evolving profile of natural and man-made risks and protecting existing infrastructure.

### **Business Performance**

Ensure NJ TRANSIT's ability to provide service into the future by investing in opportunities to improve financial sustainability. These include real estate and value capture opportunities, reducing operating costs and increasing ridership revenue.



NJ TRANSIT marshalled its professional staff from all departments and transit modes to produce a needs assessment and a comprehensive list of projects and programs selected with the overall objective of enabling the transit system to meet the NJT2030 goals and deliver on these performance indicators. Each project and program was evaluated, and the results were summarized on project sheets that provide information for each project and program.

This Capital Plan is based not only on the specific merits of individual projects and programs, but on the: overall needs of the system, both existing and expanded; the value for the dollar invested in each project; how quickly projects can be delivered; and how the projects work together to produce the best value for the transit system, our customers, and the state as a whole.

With the understanding that it is not possible to construct all projects at once, NJ TRANSIT arrayed the projects and programs by expected expenditure per year. Projects that addressed the highest state-of-good-repair needs were given highest priority. More straightforward projects and those already in development, which could be enacted quickly and had demonstrated value in improving the performance and reliability of the transit system were identified and advanced in the plan.

This Capital Plan also describes a longer list of initiatives that NJ TRANSIT can deliver over the next 20 years if an appropriate level of capital funding can be sustained. Large-scale projects typically require more than five years to complete. The intent is to make this five-year plan the first of a series of regularly updated rolling five-year plans that build on the initial momentum and adapt over time to meet the evolving needs of New Jersey and to respond to changes in technology.

Long-term investment could enable NJ TRANSIT to stay ahead of the curve and meet future demand, as businesses and communities grow. This investment could allow NJ TRANSIT to deploy new technology to improve customer service, to operate more efficiently and to contribute to a more sustainable environment. The projects identified through this process are also critical to making the transit system resilient in the face of emerging threats, such as sea-level rise and climate change.

### **Bus**

The Capital Plan calls for investments that would enable the bus network to meet the modern-day expectations of our customers. Bus riders would benefit from more reliable and cleaner rides due to new and modernized garages that can enable us to store and maintain enough buses to meet growing passenger demand. New buses, including zero-emission and articulated buses with more seats, would be cleaner, more energy efficient and accommodate more passengers. NJ TRANSIT will study new bus rapid transit systems that provide express service, using technology to minimize delays from congestion. New information technology could allow for more effective deployment of buses in response to real-time information on traffic congestion.

A signature project would be a major new bus garage and maintenance facility, which is critical to providing more reliable service, introducing zero-emission buses, and expanding capacity.

### **Rail**

Rail improvements range from new multi-level rail cars accommodating more passengers per train, to rehabilitated stations providing universal access, and new and improved bridges, rail yards and interlockings, which are the invisible behind-the-scenes infrastructure critical to delivering on-time performance. Taken together, these improvements would remove bottlenecks and produce a more flexible rail network that is not vulnerable to disruptions in service.





A signature initiative of this Capital Plan is a comprehensive overhaul of Hoboken Terminal, including the supporting rail yard facilities and the lines servicing the station, to make the facility resilient in the face of storm surges and to enable the station to reach its full potential in relieving the crowding for commuters crossing the Hudson River to work.

#### *Light Rail*

Light-rail systems would benefit from new vehicles, an overhaul of older vehicles, station improvements, and system expansion to provide service to areas with the potential for residential growth and job creation. There is emphasis on maintaining a clean reliable fleet.

#### *Access Link*

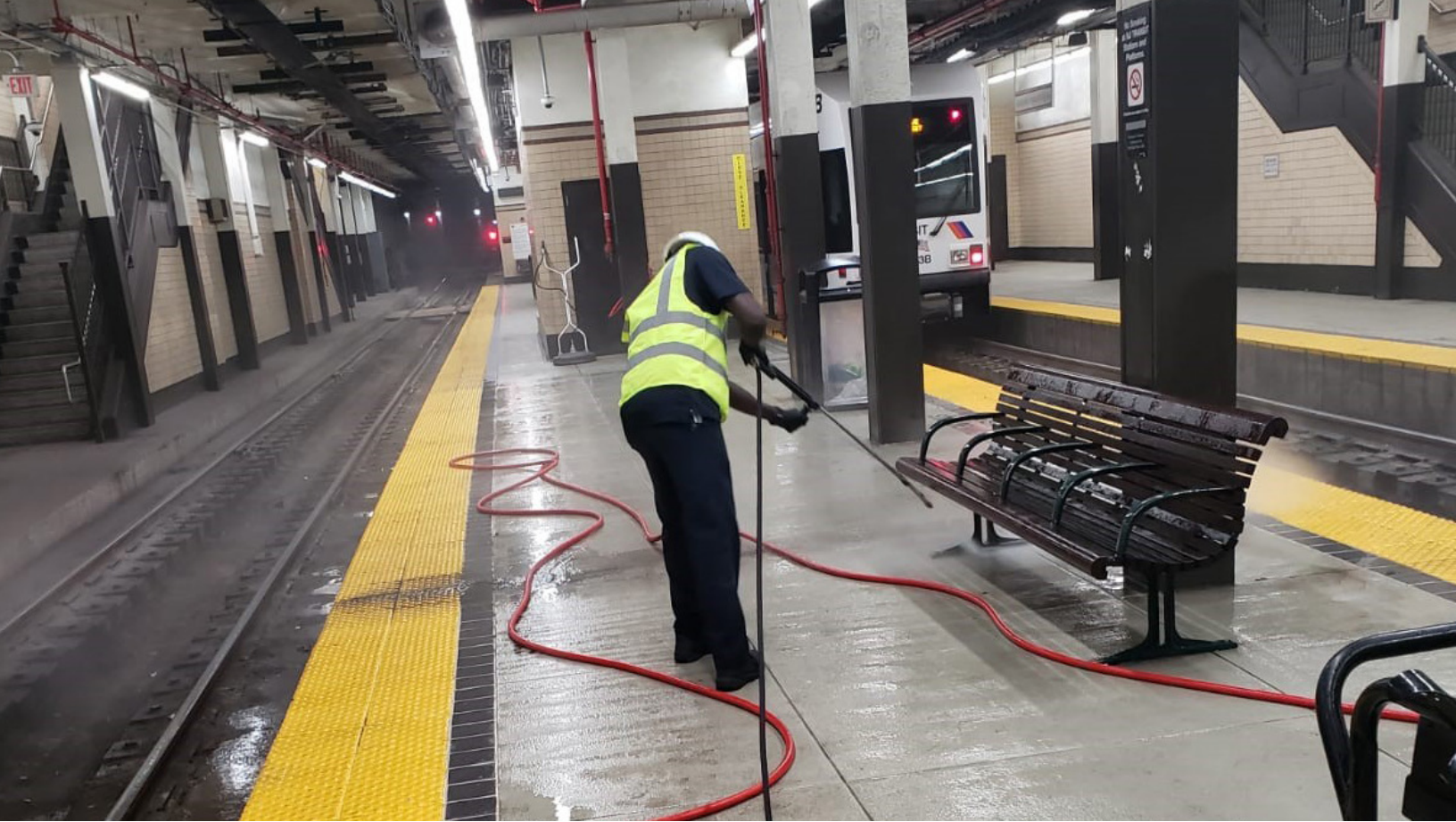
Access Link is our paratransit service for those with disabilities preventing them from accessing buses, trains and light-rail vehicles. In an effort to provide universal access to all State residents, the Capital Plan highlights opportunities to increase the size of the program to serve more customers by buying new vehicles, introducing new technology to better connect customers

with rides, and acquiring new, larger facilities to house workers who dispatch the vehicles and to store and maintain the fleet.

#### *Information Technology and Sustainability*

Technology is the key to delivering more efficient and convenient transit service and moving the State forward. New technologies and innovations include zero-emission buses and the equipment to support them, software innovations that allow for the most efficient deployment of resources (such as bus dispatching, traffic signal timing controls, automation, remote diagnostics of mechanical issues, more frequent train service) and applications to directly address customer needs and provide more and better real-time information. These investments would focus on enhancing our systems' flexibility and adaptability





### *Partnerships*

NJ TRANSIT is committed to working with all its stakeholders, customers, elected officials, and advocates, to coordinate transit improvements. These team efforts produce more attractive and sustainable transit-oriented developments that reduce costs, congestion and pollution, and use innovative methods of financing. NJ TRANSIT plans to pursue more public-private partnership and joint development opportunities, building on the success of transit-oriented development in Orange, Metuchen, Pleasantville and Rahway. The synergies resulting from these cooperative initiatives can generate sources of funding to sustain needed investment.

### *Pandemic Response*

NJ TRANSIT is actively engaged in adapting its capital program to address the challenges posed by public health emergencies, such as the COVID-19 pandemic. These measures range from an evaluation of contactless fare payment to revisiting the way we design station interiors and vehicles to allow for passenger spacing and to facilitate more thorough cleaning of vehicles and other spaces.



## THE CAPITAL PLAN BUILDS ON PROGRESS ALREADY IN MOTION

Since 2018, NJ TRANSIT has invested more in construction than it had in the preceding decade, creating thousands of construction jobs that reinvigorate communities, and building back up a system after over a decade of neglect.

Today, NJ TRANSIT is advancing over \$2 billion in projects to prepare the agency to better withstand and recover from extreme weather events and to bring long neglected assets up to a state of good repair. Across the State, NJ TRANSIT is constructing new rail power substations, replacing power and signal cable, and rebuilding critical rail infrastructure. Superstorm Sandy resiliency work has quickly advanced and is drawing to a conclusion, including signal and power upgrades along the North Jersey Coast Line and at Hoboken Terminal. Construction work for the first contracts of both Long Slip Fill and Raritan River Bridge have been awarded. NJ TRANSIT has partnered with Public Service Electric & Gas to advance construction of a \$232 million substation.

Development has already begun on the Innovation Challenge, which will leverage innovative technology and partnering approaches to deliver direct transit access from Secaucus Transfer to the Meadowlands sports, entertainment, and shopping complex.

Construction of the new ~\$1.8 billion Portal North Bridge project is within reach, as NJ TRANSIT recently secured a medium-high rating from the Federal Transit Administration, moving the project closer to its next stage and a full funding grant agreement.

NJ TRANSIT is advancing Positive Train Control across its rail network. NJ TRANSIT reached a critical milestone in 2018, completing in a single year 88% of system-wide installations on vehicles and track. NJ TRANSIT entered the revenue service demonstration testing process this year and continues to move the project toward completion.





NJ TRANSIT is investing in equipment that will improve the customer experience. Some improvements are already visible. For example, NJ TRANSIT purchased 182 new cruiser buses last year, providing safer, quicker, and more comfortable rides to thousands of suburban commuters, and recently increased its fleet for the first time in more than a decade when it received delivery of new articulated buses, for use in primarily urban areas with dense populations and higher ridership. NJ TRANSIT is designing 113 next-generation multi-level rail cars. All of these fleet purchases will provide reliable, comfortable service with more customer amenities

Asset condition assessment and management are informing investment decisions. NJ TRANSIT is transitioning to a business model that uses transit asset condition to guide the optimal prioritization of funding, including:

- » Completing condition assessments of all statewide, customer-facing stations and facilities;

- » Preparing complete inventories and assessments of culverts, drainage structures, bridges, and other infrastructure;
- » Creating and staffing an Enterprise Asset Management office to lead NJ TRANSIT's transition to a centralized, condition-focused system;
- » Revising construction procurement terms to require that components are inventoried with useful life and other data when new projects are completed; and
- » Launching a "State of Good Repair Program" to identify, track, and quickly respond to deteriorating conditions of our assets wherever they occur.

This Capital Plan is another step in NJ TRANSIT's transition away from addressing infrastructure needs on a reactive, ad hoc basis to a more comprehensive project identification and prioritization approach.





## HIGHLIGHTS FROM THE CAPITAL PLAN - INVESTING IN OUR BUS NETWORK

Buses are the most flexible and often the most cost-effective way to expand transit services. In New Jersey, they provide service over the largest geographic area because they are not limited by the extent of fixed tracks. Modifying or expanding bus service is often the most rapid way to support the economic growth of newly developed residential communities or commercial centers. This also assists in supporting demographic and economic growth in existing localities, building out new transportation corridors, and supporting state responses to natural disasters.

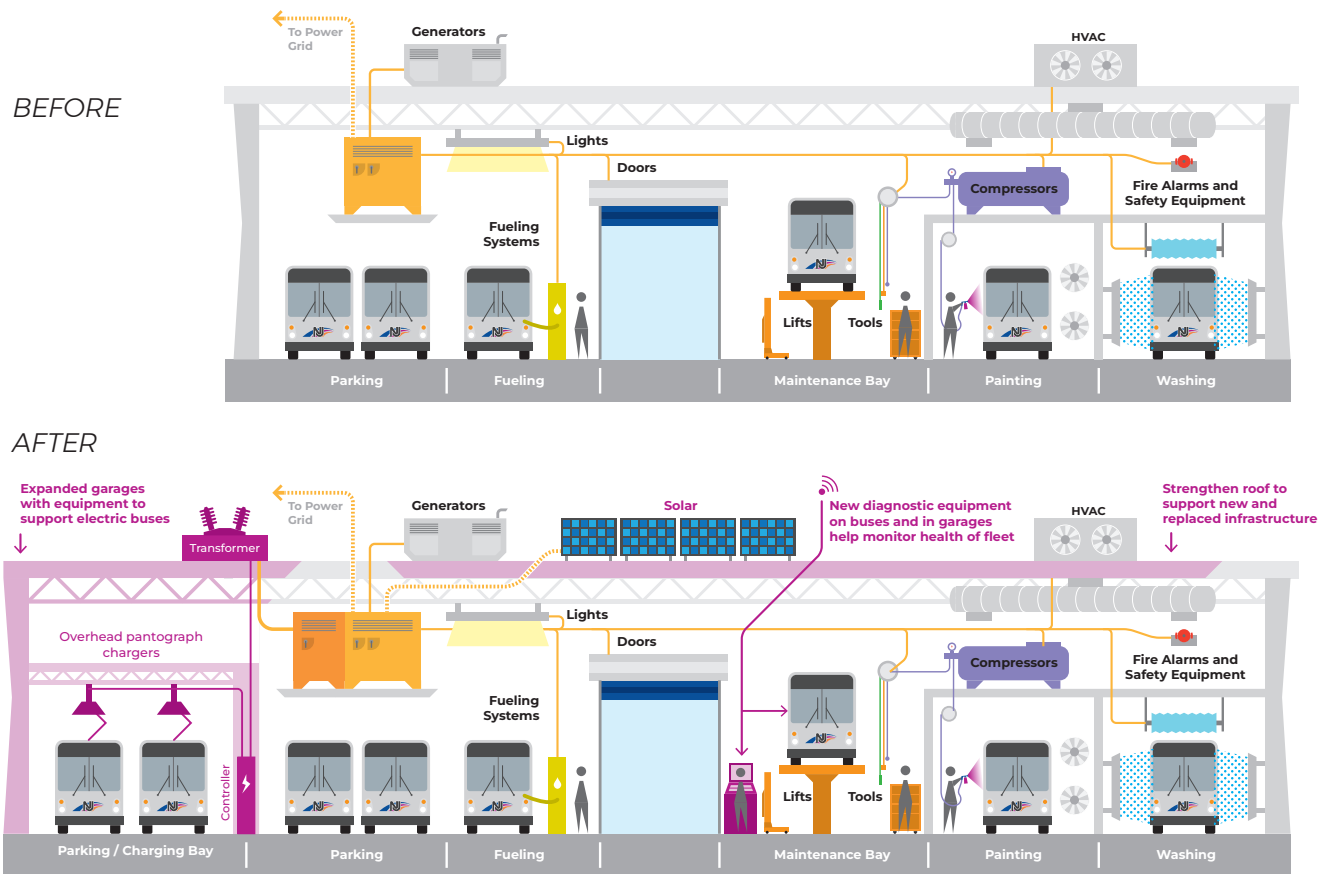
We are also looking to modernize our systems and facilities so that we can operate a modern fleet and public facilities that meet our customers' modern-day expectations. Most modernization involves investing in new technologies and infrastructure to prepare for electrification so that our fleet can become even more sustainable and lead in the fight against climate change.

As a part of this modernization effort, we would invest in the purchase of new buses that are easier to maintain and clean, a necessity that has been highlighted during the COVID-19 health crisis.

Improving and expanding bus service to meet demand and prepare for a zero-emission electrified fleet would involve more than simply buying more buses. Investments in bus service would focus on rehabilitating, expanding, and replacing critical system components to enable more reliable and efficient delivery of service to our customers. This would make for a safer, cleaner, faster, and more comfortable trip experience. To achieve this, investment would be required at all levels of the bus ecosystem.



FIGURE I-2: MODERNIZING THE BUS GARAGE ECOSYSTEM



## MODERNIZING, ELECTRIFYING, AND EXPANDING OUR BUS GARAGES

NJ TRANSIT operates 16 bus garages, which house and maintain the 2,300+ bus fleet. Bus garages are the single most important component of the system to maintaining a healthy bus fleet. Garages are where buses are fueled (or, in the future, would be charged), and also where they are washed, cleaned, and repaired. They also serve as hubs for bus operations where functions such as dispatching, personnel management, and training occur (Figure i-2). Garages are never taken out of service for intensive building upgrades because of the critical role they play every day, and no new garage has been built since 2000, even as bus ridership has increased by approximately 20 percent.

Electrifying the next generation garage and fleet would improve air quality and health in neighboring communities by reducing bus emissions. A modernized garage would be a signal to industry and a model for how transit support facilities can fit in better with surrounding communities.

This would support the following goals:



**Goal 1:** Ensure the reliability and continued safety of our transit system



**Goal 2:** Deliver a high-quality experience for all our customers, with their entire journey in mind



**Goal 4:** Promote a more sustainable future for our planet



## HIGHLIGHTS FROM THE CAPITAL PLAN - RAIL INFRASTRUCTURE CAPACITY ENHANCEMENTS AND REPLACEMENTS

Our rail system relies on many different infrastructure pieces to run effectively and smoothly. However, there are several key locations where specific pieces of infrastructure present operational challenges. These location-specific issues—which are present throughout the whole system—can lead to regular delays and inefficient service. Obsolete and now undersized river crossings negatively affect service throughout the rail system. Multiple bridges throughout the agency’s system have long exceeded their useful lives. Problems on these bridges can, at times, lead to speed limit restrictions and subsequent delays. Drawbridges that remain stuck in the “up” position can also lead to service stoppages on lines throughout the system.

Significant investments need to be made to ensure these problems are fixed so the rail system could effectively serve customers. Without these investments, infrastructure issues throughout the system would only get worse. Delays would increase, and the system would not be able to accommodate needed service expansions to match our ridership increases. This means the system would never realize its full potential and would never be able to serve customers as reliably as it should.

This Capital Plan has identified key areas where infrastructure upgrades would mitigate some of these pain points. Interlockings, retaining walls, bridges, signals, and other significant pieces of rail infrastructure would be upgraded and enhanced throughout the system. These capacity enhancements and replacements would help us provide more reliable service to customers—a critical piece of this Capital Plan’s work.

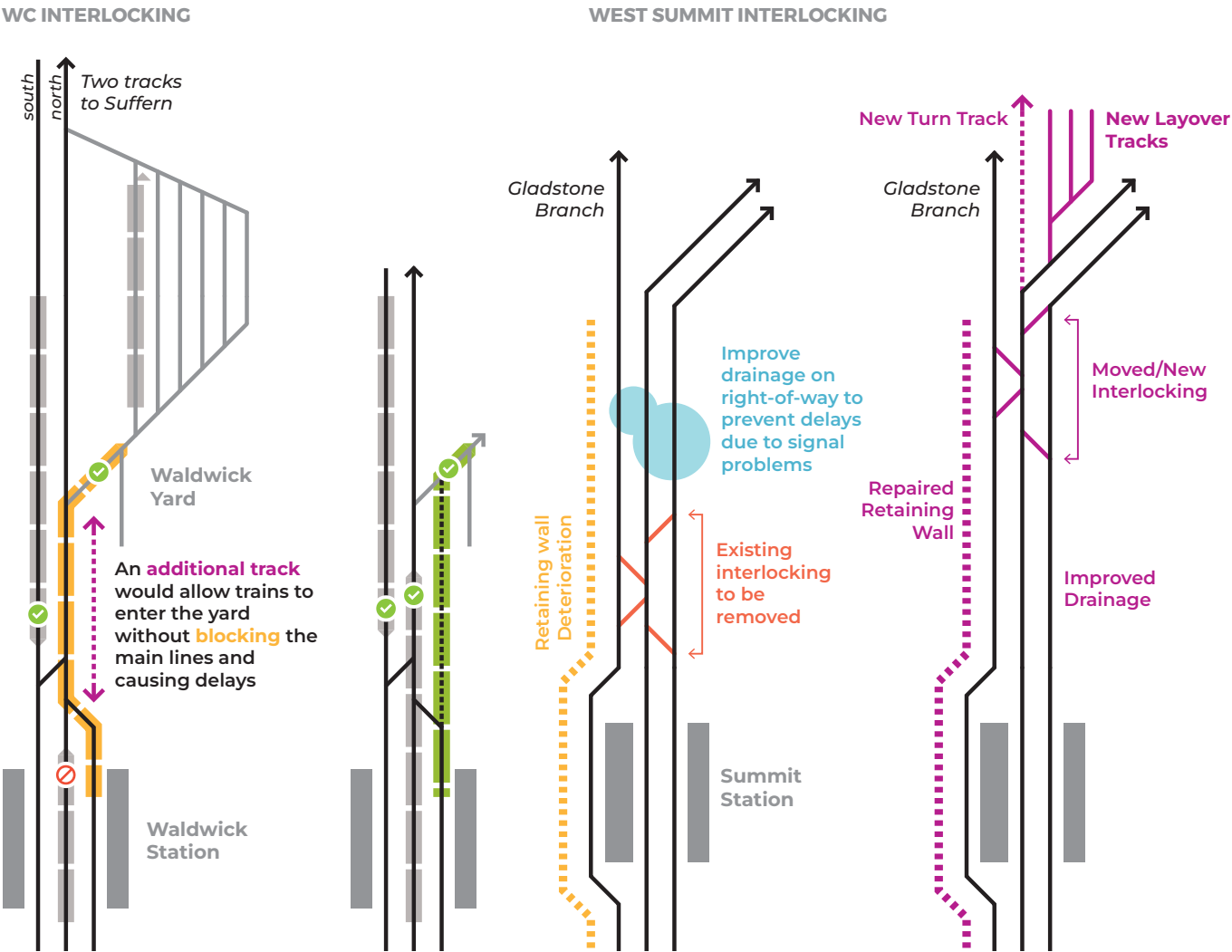
A key piece of this work would involve prioritizing any upgrades to poorly configured interlockings that cause delays. Improvements to these problem interlockings would allow trains to better move unimpeded through the system, which would allow greater service flexibility and service enhancements throughout the system. A drainage improvement program would mitigate flooding issues at key locations and, thereby, improve service through these locations, as drainage issues often lead to false signal indications (and therefore lead to delays). Finally, flyover tracks would be installed at key locations to reduce current train conflicts and ease scheduling pressures. Trains that are forced to merge onto existing high-speed rail lines from yards or from other rail lines must often wait for trains traveling at high speeds to pass, which means they cannot travel freely and are often delayed. These flyovers would mitigate that problem.

Bridge improvements are also a significant part of our infrastructure improvement plan. New bridges would incorporate additional tracks where choke points currently inhibit ideal service. This would allow trains to move more efficiently through bridges where delays commonly occur. Rebuilt interlockings would reduce congestion and delays at locations where tracks cross or intersect.

Our train schedule currently is built around avoiding these existing infrastructure problems which severely limit the capacity of the system. This creates inefficiencies and prevents the system from meeting its full potential. This Capital Plan’s recommended solutions would allow the rail system to grow in a logical way, would increase capacity, and would allow our rail system to provide more reliable and robust service.



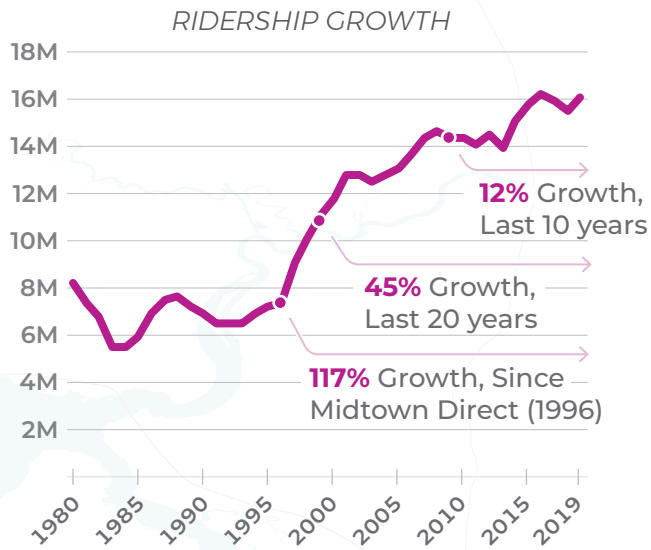
FIGURE I-3: INTERLOCKING IMPROVEMENTS CONCEPT DIAGRAMS



This would support the following goals:

-  **Goal 1:** Ensure the reliability and continued safety of our transit system
-  **Goal 2:** Deliver a high-quality experience for all our customers, with their entire journey in mind
-  **Goal 3:** Power a stronger and fairer New Jersey for all communities in the region

**FIGURE I-5: MORRIS & ESSEX LINE IMPROVEMENTS - HOLISTIC INVESTMENTS ACROSS OUR FASTEST GROWING AND MOST CONGESTED LINE**



**Newark Drawbridge**  
A new bridge would eliminate a bottleneck where the line is reduced from 3 to 2 tracks

**Summit Interlocking**

**Millburn Interlocking**

**Maplewood**

**Orange**  
**Brick Church**

**Roseville Cut**  
A new fence and lighting here will improve safety and improved drainage will reduce delays due to signal problems.

**Hoboken Terminal**

**Problems that need to be addressed along a single line compound to create bigger delays and become expensive to continually repair.**





### Gladstone Yard



### Yards

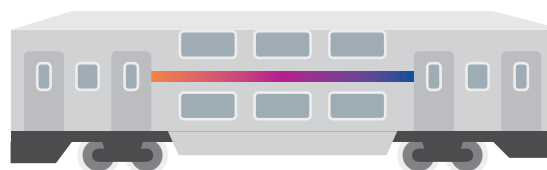


Yards updated with pedestal pit tracks for multilevel car maintenance.

### Port Morris Yard



### Dover Yard and Interlocking



### Multilevel Fleet (Systemwide)

Replacing the older passenger fleet with new Multilevel cars results in added comfort and reliability

### Drainage



Improved drainage along track prevents signal problems that result in delays.

### Station Accessibility Improvements



Add High Level Platforms (HLPs) along with access ramps and elevators. In addition to providing accessible boarding, high level platforms allow for safer and faster boarding for all customers.

Address any unsafe conditions or necessary repairs.

Additional accessible parking would be provided at stations.

### Interlockings







## HIGHLIGHTS FROM THE CAPITAL PLAN - HOBOKEN

Hoboken Terminal is a critical linchpin for NJ TRANSIT's system. The station's 17 tracks are the terminus for our Pascack Valley and Main/Bergen Lines, the Montclair Boonton Line, as well as many trains on the Morris & Essex Lines and select trains on the North Jersey Coast Line. A variety of rail infrastructure at or near the terminal site ensures our daily operations. A rail yard, a fueling facility, and other critical infrastructure pieces are nearby to help ensure service runs efficiently and smoothly. The station is also critical to our bus service; buses from Hoboken travel throughout Hudson County and into New York City. The Hudson-Bergen Light Rail stops at the terminal, and PATH service is also present there as well as ferry service.

Superstorm Sandy showed, in stark detail, the vulnerability the station faces. The storm surge associated with that storm flooded the station. The terminal was flooded with 5 feet of stormwater, and the station was closed for more than two months as repairs and restorations were made. The station remains vulnerable to similar threats in the future unless significant investments are made.

This Capital Plan would address this threat by making the station more resilient. We would elevate the station building to mitigate threats from potential storm surge, extreme weather events, and seasonal flooding. We would do this in a way that is sensitive to the existing historic character of the terminal building and to the surrounding area.

This would support the following goals:



**Goal 1:** Ensure the reliability and continued safety of our transit system



**Goal 2:** Deliver a high-quality experience for all our customers, with their entire journey in mind



**Goal 3:** Power a stronger and fairer New Jersey for all communities in the region

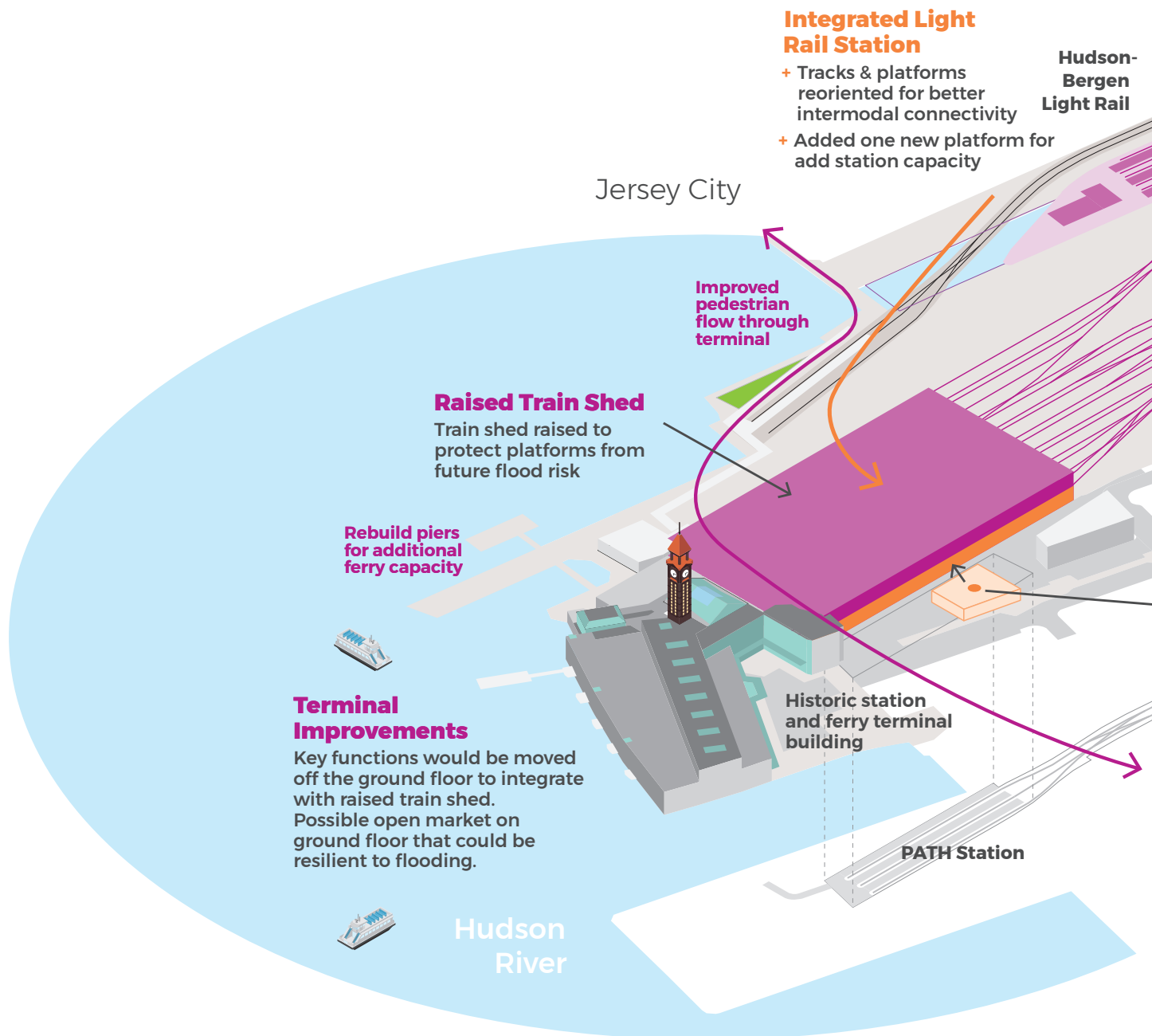


**Goal 4:** Promote a more sustainable future for our planet

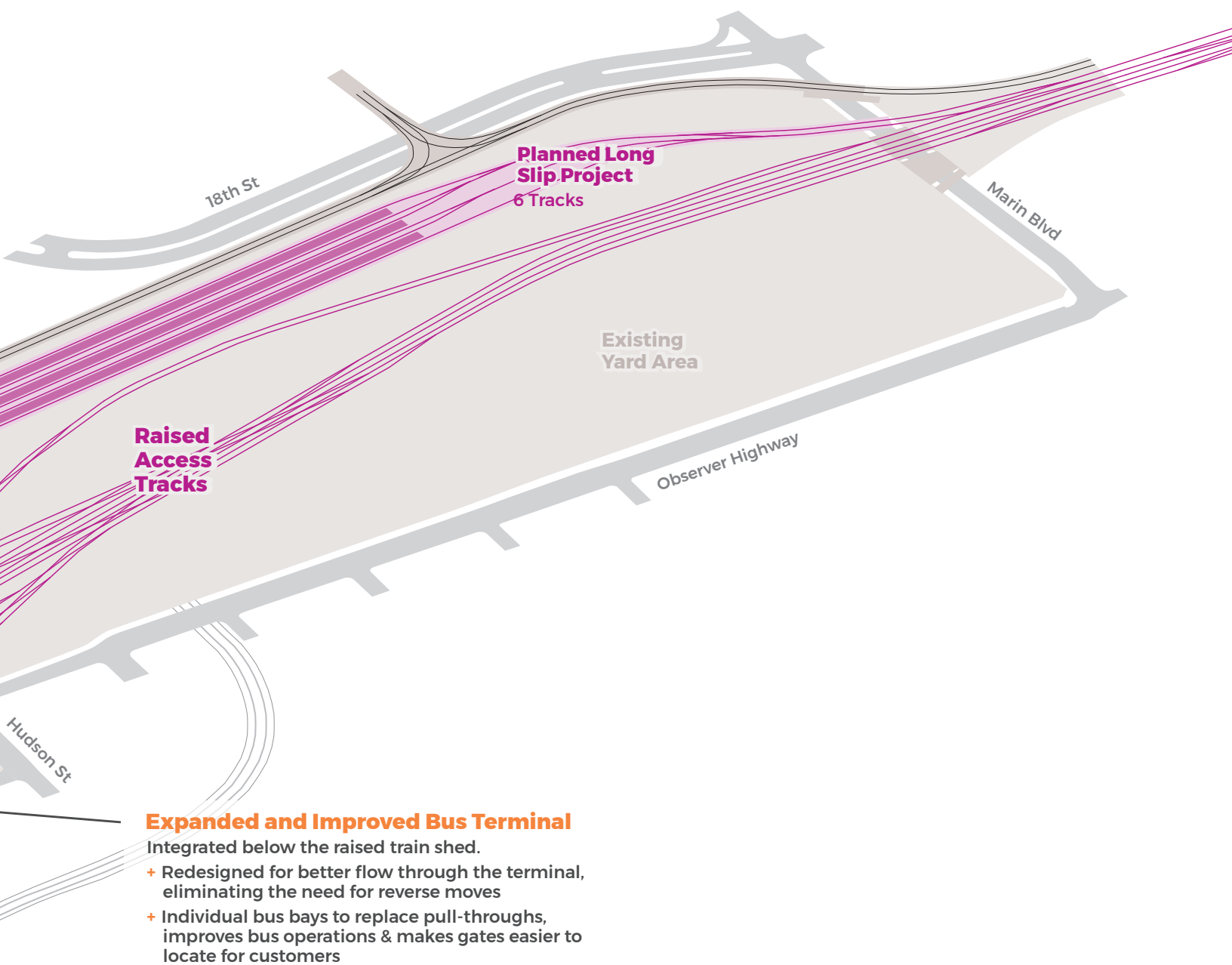


**Goal 5:** Build an accountable, innovative and inclusive organization that delivers for New Jersey

FIGURE I-6: THE VISION FOR AN IMPROVED HOBOKEN TERMINAL







Hoboken

Time	Destination	Train Status	Track
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9:47	Port Jervis	45 Boarding	3
9:57	Spring Valley	1607 Pascack Valley	4
10:35	Ridgewood	1253 Bergen County	11
PLEASE NOTE TRACK CHANGE			
10:36	Gladstone	415 Morris & Essex	16
10:38	Suffern	1111 Main	17
11:14	Spring Valley	1611 Pascack Valley	13
11:35	Ridgewood	1255 Bergen County	4
11:36	Gladstone	417 Morris & Essex	15
11:38	Suffern	1113 Main	9

WELCOME TO HOBOKEN TERMINAL. PLEASE

"EWR" Indicates Train Service to Newark Int'l Airport Station

Time	Destination
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12:35	Ridgewood
12:36	Gladstone
12:38	Suffern
12:43	Spring Valley
1:13	Middletown NY
1:35	Waldwick
1:39	Gladstone
1:43	Suffern
1:50	Spring Valley
1:58	Dover

PLEASE WATCH YOUR STEP.

"EWR" Indicates Train Service to Newark Int'l Airport Station

