

## Chapter 4: **PERFORMANCE-BASED PLANNING AND PROGRAMMING**

Federal legislation (MAP-21 and the subsequent FAST Act) required state DOTs and MPOs to establish and use a performance-based approach in transportation decision making to achieve national goals. This includes tracking performance measures, setting data-driven targets for each measure, and selecting projects to help meet those targets. The FAST Act also required that the TIP include a description of its anticipated effect toward achieving the established performance targets, linking investment priorities to those performance targets.

The goal of performance-based planning and programming is to ensure targeted 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:

1. Safety;
2. infrastructure preservation;
3. congestion reduction;
4. system reliability;
5. freight movement and economic vitality;
6. environmental sustainability; and
7. reduced project delivery delays.

Regulations required by FHWA have established final rules on performance measures that address the seven goals, accordingly:

1. fatalities and serious injuries, both number and rate per vehicles miles traveled (VMT), on all public roads;
2. pavement condition on the Interstate system and on the remainder of the NHS;
3. performance (system reliability) of the Interstate system and the remainder of the NHS;
4. bridge condition on the NHS;
5. traffic congestion;
6. freight movement on the Interstate system; and
7. on-road mobile source emissions.

The regulations required by FTA have established a strategic and systematic process of operating, maintaining, and improving public capital assets effectively through their lifecycle. The performance management requirements are a minimum standard for transit operators and involve measuring and monitoring the following:

1. transit safety;
2. transit rolling stock;
3. transit equipment;
4. transit infrastructure; and
5. transit facilities.

The FHWA has established three performance measure regulations for roadway safety (PM1), bridge and pavement condition (PM2), and system performance (PM3). The FTA has established performance measures for Transit Asset Management (TAM) and Transit Safety. MPOs may either choose to support the respective state DOT and transit operator targets and the agencies' efforts to achieve the targets or develop their own

regional targets. For additional information or to view the latest Transportation Performance Management (TPM) updates, visit [www.dvrpc.org/TPM](http://www.dvrpc.org/TPM).

## 4.1 Highway Safety Performance Measures (“PM1”)

Highway safety is the first national goal identified in the FAST Act and had the earliest deadline for addressing progress toward meeting targets in the TIP. In March 2016, the FHWA Highway Safety Improvement Program and Safety Performance Management Measures Rule (Safety PM Rule) was finalized and published in the *Federal Register*. The rule requires state DOTs and MPOs to set annual targets for five safety-related performance measures with the understanding that reaching zero fatalities on all public roads will require time and significant effort. A *target* is defined in 23 CFR 490.101 as a quantifiable level of performance or condition, expressed as a value for the measure, to be achieved within a time period required by FHWA. The federal safety performance measures are consecutive five-year rolling averages for:

- **number of fatalities** (the total number of persons suffering fatal injuries in a motor vehicle crash during a calendar year);
- **rate of fatalities per 100 million VMT** (the ratio of total number of fatalities to the number of VMT in 100 million VMT in a calendar year);
- **number of serious injuries** (the total number of persons suffering at least one serious injury in a motor vehicle crash during a calendar year);
- **rate of serious injuries per 100 million VMT** (the ratio of total number of serious injuries to the number of VMT in 100 million VMT in a calendar year); and
- **number of non-motorized fatalities and non-motorized serious injuries** (the ratio of total number of serious injuries to the number of VMT in 100 million VMT in a calendar year).

State DOTs report baseline values, targets, and progress toward meeting the targets to FHWA in an annual safety report. MPOs may either establish quantitative targets for their metropolitan planning area or agree to adopt the statewide targets. FHWA requires DOTs and MPOs to establish safety targets on an annual basis, beginning with targets for calendar year (CY) 2018. The DVRPC Board adopted a resolution on January 25, 2018, supporting NJDOT’s statewide safety targets for CY2018. On January 28, 2021, the DVRPC Board agreed to plan and program projects that will contribute toward meeting or exceeding NJDOT’s statewide Roadway Safety targets; and that DVRPC will also work with its member governments and agencies to explore setting a regional target for future annual updates, in coordination with NJDOT.

FHWA will determine whether a state has met or made significant progress toward its safety performance targets. A state is considered to have met or made significant progress when at least four out of the five safety performance targets are met or the actual outcome for the safety performance target is better than baseline performance.

If a state has not met or made significant progress toward meeting its targets, the state must comply with the provisions set forth in 23 USC 148(i) for the subsequent fiscal year. The state shall:

- Use obligation authority equal to the HSIP apportionment for the year prior to the target year, only for HSIP projects.
- Submit a HSIP Implementation Plan that describes actions the state will take to meet or make significant progress toward meeting its targets. The HSIP Implementation Plan should guide the state’s project decisions so that the combined 148(i) provisions lead to the state meeting or making significant progress toward meeting its safety performance targets in subsequent years.

## Statewide Safety Targets and Goals in the New Jersey Strategic Highway Safety Plan

The New Jersey 2020 Strategic Highway Safety Plan (SHSP) is an action-oriented and data-driven statewide, coordinated safety plan that provides a comprehensive framework for reducing fatal and serious injury crashes on all public roads in New Jersey. Available online at [www.saferoadsforallnj.com](http://www.saferoadsforallnj.com), the SHSP was updated in collaboration with federal, state, county/regional, municipal, and non-profit and private safety stakeholders, including New Jersey's three MPOs, to focus on action-oriented and data-driven activities that will be most effective in reducing fatalities and serious injuries and by incorporating the five Es: Education, Enforcement, Engineering, Emergency Response, and Equity.

This New Jersey 2020 SHSP continues to support the national vision for highway safety—*Toward Zero Deaths: A National Strategy on Highway Safety*. Multiple agencies and stakeholders are cognizant that reaching zero fatalities will require time and significant effort by different partner agencies. Therefore, annual targets must be data driven, realistic, and achievable. Targets are important for agencies to make interim progress toward the long-term goal of Toward Zero Deaths in the SHSP. The goal of setting data-driven, realistic, and achievable performance targets each year will help agencies better utilize their safety resources in ways that can result in the greatest reduction in fatalities and serious injuries over time. The previous New Jersey 2015 SHSP established a statewide goal to reduce serious injuries and fatalities by 2.5 percent annually. The current New Jersey 2020 SHSP sets a more aggressive statewide goal to reduce serious injury and fatal crashes by 3 percent annually. Table 13 details New Jersey's latest statewide safety targets that the DVRPC Board agreed upon in January 2021 to plan and program projects that contribute toward meeting or exceeding NJDOT's statewide roadway safety targets.

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**Table 13: New Jersey Statewide Safety Targets and Progress**

SAFETY PERFORMANCE MEASURE	FIVE-YEAR ROLLING AVERAGE				2015–2019 TARGET ACHIEVED?	BETTER THAN 2013–2017 BASELINE?	MET OR MADE SIGNIFICANT PROGRESS? *
	2013–2017 BASELINE	2015–2019 TARGET	2015–2019 ACTUAL**	2017–2021 TARGET			
Number of Fatalities	577.6	605	582.6	574	Yes	No	Yes
Rate of Fatalities per 100 million VMT	0.761	0.780	0.756	0.740	Yes	Yes	Yes
Number of Serious Injuries	1,092.5	1,101.4	1,469.2	2,124.8	No	No	No
Rate of Serious Injuries per 100 million VMT	1.439	1.422	1.9	2.724	No	No	No
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	379.1	393.9	463.7	588.5	No	No	No

\*4 out of 5 targets must be met or have better performance than the baseline.

\*\*Based on preliminary data from NJDOT. FHWA will issue a decision based on final data.

Source: DVRPC, 2021

These targets were established after careful consideration of previous trends, recently constructed projects, and the current socioeconomic environment. The targets are based on actual five-year rolling average of fatalities and serious injuries from data and are reported to satisfy federal requirements with the understanding that New Jersey’s safety vision is to achieve zero deaths on all New Jersey public roads over time. This long-term safety vision requires time to change attitudes and behaviors and to construct infrastructure improvements to reduce the frequency and severity of crashes.

Using a five-year rolling average and projected numbers in the target calculation, as required, can result in a higher target number than baseline number in the short term. As a result of these uncertainties, NJDOT and other states took a cautious approach to setting targets, and DVRPC supported the state targets to align regional efforts with state goals. Moving forward, DVRPC will explore regional targets to determine if they could help the region make better progress toward local safety goals.

NJDOT and the MPOs are committed to directing resources to infrastructure-related safety strategies as we diligently strive to drive down fatalities and serious injuries with an ultimate safety vision of zero deaths. The New Jersey 2020 SHSP will continue to guide the development of safety projects and allocation of HSIP funding and other resources to reduce highway fatalities and serious injuries on New Jersey’s public roadways. Currently, highway safety improvement projects funded with HSIP funds are required to be consistent with New Jersey 2020 SHSP, such as developing and funding projects that adhere to one or more safety emphasis areas within the New Jersey 2020 SHSP: intersections, driver behavior, lane departure, data, equity, pedestrians and bicyclists, and other vulnerable road users. There are also various federal funding

flavors (e.g., Surface Transportation Block Grant Program–Philadelphia [STBGP-PHILA]) besides HSIP funds that can help support safety goals, but HSIP-funded projects must adhere to performance-based goals focusing resources on areas of greatest need and potential for the highest rate of return on the investment of HSIP funds on all public roads.

### **Coordination and Progress toward Highway Safety Targets**

To strengthen communication and coordination efforts, various technical safety experts and planning staff from the MPOs and NJDOT meet regularly to discuss HSIP project advancement and performance measure targets and goals.

Meeting the previous target (2015–2019) is determined by whether the 2015–2019 Performance—based on actual 2015–2019 crash records—either meets the target or is less than the previous baseline (2013–2017) that was used to establish the previous target. A state is considered to have met or made significant progress when at least four out of the five safety performance targets are met or the actual outcome for the safety performance target is better than baseline performance. The 2015–2019 Performance (actual) data is also the baseline, or the basis, for the new 2017–2021 targets. Upon review, New Jersey has met only two out of five targets, which are number of fatalities and rate of fatalities per 100 million VMT. FHWA has not issued a decision based on final data at the time of writing.

The TIP will continue to make progress toward target achievement. At the NJDOT statewide and DVRPC regional levels, projects and programs are selected for HSIP funding in New Jersey to help achieve a significant reduction of traffic fatalities and serious injuries on all public roads in the state to support achieving safety targets. The TIP includes various HSIP-funded safety projects and programs in the DVRPC Regional Highway Program and the Statewide Program to make progress toward safety targets.

HSIP funds are set aside every federal FY in the DVRPC TIP and the STIP to advance projects that are evaluated and ranked based on Benefit/Cost analysis, *Highway Safety Manual* analysis, fatal and injury crashes, application of systemic improvements, improvements on local roads, and deliverability. In the TIP, the DVRPC region is allocated \$3 million of HSIP funds annually as part of the State’s Financial Guidance for locally sponsored, HSIP-eligible projects on New Jersey HSIP-eligible High-Risk Rural Roads (DB #04314). The list of locations results from a data-driven analysis prepared by NJDOT that prioritizes fatal and serious injury crash concentrations in four categories: intersections, high risk rural roads, pedestrian corridors, and pedestrian intersections. Appropriate design and construction projects at these roadway locations are eligible for HSIP.

DVRPC, county and city partners, and NJDOT staff work together to develop safety projects at these locations. These projects are noted in Table 14. Potential projects are evaluated by using the *Highway Safety Manual* to ensure the identified safety improvement will have a positive benefit/cost ratio that meets NJDOT standards. In July 2015, NJDOT established a Systemic Pilot Program for Roundabouts to provide counties an opportunity to implement at least one modern roundabout on local roadways in each county. Counties in the DVRPC region have taken this opportunity.

The Statewide Program includes the following programs to improve safety throughout the State of New Jersey, such as but not limited to the following:

- **Highway Safety Improvement Program Planning (DB #09388)** is an annual program for Safety Management System and Rail-Highway safety improvement projects. Through the guidance of the HSIP (23 CFR 924), it identifies, prioritizes and implements safety programs and projects associated

with safe corridors and intersection improvement programs in an effort to reduce crashes and crash severity on New Jersey's roadways.

- **Motor Vehicle Crash Record Processing (DB #X233)** is an annual program that provides the in-house Crash Records unit with upgraded equipment and new methodology. The comprehensive crash record database will include driver/crash correlation, crash location, data for driver updates, and database cleaning (correction) process.
- NJDOT's **Rail Highway Grade Crossing Program, Federal (DB #X35A1)** is intended to eliminate hazards at rail-highway grade crossings, rehabilitate grade crossing surfaces, and install protective warning devices for roadways.
- **Safety Programs (DB #19370)** is an annual program to support HSIP eligible Safety Engineering Projects and pedestrian safety improvement projects, including engineering, Right-of-Way Acquisition and Construction activities intended to reduce fatalities and serious injuries on New Jersey roadways.
- **Utility Pole Mitigation (DB #15344)** is an annual program that seeks to identify and mitigate locations with incidents of high recurring utility pole accidents throughout New Jersey.

DVRPC has the TIP Project Benefit Evaluation Criteria, a set of criteria based on regional priorities that DVRPC staff use to evaluate new projects that are added to the TIP. The criteria were developed with New Jersey and Pennsylvania members of a working subcommittee of the DVRPC RTC and were designed to align directly with the multimodal goals of the Long-Range Plan and to reflect the increasingly multimodal nature of projects in the TIP. After defining the criteria, the working subcommittee weighted them, with higher weights equaling higher priorities for the DVRPC region.

In the TIP Project Benefit Evaluation Criteria, safety is rated as the highest priority. Further, all new TIP candidate projects are evaluated for how they could potentially impact safety-critical elements (for transit) and high-crash road locations, or whether they will incorporate one or more FHWA-proven safety countermeasures (for highway). See Appendix F of this document for further information about the TIP Project Benefit Evaluation Criteria.

Many other TIP projects funded with federal non-HSIP funds will provide safety benefits to the roadway system, such as Mount Ephraim Avenue Safety Improvements, Ferry Avenue (CR 603) to Haddon Avenue (CR 561) (DB #D1914) in the City of Camden where Concept Development was funded with local HSIP funds and originated from DVRPC's Local Safety Program (recall Section 2.8 Special Programs); and subsequent phases (because No-Build was not selected as the Preliminary Preferred Alternative at the end of Concept Development) are advanced with HSIP or local STBGP-PHILA or STBGP-TRENTON funds (whichever are appropriate). Resurfacing, guiderail and vegetation maintenance, and bridge improvement projects are all expected to provide safety improvements and help decrease fatality and serious injury crashes.

**Table 14:** Local Safety Roadway Projects in the TIP

SPONSOR	DB #	PROJECT TITLE AND MUNICIPALITY	SHSP EMPHASIS AREA	PHASE	Fiscal Year	COST (In Millions)
Burlington County	04314	Systemic Roundabout at CR 541 (Stokes Road) & CR 648 (Willow Grove Rd) in Shamong Township	Intersections	DES	2022	\$0.400 HSIP
				CON	2024	\$2.5 HSIP
Camden County	D1913	Sicklerville Road (CR 705) and Erial Road (CR 706) Systemic Roundabout in Winslow Township	Intersections	DES	2022	\$0.172 HSIP
				CON	2024	\$1.518 (\$0.500 HSIP/\$1.018 STBGP -PHILA)
Camden County	D1914	Mount Ephraim Avenue Safety Improvements, Ferry Avenue (CR 603) to Haddon Avenue (CR 561) in the City of Camden	Pedestrians and Bicyclists	DES	2023	\$0.738 HSIP
				CON	2024	\$9.835 STBGP-PHILA
Mercer County	D1910	Parkway Avenue (CR 634), Scotch Road (CR 611) to Route 31 (Pennington Road) in Ewing Township	Pedestrians and Bicyclists	DES	2023	\$0.450 HSIP
				CON	2025-2027	\$7 HSIP
Mercer County	04314	CR 583, US 206 (Princeton Ave) and Brunswick Circle extension in Lawrence Township	Intersections	CON	2022	\$2.264 HSIP

Source: DVRPC, 2021

Lastly, NJDOT develops an annual safety investment strategy for all HSIP-funded activities and projects. The annual investment strategy demonstrates the linkage between the objectives of the SHSP and the projects being implemented to focus on the most effective safety improvements.

## 4.2 Infrastructure (Pavement and Bridge) Performance Management Measures Rule (“PM2”)

The FHWA final rule for the National Performance Management Measures: Assessing Pavement Condition for the National Highway Performance Program and Bridge was published in the *Federal Register* (82 FR 5886) on January 18, 2017 and became effective on February 17, 2017. It established performance measures for all state DOTs to use to carry out the National Highway Performance Program (NHPP) and to assess the condition of pavements on the Interstate system, pavements on the NHS (excluding the Interstate system), and bridges carrying the NHS that include on- and off-ramps connected to the NHS. The NHPP is a core federal-aid highway program that provides support for the condition and performance of the NHS and the construction of new facilities on the NHS. The NHPP also ensures that investments of federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets as established in a state's Transportation Asset Management Plan (TAMP) for the NHS. This final rule establishes regulations for the new performance aspects of the NHPP that address measures, targets, and reporting.

The pavement and bridge performance measures include:

- percentage of Interstate pavements in good condition
- percentage of Interstate pavements in poor condition
- percentage of Non-Interstate NHS pavements in good condition
- percentage of Non-Interstate NHS pavements in poor condition
- percentage of NHS bridges by deck area classified in good condition and
- percentage of NHS bridges by deck area classified in poor condition.

Like PM1 (highway safety), MPOs must establish targets by either agreeing to support the state targets or establishing their own quantifiable targets no later than 180 days after a state DOT establishes (or amends) its targets. On October 23, 2018, the DVRPC Board agreed to support NJDOT's statewide Pavement and Bridge Infrastructure Performance targets and NJDOT's efforts at achieving those targets shown in Table 15 (pavement) and Table 16 (bridge) below.

### **Pavement Performance Targets**

The PM2 rule requires the state DOT to report and manage performance of the NHS, regardless of ownership or maintenance responsibility, for the full extent of the Interstate and Non-Interstate NHS. In New Jersey, almost 40 percent of the NHS is owned by 83 other owners, including authorities, counties, and municipalities.

Federal rulemaking 23 U.S.C. 119 requires that all distress component information be collected for one-10<sup>th</sup>-mile increments. Pavement condition is measured by four distress components (International Roughness Index, Cracking, Rutting, and Faulting), which are then translated to good, fair, or poor condition scores per FHWA criteria and then broken out into separate values for the Interstate and Non-Interstate NHS.

- **International Roughness Index** quantifies how rough the bituminous and concrete pavement is by measuring the longitudinal profile of a traveled wheel track and generating a standardized roughness value in inches per mile.
- **Cracking** measures the percentage of bituminous and concrete pavement surface that is cracked.
- **Rutting** measures the depth of ruts (surface depression) in bituminous pavement in inches.
- **Faulting** quantifies the misalignment between concrete slabs as the difference in elevation across transverse concrete pavement joints in inches.

Pavement in good condition suggests no major investment is needed. Pavement in poor condition suggests that major reconstruction investment is needed. Roughness affects travel speeds, safety, comfort, and transportation costs. Cracking, rutting, and faulting are surface indicators of underlying structural deterioration. All three pavement types consider the International Roughness Index and cracking. Bituminous pavements additionally consider rutting, while jointed concrete also utilizes faulting.

NJDOT used information from the 2016 Highway Performance Monitoring System supplement report card and preliminary data for 2017 to approximate the baselines (estimated current conditions) and develop targets (the desired SGR) by the May 2018 deadline. NJDOT then used its own pavement management system and its own measures, metrics, and budget information to predict performance on the State Highway System. A correlation analysis was developed and then applied to the State Highway System performance, which showed a gradually declining trend on both the Interstate and Non-Interstate NHS pavements at current funding levels. NJDOT also sent a survey to all NHS owners requesting past and future expenditures on NHS routes and qualitative information regarding future funding and pavement performance to help validate



results of the correlation analysis. This analysis led to the baseline and targets in Table 15 that the DVRPC Board unanimously supported on October 23, 2018. The DVRPC Board on January 28, 2021, revised certain four-year targets based on the biennial review, and agreed to plan and program projects that contribute toward meeting or exceeding NJDOT’s statewide Pavement Infrastructure targets.

**Table 15:** State National Highway System (NHS) Pavement Infrastructure Performance Targets and Progress

PAVEMENT INFRASTRUCTURE	CONDITION	2017 BASELINE	2019 TWO-YEAR TARGET	2019/ 2021 TWO-YEAR PERFORMANCE	ORIGINAL 2021 FOUR-YEAR TARGET	TWO-YEAR TARGET ACHIEVED?
Interstate Pavement Lane Miles	Good	61.25%	n/a	62.1%	50%	n/a
	Poor	1.01%	n/a	1.8%	2.50%	n/a
Non-Interstate NHS Pavement Lane Miles	Good	32.45%	25%	33%	25%	<b>Yes</b>
	Poor	2.38%	2.50%	10.7%	15%	No

Note that 2019 two-year targets for the Interstate are not required for the first performance period (hence “n/a”). The “Baseline” in the tables is based on data from CY2017.

Source: DVRPC, 2021

The federal Infrastructure PM Rule requires that less than 5 percent of Interstate miles be considered in poor condition to meet the federal threshold for pavement condition. If pavement conditions on the Interstate system fail to meet the federal minimum condition thresholds in the most recent year of the State biennial report, the state DOT must comply with the provisions set forth in 23 USC 119(f) for the subsequent fiscal year. The State shall:

- Use obligation authority to transfer a portion of State Transportation Planning (STP) funds to the NHPP for maintenance projects to address interstate pavement conditions.
- Submit a TAMP that describes actions the state will take to meet or make significant progress toward meeting its targets. The TAMP should guide the state's project decisions in order to meet or make significant progress toward meeting its infrastructure performance targets in subsequent years.

If a state has not met or made significant progress toward meeting its targets on the Non-Interstate NHS system, the state DOT shall:

- Submit a TAMP that describes actions the state will take to meet or make significant progress toward meeting its targets. The TAMP should guide the state's project decisions in order to meet or make significant progress toward meeting its infrastructure performance targets in subsequent years.

### Bridge Performance Targets

Similar to pavement, the PM2 rule requires the state DOT to report and manage performance of all bridges on the NHS, regardless of ownership or maintenance responsibility, including bridges on ramps connecting to the NHS and NHS bridges that span a state border. Statewide, NHS bridges are owned and maintained by various entities, including NJDOT (52 percent by deck area); transportation authorities and commissions (38 percent); and counties, municipalities, NJ TRANSIT, various other agencies, and private owners (10 percent). FHWA’s performance measures aim to assess bridge condition by deriving the percentage of NHS bridges rated in good and poor condition by deck area on the NHS. A structure’s overall condition rating is determined by the lowest rating of its deck, superstructure, substructure, and/or culvert. If any of the

components of a structure qualify as poor, the structure is deemed poor. 23 CRF 490.411(a) requires that no more than 10 percent of a state’s total NHS bridges by deck area be in poor condition. It is important to note that poor does not correlate to the safety rating of the bridge. The bridge condition performance measures are calculated by summing the deck area of bridges in “good” and “poor” condition and dividing by the total deck area of all NHS bridges.

As with the pavement condition measures, DVRPC relied upon NJDOT for calculation of bridge condition metrics and supported NJDOT’s statewide targets (the desired SGR) Table 16. Due to potential tool enhancements and limited available information, NJDOT has established conservative targets. In some respects, these may be more appropriately referred to as benchmarks. The DVRPC Board on January 28, 2021 agreed to plan and program projects that contribute toward meeting or exceeding NJDOT’s statewide Bridge Infrastructure targets.

**Table 16:** State NHS Bridge Infrastructure Performance Targets

BRIDGE INFRA-STRUCTURE	CONDI-TION	2017 BASELINE	2019 TWO-YEAR TARGET	2019 TWO-YEAR PERFOR-MANCE	TWO-YEAR TARGET ACHIEVED?	ORIGINAL 2021 FOUR-YEAR TARGET	REVISED 2021 FOUR-YEAR TARGET
NHS Bridge Deck Area	Good	21.70%	19.40%	22.1%	Yes	18.6%	21.3%
	Poor	6.5%	6.5%	6.8%	No	6.5%	6.8%

Source: DVRPC, 2021

## Coordination and Progress toward Pavement and Bridge Infrastructure Performance Targets

NJDOT continues to hold stakeholder meetings and workshops that included the assessment and analyses of the state NHS network pavement and bridges, as well as the State Highway System pavement and bridges; and discussions related to performance measures, targets and target setting approach, SGR objectives, issues, and challenges. Since a significant amount of the NHS in the state is owned by other jurisdictions, stakeholders included these non-NJDOT NHS owners. The MPOs in New Jersey assisted NJDOT with the collection and dissemination of data to the non-NJDOT NHS owners. The MPOs also agreed to use the infrastructure targets that NJDOT established and to adopt the statewide federal TPM infrastructure targets.

State DOTs must submit interim and full term (two- and four-year) progress reports for the PM2 and PM3 performance measures to demonstrate whether they have met or made significant progress toward meeting the targets. The states’ first two-year progress reports were submitted to FHWA in October 2020. Based on the progress reports, NJDOT adjusted some of their four-year targets as noted in the tables above.

The federal Infrastructure PM Rule requires that no more than 10 percent of the total deck area of bridges on the NHS be considered structurally deficient in order to meet the federal threshold for bridge condition. If a state has not met the federal threshold for bridge conditions for three consecutive years, the state DOT shall:

- Obligate and set aside NHPP funds for eligible NHS bridge projects. The set-aside will remain in effect until the state meets the threshold of less than 10 percent of bridge deck area classified as structurally deficient.

The NJDOT has continuously engaged with the state’s three MPOs during the TAMP development process, enabling the department to inform, collaborate, and coordinated with all NHS owners to obtain condition data and investment information. In 2017, NJDOT updated its Transportation Asset Management Policy to adopt transportation asset management as the official institutional approach to preserve infrastructure assets. The policy reflects the department’s commitment to apply a performance-based approach to managing transportation system performance outcomes. Transportation Asset Management is the application of this approach to manage the condition of infrastructure assets. In 2018, NJDOT prepared the Initial New Jersey TAMP, which has been certified by FHWA. In July 2020, FHWA issued its 2020 consistency determination, affirming that NJDOT developed and implemented the New Jersey TAMP consistent with federal requirements. The TAMP documents the risk-based approach for management of the NHS and State Highway System assets in New Jersey, identifies SGR Objectives for assets, and outlines investment strategies that will help achieve these objectives. The TAMP represents NHS assets, regardless of ownership.

The DVRPC region remains dedicated to system preservation for pavement and bridges. The current and DVRPC Long-Range Plan continue the emphasis on analysis related to transportation system preservation needs and funding, aligned with supporting the pavement and bridge condition performance targets, which in turn informs the fiscally constrained list of projects included in the Long-Range Plan and TIP. In the TIP, pavement and bridge preservation projects comprise almost half (47.9 percent) of Highway Program funds of the region. In addition, system preservation remains one of the top priorities in the DVRPC TIP Project Benefit Evaluation Criteria.

**BRIDGE PROJECTS AND PROGRAMS IN THE TIP:**

In the First-Four Years of the TIP, nearly \$329 million or 24.5 percent of the DVRPC Regional Highway Program funds (excluding STATE-DVRPC funds) is programmed on bridge repair/replacement/rehabilitation projects, accordingly:

<b>DB #</b>	<b>Title</b>
03304	Bridge Deck/Superstructure Replacement Program
11371	Route 47, Bridge over Big Timber Creek
14348	Route 45, Bridge over Woodbury Creek
14426	Route 130, Bridge over Big Timber Creek
15321	Route 70, Bridge over Mount Misery Brook
15324	Washington Turnpike, Bridge over West Branch of Wading River
16336	Route 1B, Bridge over Shabakunk Creek
16339	Route 130, Bridge over Millstone River
16340	Route 130, Bridge over Main Branch of Newton Creek
16342	Route 73 and Ramp G, Bridge over Route 130
18305	Prospect Street, Bridge over Belvidere-Delaware RR (Abandoned)
11326A	Route 76, Bridges over Route 130
11326C	Route 76/676 Bridges and Pavement, Contract 3
D1709	Kaighn Avenue (CR 607), Bridge over Cooper River (Roadway and Bridge Improvements)
D1710	Lincoln Ave/Chambers Street (CR 626), Bridge over Amtrak & Assunpink Creek
D2017	CR 706 (Cooper Street) Bridge over Almonesson Creek (Bridge 3-K-3)
D2018	Bridge No. C4.13 over Parkers Creek on Centerton Road
L064	Route 206, South Broad Street Bridge over Assunpink Creek

## PAVEMENT PROJECTS AND PROGRAMS IN THE TIP:

In the First-Four Years of the TIP, \$208 million or 15.5 percent of the DVRPC Regional Highway Program funds (excluding STATE-DVRPC funds) is programmed on pavement rehabilitation projects, accordingly:

### **DB # Title**

10341	Route 168, Merchant Street to Ferry Avenue, Pavement
11309	Route 130, Westfield Ave. to Main Street
12305	Route 47, Grove St. to Route 130, Pavement
12306	Route 42, Kennedy Ave. to Atlantic City Expressway
15375	Route 30, Cooper Street to Grove Street
15385	Route 38, Nixon Drive to Route 295 Bridge
15396	Route 168, Route 42 to CR 544 (Evesham Road)
07319B	Route 29, Cass Street to Calhoun Street, Drainage
D0302	Burlington County Roadway Safety Improvements
D0401	Gloucester County Roadway Safety Improvements
D0410	Camden County Roadway Safety Improvements
D0412	Mercer County Roadway Safety Improvements
D2208	CR 544 (Evesham Rd), NJ 41 to Schubert Ave
D2209	CR 758 (Coles Mill Rd), Farwood Rd to Grove St
D2210	CR 654 (Hurffville-Cross Keys Rd), CR 630 (Egg Harbor Rd) to CR 651 (Greentree Rd)
D2211	US 322/CR 536 (Swedesboro Rd), Woolwich-Harrison Twp Line to NJ 55
DR2201	Walt Whitman Bridge NJ Corridor Resurfacing
X51	Pavement Preservation

According to NJDOT's Statewide Capital Investment Strategy FY2013–2022, more than \$260 million (approximately 8 percent) of the annual investments go toward road assets. The New Jersey Transportation Trust Fund (TTF) provides \$400 million annually to all local governments in New Jersey for the funding of road, bridge, and other transportation projects. Some of these programs include the following.

The **Local Municipal Aid, DVRPC (DB #X98C1)** is an annual program for municipal road improvement projects, such as resurfacing, rehabilitation or reconstruction, and signalization. Projects involving bridge improvements, pedestrian safety improvements and bikeway improvements are also eligible to receive funds under Local Municipal Aid.

NJDOT's **County Aid (DB #X41C1)** program covers roads and bridges under county jurisdiction. Public transportation and other transportation projects are also included.

The NJDOT **Local Bridges, Future Needs Fund (DB #08387)** is an annual program that continues in the TIP. This program provides funding for improvements on county bridges. Currently, the state focuses on preventive maintenance, rehabilitation, and selective replacement of bridges.

The NJDOT **Local Aid Infrastructure Fund (DB #X186)** provides for various emergency and regional needs throughout the state at the county or municipal level, which includes the replacement or rehabilitation of orphan bridges.

In the TIP, the annual NJDOT **LFIF (DB #17390)** will continue to assist counties and municipalities with the impacts associated with the freight industry's use of infrastructure. Pavement and bridge preservation projects are LFIF eligible.

Finally, the **NJDOT Transportation Infrastructure Bank (DB #X186B)** remains in the Statewide Program. It will provide financial loans to public or private entities for the planning, acquisition, engineering, construction, reconstruction, repair, and rehabilitation of a transportation project or for any other purpose at a low interest rate. Camden County was the first in the State of New Jersey to receive financing from the NJDOT Transportation Infrastructure Bank for the Westfield Avenue (CR610) milling and overlay road reconstruction project that costs approximately \$2.1 million.

## 4.3 System (NHS, Freight, CMAQ) Performance Management Measures (“PM3”)

The FHWA final rule for the National Performance Management Measures; Assessing Performance of the NHS, Freight Movement on the Interstate System, and CMAQ was published in the Federal Register (82 FR 5970) on January 18, 2017 and became effective on May 20, 2017.

This final rule is the third in a series of three related rulemakings that together establish a set of performance measures for state DOTs and MPOs to use as required by MAP-21 and the FAST Act. The measures in this third final rule will be used by state DOTs and MPOs to assess the performance of the Interstate and Non-Interstate NHS for the purpose of carrying out the NHPP; to assess freight movement on the Interstate system; and to assess traffic congestion and on-road mobile source emissions for the purpose of carrying out the CMAQ Program. These system performance measures are collectively referred to as PM3 measures.

PM3 system performance measures include the following listed below that are divided into three categories: Travel Time Reliability (TTR), Congestion, and Emissions Reduction. Each category has its own measures.

### **TTR:**

- Percentage of Person-Miles Traveled (PMT) on the Interstate system that are reliable
- Percentage of PMT on the Non-Interstate NHS that are Reliable; and
- Interstate system Truck TTR Index.

### **CMAQ Congestion:**

- Annual Hours of Peak-Hour Excessive Delay (PHED) per Capita and
- Percentage of Non-SOV Travel.

### **CMAQ Emissions Reduction:**

- On-Road Mobile Source Emissions Reduction for CMAQ-Funded Projects.

Like PM1 and PM2, MPOs must establish targets by either agreeing to support the state targets or establishing their own quantifiable targets no later than 180 days after a state DOT establishes (or amends) its targets. On October 23, 2018, the DVRPC Board agreed to support NJDOT’s statewide NHS System Performance and Freight System Performance targets and NJDOT’s efforts at achieving those targets are shown in Table 17 and Table 18. The DVRPC Board agreed to support NJDOT’s CMAQ Congestion targets on May 24, 2018, and the CMAQ Emissions Reductions targets on September 27, 2018. These are not annual targets unlike PM1 (highway safety). The DVRPC Board on January 28, 2021 agreed to plan and program projects that contribute toward meeting or exceeding NJDOT’s system performance targets.

### **Travel Time Reliability (TTR) Targets**

The first major performance area under system performance is TTR. Reliability refers to the variability of travel times on road segments experienced by travelers. The less variability there is for any given set of

roadway segments, the more reliable those segments are. TTR does not mean eliminating traffic congestion but reducing its extremes to maintain consistent traveler expectations.

The measures for TTR are the percentage of PMT on the Interstate on the NHS with reliable travel times, and the percentage of PMT on the Non-Interstate NHS with reliable travel times. The measures are calculated by using the Level of TTR metric, defined as the ratio of the longer travel times (80th percentile) to a “normal” travel time (50th percentile).

TTR is assessed by using archived real-time vehicle probe data contained in the National Performance Management Research Data Set (NPMRDS) and then calculated with the assistance of the Probe Data Analytics Suite. The Probe Data Analytics Suite was created and maintained by the University of Maryland Center for Advanced Transportation Technology Laboratory (UMD CATT Lab), following FHWA guidance. Only current and some historical data is available through the Probe Data Analytics Suite; forecasts for these measures are not. The NJDOT Complete Team, which consists of planning and operations staff from NJDOT, all New Jersey MPOs, NJ TRANSIT, Port Authority of New York and New Jersey, New Jersey Turnpike Authority, and FHWA-New Jersey, had several meetings to discuss the underlying data, calculation tools and methods, baseline results, and target-setting approaches for the PM3 measures.

Long-term policies for the agencies support improvements to reliability. Given traffic growth and near-term projects and programs, the consensus was to have the required targets represent maintenance of current values for each TTR measure, as shown in Table 17.

**Table 17: State TTR (System Reliability) Targets and Progress**

NHS SYSTEM	2017 BASELINE	2019 TWO-YEAR TARGET	2019 TWO-YEAR PERFORMANCE	ORIGINAL FOUR-YEAR TARGET	TWO-YEAR TARGET ACHIEVED?
PMT on the Interstate with Reliable Travel Times	82.1%	82%	80.6%	82%	No
PMT on the Non-Interstate NHS with Reliable Travel Times	84.1%	n/a	86.2%	84.1%	n/a

Source: DVRPC, 2021

In order to observe future trends going forward and to revisit and adjust targets appropriately as a result of a more reliable NPMRDS v2 database, which is expected to be available over the next four to six years, NJDOT and the MPOs have collaboratively decided to keep the future two-year and four-year TTR targets for Interstate and Non-Interstate the same as the 2017 baseline values.

### Freight/Truck TTR Targets

The national system performance measure for freight is the Truck TTR Index and is required for Interstate highways on the NHS only. This measure is like the TTR measure and metric described above, but it is focused primarily on truck traffic. Truck TTR is the ratio between the “congested” (95th percentile) and “average” (50th percentile) truck travel times. This metric is averaged for all Interstate Road segments in the state, weighted by distance, resulting in the Truck TTR Index for the state. Unlike the TTR measures, there is no “threshold” that determines whether a segment is reliable or unreliable for trucks.

As with the TTR measures, the Truck TTR performance measure was based on the NPMRDS data source and calculated by using the UMD CATT Lab NPMRDS Analytics Suite tool but uses travel times specifically reported from trucks (where available). As with the previous TTR measures, the NJDOT Complete Team met several times to discuss and agree on the underlying data, calculation tools and methods, baseline results, and target-setting approaches. Again, long-term policies for the agencies support improvements to freight TTR.

**Table 18:** State Freight Reliability Performance Target on the NHS Interstate System and Progress

FREIGHT	2017 BASELINE	TWO- YEAR TARGET	2019 TWO-YEAR PERFORMANCE	Two-Year Target Achieved?	ORIGINAL FOUR-YEAR TARGET
Truck TTR	1.82%	1.9%	1.89%	Yes	1.95%

Source: DVRPC, 2021

As Table 18 above shows, the identified targets for freight performance on the NHS Interstate system represent a slightly worsening value in both the two-year and four-year targets compared to baseline due to anticipated increase in traffic (both overall and trucks specifically) and near-term projects and programs in the DVRPC FY2022 TIP for New Jersey.

### Coordination on TTR and Freight/Truck TTR Targets

DVRPC is committed to improving reliability on roadways within its region in New Jersey, as well as working with its county, city, and transit partners, and NJDOT staff to develop projects that will inevitably improve TTR and help meet state targets. As mentioned before, DVRPC proactively seeks to include freight as a primary planning factor through its Long-Range Plan, TIP development, and the conduct of technical studies. DVRPC’s goal is to serve the region’s freight stakeholders and maintain the Philadelphia-Camden-Trenton region as an international freight center. At the forefront of DVRPC’s Freight Planning Program is the Delaware Valley Goods Movement Task Force, a broad-based freight advisory committee that provides a forum for the private- and public-sector freight community to interject its unique perspectives on regional plans and specific projects.

In addition to NJDOT’s statewide projects and programs, DVRPC had programmed a local, county-sponsored intersection and operational CMAQ-funded congestion relief project in Hamilton Township via the FY2018 Competitive CMAQ Program (see DB #X065). These projects are described in more detail in the subsequent section, “Progress toward CMAQ Congestion and Emissions Reductions Targets”; and Table 3 in Section 2.5 Goods Movement and Economic Development shows a sampling of TIP projects that support freight mobility and TTR as part of promoting goods movements and economic development.

The FAST Act established the NHFP to improve the efficient movement of freight on the NHFN. NHFP’s eligibility criteria require that a project contribute to the efficient movement of freight and be identified in the state’s freight investment plan. States may use up to 10 percent of NHFP funding each year for public or private freight rail, water facilities (including ports), and/or intermodal facilities. In the TIP, projects programmed with federal NHFP and NHPP funds in the DVRPC New Jersey region are as follows:

- **Route 295/42/I-76, Direct Connection, Contract 4 (DB #355E)** is one of the last major construction contracts to relieve an existing bottleneck at an interchange and improve safety by providing direct connections among multiple highways.

- **Route 42 SB, Leaf Avenue Extension to Creek Road (CR 753) (DB #18313)**, a project carried over from the current FY2020 TIP into the TIP that may relocate access to NJ 42 ramps further down CR 753 and provide sufficient lane configurations to accommodate freight movement.

Further, the annual **New Jersey Rail Freight Assistance Program (DB #X34)** in the Statewide Program provides State Transportation Trust Funds for the rehabilitation and improvement of key elements of the New Jersey rail freight network. The DVRPC TIP Project Benefit Evaluation Criteria (Appendix F) also prioritizes reliability and congestion, investing in centers and the economy (including Freight Centers), and facility/asset condition and maintenance (which includes truck volume) for new project candidates. NJDOT and NJ TRANSIT sponsor numerous statewide programs that improve TTR. Many of these are funded through the CMAQ Program further detailed in this document's section 4.3 System (NHS, Freight, CMAQ) Performance Management Measures ("PM3") under "Progress toward CMAQ Congestion and Emissions Reductions Targets."

NJDOT's Statewide Freight Plan (published in 2017) identifies improving reliability and efficiency as one of its goals. This plan provides a well-defined blueprint for NJDOT investment, identifying discrete projects that immediately address critical freight system improvements. It also includes a fiscally constrained freight investment plan that identifies and prioritizes freight-related transportation projects. The Truck TTR Index was one of four factors that were used for project prioritization.

In addition to the Statewide Freight Plan cited above, NJDOT continues to spearhead various initiatives with the specific intent of improving infrastructure conditions for goods movement in New Jersey. These include:

- Freight Management System;
- Freight Performance Measures; and
- Truck Monitoring Program.

NJDOT is also developing an internal Freight Management System that would be used to advance freight-specific concerns into NJDOT's capital programming process.

DVRPC is an active participant in NJDOT's Freight Advisory Committee and the Eastern Transportation Coalition and served on the stakeholder group for the development of the 2017 NJDOT Statewide Freight Plan. The Eastern Transportation Coalition provides a forum for state, local, and regional transportation agencies and organizations from Maine to Florida to work together to improve transportation mobility, safety, efficiency, and system performance. Coalition members facilitate more efficient network operations through regional incident management planning, coordination, communication, and improved information management across jurisdictions and modes. DVRPC and the other two MPOs in New Jersey are also involved in the Metropolitan Area Planning Forum of the Greater New York Metropolitan Transportation Management Area, which identified regional freight initiatives as one of the key items to work on.

Finally, there are also several grant programs (outside of DVRPC) administered by the state and federal governments specifically targeting freight. NJDOT's LFIF assists counties and local municipalities with the mitigation of impacts on the local transportation system associated with the state's freight industry. USDOT's INFRA grant program (formerly known as the FASTLANE program) provides for major investments in roads, rail, transit, and port infrastructure. The projects awarded with NJDOT's LFIF, USDOT's INFRA grants in the DVRPC New Jersey region that directly support TTR, including freight, are:



#### **FY2021 NJDOT LFIF AWARDS (\$3.328 MILLION TOTAL):**

- \$183,000 for the Reconstruction of Union Landing Road - Phase 3 in Cinnaminson Township, Burlington County;
- \$1,050,000 for the Reconstruction of Hall Avenue & Heller Road in Bellmawr Borough, Camden County;
- \$440,000 for the Water Street Improvements in Gloucester City, Camden County;
- \$325,000 for Roadway Improvements to Heron Drive, Phase 2 in Logan Township, Gloucester County;
- \$700,000 for Paradise Road Resurfacing in West Deptford Township, Gloucester County;
- \$360,160 for the Industrial Drive Improvement Project in Hamilton Township, Mercer County; and
- \$270,000 for Thomas J Rhodes Improvement Project in Hamilton Township, Mercer County.

#### **FY2018 NJDOT LFIF AWARDS (\$9.990 MILLION TOTAL):**

- \$2.1 million for the Rising Sun Road-Dunns Mill Road Connector Road in Bordentown Township, Burlington County;
- \$850,000 for Charles Street Roadway Improvements in Gloucester City, Camden County;
- \$4 million for Route 44 Truck Bypass and Du-Pont Port Access Road in Gloucester County;
- \$2 million for the Paulsboro Marine Terminal Spine Road Grading, Paving and Striping Project in Gloucester County;
- \$300,000 for the reconstruction of Commerce Boulevard in Logan Township, Gloucester County; and
- \$740,000 for the Paulsboro-Greenwich Township Truck Route Improvements in Paulsboro Borough, Gloucester County.

#### **FY2011 USDOT TRANSPORTATION INVESTMENT GENERATING ECONOMIC RECOVERY (TIGER) AWARD (\$18.5 MILLION TOTAL):**

- \$18.5 million for the South Jersey Port Corporation's South Jersey Port Rail Improvements to repair the DelAir Bridge, a critical link to rail networks in Pennsylvania and New Jersey and upgrade the rail network from the bridge to the Ports of Salem, Paulsboro, and Camden to accommodate anticipated demand in rail/port traffic. The DelAir Bridge is currently completed and open to traffic.

#### **CMAQ Congestion Targets**

The federal CMAQ funds projects that reduce congestion and improve air quality. The CMAQ Congestion and Emissions Reduction Targets are specifically intended to reduce congestion, directly related to attributes of CMAQ-funded projects, and unlike other federally required performance measures, they specifically apply to urbanized areas with a population of over one million. Note that traffic congestion occurs when the amount of traffic far exceeds the physical capacity of the system, generally measured by the number of travel lanes on the roadway, the number of intersections, access points, and numerous other factors. Reliability is used in reference to the level of consistency in the transportation service provided by a roadway. For example, a roadway can be heavily congested, but if the amount and time of day when the congestion occurs on it is consistent, then it is considered reliable. USDOT established performance measures pertaining to reliability because empirical evidence exists to suggest that the traveling public values reliability more than straight travel times. Traffic Congestion and Reliability: Linking Solutions to Problems is available on the FHWA website at [ops.fhwa.dot.gov/congestion\\_report\\_04/chapter2.htm](https://ops.fhwa.dot.gov/congestion_report_04/chapter2.htm).

CMAQ Congestion has two measures for the applicable urbanized area, which are:

- **Annual Hours of PHED per Capita on the NHS:** The threshold for excessive delay is based on the travel time at 20 mph or 60 percent of the posted speed limit travel time, whatever is greater, and is measured in 15-minute intervals. The actual rule containing all the details is found in 23 CFR

490.707(a). The “excessive” part of the PHED name indicates that some level of congestion is recognized as not possible or desirable to eliminate and thus not counted. For example, some congestion can accompany economic activity in thriving places. The “per capita” implies that the total delay is shared by all residents, so some trips can be avoided or shifted to non-vehicular modes out of the peak period. This measure sums up the delay experienced by travelers throughout an entire year on NHS roads, specifically during peak periods.

- **Non- SOV travel on the NHS:** Non-SOV travel may include travel via carpool, vanpool, public transportation, commuter rail, walking, or bicycling, as well as telecommuting. The actual rule containing all the details is found in 23 CFR 490.707(b).

For the PHED per capita measure, only a four-year target is required at this time, while both two- and four-year targets are required from the base year for the Percentage of Non-SOV measure. The CMAQ Congestion Performance Targets that are established by NJDOT and supported by the DVRPC Board are shown in Table 19: *CMAQ Congestion Measures Targets on the NHS and Progress*.

**Table 19:** CMAQ Congestion Measures Targets on the NHS and Progress

DVRPC URBANIZED AREAS	CMAQ CONGESTION MEASURES	2017 BASELINE	TWO-YEAR TARGET	2019 TWO-YEAR PERFORMANCE	TWO-YEAR TARGET ACHIEVED?	FOUR-YEAR TARGET
Philadelphia PA-NJ-DE-MD	Non-SOV Travel	27.9%	28%	28.2	Yes	28.1%
	Annual PHED per Capita	16.8	n/a	14.6	Yes	17.2 Hours per Capita
New York-Newark NY-NJ-CT	Non-SOV Travel	51.6%	51.6%	51.6	Yes	51.7%
	PHED per Capita	20	n/a	22.3	No	22 Hours per Capita

Notes:

1. Baseline for Non-SOV Travel is based on 2012-2016 American Community Survey (ACS).
2. PHED per Capita Four-Year Target assumes a growth of +0.6 percent per year.
3. See DVRPC’s CMAQ Performance Plan for 2018–2021 (Publication #TM19003)

Source: DVRPC, 2021

The DVRPC region is part of the Philadelphia PA-NJ-DE-MD Urbanized Area and includes a small portion of the New York-Newark NY-NJ-CT Urbanized Area in Mercer County, New Jersey.

### Coordination on CMAQ Congestion Targets

Pursuant to the FAST Act and MAP-21, and the ensuing requirements of 23 CFR Part 490, the National Performance Management Measures Final Rule, all state DOTs and MPOs that contain, within their respective boundaries, any portion of the NHS network within the urbanized area must establish a single unified target for the congestion measures. In other words, all performance areas require single statewide targets or their own regional target, except for the two CMAQ congestion measures (PHED per Capita and Percentage of Non-SOV), where requirements apply to urbanized areas with a population over one million. DVRPC staff collaborated with multiple agencies in developing and agreeing on a single realistic target for each of the two measures.

In the case of the Philadelphia PA-NJ-DE-MD Urbanized Area (“Philadelphia Urbanized Area”), this means that DVRPC collaborated with the Lancaster County Transportation Coordinating Committee (LCTCC), North Jersey Transportation Planning Authority (NJTPA), South Jersey Transportation Planning Organization (SJTPA), Wilmington Area Planning Council (WILMAPCO), Pennsylvania Department of Transportation (PennDOT), New Jersey Department of Transportation (NJDOT), Delaware Department of Transportation (DelDOT), and Maryland Department of Transportation (MDOT) in developing and agreeing on a common congestion measure baseline and targets for the Philadelphia Urbanized Area. Since there is a portion of the New York-Newark NY-NJ-CT Urbanized Area (“New York Urbanized Area”) in Mercer County, New Jersey, within the DVRPC region, DVRPC also collaborated with the NJTPA, the New York Metropolitan Transportation Council (NYMTC), NJDOT, the New York State Department of Transportation (NYSDOT) and others to adopt a common congestion measure baseline and targets for that urbanized area.

On May 24, 2018, the DVRPC Board agreed to support CMAQ Congestion performance measure targets for PHED per Capita and Percentage of Non-SOV travel for the Philadelphia and New York urbanized areas. On January 28, 2021, the Board agreed to continue to plan and program projects that contribute toward meeting or exceeding NJDOT’s statewide system performance targets.

DVRPC is an MPO that serves a Transportation Management Area with a population greater than one million that includes a non-attainment or maintenance area. As such, DVRPC was required to develop a CMAQ Performance Plan for 2018–2021 to support the implementation of these CMAQ congestion measures. In the CMAQ Performance Plan, which is required to be updated biennially through the performance period, the MPO must describe how they plan to meet the targets, detail their progress toward achieving the targets over the course of the Performance Plan, and include a description of projects identified for funding that will contribute to achieving targets. The DVRPC Board approved the submission of the DVRPC’s CMAQ Performance Plan for 2018–2021 (Publication #TM19003) to NJDOT for submission to FHWA on September 27, 2018. The other MPOs in New Jersey (SJTPA and NJTPA) were also required to submit a CMAQ Performance Plan for the same period. In October of 2020, the Board adopted the DVRPC CMAQ Mid-Performance Period Progress Report (2018–2019) (Publication #TM21003).

### **CMAQ Emissions Reduction Targets**

DVRPC coordinated efforts with NJDOT and other MPOs in the state to develop cumulative On-Road Mobile Source Emissions two-year and four-year targets as daily kilograms. MPO regional targets in Table 20 were used to develop NJDOT’s statewide on-road mobile emissions reductions targets displayed in Table 21. Page 15 of DVRPC’s CMAQ Performance Plan for 2018–2021 (Publication #TM19003) describes the process in developing the regional targets.

**Table 20:** CMAQ On-Road Emissions Reductions Targets (in Daily Kilograms) for the DVRPC New Jersey Region and Progress

POLLUTANT	2018–2019 TWO-YEAR TARGET	2018–2019 TWO-YEAR PERFORMANCE	2018–2019 FOUR-YEAR TARGET
VOC	1.45	70.13	2.864
NO <sub>x</sub>	7.453	668.79	14.861
PM <sub>2.5</sub>	2.627	108.52	5.253

Source: NJDOT, 2021

**Table 21:** NJDOT Statewide CMAQ On-Road Emissions Reductions Targets (in Daily Kilograms) and Progress

POLLUTANT	2017 Baseline	TWO- YEAR TARGET	2019 TWO-YEAR PERFORMANCE	TWO-YEAR TARGET ACHIEVED?	FOUR- YEAR TARGET
VOC	44.493	17.682	157.75	Yes	36.324
NO <sub>x</sub>	244.301	114.401	1500.52	Yes	231.850
PM <sub>2.5</sub>	9.572	4.29	162.02	Yes	8.52

Source: NJDOT, 2021

### Coordination and Progress toward CMAQ Emissions Reduction Targets

DVRPC has coordinated emissions reduction target setting with both PennDOT and NJDOT to establish emissions reduction targets from CMAQ-funded projects in the relevant portions of the DVRPC planning areas. Each state has developed state-level emissions reductions targets that account for emissions reductions at the MPO level. On September 27, 2018, the DVRPC Board agreed to support NJDOT’s statewide CMAQ Emission Reduction Targets and NJDOT’s efforts at achieving those targets mentioned above, as well as to adopt the MPO regional targets, and approve DVRPC to submit the CMAQ Baseline Report and Performance Plan for 2018–2021 (Publication #TM19003) to NJDOT for submission to FHWA. In October of 2020, the DVRPC Board adopted the mid-period performance plan (publication #TM21003). The statewide CMAQ performance and targets are built upon the regional CMAQ performance and targets.

If the states and MPOs do not meet the two-and-four-year targets, they are able to adjust the targets and evaluate future CMAQ investments that may improve progress towards meeting the targets. In May 2020, NJDOT and the New Jersey MPOs agreed that DVRPC has outperformed the CMAQ two- and four-year emissions reduction targets for the applicable pollutants in the New Jersey portion of the DVRPC planning area.

DVRPC continues to select projects and programs that have a positive air quality benefit in terms of reducing mobile source emissions to help DVRPC and the State of New Jersey meet two- and four-year targets for traffic congestion and on-road mobile source emissions. The latest FY2020 Competitive CMAQ Program that DVRPC administered throughout CY20 to CY21 selected various projects that will support the CMAQ Congestion and Emissions Reductions Targets and were approved by the May 2021 DVRPC Board for authorization in FY22, FY23, or FY24. There are also intersection/interchange improvement (totaling \$52 million over the First-Four Years) and signal/ITS improvement projects (\$6.7 million over the First-Four Years) on the TIP’s Highway Program that will help meet these targets, accordingly:

## INTERSECTION/INTERCHANGE IMPROVEMENTS ON THE TIP:

### DB # Title

04314 Local Safety/ High Risk Rural Roads Program  
12307 Route 38, South Church Street (CR 607) to Fellowship Road (CR 673), Operational and Safety Improvements  
15302 Route 41 and Deptford Center Road  
18313 Route 42 SB, Leaf Avenue Extension to Creek Road (CR 753)  
9212C Route 206, Monmouth Road/Juliustown Road Intersection Improvements (CR 537)  
D0701 Princeton-Hightstown Road Improvements, CR 571  
D1910 Parkway Avenue (CR 634), Scotch Road (CR 611) to Route 31 (Pennington Road)  
D1913 Sicklerville Road (CR 705) and Erial Road (CR 706) Systemic Roundabout  
X35A1 Rail-Highway Grade Crossing Program, Federal

## SIGNAL/ITS IMPROVEMENTS ON THE TIP:

### DB # Title

01300 Transportation Systems Management and Operations (TSMO)  
D1601 New Jersey Regional Signal Retiming Initiative  
D2004 Transportation Operations  
D2020 New or Upgraded Traffic Signal Systems at Intersections, Phase 1  
D2021 New or Upgraded Traffic Signal Systems at Intersections, Phase 2  
D2022 New or Upgraded Traffic Signal Systems at Intersections, Phase 3

DVRPC will also continue to promote and develop projects and programs with air quality benefits to its counties and planning partners. As part of the DVRPC CMP, DVRPC facilitates a CMP Planning Advisory Committee and generates a list of the top 10 bottlenecked locations for both State and Authority roadways, and County and Local roadways. The objectives for DVRPC's CMP are to (1) minimize growth in recurring congestion and improve reliability of the transportation system; (2) provide transit where it is most needed for accessibility; (3) maintain the existing core transportation network; (4) improve safety and reduce non-recurring congestion by reducing crashes; (5) maintain movement of goods by truck; (6) maintain transportation preparedness for major events, especially ones that call for inter-regional movements far beyond normal and serve routine needs; and (7) at the end of the day, ensure that all transportation investments support DVRPC Long-Range Plan principles. Section 2.4 Congestion Management Process of explains more about the CMP. Lastly, DVRPC works with its counties, cities, and NJDOT to develop problem statements for future congestion relief projects that will hopefully also result in improved TTR, congestion mitigation, and improved air quality.

Besides the DVRPC local CMAQ Program and examples of projects above, NJDOT and NJ TRANSIT have several statewide programs that help reduce emissions (as well as congestion), throughout the state. These are listed below.

**Bicycle and Pedestrian Facilities/Accommodations (DB #X185)** continues to be a comprehensive program to ensure the broad implementation of the Statewide Bicycle and Pedestrian Master Plan, Complete Streets Policy, and the implementation of federal and state policies and procedures pertaining to bicycle, pedestrian, transit, and ADA access and safety. This program includes addressing bicycle, pedestrian, transit, and ADA travel needs through the development of improvements on state, county, and local systems either by independent capital projects or through grants to counties and municipalities. Projects must make full

consideration for the needs of all users. Funding is provided annually from three sources: CMAQ, State, and TA-FLEX.

**Intelligent Traffic Signal Systems (DB #15343)** will continue to improve mobility on New Jersey's arterial highways. Arterials contribute almost 70 percent of total congestion that occurs in New Jersey. This program will focus on dynamically managing New Jersey's arterials from NJDOT's Arterial Management Center. Existing traffic signals will be strategically, systematically, and programmatically upgraded from stand-alone signals to highly sophisticated, coordinated, real-time traffic response traffic signals. This upgrade will consist of installing new controllers, intelligent software and algorithms, robust detection, and communication. This is a plan to upgrade most of the signals on NJDOT-owned highways only.

**Rail Rolling Stock Procurement (DB #T112)** provides Section 5307, Section 5337, and State funds for the replacement of rail rolling stock, including engineering assistance and project management, to replace over-aged equipment, including rail cars, revenue service locomotives, and expansion of NJ TRANSIT rolling stock fleet (cars and locomotives) to accommodate projected ridership growth and other system enhancements over the next 10 years. Funding is provided to support vehicles/equipment (for rail operations). Annual funds are provided for Comet V single-level car lease payments, electric locomotive lease payments, diesel locomotive lease payments, dual power locomotives and multi-level rail car lease payments, and other upcoming rolling stock lease payments. Pay-as-you-go funding is also programmed for multi-level vehicles and other rolling stock.

**Small/Special Services Program (DB #T120)** supports NJ TRANSIT efforts that initiate or promote transit solutions to reduce congestion, manage transportation demand, and improve air quality. Included are state funds for the Vanpool Sponsorship Program and Transportation Management Association Program, and federal funds for the East Windsor Community Shuttle operating support. Funding is also provided for capital acquisition/operating expenses for the Community Shuttle Program, Bike/Transit facilitation, and other activities that improve air quality and help reduce congestion.

Much of the congestion within the DVRPC region occurs on state-owned and maintained highways, which are part of the NHS. Therefore, NJDOT has invested a significant number of resources in congestion relief programs statewide. Congestion relief is also one of the focus areas in NJDOT's Capital Investment Strategy. Per the Statewide Capital Investment Strategy FY2013–2022, almost \$480 million (approximately 15 percent), of annual capital investments goes toward congestion relief projects. Progress is being made toward meeting the congestion relief and on-road mobile emissions reductions targets.

## 4.4 Transit Asset Management (TAM) Rule

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 lifecycles 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 an SGR. In short, TAM uses asset condition to guide the optimal prioritization of funding at transit properties.

Based on the mandate in MAP-21 (and continued in the FAST Act), FTA developed a rule establishing a strategic and systematic process of operating, maintaining, and improving public transit capital assets effectively through their entire lifecycles. The TAM Final Rule 49 USC 625 became effective Oct. 1, 2016. The TAM rule develops a framework for transit agencies to monitor and manage public transportation assets, 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. The TAM rule established the following national TAM performance measures (49 CFR Part 625 Subpart D):

- **Rolling stock:** The percentage of revenue vehicles (by type) that meet or exceed the useful life benchmark (ULB). ULB is the measure agencies will use to track the performance of revenue vehicles (rolling stock) and service vehicles (equipment) to set their performance measure targets. ULB means either the expected lifecycle of a capital asset or the acceptable period of use in service determined by FTA. Each vehicle type's ULB estimates how many years that vehicle can be in service and still be in an SGR. The ULB considers how long it is cost effective to operate an asset before ongoing maintenance costs outweigh replacement costs;
- **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. 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); and
- **Infrastructure:** The percentage of track segments (by mode) that have performance restrictions.

Under the provisions of the Transit Asset Transportation Performance Management rulemaking, transit operators are required to annually set performance targets for their transit asset portfolio. MPOs are then required to set their own targets or adopt the transit operators targets for the transit asset portfolio in their region, beginning in calendar year 2017, based on measures mandated by the rule. The performance measures were selected by FTA and include:

- average revenue fleet age;
- average non-revenue fleet age;
- percentage of facilities that are below a condition rating of 3 on the TERM scale; and
- percentage of the track system under a performance restriction.

Transit agencies are required to upload their performance targets, as well as a supporting narrative, in their annual National Transit Database submission, and report progress against these targets. They are also required to develop a TAM Plan that adheres to the following nine elements to ensure assets are in an SGR:

- Inventory of Capital Assets;
- Condition Assessment;
- Decision Support Tools;
- Investment Prioritization;
- TAM and SGR Policy;
- Implementation Strategy;
- List of Key Annual Activities;
- Identification of Resources; and
- Evaluation Plan.

There are two Tier 1 agencies providing public transit service and subject to this FTA TAM performance management rule in the DVRPC New Jersey region. The agencies are NJ TRANSIT and DRPA/PATCO.

### **TAM Coordination, Targets, and Goals**

The MPOs have 180 days after the transit agencies set their targets, to decide either to adopt the transit operators’ targets or to develop their own metropolitan targets. In January 2019, DVRPC took formal action to adopt the same first set of targets as NJ TRANSIT and DRPA/PATCO. DVRPC has also worked with NJ TRANSIT, DRPA/PATCO, and NJDOT to develop a set of written procedures that outline the coordination process for TAM. In January 2021, the DVRPC Board agreed to continue to be consistent with the respective NJ TRANSIT and DRPA/PATCO annual TAM targets and will support the transit operators’ efforts at achieving those targets.

DVRPC’s Long-Range Plan prioritizes the preservation and maintenance of the existing transportation infrastructure. This includes maintaining the transit system in an SGR and operating it in a safe and secure manner by replacing buses, railcars, and locomotives as they age, as well as attending to rail bridges, track, signal systems, stations, and other infrastructure. An asset is in an SGR if: (1) it can perform its designed function; (2) it does not pose a known unacceptable safety risk; and (3) its lifecycle investments have been met or recovered.

### **NJ TRANSIT TAM Targets and Goals**

NJ TRANSIT operates and maintains a large fleet of buses, railroad cars, locomotives, and light rail vehicles in the DVRPC New Jersey region. To ensure these assets are in an SGR, 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.

NJ TRANSIT prepared an Enterprise Asset Management Program 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 an SGR. 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. The plan also identifies NJ TRANSIT programs and projects aimed at helping to achieve their TAM targets. Tables 3.9 to 3.14 in the NJ TRANSIT TAM Plan provide details for the following TAM performance targets for the State of New Jersey:



**(1) Rolling Stock (Percentage of revenue vehicles that have met or exceeded their ULB)**

NJ TRANSIT owns and maintains a fleet of 200 locomotives, 160 self-propelled cars, and 953 locomotive-hauled cars to serve the State of New Jersey. In addition, the agency maintains and operates 15 diesel locomotives and 65 single-level passenger cars owned by the Metro-North Railroad that are configured to operate with NJ TRANSIT’s fleet. All locomotives and loco-hauled cars are operated in push-pull service. NJ TRANSIT’s commuter rail ULB for locomotives, passenger cars, and self-propelled passenger cars is 30 years, which is lower than FTA’s ULB of 39 years. By 2023, the entire self-propelled passenger car fleet is expected to be retired and replaced by new multi-level vehicles. In the DVRPC New Jersey region, the heavy commuter rail lines include the Northeast Corridor from the City of Trenton to Hamilton Township, Princeton Junction, and to New York City’s Penn Station; and the Atlantic City line between Philadelphia’s 30th Street Station and Atlantic City, New Jersey.

The RiverLINE is the only light rail system in the DVRPC New Jersey region. Its 20 light rail vehicles (LRVs) are diesel powered, built in 2003, and are maintained by Bombardier at the 36th Street facility in the City of Camden. NJ TRANSIT has established 31 years as the ULB for LRVs, which is the FTA default value. NJ TRANSIT owns a fleet of over 3,000 buses consisting of two types: (1) over-the-road for longer-haul commuting services and (2) transit. The active bus feet in daily service is in an SGR. NJ TRANSIT has determined that the ULB for buses should be 12 years for those in transit service. These include articulated buses, transit buses, and suburban buses. NJ TRANSIT’s ULB for over-the-road for commuter service is 14 years. See percentage 2019 targets per measure in Table 22 below.

**Table 22: NJ TRANSIT Rolling Stock Performance Targets and Progress**

PERFORMANCE MEASURE	2019 TARGET (%)	2020 TARGET (%)	2020 PERFORMANCE (%)	2021 TARGET (%)
Articulated Bus	100	20.00	95.40	0.00
Automobile	28.89	52.76	27.06	6.00
Over-the-road Bus	26.80	46.40	52.01	27.00
Bus	44.83	0.00	19.32	24.00
Cutaway	13.19	1.50	23.61	64.36
Light Rail Vehicle	0.00	0.00	0.00	0.00
Minivan	4.35	4.35	8.40	5.00
Commuter Rail Locomotive	11.7	6.37	6.37	7.50
Commuter Rail Passenger Coach	16.97	17.94	17.94	16.70
Commuter Rail Self-Propelled Passenger Car	100	100.00	100.00	100.00
Van	1.53	1.53	0.00	2.00

Source: NJ TRANSIT, 2021

**(2) Equipment (Percentage of service vehicles that have met or exceeded their useful life benchmark)**

NJ TRANSIT’s non-revenue service vehicle inventory includes ordinary automobiles and locomotives that also include police cruisers and specialized track machinery (e.g., light duty trucks, heavy duty trucks, and rubber tire construction equipment and trailers). The current work train locomotive fleet includes five MP-20 locomotives and four GP-40 locomotives. The fleet of work train freight cars totals 81 cars. Of these 81 cars, 68 of them can be interchanged with freight railroads. There are also 80 pieces of steel-wheel maintenance-

of-way equipment and 158 pieces of construction equipment that include trailers and back hoes, loaders, or similar, not driven on highways. There are 68 automobiles for management and supervisory use, 275 light trucks for maintenance, and 106 heavy duty trucks. The bus non-revenue vehicle inventory consists of 58 automobiles for management and supervisory use, 75 light trucks for service calls, and 34 trucks to retrieve buses back to the maintenance garage. Further, NJ TRANSIT has a fleet of corporate non-revenue service vehicles (police, technology, maintenance, and administration); and Information Systems equipment, such as radio towers, radio repeater equipment, ticket vending machines, and a drone. The targets for automobiles, trucks, and other rubber tire vehicles, as well as steel wheel vehicles, are listed below in Table 23.

**Table 23: NJ TRANSIT Equipment Performance Targets and Progress**

PERFORMANCE MEASURE	2019 TARGET (%)	2020 TARGET (%)	2020 PERFORMANCE (%)	2021 TARGET (%)
Automobiles	39	40.00	77.05	0.00
Trucks and Other Rubber Tire Vehicles	47	50.63	34.26	64.24
Steel Wheel Vehicles	25	24.10	25.81	33.90

Source: NJ TRANSIT, 2021

**(3) Facility (Percentage of facilities rated below 3 on the condition scale)**

NJ TRANSIT takes a geographic approach (north, central, and south regions) to the condition of all facilities. Table 24 below demonstrates the targets for this measure.

**Table 24: NJ TRANSIT Facility Performance Targets and Progress**

PERFORMANCE MEASURE	2019 TARGET (%)	2020 TARGET (%)	2020 PERFORMANCE (%)	2021 TARGET (%)
Passenger/Parking Facilities	0.00	0.00	3.44	4.00
Administrative/Maintenance Facilities	0.00	0.00	3.12	4.00

Source: NJ TRANSIT, 2021

**(4) Infrastructure (Percentage of track segments with performance restrictions)**

NJ TRANSIT will implement the principles of its TAM policy by adopting an SGR policy to maintain capital assets to the level where the asset operates at full performance, in order to provide a safe, reliable, convenient, and cost-effective transit service to its customers.

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. Table 25 displays the targets for this measure.

**Table 25: NJ TRANSIT Infrastructure Performance Targets and Progress**

PERFORMANCE MEASURE	2019 TARGET (%)	2020 TARGET (%)	2020 PERFORMANCE (%)	2021 TARGET (%)
Commuter Rail	1.00	1.00	0.94	1.00
RiverLINE Light Rail	0.42	4.10	2.38	2.38

Source: NJ TRANSIT, 2021

### DRPA/PATCO TAM Targets and Goals

The Delaware River Port Authority/Port Authority Transit Corporation (DRPA/PATCO) is a bistate corporation that owns and operates four major toll bridge crossings of the Delaware River. Its transit subsidiary, PATCO, operates and maintains a 14.2-mile rapid public transit line between Philadelphia and southern New Jersey, including an administrative and maintenance facility at Lindenwold, New Jersey. The DRPA owns nine stations in DVRPC's New Jersey region and leases four stations in Philadelphia from the City of Philadelphia.

DRPA/PATCO's TAM Plan was first published on October 1, 2018. Similar to NJ TRANSIT, DRPA/PATCO's TAM Plan adheres to the nine federally required elements to ensure assets are in an SGR. It also sets forth its blueprint to identify, describe, and improve asset management practices, with the vision to maintain the agency's assets in an SGR. The plan also identifies their programs and projects aimed at helping to achieve their TAM targets.

On January 28, 2021, the DVRPC Board agrees to be consistent with the respective DRPA/PATCO annual TAM targets and will support the transit operators' efforts at achieving those targets.

#### (1) Rolling Stock (Percentage of revenue vehicles that have met or exceeded their useful life benchmark)

DRPA/PATCO's rolling stock includes all revenue vehicles. The ULB of a self-propelled heavy rail car is 39 years. The DRPA/PATCO had 75 Budd rail cars installed in 1969 (50 years old) and 45 Vickers cars installed in 1980 (39 years old). PATCO completed the car overhaul project in April 2019; hence a zero target for cars over their ULB per Table 26.

**Table 26: DRPA/PATCO Rolling Stock Performance Target and Progress**

PERFORMANCE MEASURE	2020 TARGET (%)	2020 PERFORMANCE (%)	2021 TARGET (%)
Rolling stock cars over their ULB	0	0	0

Source: DRPA/PATCO, 2021

The transit car overhaul project for the PATCO High Speed Line will result in a 25-year ULB, which is stricter than FTA's ULB of 39 years.

**(2) Equipment (Percentage of service vehicles that have met or exceeded their useful life benchmark)**

**Table 27: DRPA/PATCO Equipment Performance Target and Progress**

PERFORMANCE MEASURE	2020 TARGET (%)	2020 PERFORMANCE (%)	2021 TARGET (%)
Non-revenue service vehicles over their ULB	28	16	22

Source: DRPA/PATCO, 2021

**(3) Facility (Percentage of facilities rated below 3 on the condition scale)**

**Table 28: DRPA/PATCO Facility Performance Targets and Progress**

PERFORMANCE MEASURE	2020 TARGET (%)	2020 PERFORMANCE (%)	2021 TARGET (%)
Passenger stations facilities and parking lots with a performance rating <3	0	7.7	0
Administration and maintenance facilities with a performance rating <3	0	0	0

Source: DRPA/PATCO, 2021

**(4) Infrastructure (Percentage of track segments with performance restrictions)**

The slow zone restrictions are calculated over the 14.2-mile (74,976 feet) track of the PATCO High Speed Line. Projects that impact track (either through slow zone or track outages) are considered. The percentage of track miles in slow zone restrictions is calculated out over 365 days in Table 29.

**Table 29: DRPA/PATCO Infrastructure Performance Target and Progress**

PERFORMANCE MEASURE	2020 TARGET (%)	2020 PERFORMANCE (%)	2021 TARGET (%)
Track miles in slow zone restrictions	0.76	0.32	0.43

Source: DRPA/PATCO, 2021

**NJ TRANSIT’S Progress toward TAM Targets**

The Transit Asset Transportation Performance Management rule requires MPOs to describe how the region’s TIP will help to achieve the TAM targets. The TIP was developed to ensure progress toward target achievement. Transit operators have taken steps to ensure that projects selected for TIP funding help to achieve the TAM targets.

A few of NJ TRANSIT’s projects and programs that have been allocated resources over the First-Four Years of the TIP to help achieve TAM Targets include the following:

- Preventive maintenance of the bus system (DB #T135)
- Rail preventive maintenance program (DB #T39), which is used for the overhaul of rail cars and locomotives, and other preventive maintenance costs

- Replacement of rail cars and locomotives that have reached the end of their useful life (DB #T112), and the Bus Acquisition Program to replace buses (DB #T111).

NJ TRANSIT’s State Capital Program calls for continued investment in the state’s transit infrastructure to maintain an SGR and provide reliable transit service. An emphasis on better preparing NJ TRANSIT to withstand, and recover from, future extreme weather events through building a more resilient system remains a key focus of the Capital Program, which invests in railroad bridge rehabilitation, track replacement, signal upgrades, repairs to overhead power lines and electric substations, improvements to rail stations, and bus shelter upgrades.

### **DRPA/PATCO’S Progress toward TAM Targets**

DRPA/PATCO has programmed most of their funding for system preservation and maintenance over the First-Four Years of the TIP. DRPA/PATCO’s system preservation projects include the following:

- Preventive maintenance on vehicles and facilities (DB #DR034);
- Rehabilitate and replace interlockings, rail bed, and other rail improvements to ensure overall system safety, reliability, and minimal service disruptions (DB #DR1501);
- Renovate subway structures, such as pedestrian bridges, tunnels, subway stations, pump rooms, and tunnel leakage mitigation (DB #DR1802); and
- Rehabilitate platforms at various PATCO stations (DB #DR1803).

DRPA/PATCO has adopted the TAM policy to support and complement their Five-Year Strategic Plan “Roadmap to World-Class Stewardship: 2018–2022,” Five-Year Capital Program, and the Annual Budget Process in order to realize the agency’s vision as a “World-Class Stewardship” organization. Further, the operator will continue to utilize biennial inspections (that serve as the basis of the agency’s budget program), an integrated budget and strategic plan process, and solutions derived from the asset management to continuously evaluate and update the asset management plan.

## **4.5 Transit Safety Rule**

The Public Transportation Agency Safety Plan (PTASP) regulation, at 49 C.F.R. Part 673, requires covered public transportation providers and state DOTs to establish safety performance targets (SPTs) to address the safety performance measures identified in the National Public Transportation Safety Plan (49 C.F.R. § 673.11(a)(3)). Transit agencies are required to set their initial safety performance targets by December 31, 2020. On January 28, 2021, the DVRPC Board agreed to be consistent with the respective NJ TRANSIT and DRPA/PATCO initial targets for Transit Safety and will support the transit operators’ efforts at achieving those targets displayed below.

- **Fatalities:** Total number of fatalities reported to the National Transit Database (NTD) and rate per total vehicle revenue miles (VRM) by mode.
- **Injuries:** Total number of injuries reported to NTD and rate per total VRM by mode.
- **Safety Events:** Total number of safety events reported to NTD and rate per total VRM by mode.
- **System Reliability:** Mean distance between major mechanical failures by mode.

Transit agencies are required to report their targets and performance to the state Department of Transportation (DOT) and the agency’s MPO(s) in order to prioritize funding to improve transit safety performance.

## Fatalities

The transit safety performance measure requires that transit providers set annual targets for the number of fatalities that occur on each mode of transit that the agency operates, excluding deaths that result from trespassing, suicide, or natural causes. The NTPSP defines the modes as rail, fixed guideway bus service, and non-fixed route bus service. Fatalities are required to be calculated for both the total number of fatalities and the fatality rate per vehicle revenue mile.

Specific targets in Table 30 are set for:

- total fatalities, by mode, across the transit agency’s system; and
- the rate of fatalities, by mode, per vehicle revenue mile operated by the transit agency.

**Table 30:** Transit Fatalities Target

PERFORMANCE MEASURE	NJ TRANSIT	DRPA/ PATCO
Number of Fatalities – RiverLINE	1	n/a
Number of Fatalities – Bus	4	n/a
Rate of Fatalities per Million Miles – RiverLINE	0.79	n/a
Rate of Fatalities per Million Miles – Bus	0.055	n/a
Number of Fatalities – PATCO	n/a	0
Rate of Fatalities per 100,000 Miles – PATCO	n/a	0

Source: NJ TRANSIT, DRPA/PATCO, 2021

## Injuries

The PTASP requires that transit agencies set annual targets for the number of injuries that occur on each mode of transit that the agency operates. Injuries are defined as “harm to person that requires immediate medical attention away from the scene.” Injuries are required to be calculated for both the total number of injuries and the injury rate per vehicle revenue mile for each of the modes that the agency operates.

Specific targets in Table 31 are set for:

- total injuries, by mode, across the transit agency’s system; and
- the rate of injuries, by mode, per vehicle revenue mile operated by the transit agency.

**Table 31: Transit Injuries Target**

PERFORMANCE MEASURE	NJ TRANSIT	DRPA/ PATCO
Passenger Injuries (per 1 million miles): Number/Rate		
NJ TRANSIT RiverLINE (Number/Rate per Million Miles)	4 / 3.18	
NJ TRANSIT Bus (Number/Rate per Million Miles)	244 / 3.35	
DRPA PATCO System (Number/Rate per 100,000 Miles)	n/a	41 / 1
Employee Injuries		
NJ TRANSIT RiverLINE (Number/Rate)	0 / 0	
NJ TRANSIT Bus (Number/Rate per 200,000 Work Hours)	423 / 7.99	

Source: NJ TRANSIT, DRPA/PATCO, 2021

### Safety Events

Transit providers are required to set annual targets for the number and rate of safety events, by mode, that occur across the transit agency’s system. A safety event is defined by FTA as a “collision, derailment, fire, hazardous material spill, or evacuation.” Safety events are required to be calculated for both the total number of events and the event rate per vehicle revenue mile for each of the modes that the agency operates.

Specific targets in Table 32 are set for:

- total safety events, by mode, across the transit agency’s system; and
- the rate of safety events, by mode, per vehicle revenue mile operated by the transit agency.

**Table 32: Transit Safety Events Target**

PERFORMANCE MEASURE	NJ TRANSIT	DRPA/ PATCO
NJ TRANSIT RiverLINE Collisions (Number/Rate per Million Miles)	12 / 9.53	n/a
NJ TRANSIT RiverLINE Fire Events (Number/Rate per Million Miles)	2 / 1.59	
NJ TRANSIT Bus Collisions (Number/Rate per Million Miles)	264 / 3.63	
NJ TRANSIT Fire Events (Number/Rate per Million Miles)	12 / 0.16	
DRPA PATCO System (Number/Rate per 100,000 Miles)	n/a	50 / 1

Source: NJ TRANSIT, DRPA/PATCO, 2021

### System Reliability

Transit providers are required to set annual targets for the agency’s system reliability for each mode of transit that the agency operates. The system reliability performance measure accounts for major mechanical failings of a vehicle that prevent the vehicle from starting or completing a scheduled trip. Mechanical failings and interrupted trips can create hazardous conditions for the transit operators and passengers depending on the location of the service interruption and if passengers are required to de-board in unsafe locations.

Specific targets in Table 33 are set for:

- the miles traveled between major mechanical failures calculated for each mode that the transit agency operates.

**Table 33: Transit System Reliability Target**

PERFORMANCE MEASURE	MEAN DISTANCE IN MILES BETWEEN MAJOR SERVICE FAILURE	
	NJ TRANSIT	DRPA/PATCO
NJ TRANSIT RiverLINE (per million miles)	6,284	n/a
NJ TRANSIT Bus (rate per million miles)	135.45	
DRPA's PATCO System (total failures)	n/a	230

Source: NJ TRANSIT, DRPA/PATCO, 2021

The DVRPC Board adopted these transit safety targets on January 28, 2021. Once the respective transit agencies report on their performance, it will be reported on the DVRPC TPM webpage at [www.dvrpc.org/TPM](http://www.dvrpc.org/TPM).

### Coordination and Progress toward Transit Safety Targets

49 C.F.R. § 673.15(b) requires, to the maximum extent practicable, a state or transit agency to coordinate with states and MPOs in the selection of State and MPO safety performance targets; and in accordance with 49 U.S.C. 5303(h)(2)(B) and 5304(d)(2)(B), states and transit agencies must make their safety performance targets available to states and MPOs to aid in the planning process. MPOs are required to set performance targets for each performance measure, per 23 C.F.R. § 450.306; and these must be established 180 days after the transit agency establishes their performance targets. FTA will not impose penalties for failing to meet safety performance targets set by transit providers. DVRPC is required to list the NJ TRANSIT and DRPA/PATCO projects in the DVRPC FY2020 TIP for New Jersey. DVRPC has coordinated with both transit operating agencies on target setting during the summer and fall of 2020 and agreed to accept their Transit Safety Targets at the January 28, 2021 DVRPC Board Meeting.

The Transit Safety Rule requires MPOs to describe how the region's TIP will help to achieve the Transit Safety targets. Transit safety, and safety in general, is high priority for all projects in the TIP as shown by Safety being one of the top criterion of the DVRPC TIP Project Benefit Evaluation Criteria.

NJ TRANSIT's 10-year strategic plan, *NJT 2030*, states that NJ TRANSIT's mission is to "move New Jersey and the region by providing safe, reliable and affordable public transportation that connects people to their everyday lives, one trip at a time," and the first of its five goals is to "ensure the reliability and continued safety of our transit system." One of the ways that the plan sets forth to measure success for this goal, is to "strive for zero preventable injuries and fatalities across all modes by 2025, with an annual decrease of 20 percent."



## PROJECTS SUPPORTING MEASURE 1: FATALITIES, MEASURE 2: INJURIES, AND MEASURE 3: SAFETY EVENTS

To reduce the number of fatalities, injuries and safety events, NJ TRANSIT and DRPA/PATCO are implementing projects that will help reduce rail vehicle collisions and improve passenger safety for all transit users in and around NJ TRANSIT and DRPA/PATCO's operating environments.

**NJ TRANSIT** takes every precaution to ensure both passenger and public safety on their bus, rail and light rail systems. NJ TRANSIT operates a risk-based 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.

- **ADA--Platforms/Stations (DB #T143)** for the design and construction of necessary repairs to make NJ TRANSIT's rail stations, and subway stations more accessible for the Americans with Disabilities Act (ADA) including related track and infrastructure work.
- **Bridge and Tunnel Rehabilitation (DB #T05)** for the design, repair, rehabilitation, replacement, painting, inspection of tunnels/bridges, and other work such as movable bridge program, drawbridge power program, and culvert/bridge/tunnel right of way improvements necessary to maintain a state of good repair.
- **High Speed Track Program (DB #T43)** is an annual program of high-speed track rehabilitation including high speed surfacing, systemwide replacement of life-expired ties and other rail improvements, right-of-way fencing, equipment necessary to maintain a state of good and safe repair, purchase of long lead-time materials for next construction season, maintenance-of-way work equipment, interlocking improvements, passing sidings, other improvements, materials and services as necessary.
- **Track Program (DB #T42)** is an annual program of track rehabilitation including system wide replacement of life-expired ties and other rail improvements, right-of-way fencing, equipment necessary to maintain a state of good and safe repair, purchase of long lead-time materials for next construction season, maintenance-of-way work equipment, interlocking improvements, passing sidings and other improvements.
- **Light Rail Infrastructure Improvements (DB #T95)** includes but is not limited to communication systems upgrade, accessibility improvements, vehicle and facility improvements, and other infrastructure rehabilitation improvements, including rolling stock enhancements, for the RiverLINE.
- **Other Rail Station/Terminal Improvements (DB #T55)** for the design, land acquisition and construction of various stations, platform extensions, parking and related facilities, and upgrades throughout the system including related track and rail infrastructure work.
- **Safety Improvement Program (DB #T509)** for safety improvement initiatives system wide addressing bus, rail, light rail, Access Link and other identified safety needs.
- **Security Improvements (DB #T508)** for continued modernization/improvements of NJ TRANSIT Police and other security improvements. Today, the NJ TRANSIT Police Department is the only transit policing agency in the country with statewide authority and jurisdiction.
- **Signals and Communications/Electric Traction Systems (DB #T50)** for continued modernization/improvements to the signal and communications systems, including signal/communication upgrade of interlockings, and other communication improvements. In addition, funding will be provided for Positive Train Control (PTC) training facilities including but not limited to equipment purchasing, engineering, design, planning, construction, acquisitions and other associated costs. Note that PTC is a major safety initiative underway at NJ TRANSIT. PTC uses Global Positioning System (GPS) technology, Wi-Fi, and high-frequency radio transmission to automatically

control train speeds. PTC is capable of automatically controlling train speeds and movements, thereby reducing the risk of accidents due to human error. PTC will make train accidents, already rare, even less likely. Implementation of PTC enhances the safety NJ TRANSIT rail customers and employees and is required by federal law. Details of NJ TRANSIT's PTC program can be found at [www.njtransit.com/ptc](http://www.njtransit.com/ptc).

#### **DRPA/PATCO:**

- **Install Elevators, PATCO (DB #D0906)** for the installation of ADA compliant elevators at PATCO stations.
- **PATCO Rail Replacement - Ferry Avenue to Broadway (DB #DR2008)** for the replacement of approximately 40,000 linear feet of rail between Ferry Avenue and Broadway stations that are at the end of their useful life.
- **PATCO Stations Modernizations (DB #DR2006)** for the modernization of all PATCO stations and extend the useful life of the stations and their major components.
- **PATCO Viaduct Preservation Project (DB #DR2007)** to improve and protect the Collingswood and Westmont viaducts besides extending the useful life of this portion of the PATCO infrastructure.
- **Electrical Cable Replacement (DB #DR008)** for systemwide replacement of electrical cable to improve reliability and fire resistance.
- **Embankment, Fence, and Retaining Wall Restoration/Rehabilitation (DB #DR015)** to address embankment restoration to prevent erosion and preserve drainage control.
- **Lindenwold Yard Tie Renewal, Lindenwold Viaduct, and Overall Improvements (DB #DR044)** for the replacement of ties, rails and turnout components at Lindenwold Yard and replacement of direct fixation system, including track fasteners, anchors, concrete, and guard rail on Lindenwold viaducts. Also, electrical systems and distribution of the third rail power within the yard will be modified and improved. Up to 4.5 miles of track and 53 turnouts will be replaced.
- **PATCO Interlocking & Track Rehabilitation (DB #DR1501)** includes rehabilitation and replacement of interlockings, rail bed, and other rail improvements to ensure overall system safety, reliability, and minimal service disruptions.
- **PATCO Station Platform Rehabilitation (DB #DR1803)** includes planning, design, and reconstruction of PATCO Station Platforms. Work will include rehabilitation as well as replacement of concrete platforms and supporting structures including concrete and steel repairs for passenger safety.
- **Pedestrian Bridge and Tunnel Rehabilitation (DB #D1305)** for the planning, design, and construction to rehabilitate Pedestrian Bridges and Tunnels. The projects will allow for preventive repairs of bridges and tunnels owned by PATCO, including structural steel and concrete repairs, installation of protective coating, miscellaneous steel repair, joint filler and spot paint.
- **Rehabilitation of PATCO Bridges (DB #D1912)** for the planning, design, and construction to rehabilitate PATCO Bridges.
- **Subway Structures Renovation (DB #DR1802)** will provide for preventive repairs of pedestrian bridges, tunnels, subway stations, pump rooms owned by PATCO including but not limited to miscellaneous steel repair, concrete repair, joint filler, painting, waterproofing, and tunnel leakage mitigation throughout the PATCO High Speed Line System.
- **Relocation of Center Tower/SCADA Modernization (DB #DR038)** includes the purchase and installation of new equipment for centralized train control, traction power control, and integrated customer service/communication.
- **Smoke and Fire Control (DB #DR019)** will provide smoke and fire control for evacuation of patrons in emergencies and ventilation improvements.

## PROJECTS SUPPORTING MEASURE 4: SYSTEM RELIABILITY

To insure safe, efficient, and reliable service to NJ TRANSIT and DRPA/PATCO riders, it is paramount that system infrastructure and revenue fleet equipment remain reliable and minimize failures that can cause either operating agency to suspend or significantly delay service. The following programs will be implemented to help maintain system reliability.

### NJ TRANSIT:

- **Bus Acquisition Program (DB #T111)** for the replacement of transit, commuter, access link, and suburban buses for NJ TRANSIT as they reach the end of their useful life as well as the purchase of additional buses to meet service demands.
- **Bus Support Facilities and Equipment (DB #T08)** to maintain NJ TRANSIT's bus fleet including but not limited to, bus tires, engines and transmissions and other parts, support vehicles\equipment (for bus operations), maintenance equipment, and bus mid-life overhaul needs. Also included is midlife rehabilitation of bus facilities, other capital improvements to various support facilities and bus mid-life overhauls including but not limited to acquisition of properties and any items or services needed to support the acquisition.
- **Preventive Maintenance-Bus (DB #T135)** for the overhaul of buses including preventive maintenance costs in accordance with federal guidelines as defined in the National Transit Database Reporting Manual and federal law.
- **Preventive Maintenance-Rail (DB #T39)** for the overhaul of rail cars and locomotives and other preventive maintenance costs in accordance with federal funding guidelines as defined in the National Transit Database Reporting Manual and federal law.
- **Locomotive Overhaul (DB #T53E)** for the cyclic overhaul of locomotives based on manufacturer replacement standards to support the equipment through its useful life.
- **Rail Fleet Overhaul (DB #T53G)** for the mid-life overhaul and reliability/safety improvements of rail cars based on manufacturer recommendations and other rolling stock modifications to meet mandated standards.
- **Rail Rolling Stock Procurement (DB #T112)** for the replacement of rail rolling stock, including engineering assistance and project management, to replace over-aged equipment including rail cars, revenue service locomotives, and expansion of NJ TRANSIT rolling stock fleet (cars and locomotives) to accommodate projected ridership growth and other system enhancements over the next ten years.
- **NEC Improvements (DB #T44)** for improvements to the Northeast Corridor (NEC) to maintain state of good repair, increase capacity, and improve efficiency.
- **Technology Improvements (DB #T500)** for improvements to passenger communication and fare collection systems and other information technology improvements to meet internal and external customer needs. Funding is included for Public Address Upgrades/Onboard Communication Systems, Bus Radio System Upgrade Program, GIS Systems, TVM Replacement/Expansion, Smart Card Technology and improvements at stations system wide, computer systems and services, photocopy lease payments, ADA Access Link computer upgrades and upgrades to increase efficiency and productivity of NJ TRANSIT's technology infrastructure to support services to customers.
- **High Speed Track Program (DB #T43)** is an annual program of high-speed track rehabilitation including high speed surfacing, systemwide replacement of life-expired ties and other rail improvements, right-of-way fencing, equipment necessary to maintain a state of good and safe repair, purchase of long lead-time materials for next construction season, maintenance-of-way work equipment, interlocking improvements, passing sidings, other improvements, materials and services as necessary.

- **Track Program (DB #T42)** is an annual program of track rehabilitation including system wide replacement of life-expired ties and other rail improvements, right-of-way fencing, equipment necessary to maintain a state of good and safe repair, purchase of long lead-time materials for next construction season, maintenance-of-way work equipment, interlocking improvements, passing sidings and other improvements.
- **Light Rail Infrastructure Improvements (DB #T95)** includes but is not limited to communication systems upgrade, accessibility improvements, vehicle and facility improvements, and other infrastructure rehabilitation improvements, including rolling stock enhancements, for the RiverLINE.
- **Signals and Communications/Electric Traction Systems (DB #T50)** for continued modernization/improvements to the signal and communications systems, including signal/communication upgrade of interlockings, and other communication improvements. In addition, funding will be provided for Positive Train Control training facilities including but not limited to equipment purchasing, engineering, design, planning, construction, acquisitions and other associated costs.

#### **DRPA/PATCO:**

- **DRPA - Rebuild PATCO Cars (DB #DR046)** for the replacement of PATCO's existing car fleet, through complete rebuilding of existing cars.
- **Electrical Cable Replacement (DB #DR008)** for systemwide replacement of electrical cable to improve reliability and fire resistance.
- **PATCO Interlocking & Track Rehabilitation (DB #DR1501)** includes rehabilitation and replacement of interlockings, rail bed, and other rail improvements to ensure overall system safety, reliability, and minimal service disruptions.
- **PATCO Track Resurfacing & Rail Profile Grinding (DB #D1911)** involves adjusting the track to eliminate minor horizontal and vertical shifts that impact ride quality. Work also includes the replacement of rail ties, ballast cleaning, and improvements to the shoulder that impact the track.
- **PATCO Rail Replacement - Ferry Avenue to Broadway (DB #DR2008)** for the replacement of approximately 40,000 linear feet of rail between Ferry Avenue and Broadway stations that are at the end of their useful life.
- **PATCO Viaduct Preservation Project (DB #DR2007)** to improve and protect the Collingswood and Westmont viaducts besides extending the useful life of this portion of the PATCO infrastructure.
- **Lindenwold Yard Tie Renewal, Lindenwold Viaduct, and Overall Improvements (DB #DR044)** for the replacement of ties, rails and turnout components at Lindenwold Yard and replacement of direct fixation system, including track fasteners, anchors, concrete, and guard rail on Lindenwold viaducts. Also, electrical systems and distribution of the third rail power within the yard will be modified and improved. Up to 4.5 miles of track and 53 turnouts will be replaced.
- **Electrical Cable Replacement (DB #DR008)** for systemwide replacement of electrical cable to improve reliability and fire resistance.
- **Preventive Maintenance (DB #DR034)** for preventive maintenance expenses pertaining to activities performed on vehicles and facilities.
- **Pedestrian Bridge and Tunnel Rehabilitation (DB #D1305)** for the planning, design, and construction to rehabilitate Pedestrian Bridges and Tunnels. The projects will allow for preventive repairs of bridges and tunnels owned by PATCO, including structural steel and concrete repairs, installation of protective coating, miscellaneous steel repair, joint filler and spot paint.
- **Rehabilitation of PATCO Bridges (DB #D1912)** for the planning, design, and construction to rehabilitate PATCO Bridges.

- **Subway Structures Renovation (DB #DR1802)** will provide for preventive repairs of pedestrian bridges, tunnels, subway stations, pump rooms owned by PATCO including but not limited to miscellaneous steel repair, concrete repair, joint filler, painting, waterproofing, and tunnel leakage mitigation throughout the PATCO High Speed Line System.
- **Relocation of Center Tower/SCADA Modernization (DB #DR038)** includes the purchase and installation of new equipment for centralized train control, traction power control, and integrated customer service/communication.
- **Transit Enhancements (DB #DR036)** will support enhancements to the PATCO High Speed Line.

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