

Appendix B: NJTPA System Performance

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Performance Measures Overview

The Moving Ahead for Progress in the 21st Century Act (MAP-21), adopted in 2012, required State DOTs and MPOs to conduct performance-based planning and programming (PBPP) by tracking nationally established performance measures, setting data-driven targets for each measure, and selecting projects to help meet those targets. These PBPP requirements were continued and strengthened in the Fixing America’s Surface Transportation (FAST) Act in December 2015. PBPP supports effective and efficient investment of federal transportation funds by increasing accountability and transparency and providing for better investment decisions that focus on key outcomes related to seven national goals:

- Safety
- Infrastructure preservation
- Congestion reduction
- System reliability
- Freight movement and economic vitality
- Environmental sustainability
- Reduced project delivery delays

The national performance measures are grouped based on federal funding program and performance area.

<i>Funding Program</i>	<i>Performance Area</i>
Highway Safety Improvement Program (HSIP)	Roadway Safety
Transit Safety & Oversight (49 U.S. Code § 5329)	Transit Safety
Transit Asset Management (49 U.S. Code § 5326)	Transit Asset Management
National Highway Performance Program (NHPP)	National Highway System (NHS) Asset (Pavement and Bridge) Management
	NHS Travel Time Reliability
National Highway Freight Program (NHFP)	Freight
Congestion Mitigation and Air Quality (CMAQ)	CMAQ Traffic Congestion
	CMAQ Emissions Reduction

Performance measure requirements are addressed by state departments of transportation, public transit providers, and MPOs in a cooperative process. For the NJTPA region, this involves the NJTPA working among a host of agencies, including the NJDOT, NJ TRANSIT, PANYNJ, neighboring MPOs, and neighboring state transportation departments. In terms of setting targets, MPOs may either establish quantitative targets for their metropolitan planning area or agree to plan and program projects that contribute toward the accomplishment of the statewide targets. MPOs must report their targets to the state DOT and include a discussion of progress toward meeting the targets in their long range transportation plans and transportation improvement programs.

Plan 2050, the NJTPA's long range transportation plan, was developed with an eye toward addressing the national performance measures and the respective targets that have been established by agencies here for the NJTPA region. This appendix, part of Plan 2050, addresses the federal requirement (under 23 CFR § 450.324) for a system performance report that evaluates the condition and performance of the transportation system with respect to the performance targets. Each of the sections, arrayed below by performance area, describes: background on the priority and definition of the national measures; the most recent and current targets applicable to the NJTPA region; and (where data is available) how the region is faring with regard to those targets and how the region is continuing to address them.

Importantly, as permitted and encouraged by USDOT, numerous performance measures beyond those federally required are also routinely monitored by the NJTPA (including many described throughout Plan 2050), recognizing that the mandated national measures only tell part of the story of transportation in the region. These relate to areas such as livability, equity, the natural environment and resilience, economic prosperity, and land use.

For reference, the latest targets for the national performance measures that are the focus of this appendix can be found on the NJTPA website at <http://www.njtpa.org/planning/performance-analysis/njtpa-performance-measure-targets.aspx>. The set of broader regional performance measures applied within Plan 2050 and elsewhere in the NJTPA process can be explored at <https://www.njtpa.org/Planning/Plans-Guidance/Performance-Measures/Regional-Performance-Measures.aspx>.

Roadway Safety

Background

Safety is the first national goal identified in the FAST Act. The Highway Safety Improvement Program (HSIP) and Safety Performance Management Measures Rule (Safety PM Rule) requires State DOTs and MPOs to set targets for five safety-related performance measures on an annual basis, beginning with targets for calendar year (CY) 2018. The safety measures are assessed as five-year averages. For example, the targets for 2018 reflected data collected during calendar years 2014 through 2018. State DOTs report baseline values, targets, and progress toward meeting the targets to the Federal Highway Administration (FHWA) in an annual safety report.

The federal roadway safety performance measures are **five-year rolling averages** of:

- **Number of fatalities**
- **Rate of fatalities per 100 million vehicle miles traveled (MVMT)**
- **Number of serious injuries**
- **Rate of Serious Injuries per 100 MVMT**
- **Number of non-motorized fatalities and serious injuries (combined)**

NJDOT Statewide Targets and Goals

NJDOT's annual safety report (ASR) includes statewide targets for the subsequent calendar year's performance (e.g., the 2020 ASR set targets for CY 2021).

NJDOT updated the [New Jersey Strategic Highway Safety Plan](#) (SHSP) in August 2020. This document adopts the national vision for highway safety – *Toward Zero Deaths: A National Strategy on Highway Safety*, which sets a national goal of reducing the number of traffic fatalities by half by the year 2030. The New Jersey SHSP also sets a statewide goal to reduce fatalities, serious injuries, and total injuries each by 3 percent annually. The SHSP was prepared in collaboration with the New Jersey Division of Highway Traffic Safety (NJDHTS) and all three New Jersey MPOs, New Jersey's county engineers and planners, and other safety advocates. The statewide targets referenced above were developed to help further the SHSP goals (but note that targets developed prior to the August 2020 SHSP were developed based on the previous SHSP's goal to reduce combined fatalities and serious injuries by 2.5 percent annually).

The NJTPA Board has approved resolutions supporting the NJDOT's statewide roadway safety targets on an annual basis since the CY 2018 targets were set in 2017.

Progress Toward Targets

The following chart details the most recent New Jersey statewide roadway safety performance targets for which corresponding condition data is available. These targets, for 2015-2019, were established by NJDOT and endorsed by the NJTPA in 2018. The corresponding actual safety performance conditions are shown for comparison with the prior targets.

In addition, current targets are shown, with the prior year's actual conditions serving as a new baseline.

Roadway Safety - All Public Roads in New Jersey - Five-year rolling averages - Annual targets

Measure	5-yr period	Previous Baseline ¹			Previous target ¹		Previous condition ¹	Previous target met? ¹	Current Baseline	Current 1-year target
		2013–2017	2015–2019		2015–2019		2015–2019	2017–2021		
# of Fatalities	577.6	605.0	582.6	✓	582.6	574.0				
Rate (per 100 MVMT) of Fatalities ²	0.761	0.780	0.756	✓	0.756	0.740				
# of Serious Injuries ^{2,3}	1,092.5	1,101.4	1,469.2	✗	1,469.2	2,124.8				
Rate (per 100 MVMT) of Serious Injuries ^{2,3}	1.439	1.422	1.9	✗	1.9	2.724				
# of Non-motorized Fatalities+Serious Injuries ^{2,3}	379.1	393.9	463.7	✗	463.7	588.5				

Notes:

¹ Showing data (baseline, target, and condition) for a previous year where actual condition data is available.

² Complete 2019 data for serious injuries and VMT not yet available and are projected using available data.

³ The injury classification scheme was updated in 2019. Injuries are now being classified as serious that were not previously, causing a large jump in number and rate of serious injuries between 2018 and 2019.

The (preliminary) data on 2015-2019 safety conditions appear to show fatalities (number and rate) were below the corresponding target values (and the fatality rate reduced below the baseline from two years prior), but serious injuries were well above the targets. However, the serious injuries numbers reflect a new injury classification that began in 2019, a federally required change to a national standard. Injuries not previously classified as “serious” are now being included in these metrics, distorting a straightforward comparison from year to year. (As an example of the classification change, a crash victim with a broken arm that would have been classified as a “moderate” injury in 2018 and earlier, is now classified as a “suspected serious” injury.)

Information is not available to render a consistent “apples-to-apples” comparison of actual conditions with the targets (and baseline) set with the prior serious injury classifications. It is certainly not expected that the data showing a doubling of annual serious injuries to 2,768 in CY 2019 from 1,284 in CY 2018 reflects a real trend.

Nevertheless, New Jersey formally did not “meet or make overall significant progress” toward NJDOT’s 2019 roadway safety targets. For “overall significant progress” to be demonstrated, significant progress must be demonstrated for at least four of the five targets (and for “significant progress” to be demonstrated for one of the targets, the current value must be at or below the target, or below the corresponding baseline value). The available data indicates this was demonstrated for only two of the five targets (number of fatalities and fatality rate). Based on FHWA regulations, NJDOT is : (1) submitting an HSIP Implementation Plan for FY 2022, and (2) making plans to use obligation authority equal to its FY 2018 HSIP apportionment only for HSIP projects in FY 2022 (and thus losing the flexibility to reprogram HSIP funds for other project types).

For the current targets, established by NJDOT and endorsed by the NJTPA in 2020, attention is paid to the fact that the baseline period (2015-2019) only includes one year with the new serious injury classification, while the target period (2017-2021) includes three. The current targets identified for the three measures that include serious injuries (number of serious injuries, serious injury rate, and number of non-motorized fatalities and serious injuries) therefore exhibit an apparent large increase. This should not be taken to imply that injuries should or will increase, just that the required accounting will likely continue to numerically show an apparent year-to-year increase in the five-year averages until the five-year period no longer includes data from before 2019.

As noted above, the 2021 targets (for the 2017–2021 five-year averaging period) represent increases over the 2015–2019 (baseline) averages for all of the measures that include serious injuries, as a result of the required update to the injury classification scheme. Note, however, that all of the targets set a 2021 goal for a reduction in the **annual** fatalities and serious injuries, both motorized and non-motorized (compared to the 2019 annual value). The charts shown below show how the projected annual number of serious injuries declines from 2019 to 2021, even though the five-year average values increase. These charts also show how the NJTPA region compares to the statewide values.

These charts also show targets set for previous years, during which New Jersey did show “overall significant progress” toward meeting its annual safety targets¹.

This more detailed examination of the annual trends shows a fairly steady number of annual fatalities in recent years, even with growing traffic. This translates to a slight decline in fatality rate. Serious injuries dipped around the mid-2010s but increased again somewhat, even prior to the 2019 classification change. As discussed elsewhere in Plan 2050, non-motorized fatalities and serious injuries have also crept up in recent years.

¹ FHWA defines making “overall significant progress” for highway safety as either meeting the target or reducing below the baseline year value for three of the five safety performance measures. For example, for the 2018 targets (prior to the update to the serious injury reporting), three of the performance measure targets were met (for the number and rate of fatalities, and the rate of serious injuries), and a fourth performance measure (number of serious injuries) the 2018 condition was below the 2016 baseline value. Thus, the state was able to show “overall significant progress” toward the highway safety targets.

Figure 1: Number of Fatalities (NJ and NJTPA)

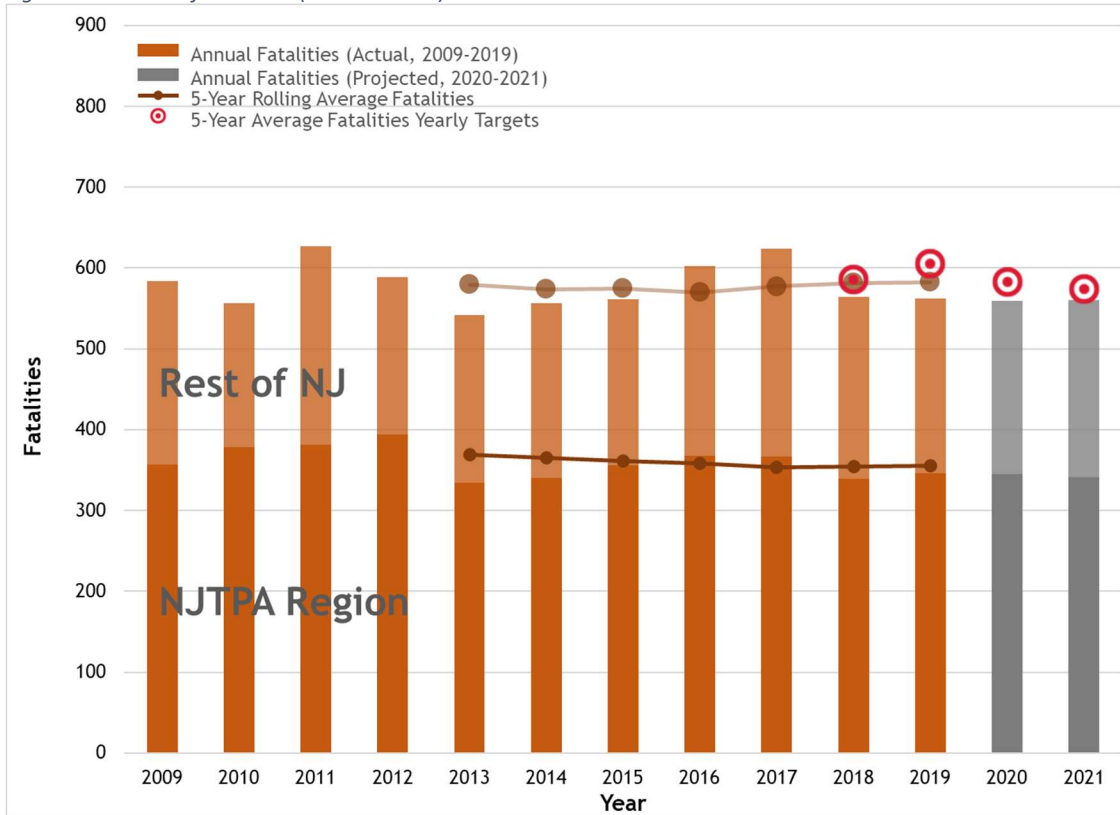


Figure 2: Fatalities per 100 million VMT (NJ and NJTPA)

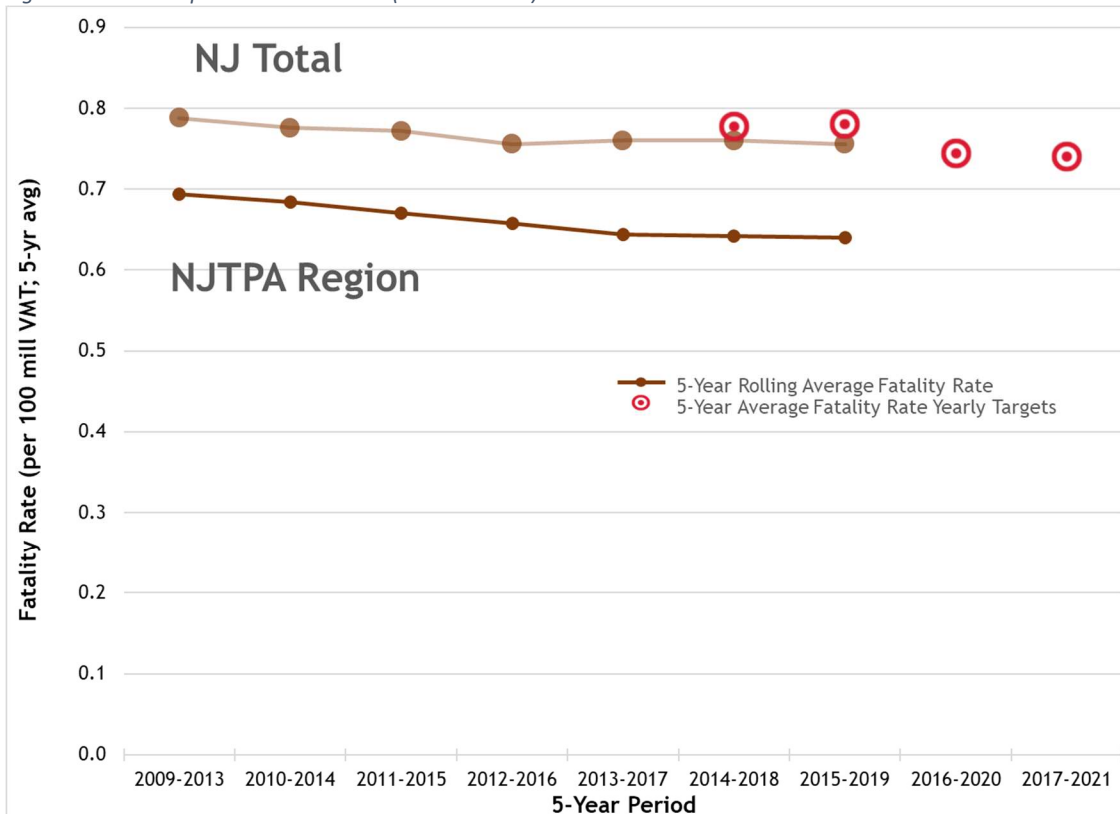


Figure 3: Number of Serious Injuries (NJ and NJTPA)

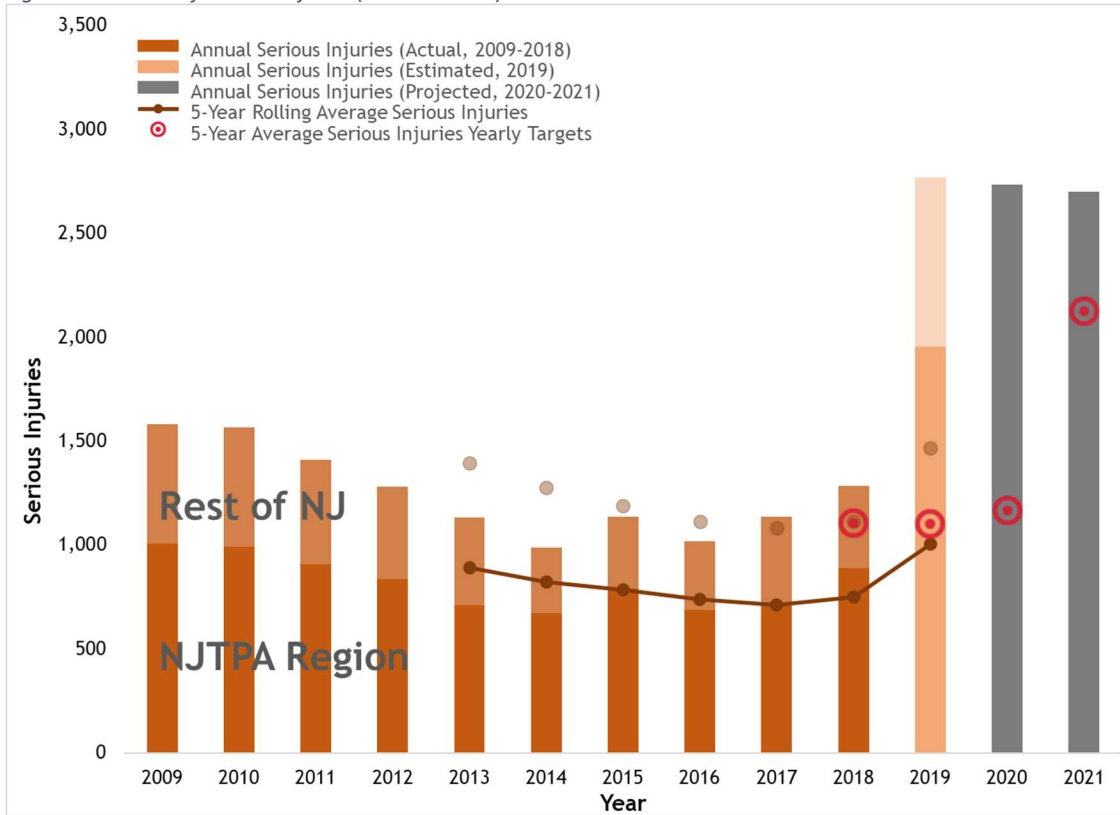


Figure 4: Serious Injuries per 100 million VMT (NJ and NJTPA)

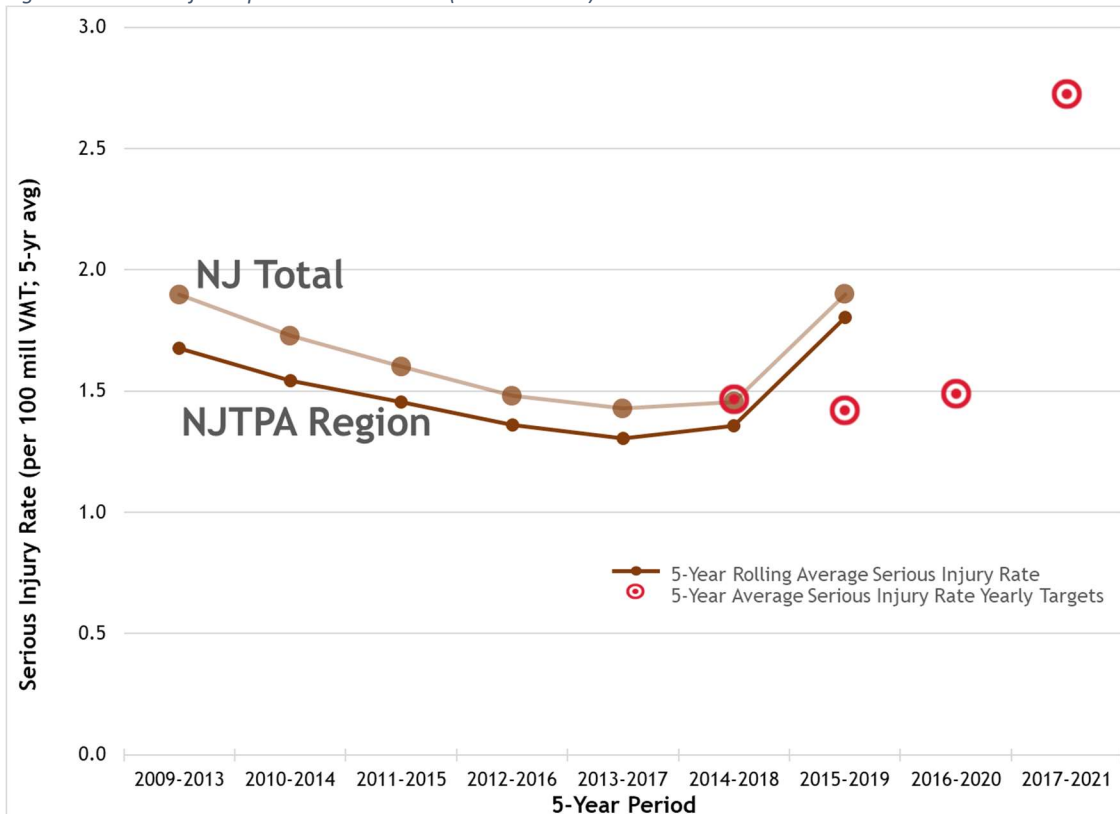
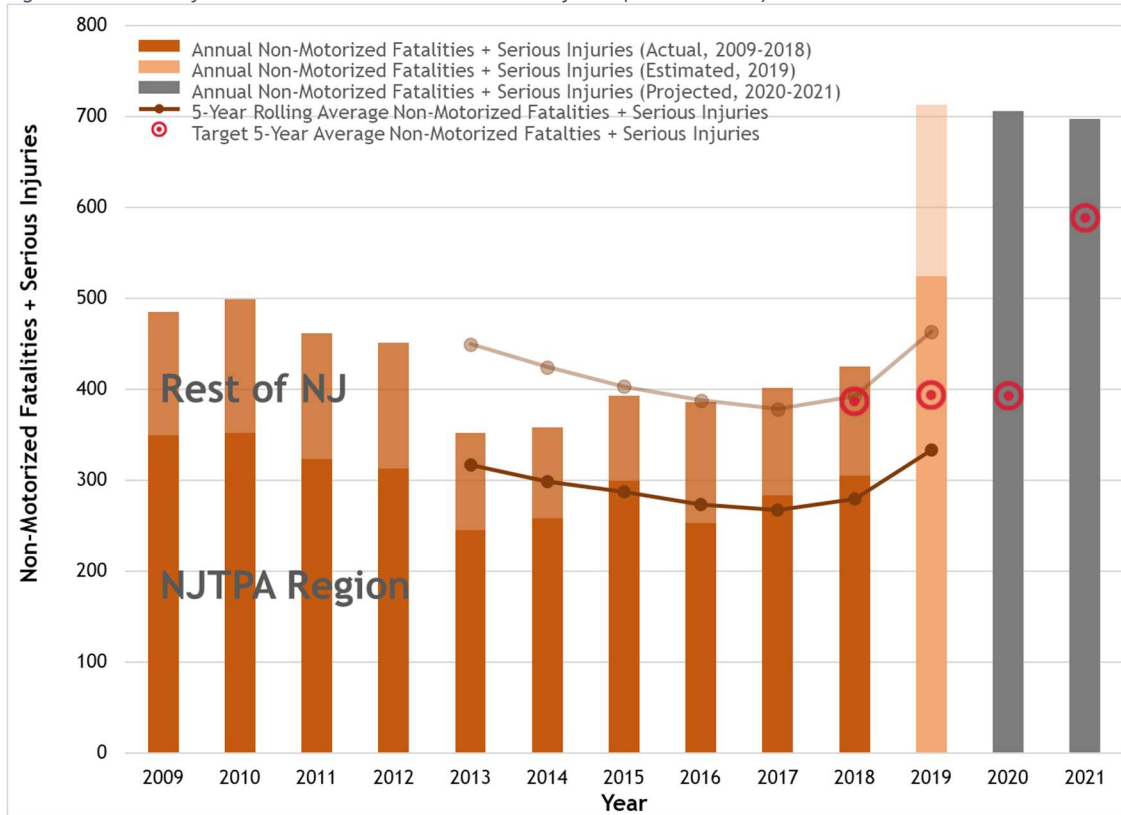


Figure 5: Number of Non-Motorized Fatalities + Serious Injuries (NJ and NJTPA)



These trends are considered in Plan 2050 as the NJTPA continues to prioritize transportation safety for the region. The NJTPA Regional Capital Investment Strategy encourages that improving safety and security be explicitly incorporated in the planning, design, and implementation of all investments. Safety is a shared emphasis among all partner agencies, with numerous planning efforts and programs devoted to reducing the risks for the traveling public. Safety enhancing projects and programs are advanced in the NJTPA TIP, in part based on significant safety criteria within the NJTPA project prioritization process. The criteria were updated in 2018 and incorporates the latest crash data. All of these priorities are closely aligned with addressing the established New Jersey safety performance targets referenced above.

Public Transit Safety

Background

As noted above, safety is the first national goal set forth in the FAST Act. The Federal Transit Authority's Public Transportation Agency Safety Plan (PTASP) regulation requires that a public transit agency's PTASP includes performance targets based on the safety performance measures established under the National Public Transportation Safety Plan. USDOT's statewide and nonmetropolitan and metropolitan transportation rule further requires that MPOs develop targets for the PTASP performance measures, coordinating with the transit agencies.

The PTASP performance measures are organized in six sets:

- Fatalities
 - **The total number of fatalities reported to the National Transit Database (NTD), by mode.**
 - **The rate of fatalities, per revenue vehicle mile (RVM), by mode.**
- Injuries
 - **The total number of injuries reported to the NTD, by mode.**
 - **The rate of injuries, per RVM, by mode.**
- Collision Events
 - **The total number of collision events reported to the NTD, by mode.**
 - **The rate of collision events, per RVM, by mode.**
- Employee Injuries
 - **The total number of employee injuries reported to the NTD, by mode.**
 - **The rate of employee injuries, either per RVM (for the light rail systems), or per 200,000 hours (for the bus operations), by mode.**
- Fire Events
 - **The total number of fire events reported to the NTD, by mode.**
 - **The rate of fire events, per RVM, by mode.**
- System Reliability
 - **The mean distance between major service failures, by mode.**

The first five sets of performance measures (fatalities, injuries, collisions, employee injuries, and fires) relate to "reportable events" as defined by FTA (in the *NTD Safety and Security Reporting Manual*). These include any events (either planned or unplanned) occurring on a transit right-of-way, in a transit revenue facility, in a transit maintenance facility, or involving a transit revenue vehicle that meets NTD reporting thresholds provided below. (Occupational safety events occurring in administrative buildings are excluded from NTD reportable events.)

- Fatalities involving passengers, others (people waiting or leaving), transit vehicle operators, bicyclists, pedestrians, and occupants of other vehicles.
- Injuries requiring transportation away from the scene for medical attention.
- Substantial property damage.

- Towaways of any motor vehicle.
- Smoke, fire evacuations for life safety reasons, fire (suppression).

The “rates” for the first five sets of performance measures are per vehicle revenue mile, except for the rate of employee injuries for the NJ TRANSIT bus system, which is reported per 200,000 hours worked (an OSHA standard representing the number of hours that 100 employees working 40 hours a week for 50 weeks would accumulate).

The last performance measure (system reliability) is the average distance between major mechanical failures, particularly those failures that inhibit vehicle movement or prevent the start or completion of a scheduled revenue trip due to safety concerns. Examples of factors and/or components impacting system reliability include tires, brakes, doors, engine/transmission, cooling systems, steering, axles, and suspension.

NJ TRANSIT has oversight of four PTASPs—one for the NJ TRANSIT bus operations (systemwide), and one for each of the three NJ TRANSIT light rail operations: Newark Light Rail, Hudson Bergen Light Rail, and River Line. The PTASPs contain targets for each of the performance measures described above. Targets pertinent to the NJTPA region apply to the following three systems (the River Line is outside the NJTPA region):

Non-Rail Mode

- 1) Systemwide bus operations

Rail Modes

- 2) Newark Light Rail
- 3) Hudson Bergen Light Rail

PTASPs are not required for the NJ TRANSIT commuter rail system and the Port Authority of New York & New Jersey’s Port Authority Trans Hudson (PATH) rail system. Those systems are regulated by the Federal Rail Authority (FRA) and not by FTA. FRA requires different safety planning and monitoring procedures, and USDOT regulations do not require MPOs to be involved in that planning.

NJ TRANSIT Targets and Goals

NJ TRANSIT’s initial set of targets were developed as part of the PTASPs approved by NJ TRANSIT in 2020. These are short-term targets; NJ TRANSIT’s long-term goal is to reduce all of these performance measures to zero. The NJTPA Board approved a resolution supporting NJ TRANSIT targets in January 2021. These targets may be updated annually in the various PTASPs that NJ TRANSIT oversees, but the NJTPA is not required to officially act on any target updates. However, any updates provided by NJ TRANSIT will be monitored and considered in the NJTPA planning and programming process.

In August 2021, NJ TRANSIT provided updated targets for calendar year 2021. These NJ TRANSIT targets are listed in the table below. As noted in the table, the bus safety targets were developed by taking the average for the performance measure values from the prior three calendar years, while the light rail system targets were set at the performance measure values from just the prior calendar year. The same

values are shown in the "Baseline" columns, as the NJ TRANSIT approach has been to maintain the current level for the target year.

Progress Toward Targets

The NJTPA's Plan 2050 and TIP prioritize transportation safety, including safety programs related to the public transit system. NJ TRANSIT continues to operate a Safety Management System (SMS), a data-driven process to proactively manage public transportation system risks. The SMS is intended to change the safety culture to reduce safety-related events by making safety everyone's responsibility, empowering employees to play a role in safety, and encouraging employees and contractors to report safety concerns to senior management. These and other elements will continue to be examined and emphasized as appropriate to support the achievement of the PTASP targets.

The table below shows the progress in meeting the initial (2020) targets set by NJ TRANSIT, along with the latest (2021) targets.

Transit Safety Measures - NJ TRANSIT - 1-year targets

Calendar year of data collection->	Previous Baseline		Previous target ¹		Previous target met?		Current Baseline		Current target ¹	
	2017-2019 or 2019 ²	2020			2018-2020 or 2020 ³	2021				
Total number of fatalities reported to the NTD⁴										
Newark Light Rail	0	0	✓		0	0				
Hudson Bergen Light Rail	2	2	✓		1	1				
NJ TRANSIT Bus Operations	4	4	✗		5	5				
Rate of fatalities per MVRM⁵										
Newark Light Rail	0.00	0.00	✓		0.00	0.00				
Hudson Bergen Light Rail	0.96	0.96	✓		0.51	0.51				
NJ TRANSIT Bus Operations	0.055	0.055	✗		0.073	0.073				
Total number of injuries reported to the NTD⁴										
Newark Light Rail	8	8	✓		5	5				
Hudson Bergen Light Rail	5	5	✗		13	13				
NJ TRANSIT Bus Operations	244	244	✓		202	202				
Rate of injuries per MVRM⁵										
Newark Light Rail	15.98	15.98	✓		10.46	10.46				
Hudson Bergen Light Rail	2.40	2.40	✗		6.65	6.65				
NJ TRANSIT Bus Operations	3.35	3.35	✓		2.76	2.76				
Total number of collision events reported to the NTD⁴										
Newark Light Rail	6	6	✓		5	5				
Hudson Bergen Light Rail	7	7	✓		7	7				
NJ TRANSIT Bus Operations	264	264	✓		231	231				
Rate of collision events per MVRM⁵										
Newark Light Rail	11.91	11.91	✓		10.46	10.46				
Hudson Bergen Light Rail	3.36	3.36	✓		3.36	3.36				
NJ TRANSIT Bus Operations	3.63	3.63	✓		3.15	3.15				
Total number of employee injuries reported to the NTD⁴										
Newark Light Rail	9	9	✓		9	9				
Hudson Bergen Light Rail	1	1	✗		8	8				
NJ TRANSIT Bus Operations	423	423	✗		437	437				
Rate of employee injuries per MVRM⁵										
Newark Light Rail	17.87	17.87	✗		18.84	18.84				
Hudson Bergen Light Rail	0.48	0.48	✗		4.10	4.10				
Rate of employee injuries per 200,000 hours										
NJ TRANSIT Bus Operations	7.99	7.99	✓		7.99	7.99				
Total number of fire events reported to the NTD⁴										
Newark Light Rail	8	8	✓		4	4				
Hudson Bergen Light Rail	1	1	✗		2	2				
NJ TRANSIT Bus Operations	12	12	✓		9	9				
Rate of fire events per MVRM⁵										
Newark Light Rail	15.89	15.89	✓		8.37	8.37				
Hudson Bergen Light Rail	0.48	0.48	✗		1.02	1.02				
NJ TRANSIT Bus Operations	0.16	0.16	✓		0.13	0.13				
Mean distance between major service failures (miles)										
Newark Light Rail	5,408	5,408	✓		5,256	5,256				
Hudson Bergen Light Rail	26,461	26,461	✗		93,215	93,215				
Mean distance between major service failures (million miles)										
NJ TRANSIT Bus Operations	135.45	135.45	✓		72.08	72.08				

Notes:

¹ The NJ TRANSIT approach was to maintain the baseline level for the target year.

² The "previous baseline" for the bus system was developed by taking the average from calendar years 2017, 2018, and 2019. The light rail systems used data from calendar year 2019.

² The "current baseline" for the bus system was developed by taking the average from calendar years 2018, 2019, and 2020. The light rail systems used data from calendar year 2020.

⁴ NTD = National Transit Database

⁵ MVRM = million vehicle revenue miles

Public Transit Assets

Background

Critical to the safety and performance of a public transportation system is the condition of its capital assets—most notably, its equipment, rolling stock, infrastructure, and facilities. When transit assets are not in a state of good repair, the consequences include increased safety risks, decreased system reliability, higher maintenance costs, and lower system performance.

Transit asset management (TAM) is the strategic and systematic practice of procuring, operating, inspecting, maintaining, rehabilitating, and replacing transit capital assets to manage their performance, risks, and costs over their life cycles to provide safe, cost-effective, and reliable public transportation. TAM uses transit asset condition to guide how to manage capital assets and prioritize funding to improve or maintain a state of good repair. Based on the mandate in MAP-21 (and continued in the FAST Act), FTA developed a rule (49 USC 625) establishing a strategic and systematic process of operating, maintaining, and improving public capital assets effectively through their entire life cycle. The TAM rule develops a framework for transit agencies to monitor and manage public transportation assets, improve safety, increase reliability and performance, and establish performance measures. Transit agencies are required to develop TAM plans and submit their performance measures and targets to the National Transit Database. TAM plans must be updated at least every four years. MPOs are required to either set specific MPO targets or support the transit agency targets.

The TAM rule established the following national transit asset management performance measures:

- ***Rolling stock:* The percentage of revenue vehicles (by type) that meet or exceed the useful life benchmark (ULB)²**
- ***Equipment:* The percentage of non-revenue service vehicles (by type) that meet or exceed the ULB**
- ***Facilities:* The percentage of facilities (by group) that are rated less than 3.0 on the Transit Economic Requirements Model (TERM) scale³**
- ***Infrastructure:* The percentage of track segments (by mode) that have performance restrictions**

Within the NJTPA planning area, there are two Tier 1 transit agencies providing public transit service and subject to the FTA TAM performance management rules. These agencies are the New Jersey Transit Corporation (NJ TRANSIT) and the Port Authority of New York and New Jersey (PANYNJ) Port Authority

² Useful life benchmark (ULB) is the yardstick that agencies will use to track the performance of revenue vehicles (rolling stock) and service vehicles (equipment) to set their performance measure targets. Each vehicle type's ULB estimates how many years that vehicle can be in service and still be in a state of good repair. The ULB considers how long it is cost effective to operate an asset before ongoing maintenance costs outweigh replacement costs.

³ Under the TERM scale, an asset in need of immediate repair or replacement is scored as one (1), whereas a new asset with no visible defects is scored as five (5).

Trans-Hudson (PATH). In addition, there are several Tier 2 transit providers⁴. NJ TRANSIT is sponsoring a Tier 2 Group TAM Plan for these providers.

Transit Agency Targets and Goals

NJ TRANSIT maintains a large fleet of buses, railroad cars, locomotives, and light rail vehicles. The fleet is in a state of good repair and meets FTA guidelines for useful equipment life. To continue in this pattern, NJ TRANSIT has budgeted funds to permit regular ongoing replacement of equipment as it approaches the end of its useful life. This approach also permits NJ TRANSIT to procure newer propulsion and fuel systems for vehicles and railroad equipment as they are proven to be feasible, reliable, and cost effective. This maintenance strategy creates a sustainable financial replacement program and is expected to continue into the future.

NJ TRANSIT prepared an Enterprise Asset Management Program Transit Asset Management (TAM) Plan dated October 1, 2018. In this plan, NJ TRANSIT sets forth its blueprint to identify, describe, and improve asset management practices, with the vision to maintain the agency's assets in a state of good repair. The plan presents a summary inventory of assets, describes the current condition of the assets, sets near-term targets for the required performance measures, and explains how NJ TRANSIT managers develop and present requests for operating/maintenance budgets and capital asset replacements.

NJ TRANSIT has committed to improving the resiliency of its systems to prevent future damage and to prepare for possible future extreme weather events and security threats. This includes significant new investments in a series of hardening projects such as new rail vehicle storage, upgraded power systems, maintenance facilities, emergency control centers, security improvements and signal and communications systems resilience upgrades.

NJ TRANSIT established TAM targets in 2018 and submitted them to FTA. The NJTPA Board approved a resolution supporting NJ TRANSIT targets in May 2019⁵.

Progress Toward Targets

NJ TRANSIT's TAM plan identifies and discusses NJ TRANSIT programs and projects aimed at helping to achieve its TAM targets. It is important to point out that as time advances, equipment continues to age and may pass beyond its useful life benchmark (ULB). The table below summarizes the current targets (for FY2020), along with previous targets (for FY2019) and whether or not they were met with FY2019 condition data.

⁴ Tier 2 providers are defined as federal transit funding recipients that own, operate, or manage one hundred or fewer vehicles in revenue service during peak regular service across all non-rail fixed route modes or in any one non-fixed route mode, subrecipients under the 5311 Rural Area Formula Program, or any American Indian tribe.

⁵ FTA regulations do not require MPOs to adopt new transit asset management targets if and when transit agencies update them (typically annually). However, the most current targets must be reflected in MPO long range plans and transportation improvement programs.

Transit Asset Condition Measures - NJ TRANSIT - 1-year targets

Measure	Previous target		Condition	Previous target met?	
	Fiscal year ¹ of data collection->	FY2019		FY2020	Current target
Rolling Stock: Percent of revenue vehicles that have met or exceeded their ULB²					
AB - Articulated Bus	100.00%	100.00%	✓	20.00%	
AO - Automobile	28.89%	28.89%	✓	52.76%	
BR - Over-the-road Bus	45.00%	52.02%	✗	46.40%	
BU - Bus	0.00%	0.16%	✗	0.00%	
CU - Cutaway	13.19%	11.67%	✓	1.50%	
LR - Light Rail Vehicle	0.00%	0.00%	✓	0.00% ⁴	
MV - Minivan	4.35%	2.13%	✓	4.35%	
RL - Commuter Rail Locomotive	6.41%	7.55%	✗	6.37%	
RP - Commuter Rail Passenger Coach	18.26%	17.94%	✓	17.94%	
RS - Commuter Rail Self-Propelled Passenger Car	100.00%	100.00%	✓	100.00%	
SV - Sports Utility Vehicle	0.00%	0.00%	✓	0.00%	
VN - Van	1.53%	2.74%	✓	1.53%	
Equipment: Percent of non-revenue vehicles that have met or exceeded their ULB²					
Automobiles	39.00%	82.83%	✗	40.00%	
Trucks and other Rubber Tire Vehicles	47.00%	47.52%	✗	50.63%	
Steel Wheel Vehicles	25.00%	23.60%	✓	24.10%	
Facilities: Percent of facilities rated below 3 on the TERM scale³					
Passenger/Parking Facilities	0.00% ⁵	0.68%	5	0.00% ⁵	
Administrative/Maintenance Facilities	0.00% ⁵	0.00%	5	0.00% ⁵	
Infrastructure: Percent of track segments with performance restrictions					
CR - Commuter Rail	1.00%	0.79%	✓	1.00%	
LR - Light Rail	4.10%	3.91%	✓	4.10%	
YR - Hybrid Rail	0.43%	0.18%	✓	0.43%	

Notes:

¹ NJ TRANSIT fiscal year is July 1 to June 30.

² Useful life benchmark (ULB) is the yardstick that transit agencies use to track the performance of revenue vehicles (rolling stock) and service vehicles (equipment) to set their performance measure targets. Each vehicle type's ULB estimates how many years that vehicle can be in service and still be in a state of good repair. The ULB considers how long it is cost effective to operate an asset before ongoing maintenance costs outweigh replacement costs.

³ Under the TERM scale, an asset in need of immediate repair or replacement is scored as one (1), whereas a new asset with no visible defects is scored as five (5).

⁴ NJ TRANSIT's entire light rail fleet was acquired after 2000 and has ULB of 31 years.

⁵ NJ TRANSIT facilities have not all been inspected, so targets arbitrarily set at 0%.

Transit Asset Condition Measures - PATH - 1-year targets

Measure	Year ¹ of data collection->	Previous target		Condition	Previous target met?	
		2019	2020		2019	2020
Rolling Stock: Percent of revenue vehicles that have met or exceeded their ULB²						
FB - Ferryboat		0.00%	0.00%	✓		0.00%
HR - Heavy Rail		0.00%	0.00%	✓		0.00%
Equipment: Percent of non-revenue vehicles that have met or exceeded their ULB²						
Trucks and other Rubber Tire Vehicles		26.00%	6.38%	✓		26.00%
Steel Wheel Vehicles		9.00%	3.64%	✓		9.00%
Facilities: Percent of facilities rated below 3 on the TERM scale³						
Passenger/Parking Facilities		0.00%	0.00%	✓		0.00%
Administrative/Maintenance Facilities		0.00%	0.00%	✓		0.00%
Infrastructure: Percent of track segments with performance restrictions						
HR - Heavy Rail		1.30%	99.88%	✗		1.30%

Notes:

¹ PATH fiscal year is January 1 to December 31.

² Useful life benchmark (ULB) is the yardstick that transit agencies use to track the performance of revenue vehicles (rolling stock) and service vehicles (equipment) to set their performance measure targets. Each vehicle type’s ULB estimates how many years that vehicle can be in service and still be in a state of good repair. The ULB considers how long it is cost effective to operate an asset before ongoing maintenance costs outweigh replacement costs.

³ Under the TERM scale, an asset in need of immediate repair or replacement is scored as one (1), whereas a new asset with no visible defects is scored as five (5).

Plan 2050 calls for continuing strategic investment to make transit a viable alternative for an increasing share of residents. The current funding priorities are maintaining the system in a state of good repair and operating it in a safe and secure manner. This includes replacing buses, rail cars and locomotives as they age, as well as attending to more than 600 rail bridges, 500-plus miles of track, signal systems, stations, and other infrastructure.

NHS Pavement and Bridge Condition

Background

The FHWA's Transportation Asset Management Plan Rule (TAMP Rule) established requirements for State DOTs in their preparation of TAMPs and bridge/pavement management systems. The Bridge and Pavement Condition Performance Measures Rule (aka PM2) describes the performance measures required to assess performance of the NHS assets.

PM2 requires State DOTs and MPOs to set 2- and 4-year targets for six pavement and bridge condition performance measures (listed below) every four years (with the option to modify the 4-year targets midway through the four-year performance period). State DOTs report baseline values, targets, and progress toward meeting the targets to the Federal Highway Administration (FHWA) in a biennial performance report. MPOs may either establish quantitative targets for their metropolitan planning area or agree to plan and program projects that contribute toward the accomplishment of the statewide targets. MPOs must report their pavement and bridge condition targets to the State DOT and include a discussion of progress toward meeting them in any TIP or Long Range Plan amendments after May 20, 2019.

The federal asset (pavement and bridge) management measures are:

- **Percent Interstate pavement lane-miles in Good condition**
- **Percent Interstate pavement lane-miles in Poor condition**
- **Percent non-Interstate NHS pavement lane-miles in Good condition**
- **Percent non-Interstate NHS pavement lane-miles in Poor condition**
- **Percent NHS bridge deck area in Good condition**
- **Percent NHS bridge deck area in Poor condition**

NJDOT measures the condition of pavement on the NHS for each tenth-mile segment, using a defined set of metrics. These metrics, which differ based on the type of pavement, include ride quality (using the International Roughness Index, or IRI), rutting, cracking, and faulting. The metrics are used to classify each segment's pavement condition as either Good, Fair, or Poor, using criteria established by FHWA.

NJDOT also collects bridge inspection data for all NHS bridges covered by the National Bridge Inspection Standards (NBIS). The bridge inspection data includes ratings for each bridge component (bridge deck, superstructure, substructure, and culvert (where applicable)). These ratings are used to classify each bridge as either Good, Fair, or Poor, using criteria established by FHWA.

NJDOT Statewide Targets and Goals

NJDOT establishes 2- and 4- year targets for the NHS pavement and bridge condition national performance measures within the New Jersey Transportation Asset Management Plan (TAMP). The first TAMP included targets for 2019 and 2021 referencing baseline data for 2016/2017. More broadly, the TAMP defines New Jersey's overall policy, state of good repair (SOGR) objectives and plans for infrastructure preservation.

The TAMP addresses the first goal, “Maintain and Renew Transportation Infrastructure”, of *Transportation Choices 2030*, the current New Jersey Long Range Transportation Plan. This goal calls for bringing the state’s transportation physical assets (including pavement and bridges) into a state of good repair and maintaining the state of good repair.

Development of the TAMP included NJDOT asset management experts along with other NHS owners and stakeholders. All three New Jersey MPOs and NHS-owning local governments and authorities were engaged in the process. This continued for a mid-period adjustment of 4-year targets in 2021 for the non-Interstate NHS pavement and both bridge condition measures.

The TAMP’s 10-year investment strategy was integral to setting performance targets, along with existing pavement and bridge conditions and projected conditions after planned projects/improvements. The TAMP pavement targets were intended to be realistic, considering: (1) a longer-term objective to reach 80 percent SOGR on all NHS pavements (using NJDOT’s “condition status” metric) by 2021, (2) FHWA regulations that require the percentage of Interstate lane-miles in Poor condition cannot exceed 5 percent, and (3) uncertainty related to the multiple agencies owning and maintaining the NHS in the state⁶. Importantly, the non-Interstate NHS pavement poor condition 4-year target was adjusted mid-period as the original was discovered to be flawed due to data limitations and lack of experience with the new pavement metrics.

The TAMP bridge targets were also set to be realistic, similarly recognizing that NJDOT owns only half of the state’s NHS bridges (by bridge deck area). The remaining bridges are owned by the New Jersey Turnpike Authority (about a one-third), other toll authorities (about one-sixth), and others (about 2 percent). Mid-period, trends and data corrections motivated an adjustment to a more optimistic 4-year target for good condition NHS bridges and a slight adjustment to the poor condition target as well.

Overall, NJDOT’s target-setting considerations pointed to gradually declining conditions at the current funding level, as would be expected due to the state’s aging infrastructure. Thus, the short-term targets were intended to allow for a slight worsening of asset conditions. The NJTPA Board approved resolutions supporting the NJDOT’s statewide NHS pavement and bridge condition targets in September 2018 and supported the NJDOT’s adjusted targets in March 2021.

Progress Toward Targets

The following chart details the established New Jersey statewide NHS pavement and bridge condition performance measure 2- and 4-year targets, the original baseline data that was used for their identification, and the actual pavement and bridge performance conditions at the 2-year mid-period mark. In addition, current 4-year targets are shown (including the adjustments noted above).

⁶ NJDOT only owns about three-fifths of New Jersey’s NHS pavement lane-miles, with 15 percent owned by counties, two percent by municipalities, and about a quarter by other transportation agencies and authorities (e.g., Port Authority of NY & NJ, Delaware River Joint Toll Bridge Commission, the Palisades Interstate Parkway...).

Pavement and Bridge Condition - New Jersey National Highway System - 2- and 4-year targets

Measure	Previous Condition		2-year target		2-year condition		2-year target met?		4-year target	
	Year of data collection->		2016/2017 ¹	2019	2019	2021	2019	2021	2019	2021
% Interstate pavement lane miles in good condition	61.3%	²	62.1%	²	50.0%	³				
% Interstate pavement lane miles in poor condition	1.0%	²	1.8%	²	2.5%	³				
% non-Interstate NHS pavement lane miles in good condition	32.5%	25.0%	33.0%	✓	25.0%	⁴				
% non-Interstate NHS pavement lane miles in poor condition	2.4%	⁵	2.5%	10.7%	✗	⁶				
% NHS bridge deck area in good condition	21.7%	19.4%	22.1%	✓	21.3%	⁷				
% NHS bridge deck area in poor condition	6.5%	⁵	6.5%	6.8%	✗	⁸				

Notes:

¹ Some of the measures used 2016 to indicate previous condition and others used 2017, based on data availability.

² For this first performance period, baseline and 2-year targets are not required for this measure. For official FHWA reporting purposes, the "baseline" will be the 2-year condition. However, NJTPA is showing the measure value from a previous year, which was used as a reference point for setting the target.

³ NJDOT believes it is investing appropriately to make progress toward achievement of these targets.

⁴ NJDOT is refining preservation techniques and coordinating with other NHS owners in order to meet this target.

⁵ Based on unreliable or incomplete data.

⁶ 4-year target adjusted from 2.5% to 15%. Due to data limitations and lack of experience with the new pavement metrics, the earlier targets were flawed.

⁷ 4-year target adjusted from 18.6% to 21.3%. Recent trends motivated a more optimistic target.

⁸ 4-year target adjusted from 6.5% to 6.8%. A correction and current look at the data underpinned this small adjustment.

In 2020, FHWA accepted NJDOT’s State Biennial Performance Report and all attachments for the Performance Period 2018-2021. The report includes specifics on New Jersey’s progress toward meeting established 2-year targets.

As shown in the chart, the established 2-year target for Non-Interstate NHS pavement in good condition was exceeded in 2019. NJDOT also acknowledges the targets are conservative but looks toward significantly more reliable data, better understanding of performance trends and enhanced forecasting abilities for the next performance period. Related to the pavement data issues and lack of metric experience noted above (regarding the adjustment of the 4-year target), the established 2-year (flawed) target was not achieved for Non-Interstate NHS pavement in poor condition. Due to the data issues, the target was not as conservative as intended when set.

The 2-year target (and even the baseline) for NHS bridge deck area in good condition was exceeded in 2019. NJDOT explained how this was due to better than expected project completion, a slower than historical trend decline in state-maintained deck area condition, and an improvement of the condition of bridges owned by other parties. The updated information motivated the 4-year target adjustment described above for this measure. The 2-year target was not met for NHS bridge deck area in poor condition. NJDOT noted that this was mostly due to a single large bridge that was not correctly accounted for during the original baseline examination due to a data transfer issue. Completion of more projects than projected compensated somewhat, but this new information also motivated a 4-year target adjustment as described above.

Plan 2050 continues the NJTPA's commitment to a "Fix It First" approach, one of the principles of the agency's Regional Capital Investment Strategy. A major portion of the region's transportation expenditures are allocated for maintenance, preservation, and repair of existing infrastructure. This is a shared emphasis among all partner agencies. In addition to coordinating on programming state efforts, NJTPA local programs also devote significant resources to local NHS roadway and bridge SOGR projects as discussed in Plan 2050. Factored in the development of the TIP, pavement and bridge state-of-good repair criteria are significant elements of the NJTPA's project prioritization process, very much aligned with supporting the pavement and bridge condition performance targets.

NHS Travel Time and Freight Reliability

Background

Traffic congestion is common in the NJTPA region, and many drivers are accustomed to it. They expect and plan for some delay, particularly during peak driving times. In addition, the NJTPA region experiences unexpected travel delay which can be even more burdensome. A formal definition for travel time reliability is *the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day*. Importantly, unexpected delays impact all roadway users, including those in automobiles, buses, trucks, and other vehicles.

Nearly all goods moved in the region travel by truck for at least part of their journey, especially short haul and time-sensitive deliveries. In all, more than 80 percent of domestic freight traveling to, from or within North Jersey moves by truck. This warrants particular attention to the reliability of travel times for trucks.

The national travel time and freight reliability performance measures are:

- **Percent of person-miles traveled (PMT) on the Interstate system with reliable travel times**
- **Percent of PMT on the non-Interstate NHS roadways with reliable travel times**
- **Truck Travel Time Reliability (TTTR) Index on the Interstate System**

“Reliable” travel times are based on how “longer” travel times (but that still occur as frequently as one out of five days)⁷ compare to expected (median) travel times. If the longer travel time for a segment is less than one and a half times as long as the median travel time, then that road segment is considered to have reliable travel times. For truck travel time reliability on Interstate highways, a more stringent standard of what is acceptable is used (travel times that occur as frequently as one out of 20 days). The TTTR metric for a segment is the ratio between rare “very long” truck travel times for a segment⁸ and the median truck travel time for that segment. The TTTR Index is computed by averaging the TTTR metric on all Interstate segments in the state, weighted by the segment distance. (Note that higher values for the TTTR index indicate lower travel time reliability.)

These performance measures are calculated using archived real-time vehicle probe data contained in the National Performance Management Research Data Set (NPMRDS). The NPMRDS is a dataset used to monitor system performance, procured and sponsored by FHWA. The NPMRDS is a network of roadway segments, called Traffic Message Channels (TMCs). The calculations in New Jersey are done by the NPMRDS Analytics Suite, created and maintained by the University of Maryland Center for Advanced Transportation Technology Laboratory (CATT Lab), following FHWA guidance.

⁷ The “longer” travel time is defined as the 80th percentile travel time, which is the time such that 80% of travel times are shorter.

⁸ The “very long” travel time is defined as the 95th percentile travel time, which is the time such that 95% of travel times are shorter.

FHWA requires states and MPOs to establish 2- and 4-year travel time reliability and freight targets every four years (with the option to modify the 4-year targets midway through the four-year performance period).

NJDOT Statewide Targets and Goals

One of the goals of NJDOT's current Long Range Transportation Plan, *Transportation Choices 2030*, is to "improve mobility, accessibility, and reliability". This goal intends to counter traffic congestion with a multifaceted approach, including strategies such as spot congestion improvement, improved public transit, transportation demand management, and improved facilities for bicycling and walking. Another goal is to "operate efficiently," which focuses on using transportation systems management and operations (TSMO) strategies to use existing capacity most efficiently. Both of these goals point toward improving reliability on New Jersey's roadways.

In setting statewide targets for the travel time reliability measures, New Jersey subject matter experts considered a number of factors, including:

- The long-term goal for all stakeholders is to have dependable, consistent travel times
- Stakeholders have limited experience with measuring travel time reliability, and techniques to forecast future reliability are evolving
- There are constraints on available funding, particularly considering other priorities such as improving infrastructure condition and improving safety
- The travel time reliability impact of new technologies, including connected and autonomous vehicles and transportation network companies (e.g., Uber and Lyft), is unknown

NJDOT and the New Jersey MPOs collaboratively developed 2-year and 4-year travel time reliability targets, deciding for both to aim toward maintaining the existing (2017) values while leaving open the opportunity to adjust the 4-year targets at the 2-year mid-period point (based on 2019 data).

Transportation Choices 2030 also includes a goal to optimize freight movement. It recommends continued investment in facilities to move more freight by rail, and policies that support moving freight during non-rush hours. Additionally, FHWA approved NJDOT's Statewide Freight Plan in 2017. Among other goals and objectives, the plan seeks to improve the efficiency and reliability of goods movement across and between all modes. The plan also identifies existing freight bottlenecks throughout the state, along with priority projects to address many of these bottlenecks.

When setting targets for the TTTR Index, NJDOT and its partners considered several factors, including:

- Overall VMT is increasing, which puts additional stress on the Interstate highways for all users, including trucks
- Port activity and e-commerce are also increasing, leading to increased truck activity
- Road capacity is not expanding

These factors pointed to congestion and reliability worsening in the near future, and therefore targets were identified that moderate the amount of increase in the TTTR Index measure.

NJDOT established these required reliability and freight targets for New Jersey in May 2018, and submitted them to FHWA in October 2018. The NJTPA Board approved a resolution supporting the NJDOT’s targets in September 2018. Given the conditions assessed in 2020 (discussed below), no adjustment of the 4-year targets was considered necessary.

Progress Toward Targets

The following chart details the established New Jersey statewide NHS reliability and freight performance measure 2- and 4-year targets, the original baseline data that was used for their identification, and the actual reliability and freight performance at the 2-year mid-period mark.

Highway Travel Time and Freight Reliability - New Jersey National Highway System - 2- and 4-year targets

Measure	Previous Condition		2-year target		2-year condition		2-year target met?		4-year target	
	2017	2019	2019	2021	2019	2021	2019	2021	2019	2021
% person-miles-traveled (PMT) on Interstate with reliable travel times (LOTTR)	82.1%	82.0%	80.6%	82.0%	80.6%	82.0%	✗	82.0%	82.0%	82.0%
% PMT on non-Interstate NHS with reliable travel times (LOTTR)	84.1%	84.1%	86.2%	84.1%	84.1%	84.1%	✓	84.1%	84.1%	84.1%
Truck Travel Time Reliability Index (TTTR) on Interstates	1.82	1.90	1.89	1.95	1.89	1.95	✓	1.95	1.95	1.95

Notes:

¹ NJDOT is preparing an amendment to the Mid Performance Period Progress report to demonstrate how the state can meet the 4-year target for travel time reliability (LOTTR) on Interstates.

² For this first performance period, baseline and 2-year targets are not required for this measure. For official FHWA reporting purposes, the "baseline" will be the 2-year condition. However, NJTPA is showing the measure value from a previous year, which was used as a reference point for setting the target.

³ The travel time data set continues to improve, but still does not accurately represent entire NHS. There is uncertainty about the impacts of COVID-19 on this measure.

⁴ Lower numbers for this measure indicate more reliable Interstate truck travel times.

⁵ This measure has remained within a very narrow range, just below the target.

In 2020, FHWA accepted NJDOT’s submitted a State Biennial Performance Report and all attachments for Performance Period 2018-2021. The Report includes specifics on New Jersey’s progress toward meeting established 2-year targets.

As shown in the chart, the measured percentage of PMT on the Interstate system with reliable travel times in 2019 fell short of the established 2-year target. NJDOT is amending the Mid Performance Period Progress report to demonstrate how the state can meet the 4-year target for this measure. Also as shown, the measured 2019 truck travel time reliability suggests a worsening as anticipated, but that its target was achieved (within a very narrow range). NJDOT, the NJTPA and partner agencies continue to invest in projects and programs to improve travel time reliability, overall and including truck travel time reliability.

NJTPA investment priorities are reflected in Plan 2050 and the Regional Capital Investment Strategy, which includes guidelines to:

- use the NJTPA congestion management process and context-sensitive criteria to target roadway investments that improve travel time reliability and address bottlenecks and hotspots
- invest in technologies that deliver environmental benefits, improve reliability, manage congestion, and streamline traffic flow

The NJTPA congestion management process draws attention to unreliable road segments and to freight movement. One of the criteria in the NJTPA project prioritization process addresses travel time reliability, giving additional priority to projects that help to improve travel time reliability by either reducing non-recurring incident delays or by providing alternative transportation modes or routes.

NJDOT TSMO strategies are employed to support travel time reliability on interstate and non-interstate NHS roadways. Such TSMO strategies focus on safety and mobility, congestion relief and air quality mitigation along arterial corridors, addressing recurring and non-recurring congestion, and providing real-time traveler information.

Other strategies contribute as well at state, regional and local levels, including support for expanded and enhanced public transit, shifting freight to rail and to off-peak hours, travel demand management to reduce trips and peak period travel.

These and other programs and projects in Plan 2050 should significantly contribute to addressing the established New Jersey travel time reliability and truck travel time reliability performance targets. As the NJTPA and transportation planning and programming partners improve understanding of these measures (particularly how various types of projects impact them), the agencies will continue to strive to plan and program projects accordingly.

CMAQ Congestion

Background

FHWA's Congestion Mitigation and Air Quality Improvement (CMAQ) program provides states and MPOs with funds for transportation investments that contribute to air quality improvements and provide congestion relief. Examples of CMAQ-funded projects include roadway and intersection improvements that address congestion chokepoints and help reduce vehicle idling, and bicycle and pedestrian paths that enhance travel for non-motorized modes. The national performance measures related to the CMAQ program are split into two portions: traffic congestion (addressed in this section), and emissions reduction (addressed in the next section).

The traffic congestion performance measures are applicable to all urbanized areas (UZAs) that include National Highway System (NHS) mileage and with a population over one million⁹ with designated air quality nonattainment or maintenance areas for ozone (O₃), carbon monoxide (CO), or particulate matter (PM₁₀ and PM_{2.5}). The NJTPA Planning Area overlaps two such UZAs: the New York—Newark, NY—NJ—CT (“New York-Newark”) and the Philadelphia, PA—NJ—DE—MD (“Philadelphia”) UZAs.

For each UZA, all state departments of transportation and MPOs with jurisdiction within them must coordinate with one another to set single, unified targets for the entire area—as opposed to targets for portions covered by individual states and MPOs—and they must report those single, unified targets consistently to FHWA.

The national traffic congestion performance measures are:

- **Annual person-hours of peak hour excessive delay (PHED) per capita**
- **Percent non-SOV (single-occupancy vehicle) travel**

Elements of the PHED per capita measure¹⁰ (assessed only for National Highway System facilities) include the following:

- Annual – delay accumulated over the entire calendar year
- Person-hours – delay experienced by people not vehicles
- Peak hour – 6–10 am and 3–7 pm weekdays (any “excessive” delay outside these periods is not included)
- Excessive delay – time traveling below 60 percent of posted speed limit (or 20 mph, whichever is greater)¹¹. For example, if the speed limit is:
 - 65 mph, the extra time spent by traveling slower than 39 mph

⁹ During the initial performance period (2018-2021), the requirement only applies to urbanized areas with populations above 1 million. For subsequent performance periods (i.e., starting in 2022), the requirement expands to UZAs with populations above 200,000.

¹⁰ More detail on this measure, including a video with an example on how PHED is calculated, can be found on the NJTPA website, at <https://www.njtpa.org/planning/performance-analysis>.

¹¹ Only the “extra” time is counted toward excessive delay, not the entire travel time.

- 40 mph, the extra time spent traveling slower than 24 mph
- 30 mph (or lower), the extra time spent traveling slower than 20 mph

As an illustration, consider a two-mile segment with a speed limit of 60 mph. Traveling along this segment at the speed limit takes 2 minutes. However, the “excessive delay” threshold for this segment is 36 mph (60 percent of 60 mph). At this speed, it takes 3.33 minutes. So, any time above 3.33 minutes on that segment counts toward “excessive” delay. If travel on this segment on a particular day takes 5 minutes, then 1.67 minutes (5 minus 3.33) counts as excessive delay.

- Per capita – divides by entire population, not just drivers. Thus, areas that have more transit/carpool use get “credit” for those people who are not contributing to congestion¹².

This percent non-SOV travel performance measure recognizes the role that single-occupant vehicles play in contributing to traffic congestion and pollutant emissions. The measure is calculated using U.S. Census American Community Survey (ACS) data about journey-to-work trips. Non-SOV includes carpool, train, bus, walk, bike, taxi, rideshare, working at home, etc.—anything other than driving alone.

Urbanized Area Targets and Goals

Established NJTPA goals point to user-responsive, affordable, accessible, and dynamic transportation systems; environmental protection; system coordination; efficiency; and connectivity. All of these goals relate to managing congestion and improving air quality. The NJTPA’s congestion management process includes targeting congestion bottlenecks and hotspots and specifically aims to minimize single-occupant vehicle travel through multimodal, travel demand, and operational strategies.

NJDOT’s long-range plan includes a goal to counter traffic congestion with a multifaceted approach and support for alternate modes, including strategies such as spot congestion improvements, improved public transit, transportation demand management, and improved facilities for bicycling and walking.

For the New York-Newark urbanized area, partner agencies agreed that the effects of expected economic growth, especially in New York City, would exceed the impacts of investments to reduce traffic congestion. Continued increase in non-SOV travel was expected to mitigate the growth in traffic delay to some extent. However, the ability of the existing public transit systems to accommodate increased ridership is limited over the time frame for these targets (i.e., the next four years). Additionally, only data for 2017 PHED was available as targets were identified, and there was no historical trend data. However, related measures of congestion and delay showed recent increases, and a long-term forecast of similar measures suggested modest increases over time. The 2-year target for the non-SOV measure was to maintain the current percentage, and the 4-year target represented a slight increase in the percentage of non-SOV travel. For the PHED measure, the 4-year target was set to represent an increase of 2 percent per year in excessive delay per capita.

¹² In the New York-Newark urbanized area, the Census American Community Survey reports that for every four residents, there is approximately one vehicle used for commuting to work. The other residents either do not commute to work (e.g., work at home, children, unemployed or not in work force) or commute in carpools, buses, trains, subway, ferry, walk, or bike.

For the Philadelphia urbanized area, the partner agencies relied on vehicle miles of travel (VMT) forecasts by Delaware Valley Regional Planning Commission (DVRPC), the MPO for the greater Philadelphia region. DVRPC forecast 0.7 percent annual growth in VMT from 2015 to 2020, based on the travel demand model. On that basis, a 4-year target was set to reflect an increase in the PHED measure of 0.6 percent per year (slightly less than the forecasted growth in VMT). For the non-SOV measure, the partners agreed that the 2-year target would be a slight increase, and the 4-year target would be an additional slight increase in the percentage of non-SOV travel within the urbanized area.

The state departments of transportation and MPOs in the New York-Newark and Philadelphia urbanized areas set traffic congestion targets as required in May 2018, and reported them to FHWA in October 2018. This included, in July 2018, the NJTPA Board approval of a resolution establishing the urbanized area traffic congestion targets for both the New York-Newark and Philadelphia urbanized areas. The NJTPA also prepared the required CMAQ Performance Plan to accompany NJDOT’s 2018 baseline performance report (submitted to FHWA on October 1, 2018). Given the conditions assessed in 2020 (shown below) and the ongoing uncertainty due to the COVID-19 pandemic, no adjustment of the 4-year congestion targets was considered necessary.

Progress Toward Targets

The following chart details the established New Jersey statewide NHS congestion performance measure 2- and 4-year targets, the original baseline data that was used for their identification, and the actual congestion performance at the 2-year mid-period mark.

CMAQ Congestion Measures - Large Urbanized Areas - 2- and 4-year targets

Measure	Urbanized Area	Year of data collection->				
		2017	2019	2021	2017	2021
		Previous Condition	2-year target	2-year condition	2-year target met?	4-year target
Annual hours of peak hour excessive delay on NHS per capita (PHED)	New York-Newark (NY-NJ-CT) UZA	24.4 ^{1,2}	22.3 ³	22.0 ^{4,5}	✓	
	Philadelphia (NJ-PA-MD-DE) UZA	16.1 ^{1,2}	14.6 ³	17.2 ^{4,5}	✓	
		5-year American Community Survey (ACS) years->				
		2012-2016	2014-2018	2016-2020		
% non-SOV travel	New York-Newark (NY-NJ-CT) UZA	51.6%	51.6%	51.7% ⁵	✓	51.7% ⁵
	Philadelphia (NJ-PA-MD-DE) UZA	27.9%	28.0%	28.1% ⁵	✓	28.1% ⁵

Notes:

¹ Baseline values have been recalculated with new methods.

² For this first performance period, baseline and 2-year targets are not required for this measure. For official FHWA reporting purposes, the "baseline" will be the 2-year condition. However, NJTPA is showing the measure value from a previous year, which was used as a reference point for setting the target.

³ Reductions from previous condition are most likely from changes in the travel time data set.

⁴ The travel time data set continues to improve, but still does not accurately represent entire NHS.

⁵ There is uncertainty about the impacts of COVID-19 on this measure.

⁶ A diversified mix of multi-modal projects has preserved the relatively high level of non-SOV travel in these urbanized areas.

In 2020, FHWA accepted NJDOT’s submitted a State Biennial Performance Report and all attachments for Performance Period 2018-2021. The Report includes specifics on the New York-Newark and Philadelphia urbanized areas progress toward meeting established 2-year non-SOV targets. The urbanized areas both achieved their 2014-2018 targets.

NJDOT, the NJTPA and partner agencies throughout the urbanized areas continue to invest in projects and programs to address congestion and increasing the share of travel by modes other than single-occupant vehicle. The NJTPA CMP aims to avoid the addition of single-occupant-vehicle (SOV) capacity where possible, focusing instead on travel demand management, trip reduction, and support for alternate modes to address roadway-related needs. If new SOV capacity is warranted, other complementary strategies are identified to manage demand into the future.

The NJTPA spells out these priorities in Plan 2050 and Regional Capital Investment strategy guidelines noted earlier:

- use the NJTPA congestion management process and context-sensitive criteria to target roadway investments that improve travel time reliability and address bottlenecks and hotspots
- invest in technologies that deliver environmental benefits, improve reliability, manage congestion, and streamline traffic flow

Considerable resources are devoted to maintaining and enhancing the region's public transit system. Transportation system management and operations (TSMO) are anticipated to moderate some of the expected increase in roadway delay. Transportation demand management (TDM) programs can help to change travel behaviors in ways that meet travel needs while minimizing the impacts to delay. Changes in pricing (e.g., congestion pricing, fuel costs, transit fares) could also have impacts on excessive delay and non-SOV travel. Land use (e.g., transit oriented development, or TOD) will continue to affect trip making and the traffic on NHS roads. NJDOT highlights programs such as the Transit Village and Park/Ride Programs as well as education/outreach that help to sustain a high non-SOV travel share. Finally, while there is little expectation that public transit opportunities will be significantly expanded in the near term, there are plans and proposals for longer term expansions.

It is important to note, as discussed in Plan 2050, that the impacts of transportation network companies (TNCs, e.g., Uber and Lyft) and emerging advanced transportation technology are still being understood. These may lead to increases or decreases in these measures.

CMAQ Emissions Reduction

Background

As discussed in the previous section, FHWA’s CMAQ program provides funding for transportation investments that contribute to air quality improvements and provide congestion relief. While that section discussed performance measures relating to traffic congestion, this section discusses the emissions reduction performance measures. The CMAQ emissions reduction performance measures focus specifically on the impacts of CMAQ investments in areas that do not meet air quality standards (nonattainment areas) or that have not met them in the past (maintenance areas). These measures examine the total daily kilograms of emissions reduction of mobile source pollutants or precursors—including carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and fine particulate matter (PM_{2.5})—for CMAQ-funded projects in nonattainment and maintenance areas.

States and MPOs are responsible for setting targets for the emissions reduction measures if they contain or overlap nonattainment or maintenance areas. State DOTs and MPOs are required to set 2- and 4-year emissions reduction targets that represent estimated daily emissions reduction for anticipated CMAQ-funded transportation projects in nonattainment or maintenance areas. These targets focus on the pollutants or precursors for which designated areas are in nonattainment or maintenance status.

The national emissions reduction performance measures are:

- **Total emissions reduction for the following pollutants and precursors for CMAQ-funded projects within the corresponding nonattainment and maintenance areas:**
 - **Fine particulate matter (PM_{2.5})**
 - **Carbon monoxide (CO)**
 - **Ozone precursors:**
 - **Volatile organic compounds (VOC)**
 - **Nitrogen oxides (NO_x)**

NJTPA Air Quality Areas Targets and Goals

NJDOT’s *Transportation Choices 2030* includes several goals which support the reduction of on-road mobile source emissions, including: 1) integrating transportation and land use planning; 2) improving mobility, accessibility, and reliability; 3) operating efficiently; and 4) respecting the environment.

The NJTPA’s Plan 2050 goal to protect and improve natural ecosystems, the built environment and quality of life is supported by the vibrant [Transportation Clean Air Measures](#) (TCAM) program, which funds innovative projects to reduce transportation-related emissions. Supported by CMAQ funds, with guidance from the NJTPA Board and a Technical Advisory Committee, and working closely with regional and local partners, the NJTPA has advanced many priority TCAMs.

Targets for emissions reduction by CMAQ projects were developed to harmonize the NJDOT and MPO approaches and goals for air quality, with the NJDOT engaging MPO partners throughout the process. Because New Jersey is completely covered by MPO planning areas, targets for each MPO’s planning area

were identified, and then added together to arrive at statewide targets. All three MPOs in New Jersey agreed on the data and the process to arrive at the targets. NJDOT established the New Jersey statewide targets in May 2018 and reported to FHWA in October 2018. The NJTPA Board approved a resolution establishing the emissions reduction targets in September 2018.

As a baseline, the partners examined emissions reductions from CMAQ projects authorized during the prior four fiscal years (FY 2014 – FY 2017). The baseline used required data from the FHWA CMAQ Public Access System (PAS) with corrections including eliminating duplicate projects and adding projects not counted in the system.

For target setting, the group considered the baseline and the partner agencies’ commitment to sustaining the level of effort with CMAQ program pollutant reductions. Looking at the entire four-year baseline period was appropriate because of variations in specific projects from year to year. (The four-year sum also helps to address an accounting complexity for this measure—emission reductions are assigned to the first year that projects are authorized, even if the benefits are spread over longer periods.) The target setting also considered that vehicles are becoming cleaner (less polluting) over time, making it more challenging to achieve pollutant reductions by reducing vehicle miles traveled.

Given the conditions assessed in 2020 (described below) and ongoing uncertainty due to the COVID-19 pandemic and FHWA’s Buy America policies¹³ among other factors, no adjustment of the 4-year congestion targets was considered appropriate.

Progress Toward Targets

The established NJTPA air quality area emission reductions 2- and 4-year targets are shown here, along with the original baseline data that was used for their identification, and the actual performance assessed at the 2-year mid-period mark.

CMAQ Emission Reduction Measures - NJTPA AQ Areas¹ - 2- and 4-year targets²

Measure	Pollutant	AQ Area	Federal Fiscal Years->				
			FY2014-2017	Previous Condition	2-year target	2-year condition	2-year target met?
Total (cumulative) criteria pollutant reduction (kg/day) from CMAQ Projects in AQ Areas ¹	CO	New Jersey/NJTPA CO Areas ¹ (identical)	67.376	31.927	145.495	✓	63.010
	PM _{2.5}	New Jersey PM _{2.5} Areas ¹	9.572	4.290	156.936	✓	8.520
		NJTPA PM _{2.5} Areas ¹	4.312	1.663	48.382	✓	3.267
	VOC	New Jersey Ozone Areas ¹	44.493	17.682	157.750	✓	36.324
		NJTPA Ozone Areas ¹	31.937	14.026	79.241	✓	27.318
	NO _x	New Jersey Ozone Areas ¹	244.301	114.401	1500.520	✓	231.850
		NJTPA Ozone Areas ¹	206.771	101.722	752.218	✓	202.745

Notes:

¹ "AQ Areas" are nonattainment or maintenance areas for ozone, carbon monoxide or particulate matter. Note that for the emissions reduction measures, the NJTPA is required to set targets specific to the AQ Areas within its planning region. Where different, the statewide targets are also shown for reference.

² NJTPA regional targets were met mainly due to its share of statewide projects and programs. Given ongoing uncertainty due to COVID-19 and Buy America, the 4-year targets have not been changed even though they have already been met.

¹³ https://www.fhwa.dot.gov/construction/contracts/buyam_ga.cfm

All 2-year targets were achieved as gauged in 2020. FHWA accepted NJDOT's submitted a State Biennial Performance Report and all attachments for Performance Period 2018-2021. The report detailed the NJTPA progress along with that of the other New Jersey MPOs and of the state as a whole.

Using the data in the CMAQ PAS, all of the 2- and 4- year CMAQ emissions targets have been achieved both for the individual MPOs and Statewide. The NJTPA's target achievement is due to a combination of initiated/ongoing projects and the allocated distribution of the "No MPO identified"/state-sponsored projects. (In addition to reporting the values from the CMAQ PAS, New Jersey has developed an internal process to give a clearer picture of state progress on these measures. This process attributes emissions values only to those areas that are in maintenance/nonattainment areas.)

Targets for the emissions reduction measures specifically reflect the anticipated impacts of CMAQ-funded projects that are currently funded in the TIP, including those advanced through the TCAM program. The NJTPA, working with its partner agencies, will continue to identify and develop such CMAQ projects based on a performance-driven planning and programming process.