APPENDIX D: System Performance Report

Contents

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, and continued in the Infrastructure Investment and Jobs Act (IIJA) in November 2021 (also known as the Bipartisan Infrastructure Law, or BIL). 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.

Funding Program	*Performance Area*
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 (state DOTs). 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[1]. 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.

Connecting Communities, 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 *Connecting Communities*, 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 *Connecting Communities*), 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 *Connecting Communities* and elsewhere in the NJTPA process can be explored at https://www.njtpa.org/Planning/Plans-Guidance/Performance-Measures/Regional-Performance-Measures.aspx.

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[1] However, for some performance measures (e.g., CMAQ emissions reduction), certain MPOs (including the NJTPA) are required to set quantitative targets for their regions. Additionally, targets for the CMAQ traffic congestion measures are required to be set for large urbanized areas, cooperatively by the overlapping MPOs and state DOTs.

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. The safety measures are assessed as five-year averages. For example, the targets for 2025 reflect crashes that occurred on all public roads during calendar years 2021, 2022, 2023, 2024, and 2025. 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 2024 ASR set targets for CY 2025).

NJDOT updated the [New Jersey Strategic Highway Safety Plan](#) (SHSP) in August 2020, and is in the process of updating the plan in 2025. The NJ SHSP 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.

NJTPA Regional Targets and Goals

Starting with the CY 2023 targets (adopted in December 2022), the NJTPA Board has adopted annual roadway safety targets specific to the NJTPA region. The NJTPA Board adopted the most recent roadway safety targets (for 2025) in January 2025. These targets have been set using the long-term safety goal of eliminating roadway fatalities and serious injuries by 2050. In particular, the NJTPA has projected forward a straight line from the current number of fatalities and serious injuries out to zero fatalities and serious injuries by 2046 (so that the five-year average reaches zero by 2050). It then averages the

next year's projection from that line with estimates for the current year and values from the previous three years in order to calculate a five-year average for the target year[2].

Progress Toward NJDOT Statewide Targets

The following chart details the most recent New Jersey statewide roadway safety performance targets for which corresponding condition data is available[3]. These targets, for 2018-2022, were established by NJDOT and endorsed by the NJTPA in 2021. The corresponding actual safety performance conditions are shown for comparison with the prior targets.

In addition, current statewide 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	Previous Baseline [1]	Previous target [1]	Previous condition [1]	Previous target met?	Current Baseline	Current 1-year target
5-yr period->	2016–2020	2018–2022			2019–2023	2021–2025
# of Fatalities	585.6	565.0	617.6	✖	628.6	610.6
Rate (per 100 MVMT) of Fatalities	0.790	0.766	0.844	✖	0.852	0.810
# of Serious Injuries[2]	1,878.2	2,537.2	2,727.4	✖	3,045.4	2,788.0
Rate (per 100 MVMT) of Serious Injuries[2]	2.594	3.440	3.756	✖	4.132	3.696
# of Non-motorized Fatalities+Serious Injuries[2]	554.2	754.1	750.0	✔	827.6	760.6

Notes:

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

[2] 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 data on 2018-2022 safety conditions show that statewide fatalities (number and rate) and serious injuries (also number and rate) were all above the corresponding statewide target values (and all four of these measures increased from the baseline from two years prior). The only statewide target that was met was for the number of non-motorized fatalities and serious injuries. However, note that 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.)

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[2] Previously, the NJTPA Board had approved resolutions supporting the NJDOT's statewide roadway safety targets on an annual basis, beginning with the CY 2018 targets set in 2017.

[3] Roadway crash data, particularly for non-fatal crashes, often takes quite a while to be entered into the statewide crash database. Thus, the most current complete set of annual safety data (including both fatalities and serious injuries) is for CY 2022

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 <u>not</u> "meet or make overall significant progress" toward NJDOT's 2022 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 one of the five targets (number of non-motorized fatalities and serious injuries). Based on FHWA regulations, NJDOT is : (1) submitting an HSIP Implementation Plan for FY2025, and (2) making plans to use obligation authority equal to its FY2021 HSIP apportionment only for HSIP projects in FY2025 (and thus losing the flexibility to reprogram HSIP funds for other project types).

Progress Toward NJTPA Regional Targets

The following chart details the most recent NJTPA regional roadway safety performance targets. The "previous targets" in this chart (for 2018-2022) are not available because, as noted in the table footnote, NJTPA began adopting regional targets with the subsequent period (2019-2023), and complete crash data are not yet available to judge how the 2019-2023 targets have or have not been met.

Roadway Safety - All Public Roads in NJTPA Region - Five-year rolling averages - Annual targets

Measure	Previous Baseline [1]	Previous target [1]	Previous condition [1]	Previous target met?	Current Baseline	Current 1-year target
5-yr period->	2016–2020	2018–2022			2019–2023	2021–2025
# of Fatalities	355.4	N/A[2]	370.4	N/A[2]	382.0	399.9
Rate (per 100 MVMT) of Fatalities	0.658	N/A[2]	0.698	N/A[2]	0.718	0.700
# of Serious Injuries	1,298.6	N/A[2]	1,839.8	N/A[2]	2,047.2	2,047.2
Rate (per 100 MVMT) of Serious Injuries	2.448	N/A[2]	3.490	N/A[2]	3.858	3.720
# of Non-motorized Fatalities+Serious Injuries	402.2	N/A[2]	559.6	N/A[2]	654.2	706.0

Notes:

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

[2] NJTPA began adopting regional targets with the 2019-2023 period. Previously, NJTPA supported the statewide targets.

The 2025 targets (for the 2021–2025 five-year averaging period) represent increases over the 2019–2023 (baseline) averages for many of the measures. Note, however, that all the targets set a 2025 goal for a reduction in the **annual** fatalities and serious injuries, both motorized and non-motorized (compared to the corresponding 2024 estimated annual value). The charts shown below show how the projected annual number of serious injuries declines from 2024 to 2025, even though the five-year average values increase.

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 *Connecting Communities*, non-motorized fatalities and serious injuries have also increased in recent years.

Figure 1: Number of Fatalities

NJTPA Fatalities Target for 2025

Estimated 2024 annual based on NJSP data as of 10/29/24

Legend:
- NJTPA Annual Historic
- NJTPA 5-yr Avg Historic
- Previous NJTPA 5-yr Targets
- NJTPA 5-yr Target
- NJTPA 1-yr Targets (Zero by 2050)
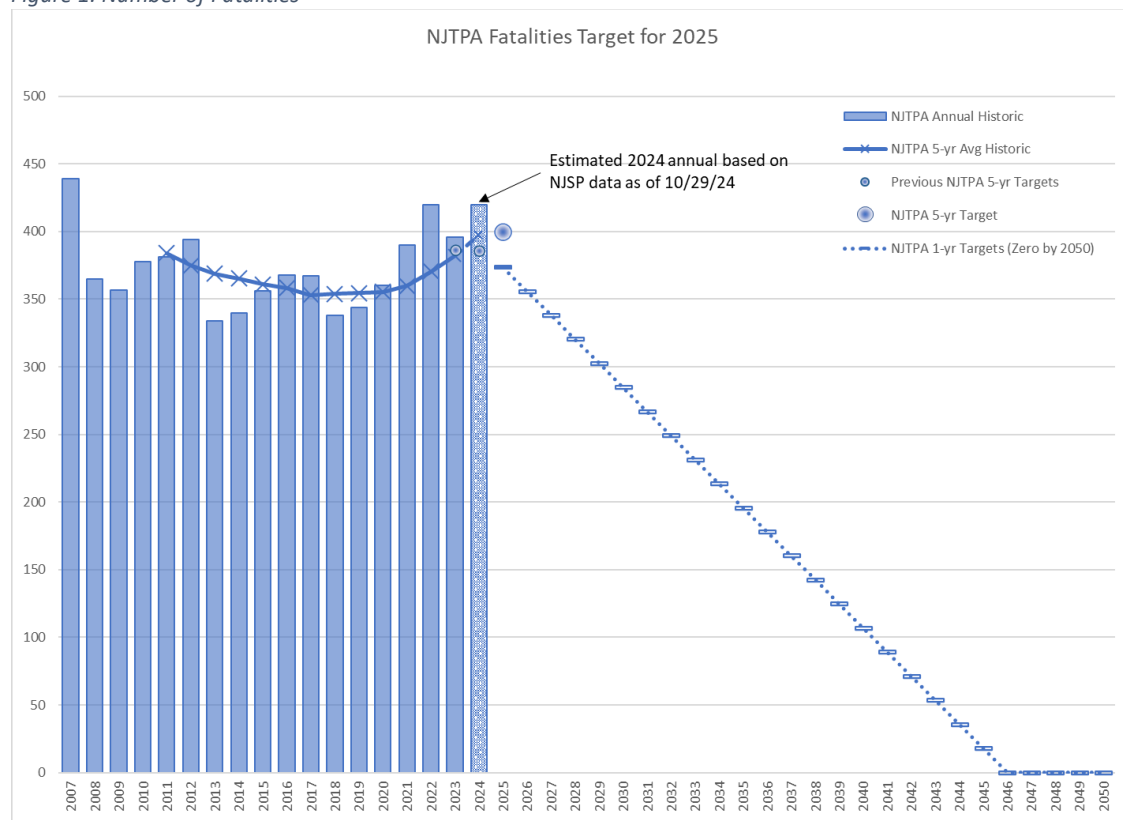
Figure 2: Fatalities per 100 million VMT

NJTPA Fatality Rate Target for 2025
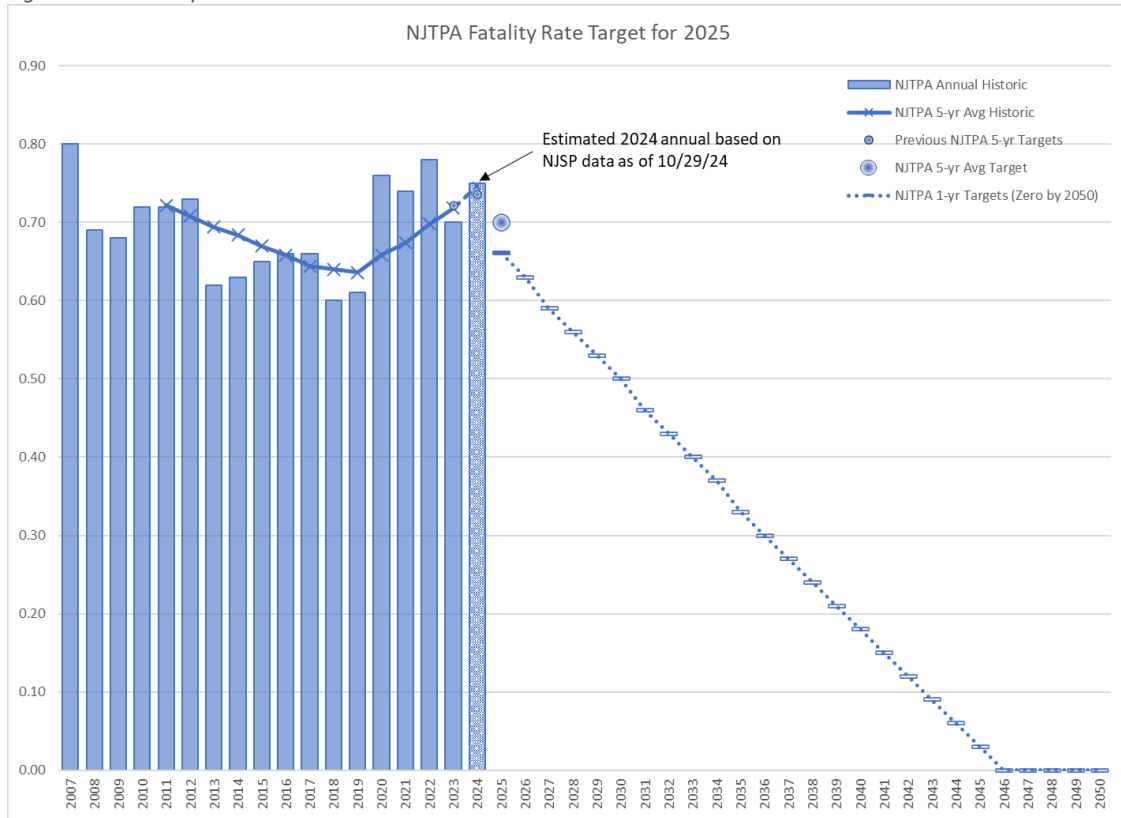
Figure 3: Number of Serious Injuries

NJTPA Serious Injuries Target for 2025
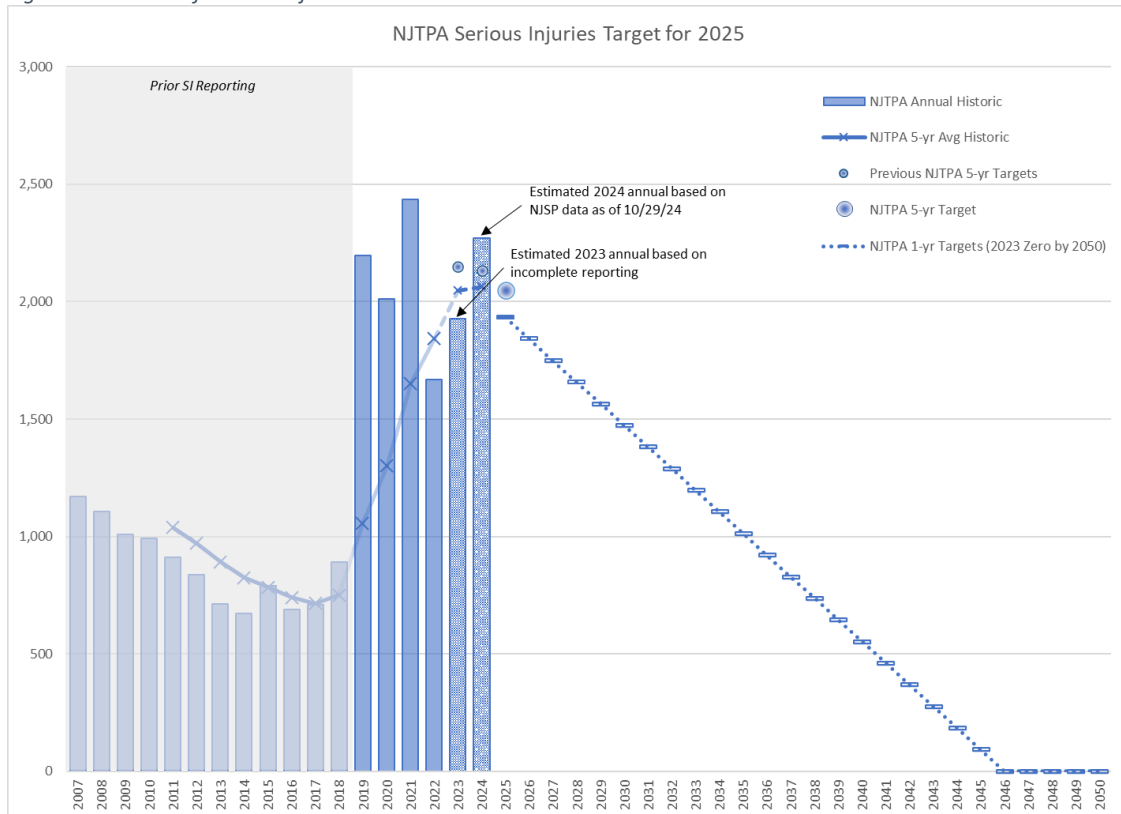
Figure 4: Serious Injuries per 100 million VMT

NJTPA Serious Injury Rate Target for 2025

Prior SI Reporting

Estimated 2023 annual based on incomplete reporting

Estimated 2024 annual based on NJSP data as of 10/29/24

Legend:
- NJTPA Annual Historic
- NJTPA 5-yr Avg Historic
- Previous NJTPA 5-yr Targets
- NJTPA 5-yr Avg Target
- NJTPA 1-yr Targets (Zero by 2050)
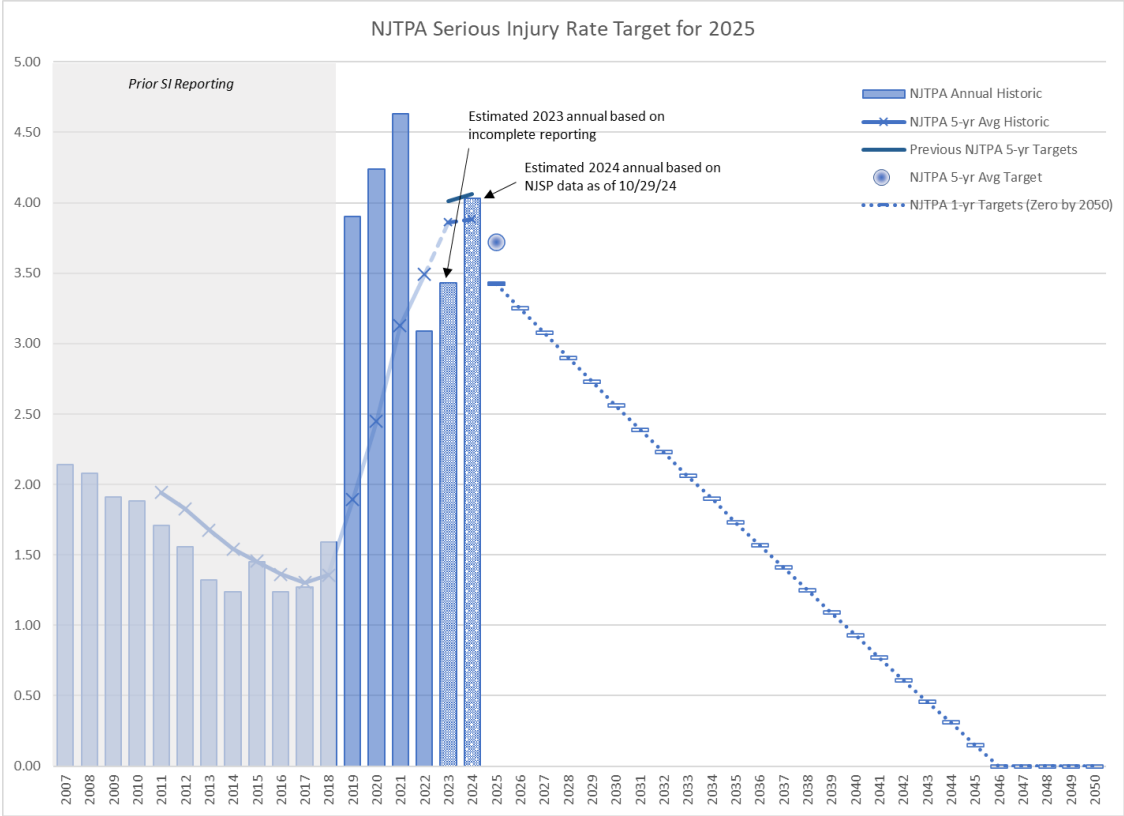
Figure 5: Number of Non-Motorized Fatalities + Serious Injuries

NJTPA Nonmotorized F+SI Target for 2025

Prior SI Reporting

Estimated 2024 annual based on NJSP data as of 10/29/24

Estimated 2023 annual based on incomplete reporting

Legend:
- NJTPA Annual Historic
- NJTPA 5-yr Avg Historic
- Previous NJTPA 5-yr Targets
- NJTPA 5-yr Target
- NJTPA 1-yr Targets (Zero by 2050)
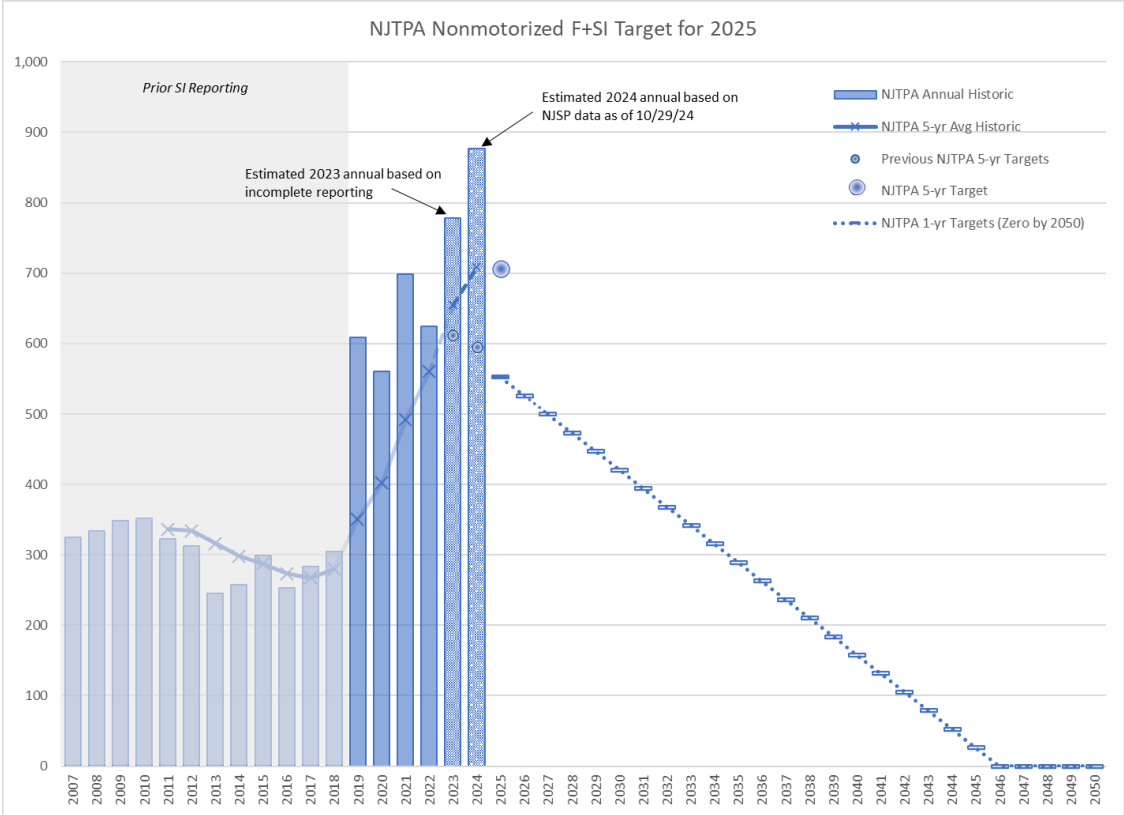
These trends are considered in *Connecting Communities* as the NJTPA continues to prioritize transportation safety for the region. The NJTPA Regional Capital Investment Strategy ([NJTPA RCIS](#)) encourages that improving safety and security be explicitly incorporated in the planning, design, and implementation 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 2025 and incorporate the latest crash data. All these priorities are closely aligned with addressing the established New Jersey and NJTPA 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 seven sets:

- Fatalities
  - **total number of fatalities reported to the National Transit Database (NTD), by mode**
  - **rate of fatalities, per million revenue vehicle miles (MRVM), by mode**
- Injuries
  - **total number of customer injuries reported to the NTD, by mode**
  - **rate of customer injuries, per MRVM, by mode**
- Collision Events
  - **total number of collision events reported to the NTD, by mode**
  - **rate of collision events, per MRVM, by mode**
- Employee Injuries
  - **total number of employee injuries reported to the NTD, by mode**
  - **rate of employee injuries, either per MRVM (for the light rail systems), or per 200,000 hours (for the bus operations), by mode**
- Fire Events
  - **total number of fire events reported to the NTD, by mode**
  - **rate of fire events, per MRVM, by mode**
- Assaults & Security Incidents
  - **total number of assaults & security incidents reported to the NTD, by mode**
  - **rate of assaults & security incidents, per MRVM, by mode**
- System Reliability
  - **mean distance between major service failures, by mode**

The first six sets of performance measures (fatalities, injuries, collisions, employee injuries, fires, and assaults/security incidents) 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.) The NTD reportable events include:

- 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 six sets of performance measures are per million vehicle revenue miles (MVRM), 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 safety performance targets for 2025 were developed as part of the PTASPs approved by NJ TRANSIT in 2024. These NJ TRANSIT targets are listed in the chart below. As noted in the chart, the safety targets were developed by taking the average for the performance measure values from the prior three calendar years. 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. Note that these are short-term targets; NJ TRANSIT's long-term goal is to reduce all these performance measures to zero.

The NJTPA Board approved a resolution supporting NJ TRANSIT initial safety targets in January 2021. These targets have been 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 have been monitored and considered in the NJTPA planning and programming process, and are posted on NJTPA's performance measures webpage (https://njtpa.org/performancemeasures).

Progress Toward Targets

The NJTPA's *Connecting Communities* 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 previous year (2023) targets set by NJ TRANSIT, along with the latest (2024) targets.

Transit Safety Measures - NJ TRANSIT - 1-year targets

Calendar years of data collection->	Previous Baseline 2020-2022 [2]	Previous target [1] 2021-2023	Previous target met?	Current Baseline 2021-2023 [3]	Current target [1] 2022-2024
Total number of fatalities reported to the NTD [4]					
Newark Light Rail	0	0	✔	0	0
Hudson Bergen Light Rail	1	1	✔	1	1
NJ TRANSIT Bus Operations	5	5	✔	5	5
Rate of fatalities per MVRM [5]					
Newark Light Rail	0.00	0.00	✔	0.00	0.00
Hudson Bergen Light Rail	0.65	0.65	✔	0.65	0.65
NJ TRANSIT Bus Operations	0.007	0.007	✖	0.064	0.064
Total number of customer injuries reported to the NTD [4]					
Newark Light Rail	2	2	✔	2	2
Hudson Bergen Light Rail	10	10	✔	10	10
NJ TRANSIT Bus Operations	160	160	✖	195	195
Rate of customer injuries per MVRM [5]					
Newark Light Rail	4.22	4.22	✖	4.53	4.53
Hudson Bergen Light Rail	6.46	6.46	✔	6.46	6.46
NJ TRANSIT Bus Operations	2.25	2.25	✖	2.67	2.67
Total number of collision events reported to the NTD [4]					
Newark Light Rail	3	3	✔	3	3
Hudson Bergen Light Rail	11	11	✔	7	7
NJ TRANSIT Bus Operations	222	222	✖	261	261
Rate of collision events per MVRM [5]					
Newark Light Rail	6.34	6.34	✖	6.46	6.46
Hudson Bergen Light Rail	7.10	7.10	✔	7.10	7.10
NJ TRANSIT Bus Operations	3.12	3.12	✖	3.57	3.57
Total number of employee injuries reported to the NTD [4]					
Newark Light Rail	6	6	✔	6	6
Hudson Bergen Light Rail	3	3	✔	3	3
NJ TRANSIT Bus Operations	406	406	✔	389	389
Rate of employee injuries per MVRM [5]					
Newark Light Rail	12.68	12.68	✔	11.64	11.64
Hudson Bergen Light Rail	1.94	1.94	✔	1.94	1.94
Rate of employee injuries per 200,000 hours					
NJ TRANSIT Bus Operations	5.70	5.70	✔	5.32	5.32
Total number of fire events reported to the NTD [4]					
Newark Light Rail	0	0	✖	2	2
Hudson Bergen Light Rail	1	1	✔	0	0
NJ TRANSIT Bus Operations	4	4	✔	3	3
Rate of fire events per MVRM [5]					
Newark Light Rail	0.00	0.00	✖	4.16	4.16
Hudson Bergen Light Rail	0.48	0.48	✔	0.00	0.00
NJ TRANSIT Bus Operations	0.06	0.06	✔	0.04	0.04
Total number of assaults & security incidents reported to the NTD [4]					
Newark Light Rail	1	1	✔	0	0
Hudson Bergen Light Rail	1	1	✔	0	0
NJ TRANSIT Bus Operations	3	3	✖	4	4
Rate of assaults & security incidents per MVRM [5]					
Newark Light Rail	1.99	1.99	✔	0.00	0.00
Hudson Bergen Light Rail	1.38	1.38	✔	0.00	0.00
NJ TRANSIT Bus Operations	0.04	0.04	✖	0.05	0.05
Mean distance between mechanical failures (miles)					
Newark Light Rail	4,823	4,823	✔	4,823	4,823
Hudson Bergen Light Rail	92,506	92,506	✔	92,506	92,506
NJ TRANSIT Bus Operations	6,313	6,313	✔	6,096	6,096

Notes:

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

[2] The "previous baseline" was developed by taking the average from calendar years 2020, 2021, and 2022.

[3] The "current baseline" was developed by taking the average from calendar years 2021, 2022, and 2023.

[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 conditions 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)**[4]

- *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) scale**[5]

- *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

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[4] 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.

[5] 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 providers[6]. NJ TRANSIT sponsors 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's latest Transit Asset Management (TAM) Plan is dated September 2022. 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 2019. 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.

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 FY2025), along with previous targets (for FY2024) and whether or not they were met with FY2024 condition data.

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[6] 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.

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

Measure	Previous target	Condition	Previous target met?	Current target
Fiscal year[1] of data collection->	**FY2024**			**FY2025**
Rolling Stock: Percent of revenue vehicles that have met or exceeded their ULB[2]				
AB - Articulated Bus	0.00%	0.00%	✔	0.00%
AO - Automobile	37.01%	26.80%	✔	100.00%
BR - Over-the-road Bus	6.89%	0.47%	✔	6.87%
BU - Bus	88.39%	85.20%	✔	93.15%
CU - Cutaway	64.95%	35.71%	✔	35.71%
LR - Light Rail Vehicle[4]	0.00%	0.00%	✔	0.00%
MV - Minivan	0.00%	0.00%	✔	100.00%
RL - Commuter Rail Locomotive	18.32%	18.13%	✔	19.77%
RP - Commuter Rail Passenger Coach	11.15%	10.99%	✔	11.15%
RS - Commuter Rail Self-Propelled Passenger Car	100.00%	100.00%	✔	100.00%
Equipment: Percent of non-revenue vehicles that have met or exceeded their ULB[2]				
Automobiles	45.10%	24.32%	✔	25.00%
Trucks and other Rubber Tire Vehicles	57.71%	45.86%	✔	51.48%
Steel Wheel Vehicles	39.68%	39.68%	✔	39.68%
Facilites: Percent of facilities rated below 3 on the TERM scale[3]				
Passenger/Parking Facilities	0.80%	0.26%	✔	2.60%
Administrative/Maintenance Facilities	0.95%	0.00%	✔	0.00%
Infrastructure: Percent of track segments with performance restrictions				
CR - Commuter Rail	1.75%	1.74%	✔	1.75%
LR - Light Rail	2.38%	0.95%	✔	0.00%
YR - Hybrid Rail	0.18%	0.18%	✔	0.00%

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.

Transit Asset Condition Measures - PATH - 1-year targets

Measure	Previous target	Condition	Previous target met?	Current target
Year[1] of data collection->	**2023**			**2024**
Rolling Stock: Percent of revenue vehicles that have met or exceeded their ULB[2]				
HR - Heavy Rail	0.00%	0.00%	✔	0.00%
Equipment: Percent of non-revenue vehicles that have met or exceeded their ULB[2]				
Steel Wheel Vehicles	9.00%	3.66%	✔	6.25%
Facilites: Percent of facilities rated below 3 on the TERM scale[3]				
Elevated Fixed Guideway Station	0.00%	0.00%	✔	0.00%
General Purpose Maintenance Facility/Depot	0.00%	0.00%	✔	0.00%
Heavy Maintenance & Overhaul (Backshop)	0.00%	0.00%	✔	0.00%
Other, Administrative & Maintenance	0.00%	0.00%	✔	0.00%
Underground Fixed Guideway Station	0.00%	0.00%	✔	0.00%
Vehicle Washing Facility	0.00%	0.00%	✔	0.00%
Infrastructure: Percent of track segments with performance restrictions				
HR - Heavy Rail	1.30%	0.00%	✔	0.00%

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

[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).

Connecting Communities calls for continuing strategic investment to make transit a viable alternative for an increasing share of residents. The current funding priorities are to maintain the system in a state of good repair and operate 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 the performance of the NHS assets.

PM2 requires State DOTs and MPOs to set two- and four-year targets for six pavement and bridge condition performance measures (listed below) every four years (with the option to modify the four-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 two- and four-year targets for the NHS pavement and bridge condition national performance measures within the New Jersey Transportation Asset Management Plan (TAMP). The latest NJDOT TAMP (dated December 2022) includes targets for 2023 (the two-year targets) and 2025 (the four-year targets), referencing baseline data from 2021. 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[7]. 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. In May 2023, the NJTPA Board adopted a resolution supporting the NJDOT's statewide two- and four-year targets for the six pavement and bridge performance measures for the 2022 through 2025 four-year performance period.

In October 2024, NJDOT submitted the required Mid Performance Period Progress Report to FHWA, covering the first two years of the performance period: 2022 and 2023. As part of that submission, NJDOT reported on the progress toward meeting the two- and four-year targets that were previously established for the various performance measures. As mentioned above, FHWA regulations allow state DOTs to adjust their four-year targets in the mid performance period report, and NJDOT chose to adjust the four-year targets for all six condition measures. In January 2025 the NJTPA Board adopted a resolution supporting the NJDOT's adjusted four-year targets.

The TAMP's ten-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 and maintain 80 percent of all State Highway System pavements in good or fair condition (using NJDOT's "condition status" metric), (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 state[8]. The four-year pavement condition targets were adjusted in the mid-period progress report. The new targets were based on projections from the updated conditions, projects in the 2024-2033 STIP, the goals and objectives in the TAMP, and the anticipated decline in pavement condition over the subsequent two years. NJDOT also considered the time required for project selection and project delivery.

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 one-third), other toll authorities (about one-sixth), and others (about 2 percent). Similar to the pavement measures, NJDOT adjusted the four-year bridge targets in the mid period progress report, based on projections from the updated conditions, projects in the 2024-2033

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[7] NJDOT and NJ TRANSIT are currently developing *Keep It Moving!*, the 2050 New Jersey long-range transportation plan. The plan will cover all modes of transportation in New Jersey including public transportation, pedestrians, cyclists, rail, vehicles, waterways, and aviation, See https://nj2050lrtp.com.

[8] 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…).

STIP, the goals and objectives in the TAMP, the anticipated decline in bridge condition over the subsequent two years, and the time required for project selection and project delivery.

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. 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 two- and four-year targets, the original baseline data that was used for their identification, and the actual pavement and bridge performance conditions at the two-year mid-period mark. In addition, current four-year targets are shown (including the adjustments noted above).

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

Measure	Baseline Condition	2-year target	2-year condition	2-year target met?	Initial 4-year target	Adjusted 4-year target
Year of data collection->	2021	2023			2025	
% Interstate pavement lane miles in good condition	75.7%	75.7%	72.1%	✖	77.0%	70.0%
% Interstate pavement lane miles in poor condition	0.1%	0.1%	0.3%	✖	0.1%	1.0%
% non-Interstate NHS pavement lane miles in good condition	41.6%	41.6%	41.5%	✖	43.0%	38.0%
% non-Interstate NHS pavement lane miles in poor condition	4.8%	4.8%	4.6%	✔	4.0%	5.0%
% NHS bridge deck area in good condition	21.3%	21.3%	20.3%	✖	23.0%	20.5%
% NHS bridge deck area in poor condition	6.6%	6.6%	5.7%	✔	6.0%	6.7%

As noted above, NJDOT submitted its Mid Performance Period Progress Report for the 2022 – 2025 four-year performance period in October 2024. The report includes specifics on New Jersey's progress toward meeting established two-year targets.

As shown in the above chart, the established two-year targets for the **percent of Interstate NHS pavement in good condition** and the **percent of Interstate NHS pavement in poor condition** were not met. In 2023, only 72.1 percent of the Interstate NHS pavement was in good condition compared to the target of 75.7 percent, and 0.3 percent was in poor condition compared to a target of 0.1 percent. As NJDOT explained in the mid performance period report, the percent Interstate in good condition target was not met primarily due to the fact that many of the completed improvements on the Interstates were limited to the secondary (or opposite direction) of travel, which is not included in the Highway Performance Monitoring System (HPMS) data that FHWA uses to monitor performance measures. The percent Interstate in poor condition target was not met due to the annual variability in data reporting, as discussed in the TAMP. The four-year target for the percent of Interstates in good condition has been updated based on projections from the new baseline conditions, the 2024 State Transportation Improvement Program (STIP) and the Transportation Asset Management Plan (TAMP). The four-year target for the percent of the Interstates in poor condition has been updated due to the low baseline for

the 2023 condition as well as a needed buffer for lead time required for project selection and project delivery.

The two-year targets for the **percent of non-Interstate NHS pavement in good condition** was just barely missed, while the two-year target for the **percent of non-Interstate NHS pavement in poor condition** was met. In 2023, 41.5 percent of the non-Interstate NHS pavement was in good condition compared to the target of 41.6 percent, and 4.6 percent was in poor condition compared to a target of 4.8 percent. Similar to the Interstate condition discussed above, the percent non-Interstate in good condition target was not met primarily due to the fact that many of the completed improvements on the non-Interstate NHS were limited to the secondary (or opposite direction) of travel. The four-year target for the percent of non-Interstate NHS in good condition has been updated based on projections from the new baseline conditions. The four-year target for the percent of the non-Interstate NHS in poor condition has been updated to reflect the 2023 condition as well as the anticipated decline in pavement condition over the next two-year timespan as discussed in the TAMP.

The two-year target for **NHS bridge deck area in good condition** was not met, while the target for **NHS bridge deck area in poor condition** was met. In 2023, 20.3 percent of the NHS bridge deck area was in good condition compared to the target of 21.3 percent, while 5.7 percent was in poor condition, compared to the target of 6.6 percent. The NJDOT explained that the target for bridges in good condition was not met because the additional funding from IIJA only resulted in modest changes due to the timeline for project delivery and the need to divert resources to reduce fair bridges moving to the poor category. The four-year target for bridges in good condition was updated to reflect current conditions and expected improvements, considering that a signficant amount of New Jersey's NHS bridges are owned by other jurisdictions that do not all receive federal bridge funding.

Connecting Communities 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 *Connecting Communities*. 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 delays 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, approximately 70 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)[9] 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 segment[10] 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.

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[9] The "longer" travel time is defined as the 80th percentile travel time, which is the time such that 80% of travel times are shorter.

[10] 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 two- and four-year travel time reliability and freight targets every four years (with the option to modify the four-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". The intent of this goal is 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 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 two-year and four-year travel time reliability targets, deciding for both Interstates and non-Interstate NHS roads to aim toward maintaining pre-pandemic levels for the two-year targets, but target slight improvements in travel time reliability for the four-year targets. .

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, NJDOT updated its Statewide Freight Plan in 2023. 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

- TTTR increased in 2021 compared to levels in 2020, but not to pre-pandemic levels. Comparing conditions in spring 2022 (when the target-setting analysis was conducted) to the previous year revealed that the TTTR had grown by approximately 0.1 to 0.5.
- Assuming that growth would continue through the end of 2022, and then through the next two years yields a two-year target of 1.90.
- Considering likely long-term growth in e-commerce along with a policy to improve reliability, a four-year target was established at 1.90.

NJDOT submitted these required reliability and freight targets for New Jersey to FHWA in October 2022. The NJTPA Board approved a resolution supporting the NJDOT's targets in April 2023. Based on the most recent data, the collaboration group decided not to adjust any of the four-year travel time and freight reliability targets.

Progress Toward Targets

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

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

Measure	Baseline Condition	2-year target	2-year condition	2-year target met?	4-year target
Year of data collection->	2021	2023			2025
% person-miles-traveled (PMT) on Interstate with reliable travel times (LOTTR)	94.0%	82.0%	90.0%	✔	83.0%
% PMT on non-Interstate NHS with reliable travel times (LOTTR)	92.2%	85.0%	88.4%	✔	86.0%
Truck Travel Time Reliability Index (TTTR) on Interstates	1.56	1.90	1.65	✔	1.90

As noted previously, NJDOT submitted its Mid Performance Period Progress Report for the 2022 – 2025 four-year performance period in October 2024. The report includes specifics on New Jersey's progress toward meeting established two-year targets.

As shown in the chart, the two-year targets were met for all three reliability measures. The state chose not to adjust their four-year targets.

NJTPA investment priorities are reflected in *Connecting Communities* and the Regional Capital Investment Strategy (RCIS), 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
- focus reliability-based ITS programs on corridors of large goods movement or where freight traffic is especially sensitive to reliability issues, as these improvements can strengthen the competitiveness of goods travel in the state.

The RCIS also includes a discussion of the anticipated travel time reliability impacts from different types of transportation projects.

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 *Connecting Communities* 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 200,000[11] with designated air quality nonattainment or maintenance areas for ozone (O_3), carbon monoxide (CO), or particulate matter (PM_{10} and $PM_{2.5}$). The NJTPA Planning Area overlaps three such UZAs: the New York—Newark, NY—NJ—CT ("New York-Newark"), the Philadelphia, PA—NJ—DE—MD ("Philadelphia"), and the Allentown, PA—NJ 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 measure[12] (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)

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[11] During the initial performance period (2018-2021), the requirement only applied to urbanized areas with populations above one million. For subsequent performance periods (i.e., starting in 2022), the requirement expands to UZAs with populations above 200,000. The FHWA publishes biennial applicability determination tables (https://www.fhwa.dot.gov/environment/air_quality/cmaq/measures/cmaq_applicability/index.cfm) specifying which UZAs apply to each MPO and state DOT.

[12] 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.

- Excessive delay – time traveling below 60 percent of posted speed limit (or 20 mph, whichever is greater)[13]. For example, if the speed limit is:
  - 65 mph, the extra time spent by traveling slower than 39 mph
  - 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 congestion[14].

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 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.

The state departments of transportation and MPOs in the New York-Newark, Philadelphia, and Allentown urbanized areas set the traffic congestion targets discussed below. In September 2022, the NJTPA Board approved a resolution establishing the urbanized area traffic congestion targets for the three urbanized areas. The NJTPA also prepared the required CMAQ Performance Plan to accompany NJDOT's 2022 baseline performance report (submitted to FHWA on October 1, 2022). Subsequently, the NJTPA Board approved a resolution to adjust the four-year non-SOV target for the Philadelphia UZA in September 2024, and prepared a CMAQ Performance Plan to accompany NJDOT's 2024 mid

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[13] Only the "extra" time is counted toward excessive delay, not the entire travel time.

[14] 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.

performance period report (submitted to FHWA on October 1, 2024). For more information on the CMAQ Performance Plans, visit https://njtpa.org/performancemeasures.

Percent Non-SOV Travel

For the New York-Newark urbanized area, over half (52.4%) of the residents used a non-SOV mode as their primary commute mode (as measured by the 2016-2020 five-year ACS). The trend has been a modest increase in recent years. Partner agency discussions on non-SOV travel (which includes working from home) centered around the impact of the COVID-19 pandemic on travel patterns. The group noted that while some workers were beginning to return to offices after working from home during the height of the pandemic, it is likely that (at least in the near term) telecommuting will remain higher than pre-pandemic conditions. Counter to that, some commuters that previously took transit may shift to driving alone, which would lower the percent of non-SOV commuters. Thus, the group anticipated that the sharp rise in non-SOV commuting seen during the height of the pandemic would likely not be maintained.

However, the group recognized that the data source for the non-SOV measure—surveys collected over a five-year time frame—may limit the responsiveness of the measure to changing conditions. This means that surveys collected in 2020 and 2021 will continue to be included in the performance measure throughout this performance period. Therefore, even to the extent that the pandemic impacts are transitory, any decreases in measured non-SOV travel would be diluted in the performance measure values until the next performance period. (Note that these discussions happened prior to the FHWA guidance on the data source for the non-SOV measure, discussed below.)

Based on these considerations, the New York-Newark UZA MPOs and state DOTs agreed that an appropriate two-year target for the non-SOV measure (corresponding to the 2018-2022 five-year ACS period) was to maintain the current percentage (52.4% non-SOV travel), and the four-year target would represent a slight increase in the percentage of non-SOV travel (to 52.5%). The New York-Newark UZA group decided not to adjust the four-year non-SOV target during mid performance period discussions in 2024.

For the Philadelphia UZA, slightly less than one third (30.6%) of the residents used a non-SOV mode for their journey to work as reported by the 2016-2020 5-year ACS. Similar to the New York-Newark UZA, non-SOV use in the Philadelphia UZA has shown modest increases in recent years, and the agency discussions highlighted similar considerations and uncertainties as discussed in the New York-Newark UZA. During the initial target-setting discussions in 2022, the Philadelphia UZA MPOs and state DOTs agreed that both the two- and four-year targets would represent a slight decrease in the percent non-SOV travel, to 30.0%. However, during the mid performance period discussions, the Philadelphia UZA coordination group decided to adjust the four-year non-SOV target upwards to 33%, given the increase in non-SOV travel that had resulted from travel changes during and following the pandemic. Note that this decision was made prior to receiving guidance from FHWA that the value of the non-SOV

performance measure would essentially become "frozen" at the value from the 2017-2021 5-year ACS[15], which was 32.8% for the Philadelphia UZA. Thus, the adjusted target of 33.0% will not be able to be met using the approved FHWA performance measure value.

For the Allentown UZA, slightly less than one fifth (19.7%) of the residents used a non-SOV mode for their journey to work as reported by the 2016-2020 5-year ACS. Historic values for non-SOV travel in the Allentown UZA were slightly lower pre-pandemic and averaged 18.6% for the prior two 5-year ACS periods (2014-2018 and 2015-2019). The Allentown UZA MPOs and state DOTs agreed to set both the two- and four-year targets to that pre-pandemic average value of 18.6%, which is slightly below the 2016-2020 reported value. The Allentown UZA group decided not to adjust the four-year non-SOV target during mid performance period discussions in 2024.

Peak Hour Excessive Delay

Based on data collected in 2021, the New York-Newark UZA experienced 20.9 person-hours per person of peak hour excessive delay. Target discussions included similar considerations as for the percent non-SOV measure. The group noted that traffic had returned to near pre-pandemic conditions, and that construction projects (which are anticipated to increase due to funding from the Infrastructure Investment and Jobs Act) would likely contribute to temporary increases in excessive delay. The group agreed that an appropriate two-year target (for 2023) would be a slight increase to 22.0 person-hours per person (which was the four-year target from the previous performance period). A four-year target (for 2025) reflected a subsequent slight decrease in excessive delay to 21.0 person-hours per person.

For the Philadelphia UZA, the estimate of current (2021) peak hour excessive delay was 13.1 person-hours per person. The consensus two-year target represented a slight increase to 15.2 person-hours per person, and the four-year target represented a subsequent very slight decrease to 15.1 person-hours per person.

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[15] Responding to a question about the data source that FHWA used to populate the actual two-year performance for the percent non-SOV travel measure in the 2024 mid performance period performance (MPP) report, FHWA said that, "The FHWA used the 2021 ACS Table DP03 5-year Estimate, instead of the 2022 ACS Table DP03 5-year Estimate, to derive the 2-year actuals for the Percent Non-SOV Travel Measure for the applicable urbanized areas, in accordance with 23 CFR 490. This data source selection was based on the fact that the 2021 ACS Table DP03 5-year Estimate, which reflects the 2010 Decennial Census Urban Areas, represents the 'most recent data' (23 CFR 490.709(f)(1)(i)) for the 'determined Urban Area' boundaries during the applicability determination in 2021 for the 2nd Performance Period (23 CFR 490.105(e)(8)(iii)(E) and 23 CFR 490.105(f)(5)(iii)(E)). While the 2022 ACS Table DP03 5-year Estimate was published more recently (on December 7, 2023) than the 2021 estimate (released on December 8, 2022), the 2022 ACS data is based on the 2020 Decennial Census Urban Areas. Since the determined boundaries for the 2nd Performance Period were not based on the 2020 Urban Areas, but rather on the 2010 Decennial Census Urban Areas, the 2021 ACS Table DP03 5-year Estimate is the data reflecting those determined boundaries."

Further, when asked about the data source for the four-year performance for the non-SOV measure, the FHWA stated that, "Because [the] 2021 ACS Table DP03 5-year Estimate … will be the 'most recent data' for the determined boundaries (based on 2010 Decennial Census), FHWA will use [this] data [set] to derive 4-year performance for the Percent Non-SOV Travel Measure … in the 2026 [full performance period report]."

For the Allentown UZA, the estimate of current (2021) peak hour excessive delay was 7.1 person-hours per person. The consensus was to set both the two- and four-year targets to the pre-pandemic average value of 8.4 person-hours per person, which is slightly above the 2021 reported value.

During the mid performance period discussions, all three UZA coordination groups decided not to adjust their four-year PHED target.

Progress Toward Targets

The following chart details the established urbanized area CMAQ congestion performance measure two- and four-year targets, the original baseline data that was used for their identification, four-year target adjustments (where made), and the actual performance at the two-year mid-period mark. Note that, due to the FHWA guidance for measuring percent non-SOV discussed above, the four-year condition is also shown for the non-SOV measure.

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

Measure	Urbanized Area	Baseline Condition	2-year target	2-year condition	2-year target met?	Initial 4-year target	Adjusted 4-year target	4-year condition	4-year target met?
Year of data collection->		2021		2023			2025		
Annual hours of peak hour excessive delay on NHS per capita (PHED)	New York-Newark (NY-NJ-CT) UZA	20.9	22.0	19.8	✔	21.0		N/A	N/A
	Philadelphia (NJ-PA-MD-DE) UZA	13.1	15.2	13.9	✔	15.1		N/A	N/A
	Allentown (PA-NJ) UZA	7.1	8.4	8.2	✔	8.4		N/A	N/A
5-year American Community Survey (ACS) years->		2016-2020		2019-2021 [1]			2019-2021 [1]		
% non-SOV travel	New York-Newark (NY-NJ-CT) UZA	52.4%	52.4%	53.4%	✔	52.5%		53.4%	✔
	Philadelphia (NJ-PA-MD-DE) UZA	30.6%	30.0%	32.8%	✔	30.0%	33.0%[2]	32.8%	✖
	Allentown (PA-NJ) UZA	20.4%	18.6%	22.3%	✔	18.6%		22.3%	✔

Notes:
[1] FHWA guidance states that, for the remainder of this performance period, the "latest available" non-SOV source from is the 2019-2021 ACS.
[2] The above FHWA guidance was not made available until after the Philadelphia UZA group had adopted their adjusted target.

As shown in the above chart, all three UZAs met their two-year targets for both CMAQ congestion measures. Progress toward the four-year targets for the non-SOV measure is shown because (as discussed above) FHWA guidance stipulates that we already know the "four-year condition" values.

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 *Connecting Communities* and the following Regional Capital Investment Strategy guidelines:

- use the NJTPA congestion management process and context-sensitive criteria to target roadway investments that improve travel time reliability and address bottlenecks and hotspots

- focus reliability-based ITS programs on corridors of large goods movement or where freight traffic is especially sensitive to reliability issues, as these improvements can strengthen the competitiveness of goods travel in the state
- identify roadway enhancements like access/egress and ramp redesigns or limited widenings that improve congestion, which can relieve stop-and-go congestion and associated emissions
- Consider roadway expansion only when the congestion management process is followed, and no other alternatives are possible to meet regional mobility needs.

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 *Connecting Communities*, 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 two- and four-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 (O_3) 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 *Connecting Communities* goal to protect and improve natural ecosystems, the built environment and quality of life is supported by NJTPA's [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. Working with NJDOT, all three MPOs in New Jersey agreed on the data and the process to arrive at the targets. NJDOT established New Jersey statewide targets and reported them to FHWA in October 2022. The NJTPA Board approved a resolution establishing NJTPA's emissions reduction targets in September 2022. In 2024, the coordination group met to discuss progress toward meeting the two-year targets, and agreed not to adjust the four-year targets.

As a baseline, the partners examined emissions reductions from CMAQ projects authorized during the prior four fiscal years (FY2018 – FY2021). 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 list of CMAQ projects during the four-year baseline period were examined, and projects that were considered to be "one-time" projects (and thus not likely representative of future CMAQ projects) were eliminated. The target setting also considered that vehicles are becoming cleaner (less polluting) over time, making it more challenging to achieve pollutant reductions from projects that reduce the amount of vehicle miles traveled.

To identify targets, the total reduction for each pollutant was calculated for the four years of the baseline period (FY2018 – FY2021), accounting for the relative "cleanliness" of the vehicles during each of the past four years. This total was then divided by four to get an annual average. The average was then projected forward for each fiscal year during the performance period (FY2022 – FY2025), again adjusting for the anticipated "cleanliness" of vehicles in the future. The two-year target was set as the sum of the emissions reduction projections for FY2022 and FY2023, and the four-year target was set as the sum of the emissions reduction projections for FY2022 through FY2025.

Progress Toward Targets

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

CMAQ Emission Reduction Measures - NJTPA AQ Areas[1] - 2- and 4-year targets

Measure	Pollutant	Baseline Condition	2-year target	2-year condition [3]	2-year target met?	4-year target
		FY2018-2021	FY2022-2023			FY2022-2025
Total (cumulative) criteria pollutant reduction (kg/day) from CMAQ Projects in AQ Areas[1]	CO	130.498	60.422	62.193	✔	114.796
	PM$_{2.5}$	12.339	4.659	0.610	✘	8.841
	VOC	18.013	8.384	3.816	✘	15.948
	NO$_x$	51.095	22.528	7.231	✘	41.425

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.

[2] Baseline conditions have been adjusted to remove "one-time only" projects, but not adjusted for changes in vehicle cleanliness over time.

[3] As reflected in the FHWA CMAQ Public Access System.

Note that the above chart only reflects quantitative emissions benefits entered into the CMAQ PAS. For several of the projects (both those specific to the NJTPA region and projects with statewide benefits), no quantitative emissions benefits have been entered to date. In other words, several projects remain unanalyzed and as a result, potentially significant emissions benefits have not been quantified for FY2022 and FY2023. As a result, it is unclear whether the two-year targets for PM$_{2.5}$, VOC, and NO$_x$ have not been met due to a lack of data, the fact that implemented projects are resulting in lower emissions benefits than forecasted when the targets were established, or both. Based on the available data on emissions reductions for projects in FY2022 and FY2023 as entered in the CMAQ PAS, the two-year targets for CMAQ emissions reductions for three of the four pollutants were not met.

The NJTPA region met its two-year target for CO emissions reduction. However, the data in the CMAQ PAS indicate that the region did not meet the two-year targets that were set for PM$_{2.5}$, VOC, and NO$_x$ emissions reductions. The failure to meet the two-year targets can be largely attributed to the lack of rigorous quantitative assessment of obligated CMAQ projects. The use of a qualitative approach resulted in a perceived deficit of emissions reductions benefits from obligated CMAQ projects.

The New Jersey Air Quality Working Group agreed to implement the following Action Plan to meet the four-year CMAQ emission benefit targets:

- NJDOT will establish a schedule to host NJ Air Quality Working Group meetings, which will occur as quarterly conference calls to ensure adherence to scheduling, data gathering, and technical analysis requirements. NJDOT will facilitate CMAQ coordination and establish roles and responsibilities for each partner in the CMAQ emission analysis process. The coordination with MPOs and other relevant agencies in the CMAQ targets evaluation and project selection will include NJDOT, NJDEP, the U.S. Environmental Protection Agency, FHWA, NJ TRANSIT, DVRPC, SJTPO, NJTPA, and the consultant team.
- All future CMAQ project analyses will use rigorous quantitative methodologies and qualitative assessment of emissions reduction benefits.

- NJDOT and its partner agencies will exclusively approve CMAQ projects with a demonstrated emissions reduction benefit, as established using the quantitative methodologies.
- For all projects and analyses, NJDOT will utilize the FHWA CMAQ toolbox and similar approved methodologies to calculate project emissions reduction benefits.
- Pursue project authorizations more rigorously to ensure projects are authorized and move forward in a timely manner.

NJDOT will rely on an improved emission analysis process and coordination with partner agencies to meet New Jersey's four-year CMAQ emission benefit goals. Following the above Action Plan, NJDOT's air quality planning team decided to keep the existing four-year CMAQ emission targets and expects to meet or exceed emission benefits from the proposed CMAQ projects for the next evaluation cycle.

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.