Description
There are approximately 1,100 rail cars and 179 locomotives that are part of the NJ TRANSIT rail fleet. About 680 of those rail cars are single-level; the Arrow III cars (pictured at right) date back to 1977, while other versions of the Comet single-level cars entered service in 1982, 1996 and 2002. About 430 cars are multilevel. The first iteration of Bombardier’s ML1 cars went into service in 2006, while the ML2s went into service in 2012. A third version (the ML3) is scheduled to begin running in 2023. Multi-level cars can fit more passengers than the single-level cars. The multi-levels also provide higher comfort levels for passengers; new ML3s will also feature WiFi access, infotainment screens, and USB charging ports.

If funded, this fleet replacement program would strive to replace all of NJ TRANSIT’s single-level cars with multi-levels over the next eight years. Existing ML1s and ML2s would also be overhauled during this time period to increase car efficiency and comfort. In addition, about 25 dual-power locomotives (which can run on both diesel- and electric-powered rail lines) would be added to the fleet, while about 10 diesel locomotives would be retired. These actions would ultimately reduce the average fleet age and drastically improve reliability.

ESTIMATED PROJECT COSTS (2020 Dollars):

$3.52 Billion

Value to Customers
- Increased on-time performance (OTP), safety and service reliability

Value to State
- Lowers operating expenses to enable more efficient use of public funds
- Reduces potential injuries associated with increased on-site maintenance work
- Increases return on investment (ROI) from increased ridership
The rail fleet replacement program would lead to an increase of about 40 rail cars and 15 locomotives for the fleet while improving customer experience and air quality.
Description
Trains currently running along NJ TRANSIT rail lines are either powered with diesel fuel-powered engines or with electrified overhead catenary wires. Diesel engines are less efficient in providing power to the trains while research shows they increase carbon emissions. Powering cars using overhead catenary wires is similarly less efficient because electricity must flow along a series of catenary lines, which dissipates energy as it travels. Adding battery storage capacity allows for further savings via energy capture through regenerative braking, which is currently not possible with existing rolling stock design. Additional benefits include the ability to run electric trains where existing catenary power supply is disabled due to extreme events, or depowered for service.

If funded, the Train Battery Pilot project would test the use of batteries to power existing NJ TRANSIT trains. Lithium-ion batteries are being studied for acquisition to be installed either as battery support tender cars, or directly into passenger carrying rolling stock. Pilot non-revenue runs are currently contemplated to be run along either the North Jersey Coast Line between Bay Head and Long Branch using retrofitted multilevel cars. This portion of the North Jersey Coast Line does not have a traction power system, so the contemplated method of operation would allow single-seat rides from Newark or New York to Bay Head where the consist could recharge in the traction electrified section from Long Branch to New York. The pilot project would be the first step towards transitioning to a cleaner, more efficient technology that will reduce energy costs for NJ TRANSIT and bring potential environmental benefits.

*ESTIMATED PROJECT COSTS (2020 Dollars):

$46 Million

*Estimates are based upon concept for design

Value to Customers
- Increases reliability of service

Value to State
- Lowers operating cost by providing more efficient power generation
- Minimizes environmental impacts
Investing in emerging technology would allow NJ TRANSIT to be more capable to adopt state-of-art systems.
Description
NJ TRANSIT must provide consistently reliable service to its customers along all its rail lines. To ensure this, the agency frequently inspect all revenue fleet vehicles and maintains them as needed to keep them in a state of good repair. Typically, rolling stock is removed from service and placed over pedestal pits, which are used to inspect the undercarriage of the multi-level train cars and to perform maintenance on all train car types. These pits are located at various rail yards and therefore the trains must be directed to one of the yards whenever an inspection is required. This procedure is time consuming and requires additional cost and resources to perform.

If funded, this project would install Machine Vision devices on existing NJ TRANSIT tracks. As trains run over the device, the device would automatically assess the condition of critical train components, such as the wheel profile and brake conditions. This information would then be sent to the maintenance department to determine if a train car needs to be sent to a yard. These devices would be strategically placed in locations that experience frequent train traffic, such as at the tracks east of the East End interlocking, which supports all trains in and out of Hoboken Station. Implementation of Machine Vision would allow NJ TRANSIT to more efficiently monitor the condition of its rail fleet and would decrease the need to send cars to rail yards for inspection, thus increasing uptime for the revenue rolling stock.

ESTIMATED PROJECT COSTS (2020 Dollars):

$32 Million

Value to Customers
- Reduces train delays
- Provides more reliable service and increased on-time performance with more efficient detection of issues with rolling stock which may cause service disruptions

Value to State
- Minimize revenue loss from service disruptions associated with equipment malfunction
Monitoring devices would be strategically placed to find potential faults before they disrupt service.