



CONNECTICUT LONG-RANGE TRANSPORTATION PLAN

Appendix C

System Performance Report



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Acronyms and Abbreviations

CO	Carbon Monoxide
CMAQ	Congestion Mitigation and Air Quality Improvement
COVID-19	Coronavirus Disease 2019
CTCDR	UConn's Connecticut Crash Data Repository
CTDOT	Connecticut Department of Transportation
DOT	Department of Transportation
FAST	Fixing America's Surface Transportation Act
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HL	Hartford Line
HSIP	Highway Safety Improvement Plan
IIJA	Infrastructure Investment and Jobs Act
IRI	International Roughness Index
L RTP	Long-Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21 st Century Act
MDBF	Mean Distance Between Failures
MNR	Metro-North Railroad
MPO	Metropolitan Planning Organization
NBI	National Bridge Inventory
NHL	New Haven Line
NHPP	National Highway Performance Program
NHS	National Highway System
Non-SOV	Non-Single Occupancy Vehicle
NOx	Nitrous Oxide
NTD	National Transit Database

O3	Ozone
OTP	On-Time Performance
PHED	Peak Hours of Excessive Delay
PM2.5	Particulate Matter at 2.5 Micrometers in Diameter or Less
PM10	Particulate Matter at 10 Micrometers in Diameter or Less
PRRP	Pavement Rehabilitation and Reconstruction Program
PSR	Present Serviceability Rating
SGR	State of Good Repair
SHSP	Strategic Highway Safety Plan
SPR	Systems Performance Report
TAM	Transit Asset Management
TAMP	Transportation Asset Management Plan
TERM	Transit Economic Requirements Model
TPM	Transportation Performance Management
TTR	Travel Time Reliability
TTTR	Truck Travel Time Reliability
ULB	Useful Life Benchmark
UZA	Urbanized Area
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

1.0 Overview

Connecticut 2055 is the state's next long-range transportation plan (LRTP) and outlines the Connecticut Department of Transportation's (CTDOT) strategic vision for its transportation system through the year 2055. It serves as a guiding framework for investment decisions, policy development, and infrastructure planning across multiple modes of transportation—highways, transit, rail, bicycle, pedestrian, and freight.

Performance based planning and programming is a critical component of the planning process. This is the strategic approach used to make better investment and policy decisions, building higher-performing transportation systems, and connecting communities. The Federal Highway Administration (FHWA) has developed national performance measures and processes for performance management through the [Transportation Performance Management \(TPM\)](#) framework. The Federal Transit Administration (FTA) has also developed federal performance measures for transit-related capital asset management. State departments of transportation (DOT) are required to set targets, analyze, and report on these national performance measures.

System Performance Reports (SPR) are federally required components of LRTPs that detail the performance measures used to assess the transportation system and document the condition and performance of the system.¹ This SPR fulfills the federal requirement and summarizes Connecticut's progress on national performance measures as well as supplemental statewide performance measures to help provide a comprehensive snapshot of the state's current system performance.

Through ongoing monitoring, reporting, and target setting, CTDOT's performance management program serves as a critical tool for aligning investment decisions with strategic objectives and providing a transportation system across Connecticut that is safe, reliable, resilient, and supportive of the state's economic and environmental priorities.

¹ [eCFR :: 23 CFR 450.216 -- Development and content of the long-range statewide transportation plan.](#)

1.1 Background on Federal Performance Management

In 2012, federal performance management requirements were established through the federal transportation bill, Moving Ahead for Progress in the 21st Century Act (MAP-21). This required state DOTs to implement standardized highway performance measures aligned with seven national goals², as shown in **Figure 1.1**.

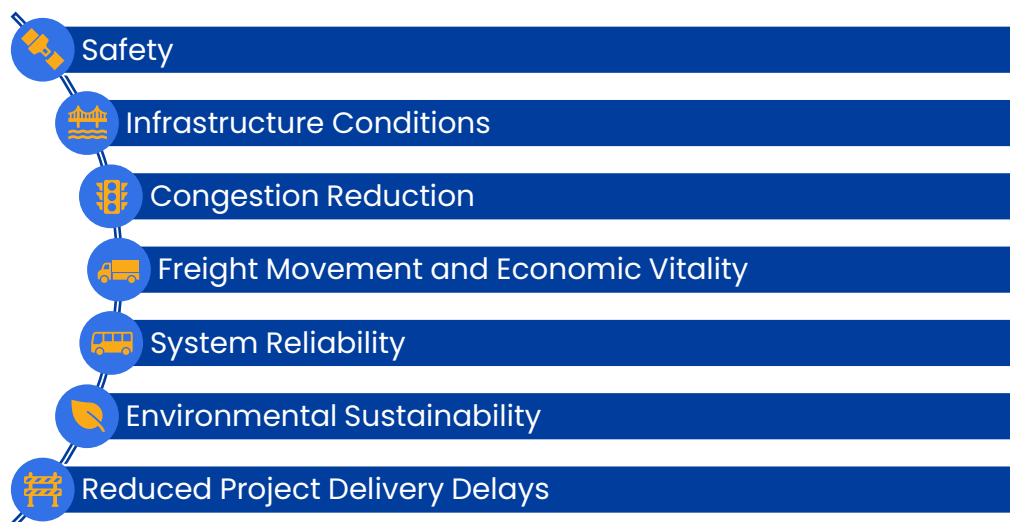


Figure 1.1: MAP-21 National Performance Goals

To address these goals, FHWA established 17 specific performance measures categorized within three key areas: Safety (PM1), Infrastructure Condition (PM2), and System Performance (PM3).³ MAP-21 also extended the performance management approach to public transportation: it required the FTA to develop national asset-management metrics for transit capital asset management.

Since October 1, 2016, transit agencies are responsible for monitoring and reporting four asset classes – rolling stock, equipment, facilities and infrastructure – against FTA performance benchmarks. The four areas of federally mandated performance measures are summarized in **Figure 1.2**.

² [A Summary of Highway Provisions - MAP-21 - Moving Ahead for Progress in the 21st Century | Federal Highway Administration](#)

³ 23 CFR Part 490

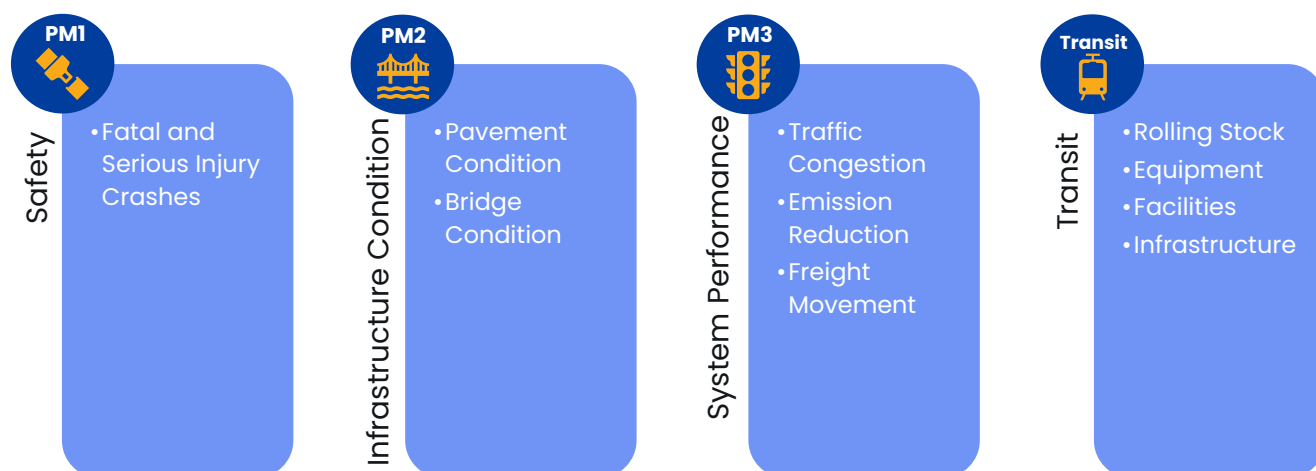


Figure 1.2: Federal Performance Measures Areas

The emphasis on performance management continued with the federal legislation, Fixing America's Surface Transportation Act (FAST Act), passed in 2015.⁴ The FAST Act preserved the performance management framework established in MAP-21 while refining certain elements, such as adjusting freight performance measures, revising performance reporting periods, and updating requirements for maintaining interstate pavement conditions. The Infrastructure Investment and Jobs Act (IIJA)⁵, enacted in 2021, reaffirmed the federal commitment to performance-based management.

CTDOT and all state DOTs are required to set targets for each performance measure in coordination with statewide Metropolitan Planning Organizations (MPO) and to integrate these targets into their LRTPs and statewide transportation improvement programs. If federally established performance targets are not met, corrective action plans outlining strategies to improve performance outcomes are needed. In certain cases, state DOTs may face restrictions on the obligation or flexing of federal funds, particularly for performance areas in which deficiencies are identified, reinforcing the importance of meeting established goals.

⁴ [A Summary of Highway Provisions - FAST Act | Federal Highway Administration](#)

⁵ [Infrastructure Investment and Jobs Act - Overview | Federal Highway Administration](#)

1.2 Federal Performance-Based Planning in Support of the Connecticut 2055 Vision

The goals of Connecticut 2055, ranging from safety and connected communities to innovation and economic vitality, were developed in alignment with federally mandated performance measures. These performance measures help provide a data-driven framework for evaluating progress and ensuring accountability in meeting the CTDOT LRTP’s vision. Each of Connecticut 2055’s goals are supported by at least one federally mandated performance measure, as shown in **Figure 1.3**.





















Connecticut 2055 goals		Supporting federal performance measure(s)		
	Safety for All Users	PM1 	PM2 	
	Connected Communities	PM1 	PM3 	
	Resilient and Sustainable Infrastructure	PM2 	PM3 	
	Innovative Future	PM1 	PM3 	
	Vibrant Economy	PM2 	PM3 	

Figure 1.3: Connecticut 2055 Goals and Performance Measures

1.2.1 Safety (PM1)

The “PM1” set of performance measures directly supports the LRTP goal of **Safety for All Users** by tracking and aiming to reduce the number and severity of crashes across all modes of transportation. Focusing on multimodal safety can improve streets to be designed and maintained with vulnerable users in mind—pedestrians, cyclists, and transit riders—not just motorists. “PM1” also contributes to the goals of **Connected Communities** and **Vibrant Economy**. Safe transportation networks foster

confidence and security, contributing to overall mobility and connectivity across communities.

CTDOT is also seeking out new and innovative solutions to address “PM1”’s performance measure to promote an **Innovative Future**.

1.2.2 Infrastructure Condition (PM2)

Maintaining assets in a state of good repair (SGR) is central to the LRTP goal of **Resilient and Sustainable Infrastructure**. The “PM2” set of performance measures can be used to ensure that roads and bridges are structurally sound and safe, reducing long-term maintenance costs and improving system durability in the face of extreme weather and increasing demand. Well-maintained infrastructure promotes **Safety for All Users** by building out a transportation network for people to safely travel. Furthermore, improving infrastructure condition supports a **Vibrant Economy** by minimizing disruptions to freight and commuter travel and improving travel reliability. This performance measure also underpins efforts to achieve an **Innovative Future**, as modern infrastructure accommodates new technologies and mobility options.

1.2.3 System Performance (PM3)

The “PM3” set of performance measures advances the LRTP goal of a **Vibrant Economy** by focusing on freight reliability and congestion reduction, which are critical for efficient goods movement and economic competitiveness. Its emphasis on emission reductions directly aligns with **Resilient and Sustainable Infrastructure**, promoting environmentally responsible transportation solutions. By improving travel reliability and reducing congestion, “PM3” performance measures also help build **Connected Communities**, ensuring people and services can move efficiently across the region. Innovations in congestion management and emissions reduction technologies directly contribute to the LRTP goal of fostering an **Innovative Future**.

1.2.4 Transit Asset Management Performance Management

Transit Asset Management (TAM) performance management supports every LRTP goal. It helps develop **Resilient and Sustainable Infrastructure** and improves **Safety for All Users** by ensuring transit assets such as buses, railcars, facilities, and equipment are maintained in a state of good repair. By reinforcing the dependability of transit systems, TAM advances the goal of **Connected Communities**, enhancing

regional mobility and integration across modes. Moreover, asset modernization under TAM initiatives supports an **Innovative Future** and **Vibrant Economy**, laying the groundwork for the adoption of zero-emission fleets, intelligent maintenance systems, and other emerging technologies that improve transit sustainability, reliability, and efficiency to keep Connecticut moving.

Through the structured application of federally mandated performance measures, Connecticut’s transportation planning process ensures that LRTP goals translate into measurable outcomes. The integration of Safety (PM1), Infrastructure Condition (PM2), System Performance (PM3), and TAM performance measures into long-range planning not only fulfills federal requirements but also enables evidence-based decisions that align with the state’s broader vision for a safe, inclusive, and future-ready transportation network.

1.3 Statewide Performance Management

Performance management has been a cornerstone of the CTDOT planning and programming processes prior to the implementation of federal performance management requirements. In 2008, CTDOT proactively developed its own set of performance measures and tracking systems. The Department then established these early initiatives and began tracking performance measures in 2009. This laid the foundation for a data-driven approach to transportation decision-making, emphasizing transparency, accountability, and continuous improvement.

CTDOT’s Standing Committee on Performance Measures is responsible for establishing, analyzing, and reporting on performance measures within CTDOT. Additionally, the Department currently tracks both national performance measures and supplemental statewide performance measures related to safety, infrastructure, highway reliability, multimodal mobility, air quality, and project delivery. State-specific performance measures related to system performance are further evaluated in **Section 3.0**. State and national performance measures data are actively tracked and results are available to the public through a [Power BI dashboard on the CTDOT website](#).

2.0 Federal Performance Measures

In accordance with federal transportation legislation—including MAP-21 and the FAST Act—FHWA and FTA have established a series of performance measures to guide investment decisions, track progress, and ensure transparency in transportation planning. FHWA measures span three primary goal areas: Safety (PM1), Infrastructure Condition (PM2), and System Performance (PM3). FTA’s TAM performance measures support the long-term sustainability and accountability of the public transit system. This section outlines Connecticut’s performance targets, monitoring practices, and recent progress under each federal performance measure, emphasizing the data-driven and coordinated efforts of CTDOT and its partners to improve transportation outcomes across all modes.

2.1 Safety (PM1)

To advance national and statewide goals to reduce traffic-related fatalities and serious injuries, the FHWA established five safety (PM1) performance measures under the Highway Safety Improvement Program (HSIP).⁶ The HSIP⁷ is a federally funded initiative aimed at reducing traffic fatalities and serious injuries on all public roads. It supports data-driven, strategic investments in roadway safety infrastructure through proven countermeasures and systemic safety improvements. These five “PM1” safety performance measures are⁸:



1. Number of fatalities;
2. Rate of fatalities per 100 million vehicle miles traveled (VMT);
3. Number of serious injuries;
4. Rate of serious injuries per 100 million VMT; and
5. Number of non-motorized fatalities and non-motorized serious injuries.

Connecticut’s 2025 HSIP satisfies federal requirements⁹, which direct each state to implement a data-driven program aimed at reducing fatalities and serious injuries

⁶ 23 CFR Part 490, Subpart B

⁷ [Highway Safety Improvement Program \(HSIP\) | FHWA](#)

⁸ [TPM Regulations - About TPM - Transportation Performance Management - Federal Highway Administration](#)

⁹ 23 U.S.C. § 148

on all public roads. The HSIP is aligned with the state’s Strategic Highway Safety Plan (SHSP) and must meet the five established safety performance measures.

CTDOT’s safety efforts are further supported by the Connecticut Vision Zero Council, which develops statewide policies to eliminate traffic-related fatalities and serious injuries. Together, the HSIP, Vision Zero framework, and “PMI” performance measures form an integrated approach to advancing roadway safety. Data collection and performance tracking play a critical role in identifying high-risk locations, guiding investments, and measuring progress toward the goal of zero deaths on Connecticut’s transportation network.



CTDOT sets and publishes statewide safety performance targets in the HSIP Annual Report submitted to FHWA. **Table 2.1** shows CTDOT’s most recent safety targets for 2025, based on 5-year moving averages.

Table 2.1: Connecticut 2025 Highway Safety Targets

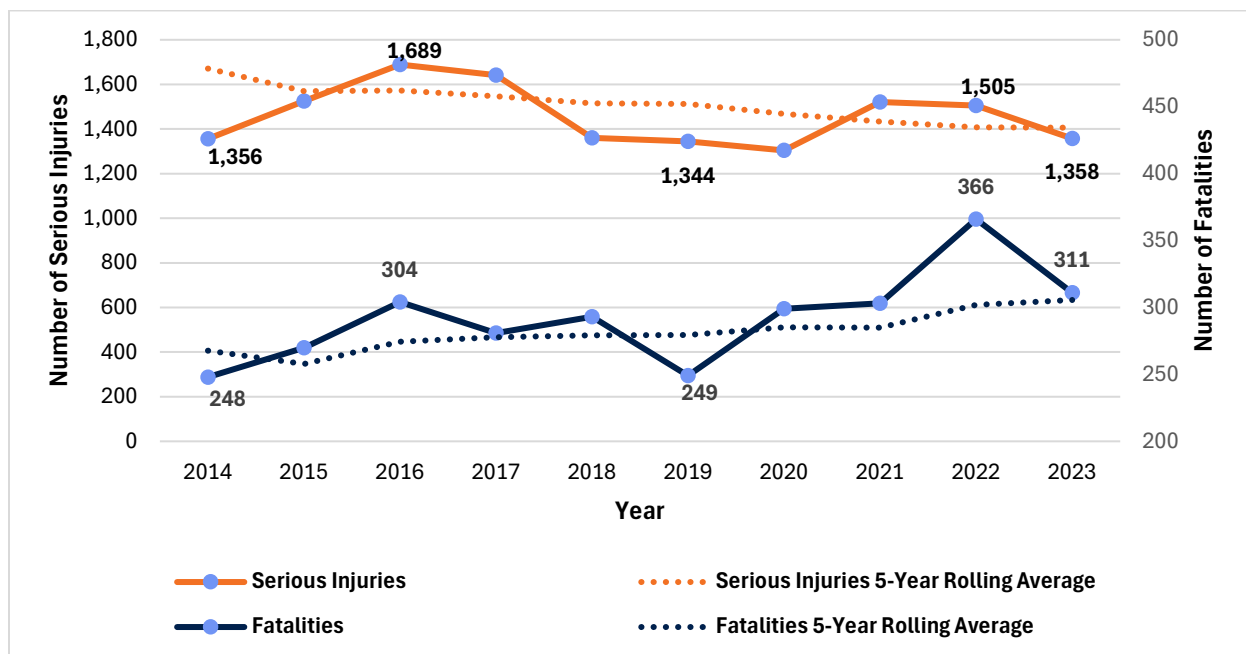
Performance Measure	CT Statewide Target
Number of Fatalities	270.0
Rate of Fatalities per 100 million VMT	0.850
Number of Serious Injuries	1,300.0
Rate of Serious Injuries per 100 million VMT	4.300
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	280.0

Source: 2024 Connecticut HSIP Annual Report

2.1.1 Motorized Fatalities and Serious Injuries

Figure 2.1 illustrates the trends in serious injuries and fatalities from 2014 to 2023, including their five-year rolling averages. The number of serious injuries peaked in 2016 at 1,689 and overall changes between 2014 (1,356 serious injuries) and 2023 (1,358 serious injuries) were similar. The five-year rolling average for serious injuries shows a steady decline between 2014 and 2023. The number of fatalities rose sharply from 248 in 2014 to a high of 366 in 2022 before decreasing to 311 in 2023. Despite the

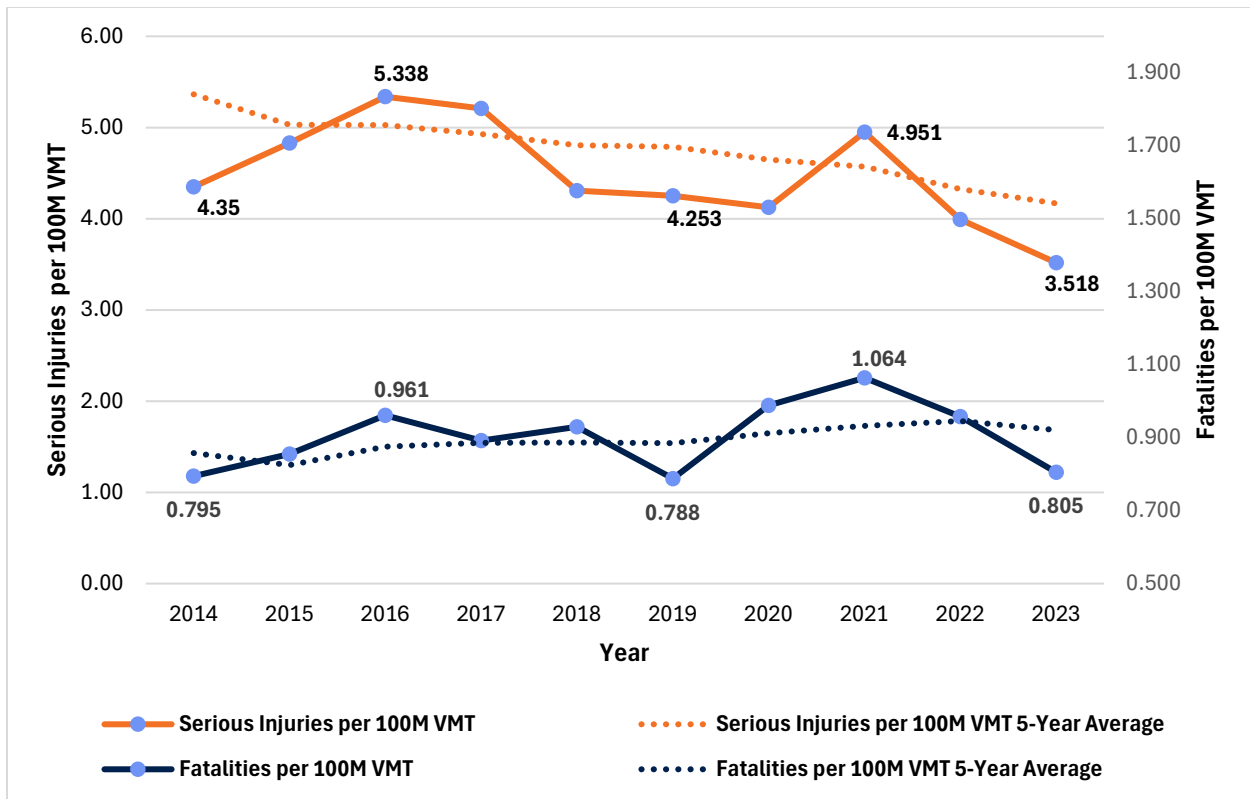
one-year decrease in fatalities, the five-year rolling average for fatalities has steadily increased, suggesting a long-term upward trend in fatal incidents.



Source: 2018-2024 Connecticut HSIP Annual Reports

Figure 2.1: Traffic Fatalities and Serious Injuries, 2014-2023

Figure 2.2 displays the rates of serious injuries and fatalities per 100 million VMT from 2014 to 2023, along with their five-year rolling averages. Serious injury rates peaked in 2016 at 5.338 per 100 million VMT but declined steadily afterward, reaching a low of 3.518 in 2023. Similarly, the five-year average for serious injuries per 100 million VMT showed a consistent downward trend. Fatalities per 100 million VMT fluctuated between 2014 and 2023, rising to a high of 1.064 per 100 million VMT in 2021 before dropping to 0.805 per 100 million VMT in 2023. Unlike the rate of serious injuries, the five-year rolling average for fatalities per 100 million VMT have shown a slight increase over this timeframe.

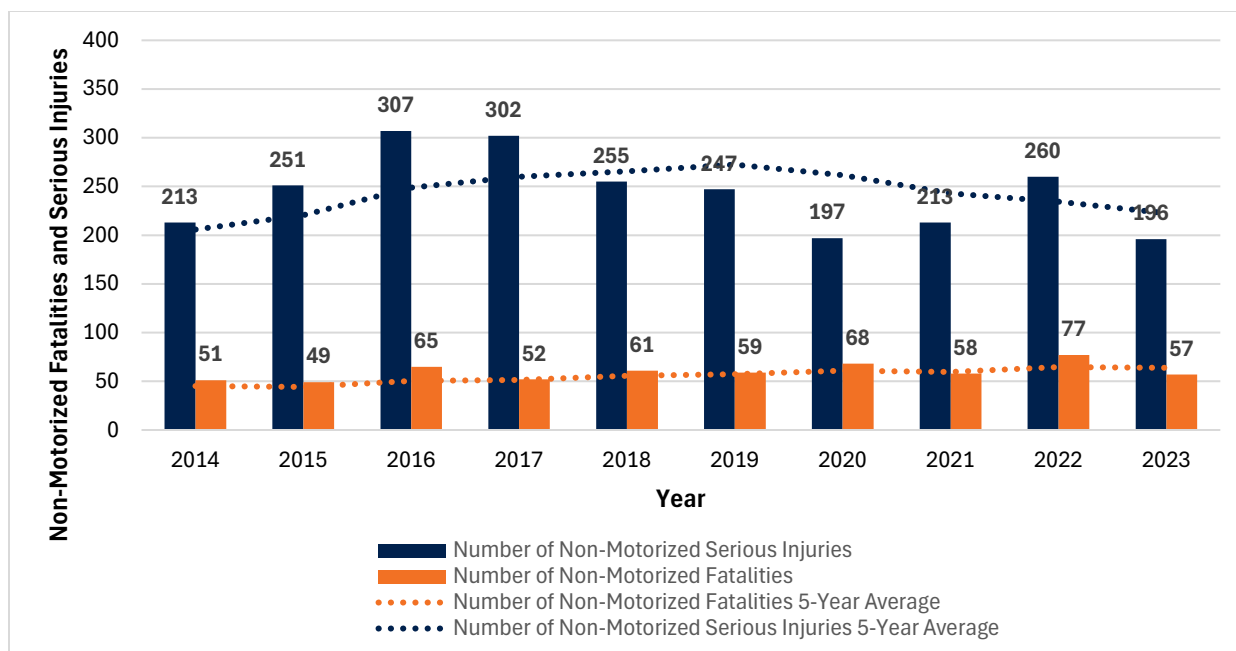


Source: 2018-2024 Connecticut HSIP Annual Reports

Figure 2.2: Traffic Fatality and Serious Injury Rate, 2014-2023

2.1.2 Non-Motorized Fatalities and Serious Injuries

Figure 2.3 presents the number of non-motorized serious injuries and fatalities affecting vulnerable users in Connecticut from 2014 to 2023. Non-motorized serious injuries reached their highest levels in 2016 and 2017 and overall changed from 213 serious injuries in 2014 to 196 in 2023. The number of serious injuries rose between 2020 and 2022 but did fall in 2023. The five-year average in serious injuries rose through 2019 and have since trended downward. The number of fatalities shows an upward trend between 2014 and 2023, peaking in 2022 before decreasing in 2023.



Source: 2018-2024 Connecticut HSIP Annual Reports

Figure 2.3: Non-Motorized Fatalities and Serious Injuries, 2014-2023

2.1.3 Safety Performance Target Assessment

CTDOT is considered to have met or made significant progress towards meeting its safety performance targets when at least four of the five safety performance targets are achieved, or when the actual outcome exceeds the baseline performance as defined by FHWA¹⁰. The baseline performance is defined as the five-year average ending with the year prior to the target’s establishment.

The most recently assessed safety performance targets cover the five-year rolling average from 2018 to 2023. **Table 2.2** shows whether Connecticut met the targets, performed better than the baseline performance, or have met or made significant progress.

¹⁰ [Guidance: FHWA Procedure for Safety Performance Measure Computation and State Target Achievement Assessment](#)

Table 2.2: Connecticut 2023 Safety Performance Target Assessment

Performance Measure	2019–2023 Target	2019–2023 Actual	2017–2021 Baseline	Met Target?	Better Than Baseline?	Met or Made Significant Progress? ¹¹
Number of Fatalities	270.0	305.0	285	No	No	No
Rate of Fatalities (per 100M VMT)	0.850	1.016	0.932	No	No	
Number of Serious Injuries	1,300.0	1,406.4	1,434.2	No	Yes	
Rate of Serious Injuries (per 100M VMT)	4.300	4.678	4.678	No	No	
Number of non-motorized fatalities and non-motorized serious injuries	280.0	285.4	302.2	No	Yes	

Source: FHWA CY 2023 Safety Performance Assessment

Note: Numbers shown are five-year Rolling Averages

CTDOT made progress by performing better than the baseline performance for two out of five safety performance targets, even though it did not meet any of the 2023 targets. Therefore, CTDOT did not make significant progress toward meeting its safety performance targets. Meeting these performance measures is a challenge for many other states. According to the FHWA, 32 states (65%) did not meet or make significant progress toward these targets in 2023.¹²

To support future improvements, an HSIP Implementation Plan was prepared and submitted to FHWA on July 1, 2024. Through this plan, CTDOT carefully re-evaluated its HSIP investments and is addressing gaps and deficiencies to ensure that

¹¹ CTDOT is considered to have met or made significant progress towards meeting its safety performance targets when at least four of the five safety performance targets are achieved, or when the actual outcome exceeds the baseline performance.

¹² [https://highways.dot.gov/safety/hsip/spm/state-safety-performance-targets#:~:text=In%20CY%202022%2C%2014%20States,States%20\(81%25\)%20in%202021](https://highways.dot.gov/safety/hsip/spm/state-safety-performance-targets#:~:text=In%20CY%202022%2C%2014%20States,States%20(81%25)%20in%202021).

identified, prioritized, and programmed projects have the best potential for reducing fatality and serious injury crashes. This implementation plan serves as a proactive step in helping CTDOT achieve its safety performance targets in the coming years. CTDOT is not alone in facing challenges with performance targets, as 32 other states are also currently not meeting them¹³.

2.2 Infrastructure Condition (PM2)



A well-maintained transportation network is essential to ensuring safety, reliability, and long-term system resilience. To support this objective, the FHWA established six infrastructure condition (PM2) performance measures¹⁴ to assess pavement condition and bridge condition for the National Highway Performance Program (NHPP).¹⁵ The NHPP is a core federal funding program that supports improvements to the National Highway System (NHS). The six PM2 infrastructure condition performance measures are:

1. Percent of Interstate pavements in good condition;
2. Percent of Interstate pavements in poor condition;
3. Percent of Non-Interstate NHS pavements in good condition;
4. Percent of Non-Interstate NHS pavements in poor condition;
5. Percent of NHS bridges (by deck area) classified as in good condition; and
6. Percent of NHS bridges (by deck area) classified as in poor condition.

Pavement conditions are assessed using three metrics based on pavement type¹⁶: For asphalt-surfaced pavements, International Roughness Index (IRI), cracking percent, and rutting are used. For concrete-surfaced pavements, IRI, percent of cracked slabs, and faulting are used. Present Serviceability Rating (PSR) is allowed as a substitution for low-speed segments, replacing all three other metrics. A section is rated as good if all three metrics are good, poor if two or more are rated poor, and fair otherwise. Pavements in good condition require no major reinvestment while those in poor condition indicate a need for repair.

¹³ [State Safety Performance Targets | FHWA](#)

¹⁴ 23 CFR Part 490, Subpart C and D

¹⁵ [Infrastructure Investment and Jobs Act - National Highway Performance Program \(NHPP\) Fact Sheet | Federal Highway Administration](#)

¹⁶ [eCFR :: 23 CFR Part 490 -- National Performance Management Measures](#)

Bridge condition is based on ratings for deck, superstructure, substructure, and culverts¹⁷. A bridge is considered in good condition if the lowest component rating is rated seven or higher, poor if it is four or lower, and fair otherwise. Condition percentages are calculated based on total deck area. As detailed in the FHWA Bridge Preservation Guide (2018), bridges in good condition require no major investment, while those in poor condition remain safe but may soon require major repairs, rehabilitation or replacement¹⁸.

CTDOT’s infrastructure condition performance targets are designed to align with both federal requirements and the state’s transportation goals and objectives. These targets are informed by projected funding levels expected to be available for transportation investment. The performance commentary in this section will reference CTDOT’s statewide pavement and bridge condition goals, which surpass the federal targets.

2.2.1 Pavement Condition

CTDOT administers various rehabilitation and resurfacing programs aimed at extending the useful life of pavements. The goal of these efforts is to keep CTDOT’s maintained roadways in a state of good repair through the application of pavement preservation treatments, advanced condition surveys, and forecasting techniques based on deterioration modeling. However, due to high traffic volumes and Connecticut’s harsh, variable climate, the state’s roadways experience substantial wear and tear. As a result, maintaining a state of good repair requires significant investment of resources.

2.2.1.1 Interstate Pavement Condition

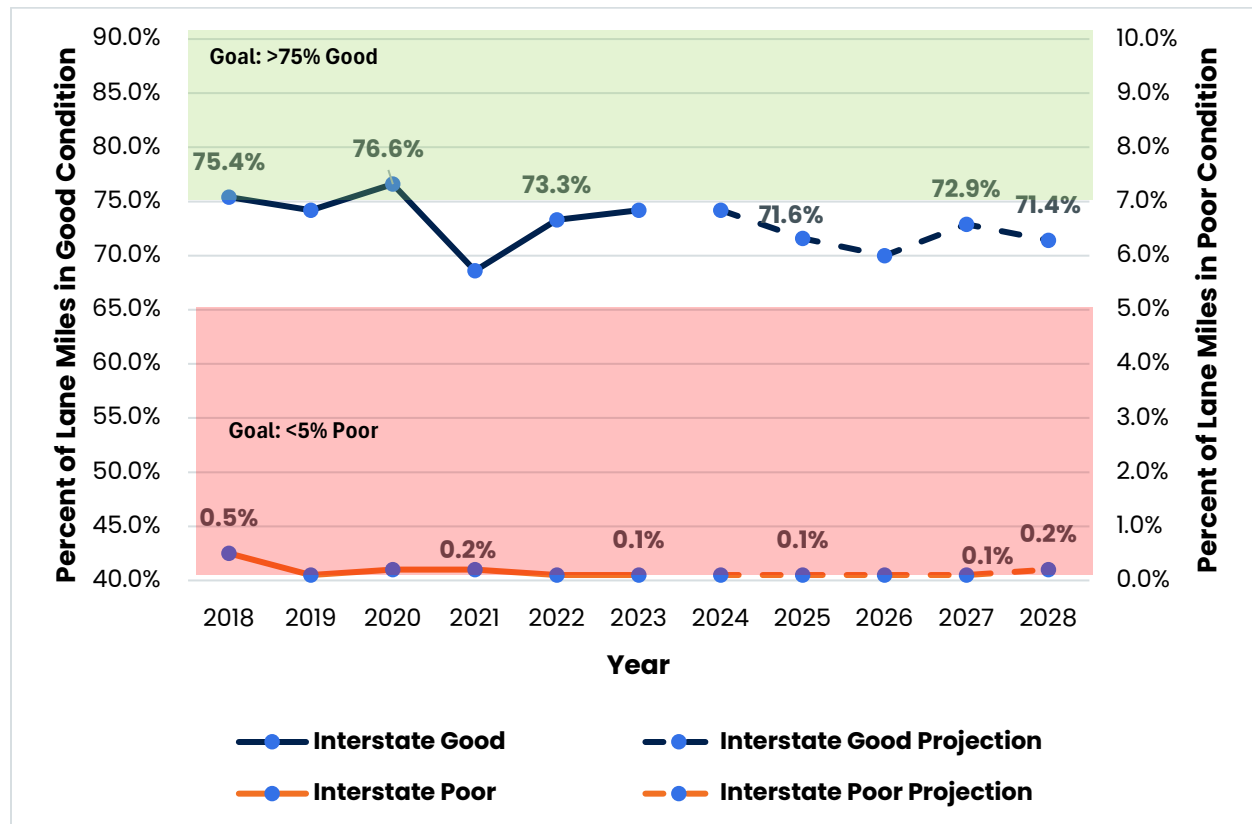
Figure 2.4 shows the condition of interstate lane miles over the 2018 to 2028 period, capturing both historical data and future projections. In 2018, the share of interstate lane miles in good condition met goals with 75.4% in good condition. The lowest percentage of interstate pavement in good condition was in 2021 with 68.6%. This has since increased to 74.2% in 2023. Despite a current upward trend, the forecast remains slightly below the established statewide goal of over 75% of interstate pavement in good condition. Based on the current level of funding available,

¹⁷ <https://www.ecfr.gov/current/title-23/section-490.401>

¹⁸ [FHWA Bridge Preservation Guide](#)

projections on the percentage of interstate pavement in good condition range between 2024 and 2028 range from 70.0% to 74.2%.

Between 2018 and 2023, CTDOT met its statewide goal of less than 5% of interstate pavement in poor condition. Over this time, the percentage of interstate pavement in poor condition has never been higher than 0.5%. Projections through 2028 based on anticipated funding levels are expected to remain in a similar range.



Source: CTDOT Biennial Performance Report for Performance Period 2022–2025 (Mid Performance Period); CTDOT 2024 Asset Fact Sheet

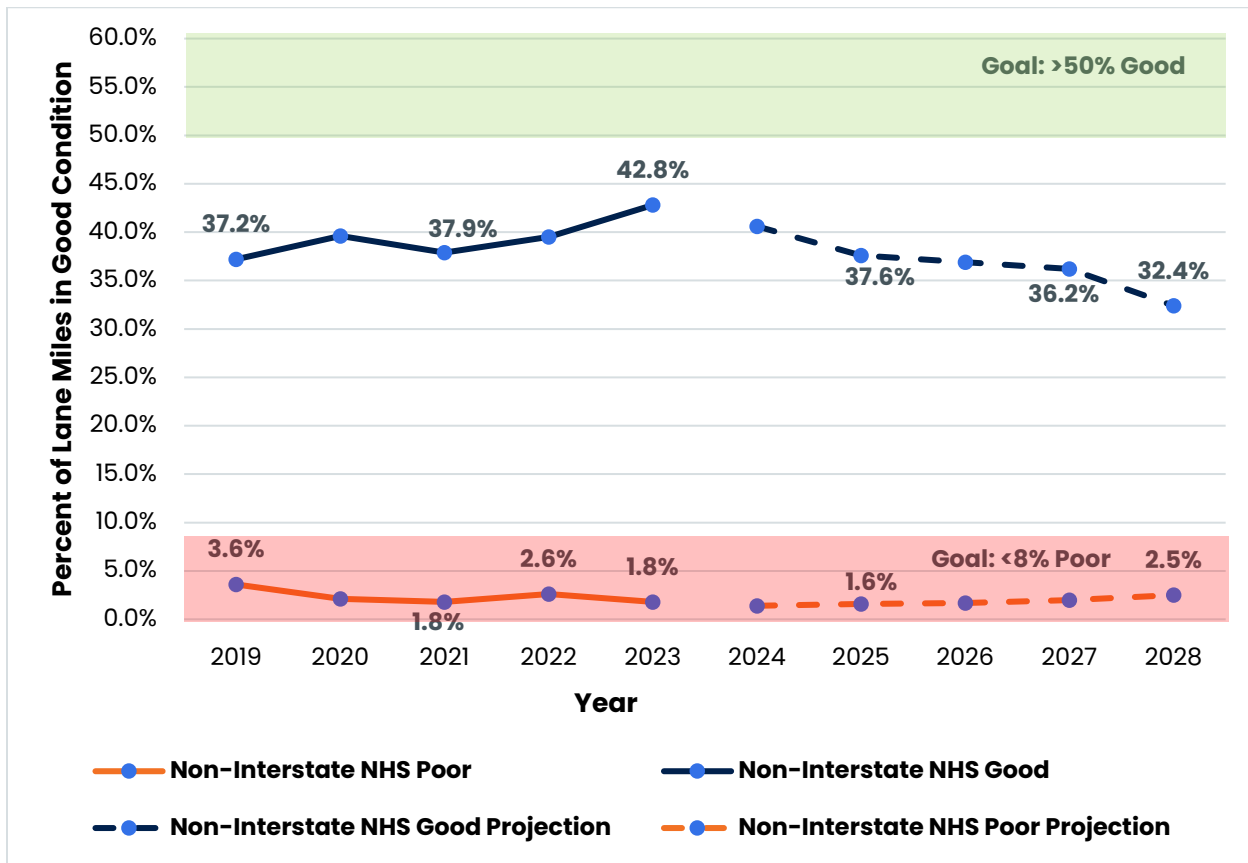
Note: NHS Good and Poor Projections based on current funding levels.

Figure 2.4: Percent of Interstate Pavement in Good and Poor Condition

2.2.1.2 Non-Interstate NHS Pavement Condition

Figure 2.5 shows the condition of interstate lane miles over the 2019–2028 period, capturing both historical data and future projections. Good condition levels peaked at 42.8% in 2023, which is below the statewide goal of greater than 50.0%. Based on anticipated funding levels, the percentage of Non-Interstate NHS pavement in good condition through 2028 are projected to decline to levels between 32.4% and 40.6%.

Between 2019 and 2023, the percentage Non-Interstate NHS pavement in poor condition ranged between 1.8% and 3.6%, all within the statewide goal of less than 8.0%. These levels are projected to remain within the goal of less than 8.0% through 2028.



Source: CTDOT Biennial Performance Report for Performance Period 2022–2025 (Mid Performance Period); CTDOT 2024 Asset Fact Sheet.

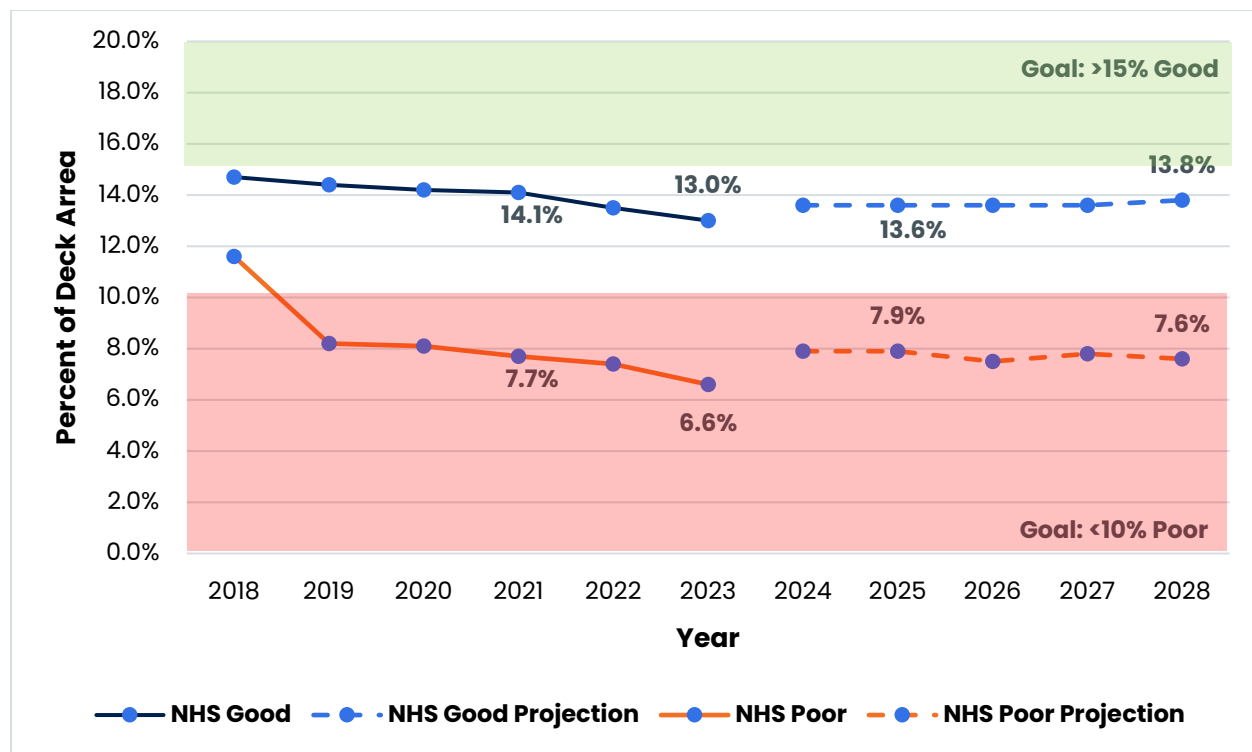
Note: NHS Good and Poor Projections based on current funding levels.

Figure 2.5: Percent of Non-Interstate NHS Pavement in Good and Poor Condition

2.2.2 Bridge Condition

CTDOT’s Bridge Management Unit has developed methods and technologies for selecting and evaluating cost-effective, programmatically optimal strategies for the comprehensive management of Connecticut’s bridges and structures. These strategies consider the life cycle costs of the assets and functional requirements such as safety, mobility, and traffic congestion. The goal of these efforts is to keep CTDOT’s maintained bridges in a state of good repair.

Figure 2.6 presents the condition of NHS bridge deck area from 2018 to 2028, tracking both actual and projected percentages of bridge deck area in good and poor condition. Since 2018, the statewide goal of 15.0% of bridge deck area being in good condition has not been met. The percentage of bridge deck area in poor condition was highest in 2018 and has declined since then. From years 2019 through 2023, the statewide goal of less than 10.0% of bridge deck area in poor condition was met.



Source: CTDOT Biennial Performance Report for Performance Period 2022–2025 (Mid Performance Period); CTDOT 2024 Asset Fact Sheet.

Note: NHS Good and Poor Projections based on current funding levels.

Figure 2.6: Percentage of NHS Bridges Deck Area in Good and Poor Condition

2.2.3 Infrastructure Condition Performance Target Assessment

Table 2.3 shows the progress determination for the infrastructure condition federal performance measures in Connecticut for the 2022–2025 performance reporting period. As of 2024, CTDOT is currently meeting four of the six PM2 infrastructure condition performance targets during the 2022–2025 performance period.

Table 2.3: Interim Progress Toward 2022–2025 Infrastructure Condition Targets

Category	Measure	2022 Baseline	2-Year Targets (End of Year 2023)	2-year Actual (2023)	4-Year Targets (End of Year 2025)
PM2: Pavement Condition	% Good Condition Interstate	68.6%	72.0%	74.2%	70.0%
	% Poor Condition Interstate	0.2%	1.0%	0.1%	1.3%
	% Good Condition Non-Interstate NHS	37.9%	37.0%	42.8%	35.0%
	% Poor Condition Non-Interstate NHS	1.8%	2.7%	1.8%	3.5%
PM2: Bridge Condition	% Good Condition	14.1%	14.2%	13.0%	13.3%
	% Poor Condition	7.7%	6.2%	6.6%	8.0%

Source: CTDOT 2022 Highway Transportation Asset Management Plan; CTDOT Biennial Performance Report for Performance Period 2022–2025 (Mid Performance Period)

CTDOT has met all four federal pavement condition performances measures for the two-year targets. This performance has been aided by CTDOT implementing a data-driven Pavement Preservation Program and Resurfacing Process Map to guide timely project delivery for preservation and maintenance efforts¹⁹. To help meet the four-year federal target, a new Pavement Rehabilitation and Reconstruction Program (PRRP) is planned.

CTDOT did not meet either of the federal two-year targets for bridge condition. This shortfall was largely due to delays in two major bridge projects that could not be completed and inspected in time²⁰. CTDOT is making significant efforts to improve bridge condition such as using improved forecasting methods, ongoing bridge-management strategies, and implementing recommendations from the Transportation Asset Management Plan (TAMP). Currently, CTDOT expects to meet the adjusted federal four-year performance target.

¹⁹ [as-Published 4th Connecticut DOT Pavement Report 082924 \(final edit\)](#)

²⁰ [CTDOT Biennial Performance Report for Performance Period 2022–2025 \(Mid Performance Period\)](#)

2.3 System Performance (PM3)

To evaluate the efficiency, reliability, and environmental impact of the nation's transportation system, the FHWA established six system performance (PM3) performance measures to assess the performance of the Interstate and Non-Interstate NHS system, freight movement on the Interstate System, and the Congestion Mitigation and Air Quality Improvement (CMAQ) Program.²¹ The six PM3 system performance measures are:



1. Percentage of person-miles on the Interstate system that are reliable, also referred to as Level of Travel Time Reliability (TTR);
2. Percentage of person-miles on the Non-Interstate NHS that are reliable (Non-Interstate TTR);
3. Truck Travel Time Reliability index (TTTR);
4. Peak Hour Excessive Delay (PHED) Per Capita by Urbanized Area; and
5. Non-Single Occupancy Vehicle (Non-SOV) Travel by Urbanized Area; and
6. Total Emissions Reductions

TTR assesses the consistency, or dependability, of travel times from day to day or across different times of the day on the roadway network. It is defined as the ratio of longer travel times (80th percentile) to the median travel time (50th percentile) over all applicable roads during four time periods (AM peak, mid-day, PM peak, and weekends) that cover the hours of 6 AM to 8 PM each day. The TTR ratio is calculated for each roadway segment, essentially comparing the segment with itself. Segments with $TTR \geq 1.50$ during any of the above time periods are considered unreliable. TTR is expressed as the percentage of person-miles traveled on the Interstate or Non-Interstate NHS system that are reliable by applying vehicle miles traveled (AADT x segment length) and a vehicle occupancy factor to calculate the performance measure.

TTTR measures the dependability of freight movement. It is defined as the ratio of longer truck travel times (95th percentile) to the median travel time (50th percentile) over the Interstate during five time periods of the day (AM peak, mid-day, PM peak, weekend, and overnight). TTTR is quantified by taking the maximum TTTR from the five time periods for each Interstate segment. The maximum TTTR is weighted by

²¹ 23 CFR Part 490, Subpart E, F, and G

segment length, then the sum of the weighted values is divided by the total Interstate length to calculate the TTTR Index.

PHED measures traffic congestion. It is quantified as the per capita traffic delay that exceeds the federally defined threshold during the region’s peak travel periods, calculated by Urbanized Area (UZA).

The Non-SOV travel measure quantifies the percentage of daily commuters in a UZA who use some form of transportation other than driving alone in a personal vehicle, such as carpooling, transit, biking, or walking. This measure was expanded to include remote work, or work from home, which is a development that has gained momentum since 2020 (COVID-19 pandemic).

The Total Emission Reduction Measure represents the cumulative estimated reduction in emissions over a two-year and four-year period from all CMAQ-funded projects. It includes reductions for each applicable criteria pollutant—ozone (O₃), carbon monoxide (CO), and particulate matter (PM_{2.5} and PM₁₀)—as well as their precursors, volatile organic compounds (VOC) and oxides of nitrogen (NO_x), in areas designated as nonattainment or maintenance. In Connecticut, the applicable pollutants and precursors are PM_{2.5}, PM₁₀, VOC, and NO_x.

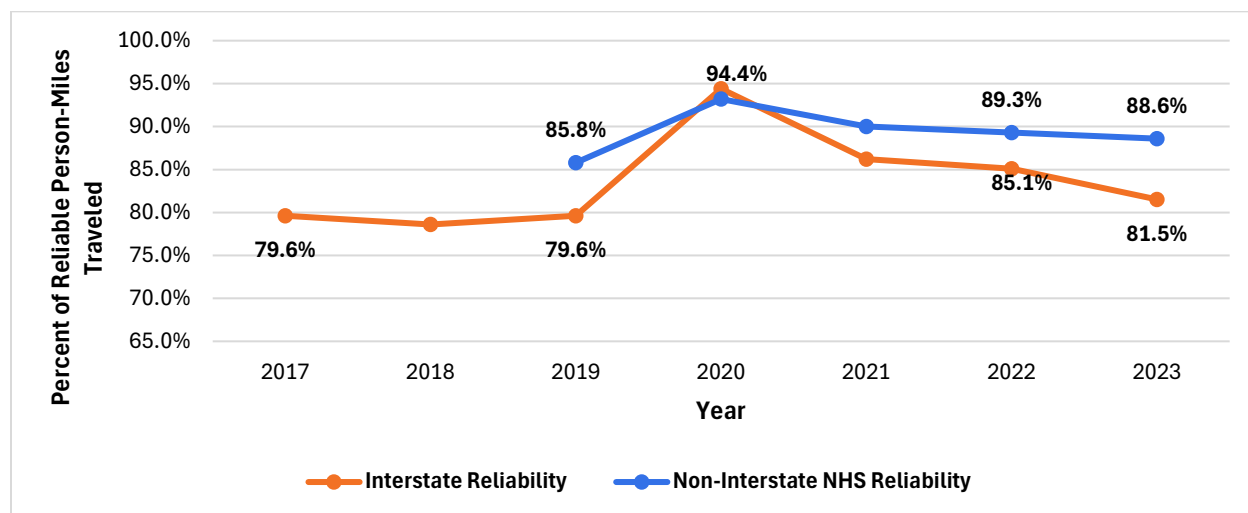
FHWA publishes applicability tables for each state DOT and MPO for UZAs where these performance measures and targets apply. Initially in 2018, these measures applied to UZAs with a population of 1,000,000 and above, of which Connecticut did not have any. This population threshold was reduced to 200,000 beginning in 2022. It is also possible for an MPO to apply for an urbanized area designation as a Traffic Management Area (TMA), in which case the federal performance measures apply to the subject UZA. Connecticut currently has six UZAs.

2.3.1 Travel Time Reliability

Travel Time Reliability (TTR) performance continues to be influenced by evolving travel patterns. Following a significant drop in traffic volumes in 2020, which led to improved reliability, subsequent years have seen a statewide rise from pandemic levels with an uneven return of congestion depending on the urbanized area. Notable contributors to this increase include construction-related congestion, especially in southeastern Connecticut; a resurgence of high traffic volumes on

Interstate highways and expressways, particularly in the Bridgeport–Stamford, CT–NY and New Haven UZAs; and the persistence of new commuting behaviors²⁰.

Figure 2.7 shows trends in statewide TTR for both Interstate and Non-Interstate NHS roadways from 2017 to 2023. Interstate reliability remained relatively stable between 2017 and 2019 at around 79.6%. TTR then sharply increased to a peak of 94.4% in 2020, likely influenced by reduced traffic volumes during the COVID-19 pandemic. Since 2020, TTR has declined and was 81.5% in 2023. Non-Interstate NHS reliability, first reported in 2019 at 85.8%, also peaked in 2020 at 93.3%. Compared to TTR on Interstates, TTR on Non-Interstate NHS roadways experienced a more moderate decline and was last reported at 88.6% in 2023.



Source: FHWA State Highway Reliability Report 2018–2021 and 2022–2025; CTDOT Biennial Performance Report for Performance Period 2022–2025 (Mid Performance Period)

Figure 2.7: Statewide Travel Time Reliability on Interstates and Non-Interstate NHS Roadways

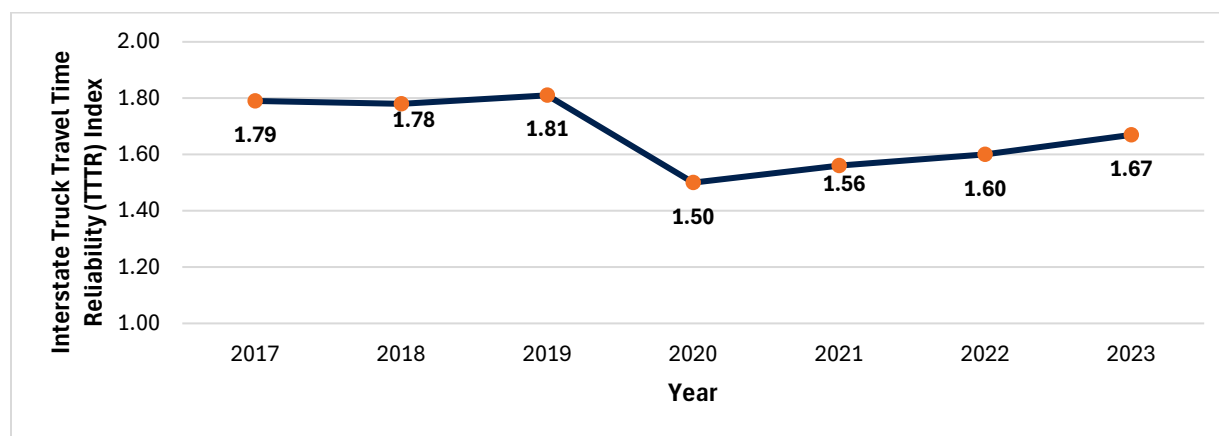
2.3.2 Truck Travel Time Reliability Index

CTDOT updated its truck bottleneck analysis in 2022 and in 2024 to identify the most significant bottlenecks and their underlying causes.²² Traffic congestion—impacting all vehicles on the highway system—has been found to be the primary factor contributing to truck bottlenecks. The TTTR metric only reflects travel time reliability on the Interstate system, and it is more sensitive to shifts in travel patterns than TTR because of its reliance on the 95th percentile travel time. In the freight sector,

²² [Appendix-D-Truck-Bottleneck-Analysis_0.pdf](#)

ongoing trends such as the growth of e-commerce have led to increased truck volumes.²³ CTDOT is continuing to monitor congestion trends as traffic volumes rise alongside evolving travel behaviors.

Figure 2.8 presents the statewide Interstate TTTR Index from 2017 to 2023. A lower TTTR value indicates better reliability. The TTTR Index remained relatively stable from 2017 to 2019, ranging from 1.79 to 1.81, before improving in 2020 to a low of 1.50. This improvement likely reflects the impact of decreased traffic during the COVID-19 pandemic. Since 2021, the TTTR Index has increased each year, reaching 1.67 in 2023.



Source: FHWA State Highway Reliability Report 2018–2021 and 2022–2025; CTDOT Biennial Performance Report for Performance Period 2022–2025 (Mid Performance Period)

Figure 2.8: Statewide Interstate Truck Travel Time Reliability

2.3.3 Congestion Mitigation and Air Quality Performance

CMAQ performance measures are required for each U.S. Census Bureau–designated UZA²⁴ that contains an NHS roadway, has a population of more than 200,000, and contains any part of non–attainment or maintenance area for criteria pollutant emissions.

²³ [Connecticut Statewide Freight Plan Update](#)

²⁴ Urbanized area means a geographic area with a population of 50,000 or more, as designated by the Census Bureau. These performance measures have been measured based on 2010 U.S. Census Bureau UZA boundaries. CTDOT is transitioning to using 2020 U.S. Census Bureau UZA boundaries as the geographical boundary going forward.

These performance measures help assess how the CMAQ program is being carried out at the statewide level. **Figure 2.9** shows the six UZAs designated within non-attainment or maintenance areas for emissions in Connecticut. These include:

- Bridgeport—Stamford, CT—NY
- Hartford, CT
- New Haven, CT
- Norwich—New London, CT—RI
- Springfield, MA—CT²⁵
- Worcester, MA—CT²⁵

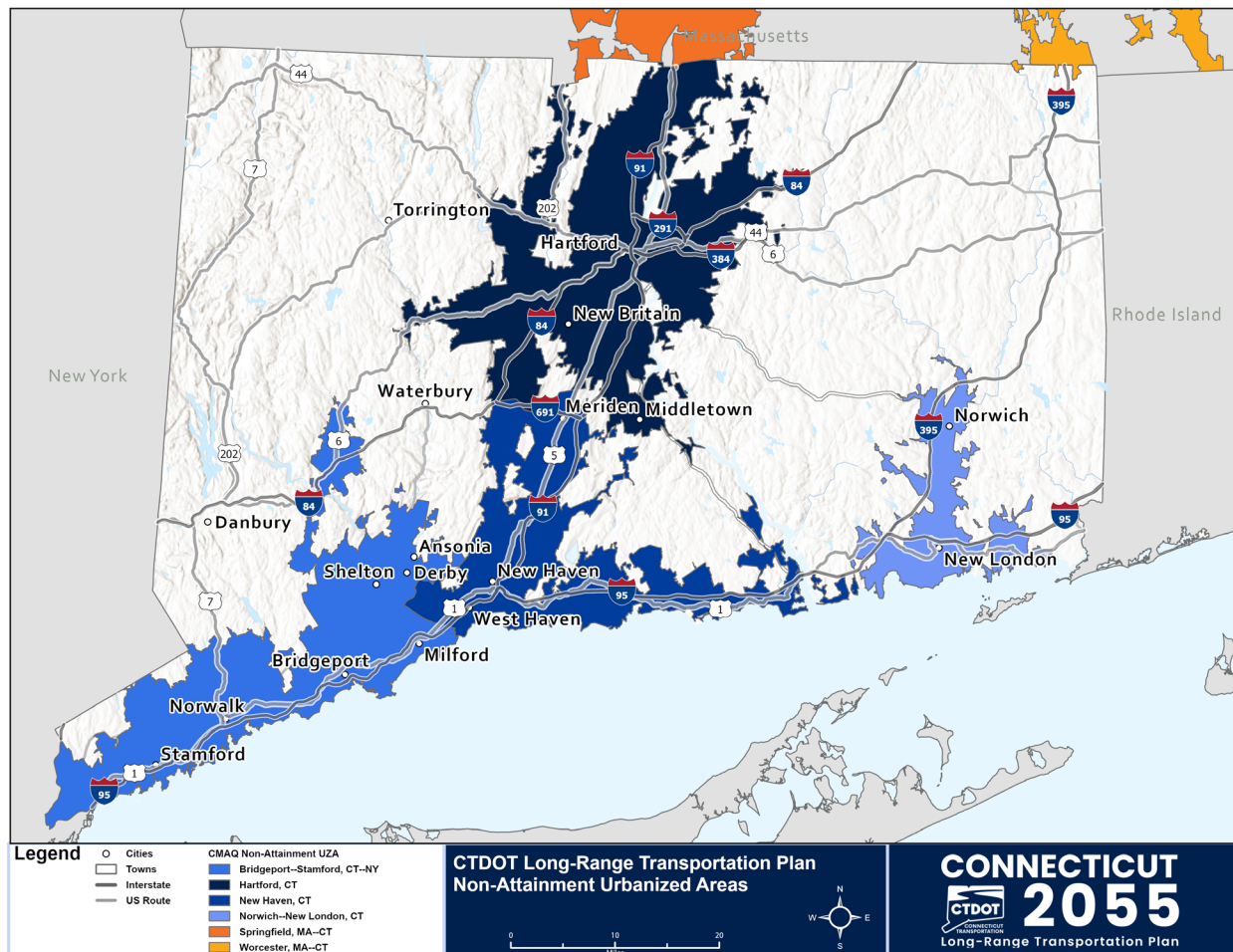


Figure 2.9: Non-Attainment Urbanized Areas

Note: This map depicts 2020 U.S. Census-designated UZA boundaries.

Under 23 CFR 490.707, two performance measures are used to assess traffic congestion in non-attainment or maintenance areas: Peak Hour Excessive Delay (PHED) and Non-Single Occupancy Vehicle (Non-SOV) travel.

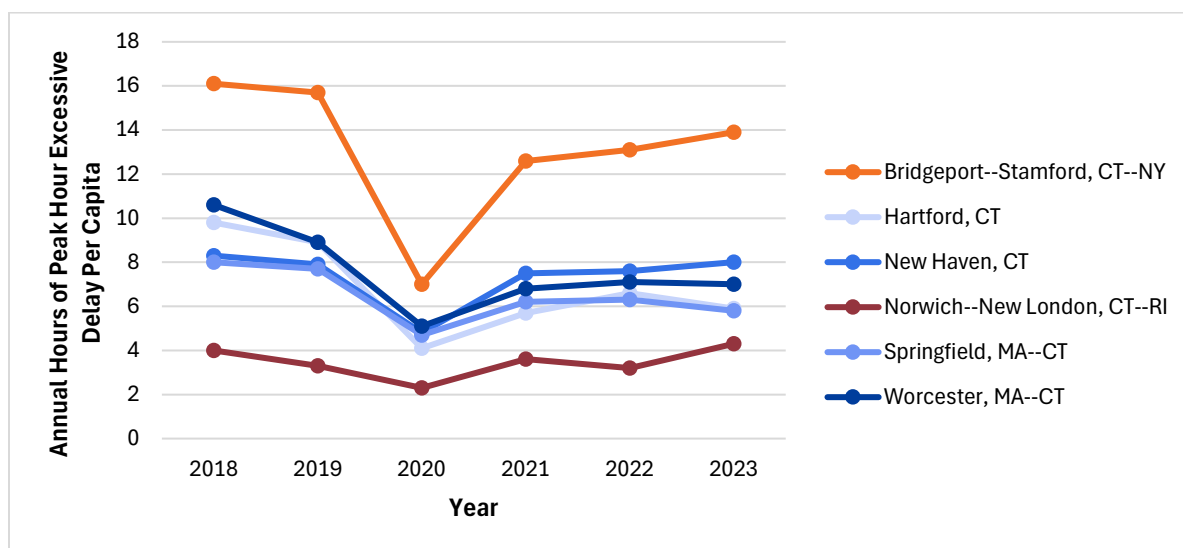
²⁵ UZA is primarily in Massachusetts

2.3.3.1 Peak Hours of Excessive Delay Per Capita by Urbanized Area

The measure of PHED per capita reflects similar travel trends being shown in the TTR metric. While congestion and traffic volumes are rising statewide, the rate of growth varies in UZAs:

- Hartford’s PHED was declining before the COVID-19 pandemic that started in 2020 and remains 34% below its pre-2019 number.
- Bridgeport–Stamford and New Haven’s PHED have been steadily climbing since 2021 but remain 12% below their respective 2019 numbers.

Figure 2.10 shows PHED per capita from 2018 to 2023 across the six urbanized areas in Connecticut. All areas experienced a drop in PHED in 2020, likely because of the COVID-19 pandemic. Following 2020, PHED has increased at each urbanized area. The Bridgeport–Stamford area has maintained the highest PHED throughout this timeframe, with a PHED value of 14 in 2023. In contrast, the Norwich–New London urbanized area has had the lowest PHED and last reported a PHED value of 4.3 hours in 2023.



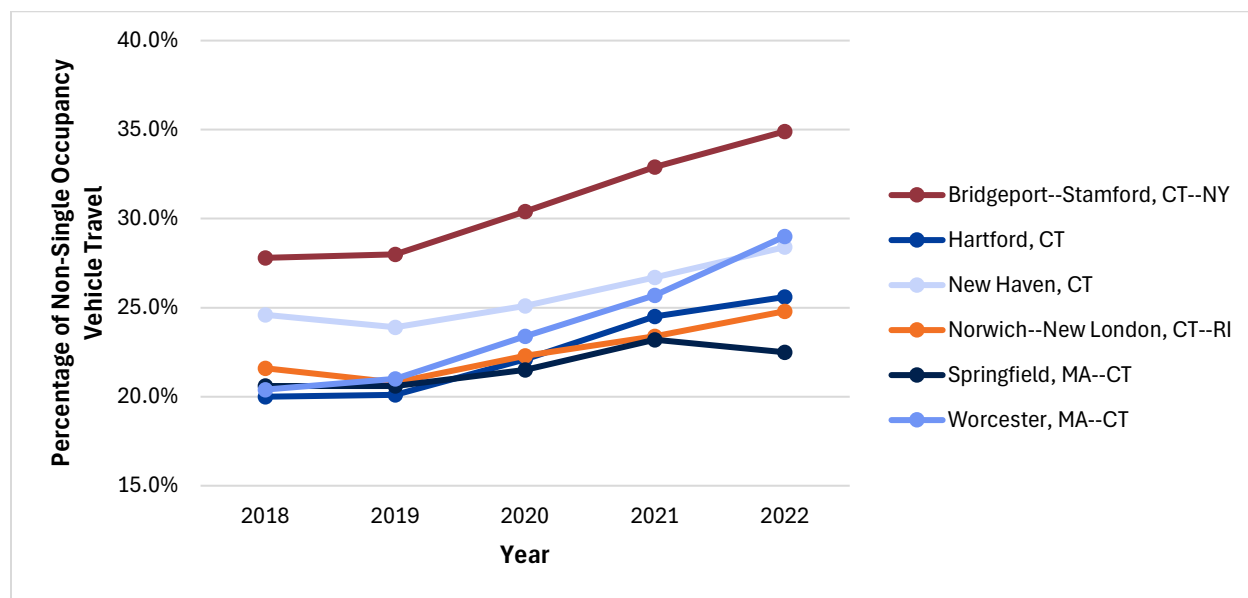
Source: [CTDOT Performance Measures Dashboard](#); CTDOT Biennial Performance Report for Performance Period 2022–2025 (Mid Performance Period)

Figure 2.10: PHED Per Capita by Urbanized Area

2.3.3.2 Non-Single Occupancy Vehicle Travel by Urbanized Area

Figure 2.11 shows the percentage of Non-SOV travel from 2018 to 2022 across six UZAs. All regions show increases in Non-SOV travel during these five years.

Bridgeport–Stamford, CT–NY has the highest Non-SOV rates and rose from about 27% in 2018 to nearly 35% in 2022. The New Haven and Worcester UZAs also saw increased rates of Non-SOV travel, especially after 2020. The Hartford, Norwich–New London, and Springfield UZAs followed similar upward trends at slightly lower levels.



Source: [CTDOT Performance Measures Dashboard](#); CTDOT Biennial Performance Report for Performance Period 2022–2025 (Mid Performance Period)

Figure 2.II: Non-SOV Travel Trends by Urbanized Area

2.3.3.3 Total Emissions Reduction

In addition to setting metrics for its urbanized areas, Connecticut establishes emission reduction targets being tracked in the CMAQ program for non-attainment and maintenance areas to address VOCs, NOx, and PM2.5. The City of New Haven was redesignated as in-attainment for PM10 on December 12, 2005, with a limited 20-year maintenance plan. As of December 12, 2025, this designated maintenance plan for PM10 is being phased out of reporting requirements²⁰.

For this performance measure, CTDOT estimates two-year and four-year emissions reductions based on the cumulative impact from CMAQ funded projects in the state, verifying that each project is completed, underway, or scheduled for construction. CTDOT tracks cumulative reductions carefully, ensuring each project is counted only once in the final reporting.

Table 2.4 summarizes emissions reduction performance since 2018. The reported values reflect the total amount of each pollutant reduced from CMAQ funded

projects, meaning that higher performance values indicate greater emissions reductions achieved. These results were supported by the CMAQ program, which at CTDOT shifted to a more qualitative assessment approach¹⁷ after an FHWA review emphasized prioritizing cost-effective air quality strategies. This shift led to a new set of projects launched in 2016, a direction that continues in the current performance period.

Table 2.4: Connecticut Statewide Total Emissions Reductions (4-year performance)

Performance Measure	2014–2017 (kg/day)	2018–2021 (kg/day)	2022–2023 (kg/day)*
PM2.5	12.95	0.00	14.98
Nox	462.49	0.00	174.27
VOC	263.89	0.00	178.90

*2-year mid-performance actuals

Source: CTDOT Biennial Performance Report for Performance Period 2022–2025 (Mid Performance Period), FHWA CY 2023 Safety Performance Assessment.

2.3.4 System Performance, Reliability, and CMAQ Performance Target Assessment

Table 2.5 presents the baseline values, two-year targets, two-year actual performance, and four-year targets for Interstate TTR, Non-Interstate TTR, and TTTR. These results reflect CTDOT’s performance on travel reliability across its highway network while managing freight movement and congestion. The two-year targets for each of the three performance measures was met in 2023 and the four-year target through the end of 2025 is currently under assessment.

Table 2.5: Interim Progress Toward 2022–2025 System Performance and Reliability Targets

Performance Measure	Baseline	Two-Year Target 2022–2023	Two-Year Actual 2022–2023	Four-Year Target 2022–2025
Percentage of the Person-Miles Traveled on the Interstate that are Reliable (Interstate TTR)	86.2%	78.6%	81.5%	71.3%
Percentage of the Person-Miles Traveled on the Non-Interstate	90.0%	84.9%	88.6%	84.9%

Performance Measure	Baseline	Two-Year Target 2022–2023	Two-Year Actual 2022–2023	Four-Year Target 2022–2025
NHS that are Reliable (Non-Interstate TTR)				
Truck Travel Time Reliability Index	1.56	1.95	1.67	2.02

Source: CTDOT Biennial Performance Report for Performance Period 2022–2025 (Mid Performance Period)

The baseline values, two-year targets, two-year actual performance, and four-year targets for PHED and Non-SOV by UZA are shown in **Table 2.6** and **Table 2.7**, respectively. The statewide target for Total Emissions Reduction is shown in **Table 2.8**.

Table 2.6: Interim Progress Toward 2022–2025 PHED Performance Targets

Urbanized Area (UZA)	Baseline	Two-Year Target 2022–2023	Two-Year Actual 2022–2023	Four-Year Target 2022–2025
Bridgeport--Stamford, CT--NY	12.6	20.0	13.9	21.9
Hartford, CT	5.7	9.8	5.9	9.8
New Haven, CT	7.5	7.9	8.0	9.5
Norwich--New London, CT--RI	3.6	4.0	4.3	5.5
Springfield, MA--CT	6.2	6.5	5.8	6.0
Worcester, MA--CT	6.8	7.0	7.0	5.0

Source: CTDOT Biennial Performance Report for Performance Period 2022–2025 (Mid Performance Period)

CTDOT met or exceeded the two-year PHED targets in the Bridgeport–Stamford, Hartford, Springfield, and Worcester UZAs and did not meet two-year targets in the New Haven and Norwich–New London UZAs.

Table 2.7: Interim Progress Toward 2022–2025 Non-SOV Travel Performance Targets

Urbanized Area (UZA)	Baseline	Two-Year Target 2022–2023	Two-Year Actual 2022–2023	Four-Year Target 2022–2025
Bridgeport--Stamford, CT--NY	30.4%	27.8%	32.9%	27.8%
Hartford, CT	22.1%	19.8%	24.5%	19.8%
New Haven, CT	25.1%	23.5%	26.7%	23.5%
Norwich--New London, CT--RI	22.3%	19.4%	23.4%	18.5%

Urbanized Area (UZA)	Baseline	Two-Year Target 2022-2023	Two-Year Actual 2022-2023	Four-Year Target 2022-2025
Springfield, MA--CT	21.5%	22.2%	23.2%	22.7%
Worcester, MA--CT	23.4%	25.4%	25.7%	29.6%

Source: CTDOT Biennial Performance Report for Performance Period 2022-2025 (Mid Performance Period)

CTDOT exceeded its two-year targets for the percentage of Non-SOV travel across all six UZAs in the state.

Table 2.8: Interim Progress Toward 2022-2025 Total Emissions Reductions Performance Targets

Performance Measure	Baseline	Two-Year Target (kg/day) 2022-2023	Two-Year Actual (kg/day) 2022-2023	Four-Year Target (kg/day) 2022-2025
Total Emission Reductions: PM2.5	0.000	6.290	14.982	6.290
Total Emission Reductions: NOx	0.000	81.978	174.274	91.978
Total Emission Reductions: VOC	0.000	87.346	178.895	87.346

Source: CTDOT Biennial Performance Report for Performance Period 2022-2025 (Mid Performance Period)

CTDOT surpassed its two-year targets for cumulative emissions reductions for PM2.5, NOx, and VOC.

2.4 Transit Asset Management Performance Measures



In addition to establishing performance measures for the surface transportation system, MAP-21 required the FTA to develop national performance measures for the capital assets of the nation’s transit systems.²⁶ Effective October 1, 2016, individual transit agencies are required to monitor and report on four performance measures related to management of its capital assets, which includes rolling stock, equipment, facilities, and infrastructure. These

²⁶ [TAM Performance Measures](#)

performance measures are defined in **Figure 2.12** and assess the state of good repair of individual agencies' capital assets, which is the condition in which a capital asset is able to operate at a full level of performance. Lower values for each performance measure indicate better performance and are the desired outcome.

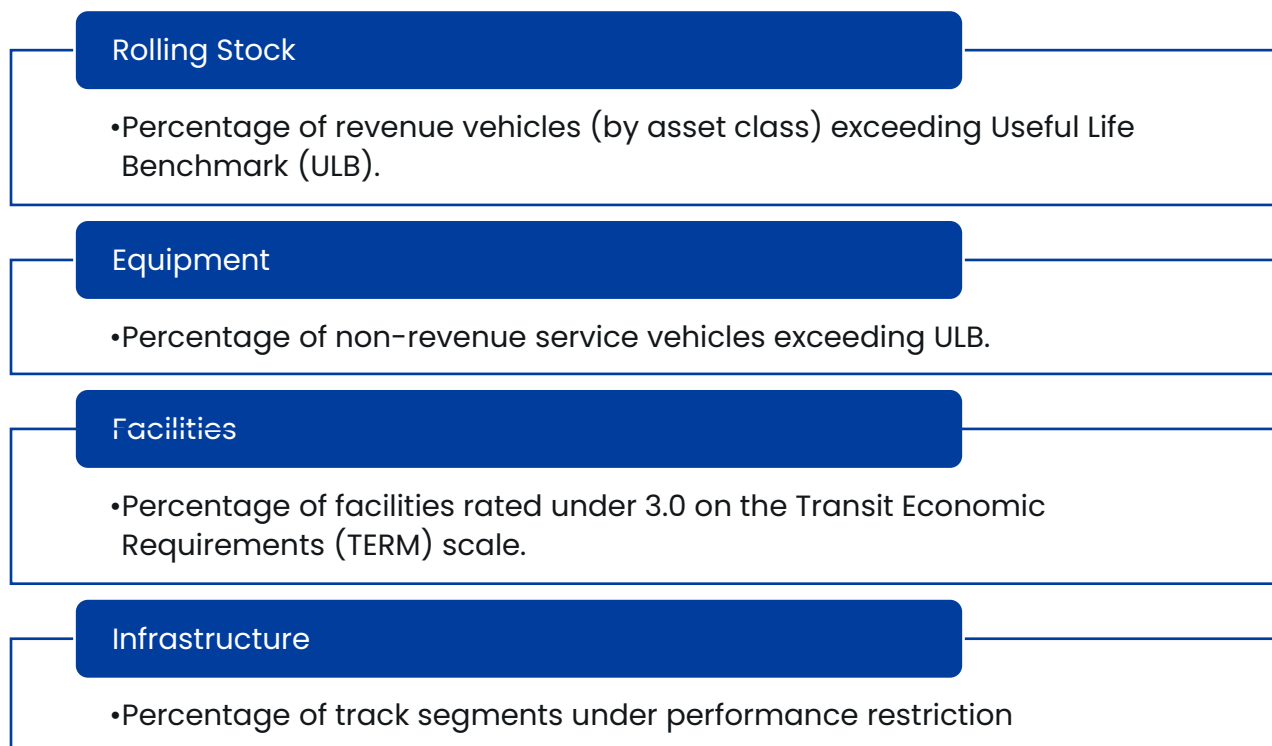


Figure 2.12: FTA TAM Performance Measures

The Useful Life Benchmark (ULB) is a measure of economic useful life measured in terms of age, mileage and other factors. The FTA's Transit Economic Requirements Model (TERM) Scale is a 1.0 to 5.0 scale used to measure the condition of facilities. Performance restrictions of rail infrastructure include segments of guideway track miles where the maximum permissible speed of transit vehicles is set below the guideway's full-service speed.

FTA requires public transit agencies to submit a TAM Plan at least every four years. TAM Plans typically provide an inventory and review of transit capital assets, assesses whether CTDOT is meeting FTA performance measures, and sets upcoming

targets. The contents and requirements of the TAM Plan are determined by the agency’s status as a Tier I or Tier II provider.²⁷

Tier I Provider: A recipient of federal transit funds who owns, operates, or manages 101 or more vehicles in revenue service during peak regular service across all fixed route modes or in any one non-fixed route mode or owns, operates or manages a rail transit system.

Tier II Provider: A recipient of federal transit funds who owns, operates, or manages 100 or fewer vehicles in revenue service during peak regular service across all fixed route modes or in any one non-fixed route mode, a subrecipient of FTA’s 5311 Rural Area Formula Program funds, or any American Indian Tribe.

CTDOT is classified as a Tier I provider and also serves as a group TAM Plan sponsor for participating Tier II providers in the state. Therefore, CTDOT has developed both a [Tier I TAM Plan](#) and [Tier II Group TAM Plan](#) to fulfill federal requirements under 49 U.S.C. § 5326 and 49 CFR Part 625 for transit agencies in Connecticut. These two TAM plans account for all transit services in the state except for the Greater Hartford Transit District and the Greater Waterbury Transit District, which complete their own TAM plans.

As part of these TAM Plans, CTDOT and participating Tier II transit agencies are required to set one-year performance targets for each applicable performance measure, which is listed in **Figure 2.12**.

2.4.1 Tier I Transit Asset Management Performance Measures

CTDOT’s most recent Tier I TAM Plan was completed in September 2022 and covers the reporting period of 2022 to 2025. CTDOT also annually reviews progress on performance measures. Each FTA-required performance measure is discussed in this section with the respective performance as of the TAM year’s completion, the most recent performance target, and the most recent actual performance.

Rolling Stock

Percentage of vehicles (by asset class) that have met or exceeded their ULB.

²⁷ [eCFR.: 49 CFR Part 625 -- Transit Asset Management](#)

Table 2.9 shows 2024 rolling stock performance data, 2021 performance and 2024 target documented in the TAM, and rolling stock asset classes with corresponding vehicle and ULB data. While some categories—such as Metro-North Railroad (MNR) commuter locomotives and self-propelled cars—remain in good standing, others like articulated buses and cutaway vehicles show higher percentages over their ULB. Continued monitoring and investment will help improve asset condition and support long-term service reliability.

Table 2.9: Tier I Rolling Stock Performance Measures and Targets

Rolling Stock Asset Class	Number of Vehicles (2024)	ULB (Years)	Percentage of Vehicles Met or Exceeded ULB		
			Current Performance (2024)	Performance Measure Target (2024)	TAM Plan Performance (\$FY21)
Transit Bus	476	12	23%	14%	22%
Articulated Bus	51	12	69%	14%	49%
Cutaway Bus	36	5	100%	17%	100%
Over-the-Road Bus	54	12	43%	14%	49%
Commuter Rail Locomotive*	27	25 (HL)** 35 (NHL)**	0%	13%(NHL) 17% (HL)	37%
Commuter Rail Passenger Coach*	80	25 (HL)** 35 (NHL)**	40%	13% (NHL) 17% (HL)	38%
Commuter Rail Self-Propelled Passenger Car*	300	35	0%	13%	0%
Ferry Boat	2	42	No Data	0%	100%

Source: CTDOT 2022–2025 Public Transportation Transit Asset Management Plan
CTDOT Tier I Transit Asset Management Plan Fact Sheet (2024)

*Includes all transit lines

** HL = Hartford Line, NHL = New Haven Line

Equipment

Percentage of non-revenue vehicles (by asset class) that have met or exceeded the ULB.

Table 2.10 shows the 2024 equipment performance data which indicates that several asset classes remain above their ULB targets, particularly automobiles, vans, and steel wheel vehicles, which continue to show 100% over ULB. Trucks have shown improvement compared to State Fiscal Year (SFY) 2021, with a reduction from 37% to 31%. While overall performance remains above target levels, these results highlight opportunities to guide future asset replacement strategies and maintain reliable operations.

Table 2.10: Tier I Equipment Performance Measures and Targets

Equipment Asset Class	Number of Vehicles (2024)	ULB (Years)	Percentage of Vehicles Met or Exceeded ULB		
			Current Performance (2024)	Performance Measure Target (2024)	TAM Plan Performance (SFY21)
Truck	16	14	31%	7%	37%
Automobile	11	5	100%	17%	100%
Sport Utility Vehicle	42	5	74%	17%	72%
Van	10	5	100%	17%	100%
Steel Wheel Vehicle	43	25	100%	0%	100%

Source: CTDOT 2022-2025 Public Transportation Transit Asset Management Plan
CTDOT Tier I Transit Asset Management Plan Fact Sheet (2024)

Infrastructure

The percentage of track segments (by mode) that have performance restrictions. Track segments are measured to the nearest 0.01 mile.

Table 2.11 shows that the 2024 infrastructure performance for rail guideway remains strong, with only 2.9% of assets exceeding their ULB—well below the 2024 target of 3.08%. This reflects continued stability in asset condition and effective management of guideway infrastructure over time.

Table 2.11: Tier I Infrastructure Performance Measures and Targets

Infrastructure Asset Class	Percentage of Guideway Slow Zone Restrictions		
	Current Performance (2024)	Performance Measure Target (2024)	TAM Plan Performance (SFY21)
Rail Guideway	2.9%	3.08%	3%

Source: CTDOT 2022–2025 Public Transportation Transit Asset Management Plan
CTDOT Tier I Transit Asset Management Plan Fact Sheet (2024)

Facilities

The percentage of facilities (by group) that are rated less than 3.0 on the TERM Scale. Condition assessments must be no more than four years old.

Table 2.12 shows that, as of 2024, none of the bus-related facilities are rated lower than 3.0 on the TERM scale, aligning with the performance target of 0%. However, 16% of rail administrative/maintenance facilities and 1% of rail passenger/parking facilities are rated 3.0 or below, exceeding the target of 0%. Notably, rail passenger/parking facilities have improved significantly from the TAM plan from 26% of rail facilities below 3.0 on the TERM scale to just 1%.

Table 2.12: Tier I Facilities Performance Measures and Targets

Facilities Asset Class	Number of Facilities (2024)	Percentage of Facilities Rated Below 3.0 ¹		
		Current Performance (2024)	Performance Measure Target (2024)	TAM Plan Performance (SFY21)
Administrative/Maintenance (Bus)	4	0%	0%	14%
Passenger/Parking (Bus)	10	0%	0%	0%
Administrative/Maintenance (Rail)	5	16%	0%	8%
Passenger/Parking (Rail)	43	1%	0%	26%

Source: CTDOT 2022–2025 Public Transportation Transit Asset Management Plan
CTDOT Tier I Transit Asset Management Plan Fact Sheet (2024)

¹Based on the TERM Scale

2.4.2 Tier II Transit Asset Management Performance Measures

CTDOT’s most recent Tier II TAM Plan was completed in September 2022 and covers the reporting period of 2022 to 2025. It covers 12 of 14 Tier II transit providers in

Connecticut as well as the Town of Mansfield and the Mashantucket Pequot Tribal Nation, which are grant recipients of the FTA’s 5310 Program. **Figure 2.13** shows the 12 transit providers included in the Tier II TAM Plan.

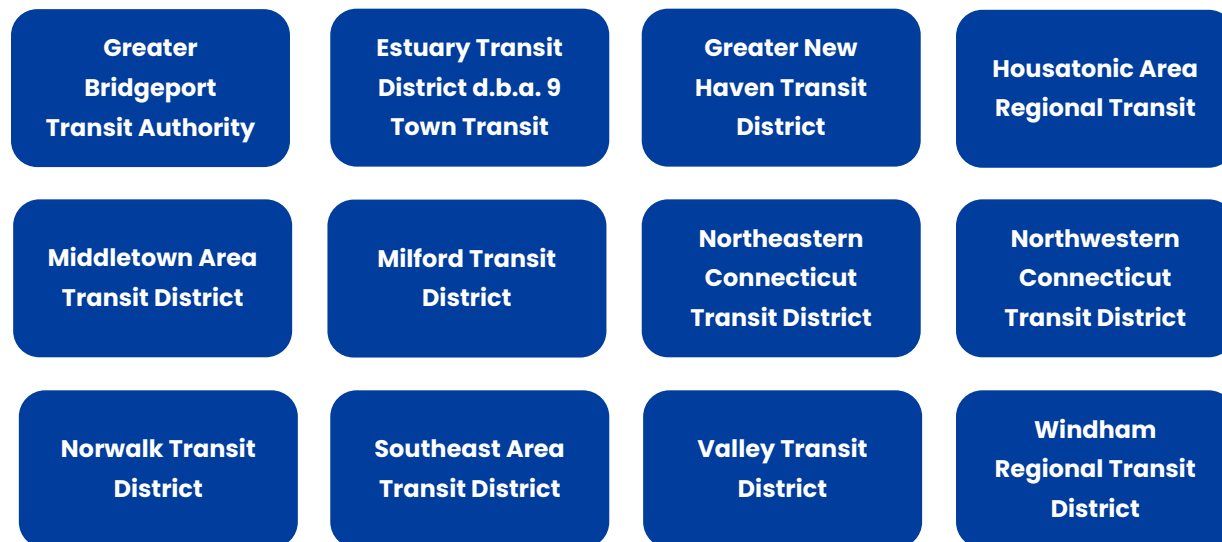


Figure 2.13: Tier II Transit Agencies included in the CTDOT Group TAM

Each FTA-required performance measure is discussed in this section with the respective performance as of the TAM year’s completion, the most recent performance target, and the most recent actual performance.

Rolling Stock

Percentage of vehicles (by asset class) that have met or exceeded their ULB.

Table 2.13 shows the Tier II 2024 rolling stock data performance. Transit buses remain slightly above the performance target. Cutaway buses and minivans continue to exceed their ULB targets, indicating potential areas for future investment. Ongoing asset monitoring and replacement planning will support improved performance across these vehicle types.

Table 2.13: Tier II Rolling Stock Performance

<u>Rolling Stock</u> Asset Class	Number of Vehicles (2024)	ULB (Years)	Current Performance (2024)	Performance Measure Target (2024)	TAM Plan Performance (SFY21)
Transit Bus	198	12	21%	14%	5%
Cutaway Bus	291	5	83%	17%	57%

<u>Rolling Stock Asset Class</u>	Number of Vehicles (2024)	ULB (Years)	Current Performance (2024)	Performance Measure Target (2024)	TAM Plan Performance (SFY21)
Minivan	8	5	100%	17%	100%

Source: CTDOT 2022–2025 Public Transportation Transit Asset Management Group Plan
 CTDOT Tier II Transit Asset Management Plan Fact Sheet (2024)

Equipment

Percentage of non-revenue vehicles (by asset class) that have met or exceeded the ULB.

Table 2.14 shows that all equipment asset classes exceed their ULB targets, with notable increases in trucks, vans, and SUVs compared to SFY21. While automobiles remain unchanged, other categories have seen higher percentages over time. These trends suggest an opportunity to prioritize equipment renewal to enhance reliability and maintain a state of good repair.

Table 2.14: Tier II Equipment Performance

<u>Equipment Asset Class</u>	Number of Vehicles (2024)	ULB (Years)	Current Performance (2024)	Performance Measure Target (2024)	TAM Plan Performance (SFY21)
Truck	5	14	80%	7%	22%
Automobile	2	5	100%	17%	100%
Sport Utility Vehicle	46	5	85%	17%	81%
Van	7	5	86%	17%	71%

Source: CTDOT 2022–2025 Public Transportation Transit Asset Management Group Plan
 CTDOT Tier II Transit Asset Management Plan Fact Sheet (2024)

Facilities

The percentage of facilities (by group) that are rated less than 3.0 on the TERM Scale. Condition assessments must be no more than four years old.

Table 2.15 shows that both administrative/maintenance and passenger facilities are now at 0% exceeding 3.0 on the TERM scale and are meeting performance targets. This reflects a positive trend from SFY 2021 and indicates strong asset condition across all facility types.

Table 2.15: Tier II Facilities Performance

<u>Facilities</u> Asset Class	Number of Facilities (2024)	Current Performance (2024)	Performance Measure Target (2024)	TAM Plan Performance (SFY21)
Administrative/ Maintenance	10	0%	0%	6%
Passenger	5	0%	0%	6%

Source: CTDOT 2022-2025 Public Transportation Transit Asset Management Group Plan
 CTDOT Tier II Transit Asset Management Plan Fact Sheet (2024)

3.0 Connecticut System Performance Measures

CTDOT maintains a robust Performance Measures Program going beyond federal requirements to provide a more comprehensive view of the state's transportation system. Developed and managed by the Division of Performance Management within the Bureau of Policy & Planning, this program tracks a wide range of metrics across highways, transit, bicycle and pedestrian infrastructure, and project delivery. In addition to meeting federal reporting expectations, CTDOT monitors state-prioritized indicators such as transit ridership and reliability, rail structure condition, active transportation investments, and construction performance. These measures support data-informed planning, funding decisions, and operational strategies. Updated regularly and made available through interactive dashboards, this performance framework reflects CTDOT's commitment to transparency and accountability in delivering a safe, efficient, and multimodal transportation network.²⁸

3.1 Transit System Performance Measures

CTDOT is one of a limited number of state transportation agencies that directly own, operate, or subsidize most public transportation services within the state. These services span a comprehensive network that include commuter and intercity rail, urban fixed-route bus systems, and rural transit options such as fixed-route and demand-response bus services.

CTDOT collects data and monitors performance of the transit services it manages or helps manage. In particular, performance data is gathered for *CTrail's* rail lines, *CTtransit's* bus systems, and independent transit districts across the state. CTDOT also monitors performance of other rail service providers in the state (MNR, Amtrak and Transit America Services, Inc.) to ensure that CTDOT's Bureau of Public Transportation operates consistently with its mission statement and allocates funding in a manner designed to achieve its goals and objectives.

²⁸ [Performance Measures](#)

CTDOT’s tracks these performance measures to evaluate the condition and performance of statewide rail and bus systems:

- Passenger rail structure condition
- Transit system performance
 - Rail and bus system ridership
 - On-time performance
- Rail equipment reliability

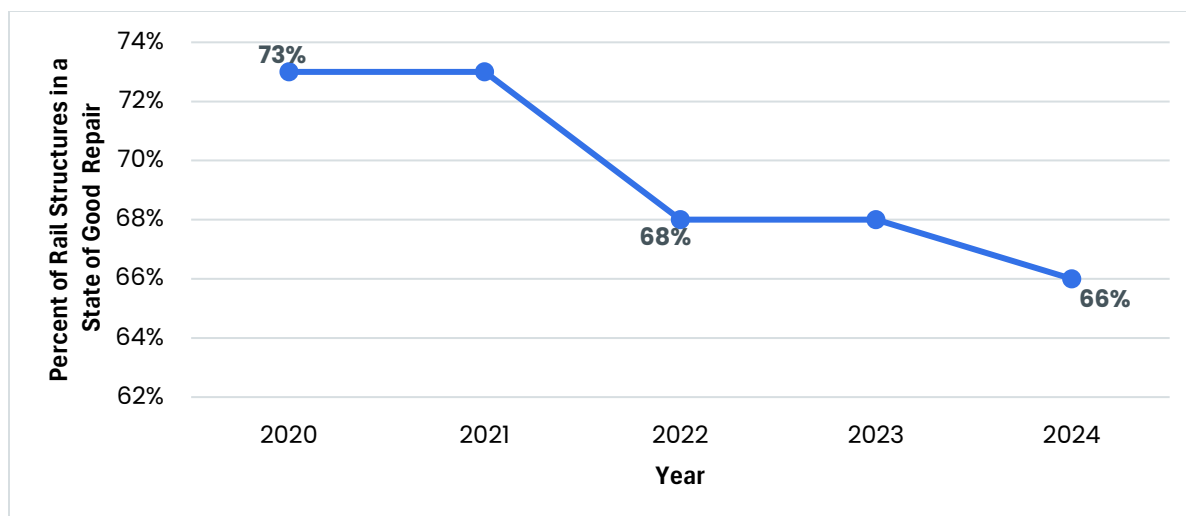
3.1.1 Passenger Rail Structure Condition

The State of Connecticut owns all rail infrastructure associated with the MNR New Haven Line, which includes rail line along the Northeast Corridor from New Haven to the New York border, as well as the Danbury, Waterbury, and New Canaan branches. CTDOT holds full capital responsibility for these assets, which are managed. Infrastructure along the CTrail Shore Line East and Hartford Line is owned by Amtrak, and thus not CTDOT’s capital responsibility. However, CTDOT does maintain rail infrastructure on the Shore Line East and Hartford lines.

Rail systems rely on extensive infrastructure assets, with passenger rail bridge condition being a key performance metric. As of 2024, CTDOT maintains 206 rail structures including, 149 fixed bridges, 35 culverts, 5 movable bridges, and 17 pedestrian bridges.²⁹

Passenger rail bridges are inspected annually and rated using the National Bridge Inventory (NBI) scale, which includes a scale with values ranging from 0 to 9. A bridge is considered in a state of good repair if all major bridge components score 5 or higher. These components include the deck (where applicable), superstructure, substructure, and, for movable bridges, mechanical and electrical systems. **Figure 3.1** shows the percentage of passenger rail structures in a state of good repair condition from 2020 to 2024.

²⁹ [2024 Public Transit Asset Fact Sheets \(Tier 1\)](#)



Source: [Asset Management](#), CTDOT Public Transit Asset Fact Sheets (Tier 1): 2020–2024

Figure 3.1: Passenger Rail Structure Condition

The percentage of all rail structures in a state of good repair has declined from 73% (150 structures) in 2020 to 66% (136 structures) in 2024. CTDOT anticipates \$11.5 billion in state of good repair needs from 2024–2027 for the New Haven Line and its branch line rail infrastructure including bridges.³⁰ This figure would address an existing state of good repair backlog of \$9.6 billion as of the SFY 2024 and additional state of good repair needs through 2027. Rail infrastructure needs grew in part because of increased cost for construction such as moveable bridge replacement projects.

3.1.2 Transit System Performance

CTDOT measures transit system performance based on ridership, which is consistent with industry standards. Ridership data is collected from each provider and most urban transit systems must report this data to the FTA’s National Transit Database (NTD) monthly. CTDOT tracks ridership performance for the following modes and services:

- Rail Ridership
 - New Haven Line
 - Shore Line East
 - Hartford Line

³⁰ CTDOT 2024 Public Transit Asset Fact Sheet (Tier 1)

- Bus Ridership
 - CTtransit services
 - Independent transit districts services

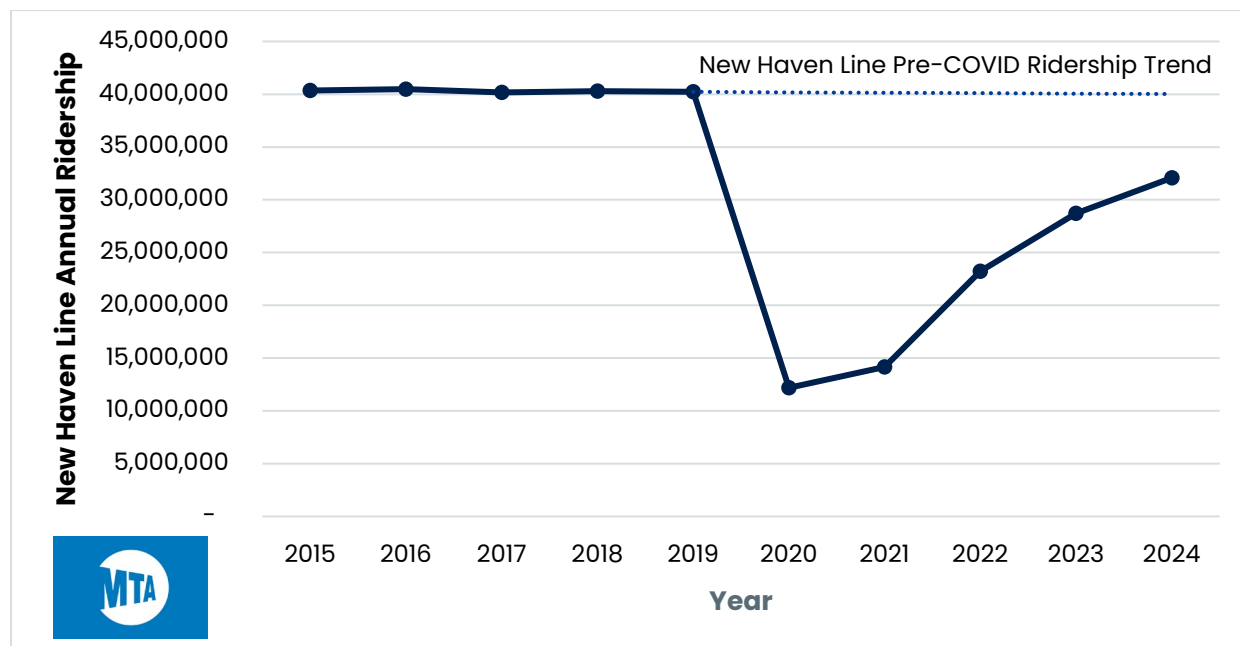
The following sections and figures summarize ridership trends from 2015 to 2024, illustrating ridership recovery 2019 and future projections for both passenger rail and bus systems.

3.1.2.1 Rail System Ridership

Figure 3.2 shows rail ridership trends on the New Haven Line from 2015 to 2024. Between 2015 and 2019, annual ridership on the New Haven Line was consistent at approximately 40 million passengers. However, following the onset of the 2020 COVID-19 pandemic, annual ridership fell to 12 million passengers – a 70% reduction. Beginning in 2021, annual ridership on the New Haven Line gradually climbed to more than 30 million passengers in 2024, an increase of 152% since 2020.



New Haven Line



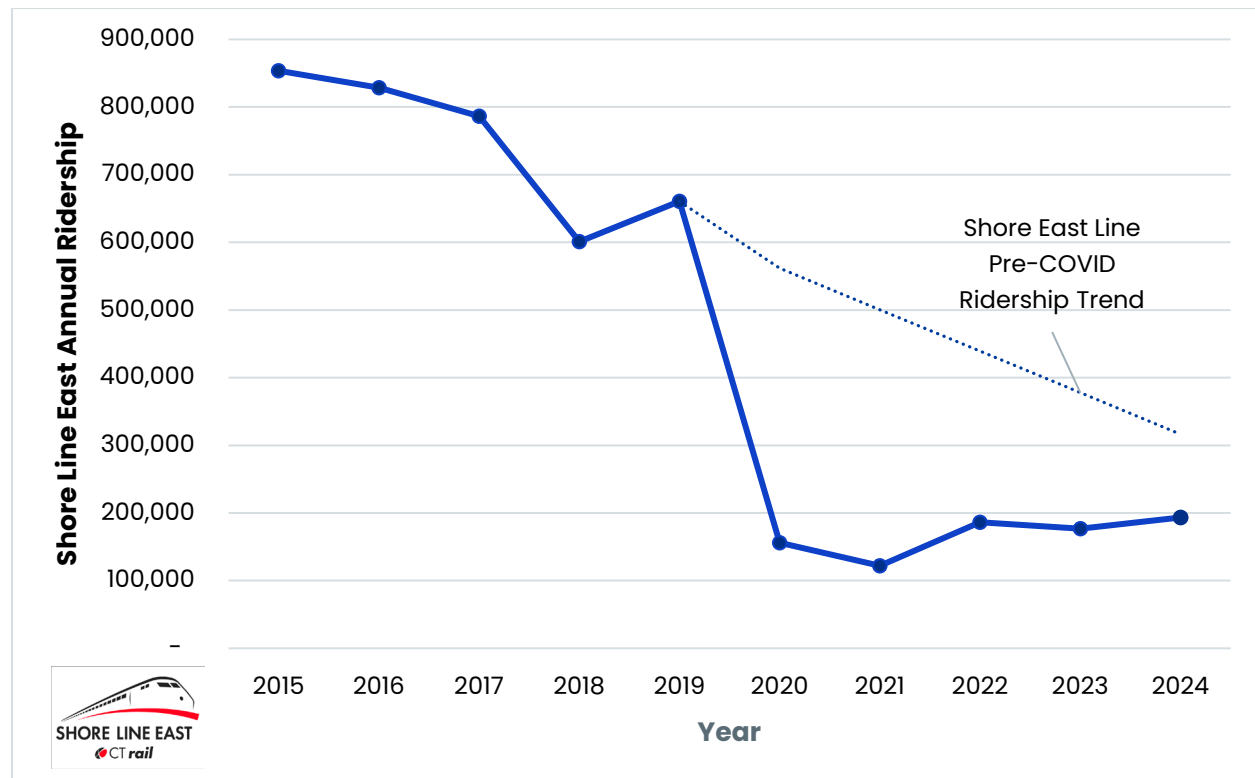
Source: CTDOT Office of Rail

Figure 3.2: New Haven Line Ridership Trends, 2015–2024

Figure 3.3 shows annual ridership trends on CT*rail*'s Shore Line East from 2015 to 2024. Ridership fell 28% from 2015 to 2018 but also experienced an increase in ridership in

2019. However, ridership dropped significantly to 156,000 in 2020 and a low of 122,000 in 2021. Annual ridership grew slightly between 2022 and 2024, from 186,000 to 193,000 passengers.

Shore Line East

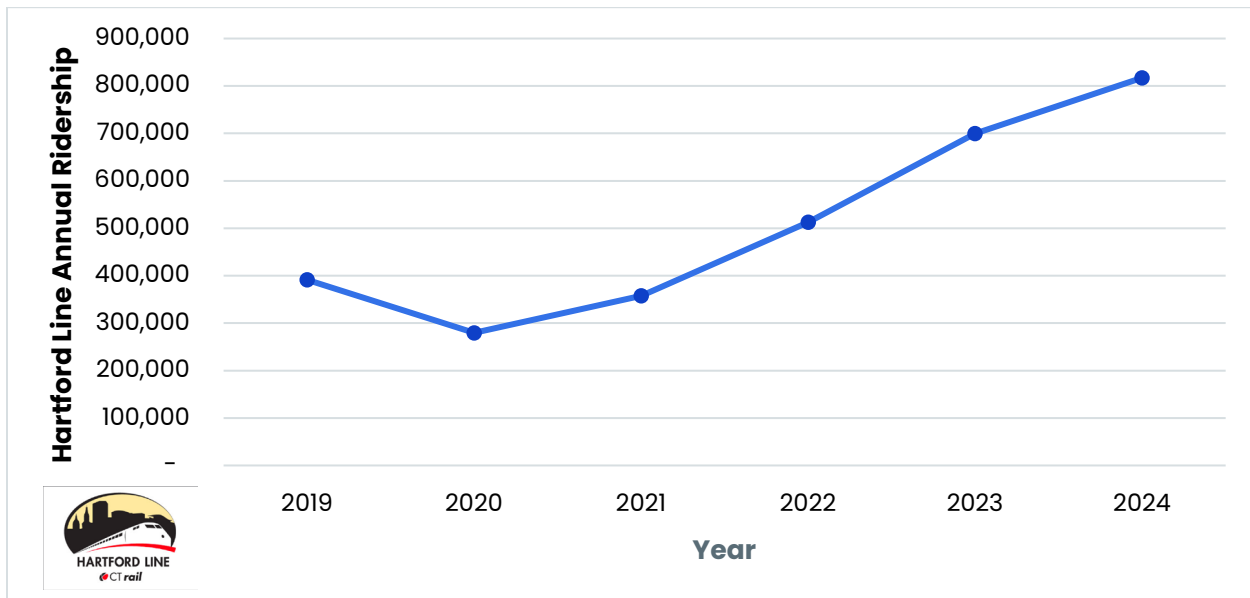


Source: CTDOT Office of Rail

Figure 3.3: Shore Line East Ridership Trends, 2015–2024

Figure 3.4 shows annual ridership trends on the Hartford Line. Operating since 2018, the Hartford Line includes both the State-owned CTrail Hartford Line service, and Amtrak’s Hartford regional train service. In 2020, ridership fell to 280,000 passengers, but has since trended upward, rising to 817,000 passengers in 2024.

Hartford Line



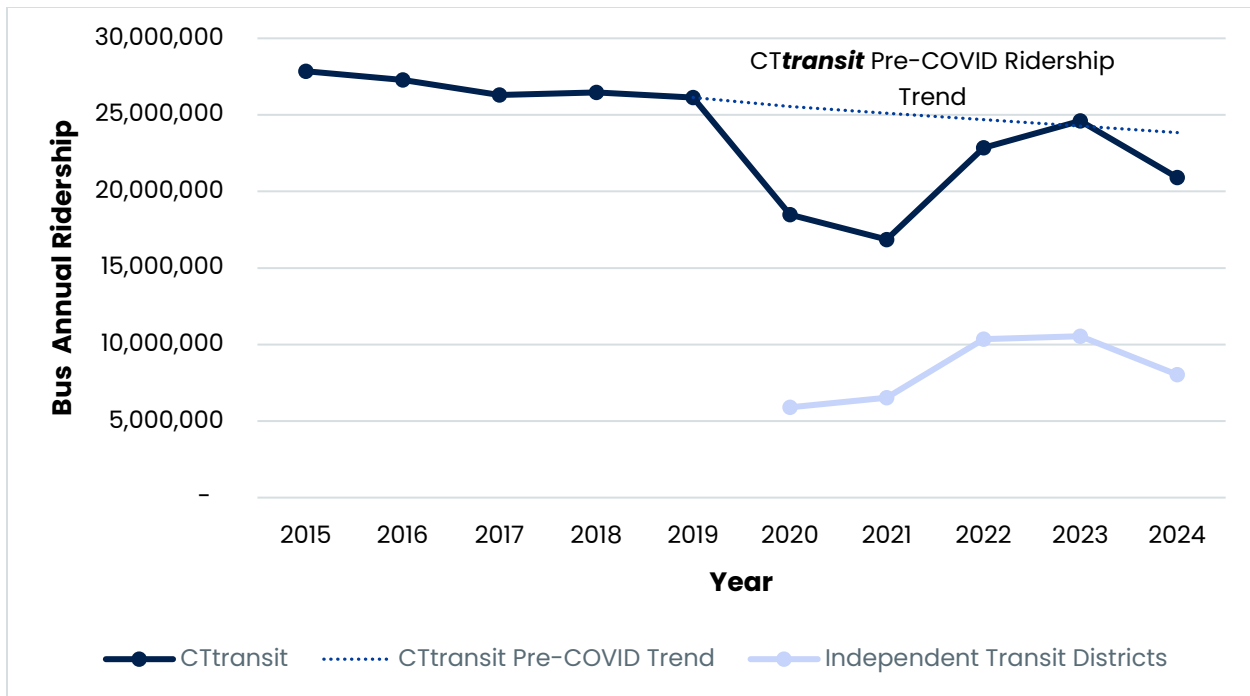
Source: CTDOT Office of Rail

Figure 3.4: Hartford Line Ridership Trends, 2019–2024

3.1.2.2 Bus System Ridership

Figure 3.5 shows bus ridership trends for CTtransit and independent transit districts from 2015 to 2024. Through 2023, bus ridership recovered 94% from pre-pandemic levels, and current CTDOT forecasts suggests a full recovery by 2027. Since 2020, bus ridership as a share of all public transportation has been growing and now accounts for 45% of all public transit in the State. In 2023, ridership reached a relative high of 24 million passengers in 2023 but also fell to 21 million in 2024.





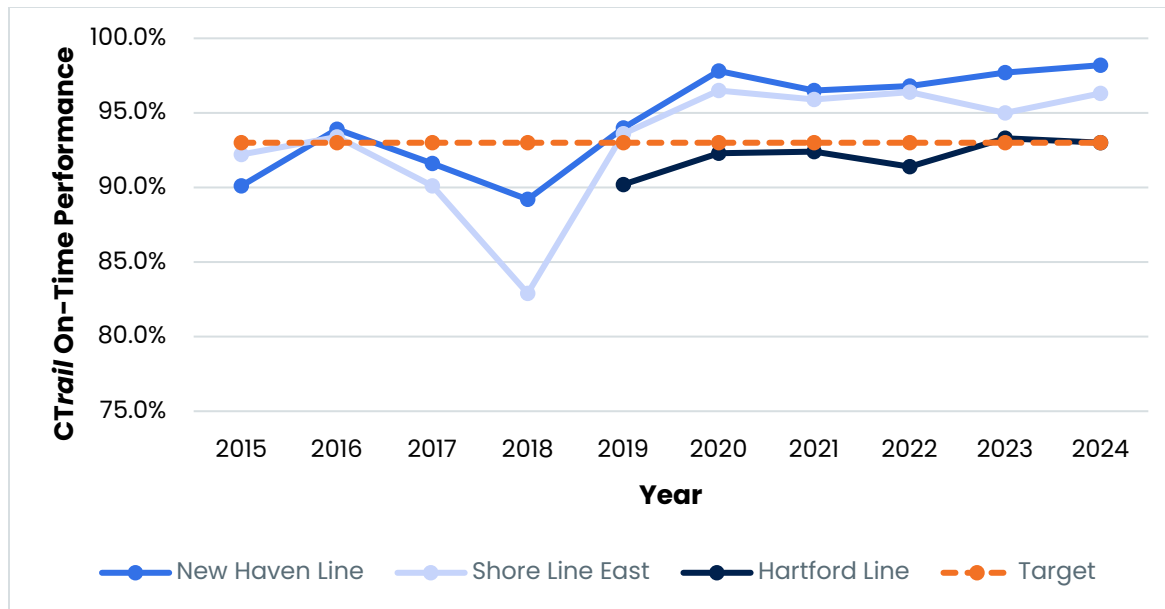
Source: CTDOT Office of Transit & Ridesharing

Figure 3.5: Bus Ridership Trends, 2015–2024

Data for the independent transit districts was not available prior to 2020. Since 2020, annual ridership has increased from 5.9 million passengers in 2020 to 10.5 million passengers in 2023, a 79% increase. However, in 2024, annual ridership fell to 8 million passengers.

3.1.3 On-Time Performance

CTDOT tracks On-Time Performance (OTP) to measure the reliability of its rail system. For *CTrail*, a train is considered late if it arrives at its destination 6 minutes after its scheduled arrival. OTP can be affected by factors such as track outages and planned construction, dispatcher induced delays, weather conditions, and crew related delays in turning around trainsets. **Figure 3.6** displays OTP trends and targets for the New Haven Line, Shore Line East, and Hartford Line from 2015 to 2024. CTDOT maintains a target that 93% of trains meet OTP.



Source: [CTDOT Performance Measures Dashboard](#) and CTDOT Office of Rail

Figure 3.6: CTrail On-Time Performance, 2015–2024

On the New Haven Line, the OTP target was not met in 2015, 2017, and 2018. Since 2019, the OTP target has been met, and performance has exceeded 97% from 2020 to 2024.

The Shore Line East’s OTP was a low of 82% in 2018 and only met the 93% target one year from 2015 to 2019. Since 2019, the OTP target has been met and a peak of over 96% was measured in 2022.

During its first two years of service, the Hartford Line’s OTP on the Hartford Line fell below the 93% performance target. Since 2021, OTP has been measured at near or above this target. To maintain and improve OTP, CTDOT is focused on replacing aging infrastructure and equipment. It has recently replaced the overhead catenary system of the New Haven Line and has planned a major capital program to replace the aging signal system.

3.1.4 Reliability

The primary metric CTDOT uses to track the reliability of its fleet is Mean Distance between Failures (MDBF) in miles for rail and Average Miles between Road Calls for buses. These metrics measure the average distance a vehicle travels before a mechanical failure occurs. The vehicle types tracked include:

Rail Rolling Stock

- Locomotives
- Passenger Coaches
- Self-Propelled Passenger Cars

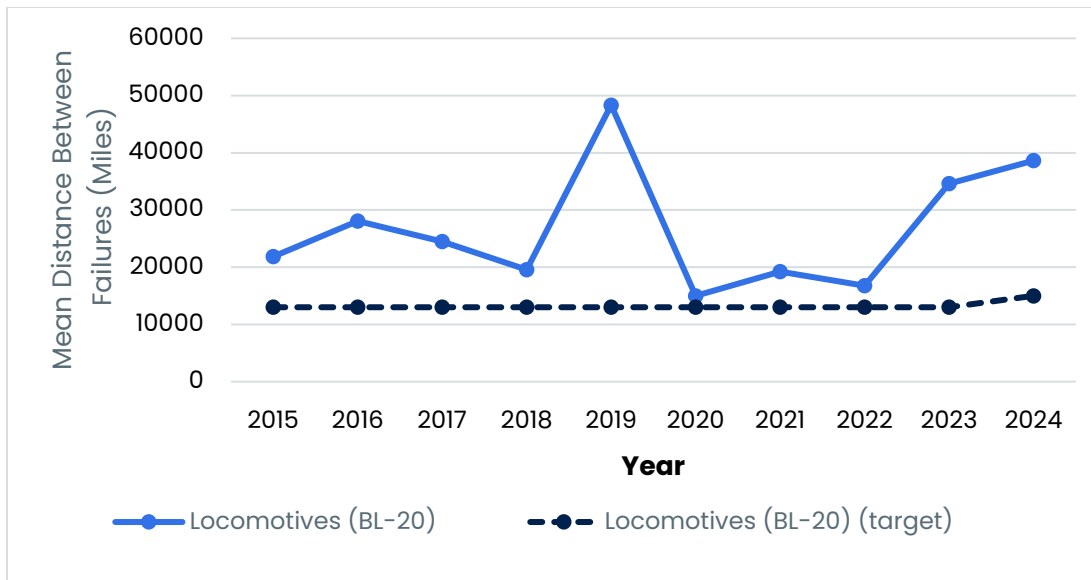
CTtransit Bus Vehicles

- Transit Buses
- Articulated Buses
- Over-the-Road Buses
- Cutaway Buses

3.1.4.1 Locomotives

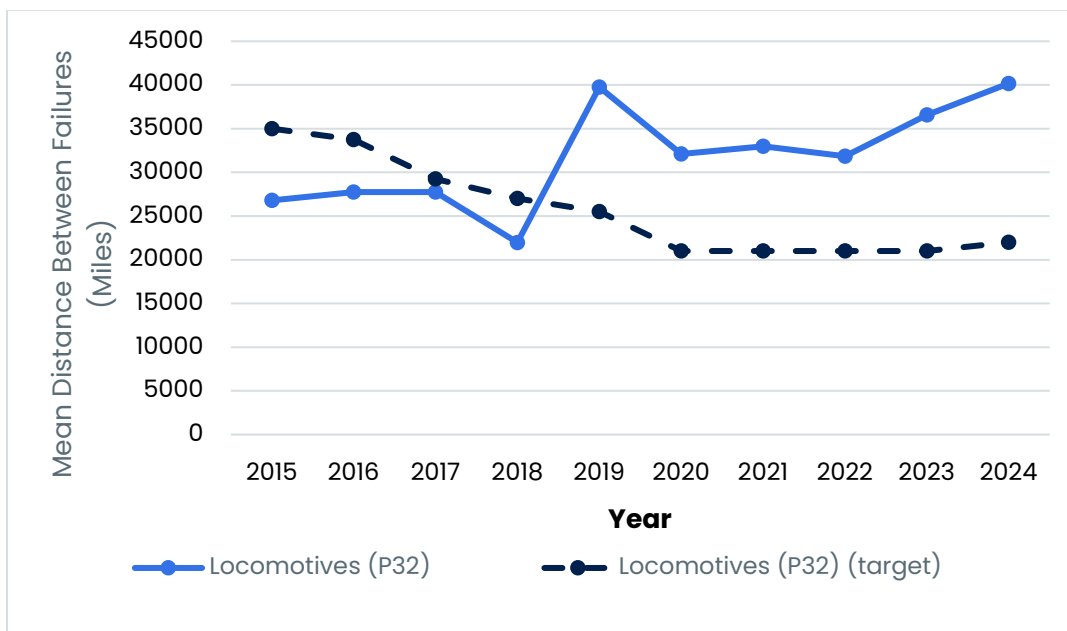
BL20 and P32 diesel locomotives are used to power trains on the New Haven Line’s Danbury and Waterbury branches. **Figure 3.7** shows MDBF performance trends of the BL20 locomotives, which has been above the established MDBF targets of 13,000 miles (effective from 2015 to 2023) and 15,000 miles (effective in 2024) every year.

Figure 3.8 shows MDBF performance trends of P32 locomotives. The MDBF performance target has ranged from every 40,000 miles to every 21,000 miles between 2015 and 2024. In 2024, the target was increased to every 22,000 miles. The P32 locomotives did not meet their performance target between 2015 and 2018. However, MDBF performance targets have been met every year between 2019 and 2024.



Source: [CTDOT Performance Measures Dashboard](#)

Figure 3.7: CTrail Fleet Reliability (BL-20 Locomotives), 2015–2024



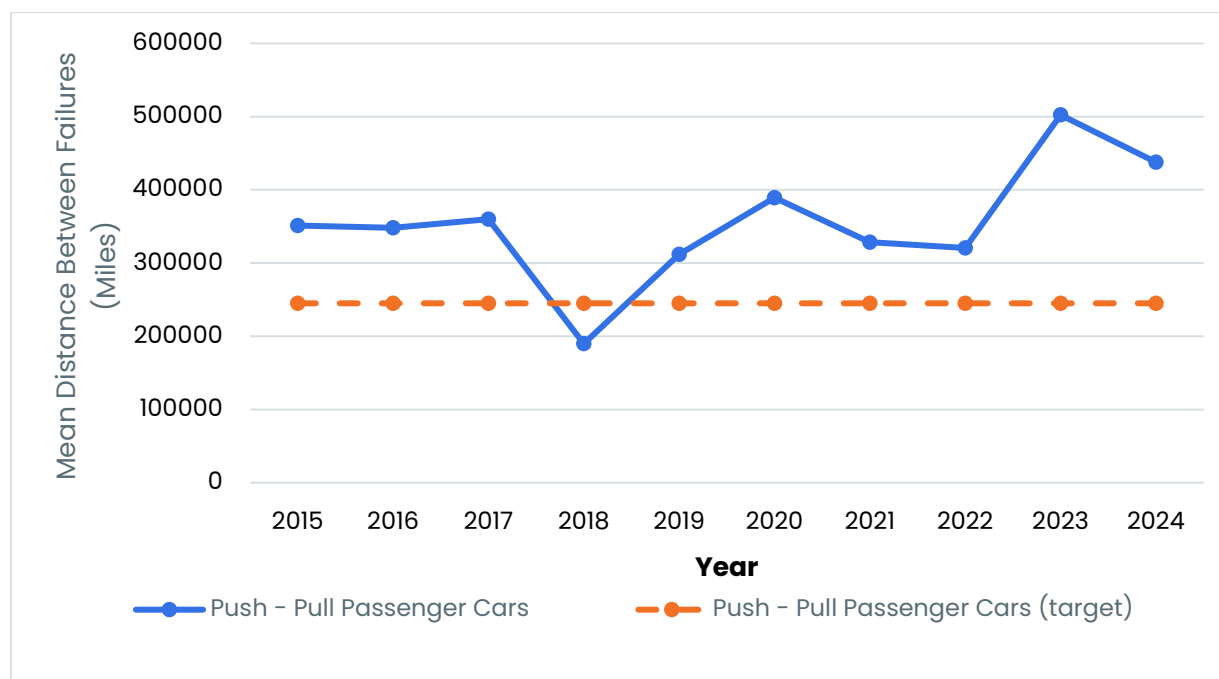
Source: [CTDOT Performance Measures Dashboard](#)

Figure 3.8 CTrail Fleet Reliability (P32 Locomotives), 2015–2024

3.1.4.2 Passenger coaches

A total of 47 passenger coaches are used on the New Haven Line, and a total of 33 passenger coaches are used on the Hartford Line. These coaches have generally

performed above the established performance targets, except in 2018 when the MDBF fell to 190,000 miles, failing to meet the target of 245,000 miles. **Figure 3.9** shows MDBF reliability performance and targets for passenger coaches from 2015 to 2024. Currently, 60% of the New Haven Line’s passenger coach fleet are within its ULB of 35 years and all 33 of the Hartford Line passenger coaches are past their ULB of 25 years.



Source: [CTDOT Performance Measures Dashboard](#)

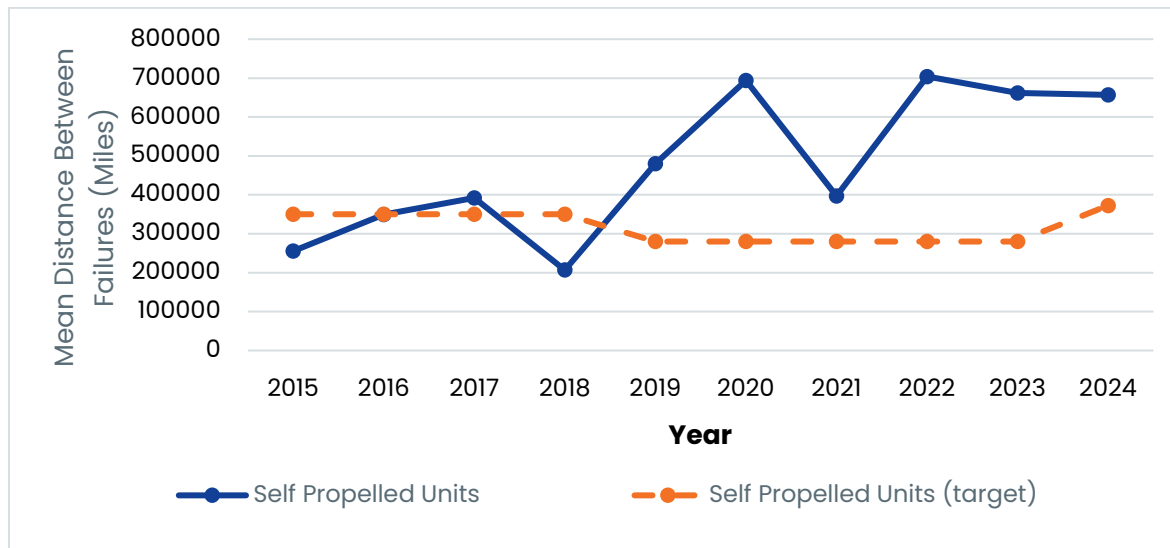
Figure 3.9: CTrail Fleet Reliability (Passenger Coaches), 2015–2024

3.1.4.3 Self-Propelled Passenger Cars

Self-propelled passenger cars are currently used on New Haven Line and Shore Line East. The fleet consists of 300 Kawasaki M8s, including a dedicated subfleet of 12 cars used for Shore Line East. As of 2024, this entire fleet is within its ULB.

Figure 3.10 shows the MDBF reliability of CTDOT’s self-propelled passenger cars. The fleet did not meet its reliability target in 2015 and 2018. In 2018, the MDBF performance target was 350,000 miles; however, the actual miles between failures was 206,000. Beginning in 2019, the Department lowered the performance target to 280,000 miles and gradually increased it to 372,500 miles by 2024. Reliability improved through 2020 but declined again in 2021 to 397,000 miles. Since 2022, however, the fleet has continuously performed well above its established performance targets.

To ensure the reliability of the rail fleet and to meet future ridership demand, CTDOT will focus on replacing and expanding its current locomotive and coach fleets over the next 10 years.



Source: [CTDOT Performance Measures Dashboard](#)

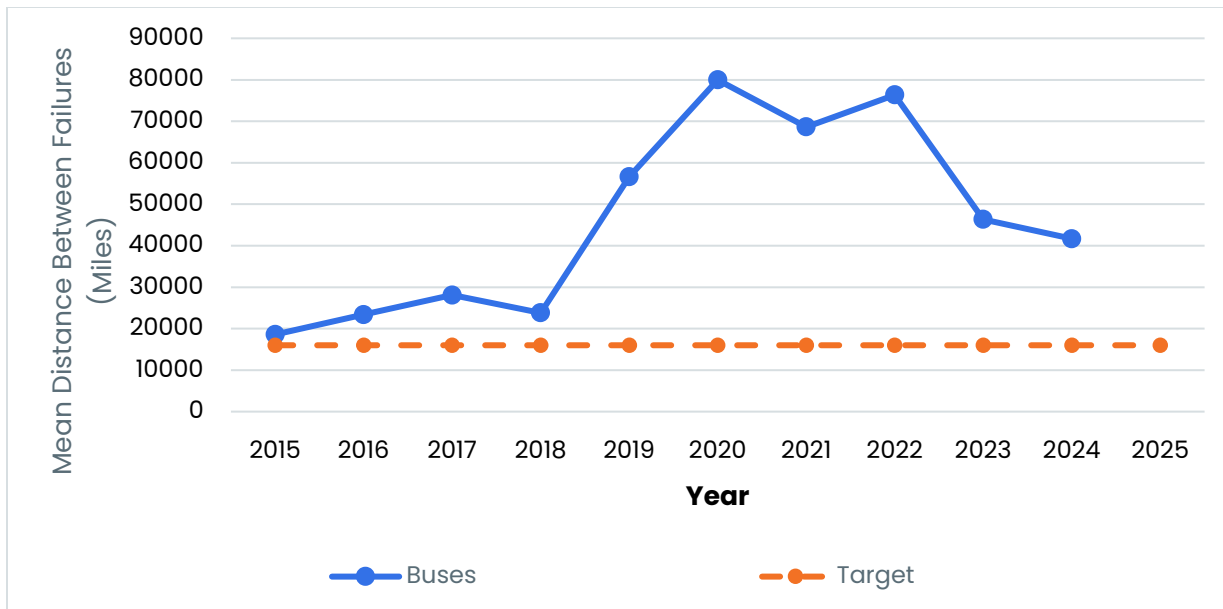
Figure 3.10: CTrail Fleet Reliability (Self-Propelled Passenger Cars), 2015–2024

3.1.4.4 CTtransit Bus Fleet

Figure 3.11 displays the Average Miles Between Road Calls for CTtransit’s bus fleet. The CTtransit revenue fleet comprises 617 vehicles. The fleet has consistently exceeded its performance target of an average of 16,000 miles between road calls. However, the trend has been declining—from a high of 80,000 miles in 2020 to 41,500 miles in 2024.

CTDOT is addressing this decline by maintaining and replacing vehicles in accordance with industry best practices and manufacturer recommendations. It has also implemented a robust preventive maintenance program. Moving forward, CTDOT are implementing a staggered vehicle replacement plan to maintain a reliable bus fleet³¹.

³¹ [CTDOT Performance Measures Dashboard](#)



Source: [CTDOT Performance Measures Dashboard](#)

Figure 3.II: CTtransit Fleet Reliability, 2015–2024

3.2 Bicycle and Pedestrian Performance

As of early 2026, CTDOT is finalizing an update to its Statewide Active Transportation Plan, which was initially completed in 2019. The plan guides future improvements on state routes for a functional and safety-focused active transportation network and



and recommends supportive programs and policies. It also serves as a strategic roadmap for developing and modernizing sidewalks, bike lanes, paved trails, and intersection improvements on or along state routes to make it safer and more comfortable to walk, bike, use a wheelchair/mobility aid device or human-scaled electronic mobility devices.

CTDOT tracks these performance measures to evaluate system performance related to bicycle and pedestrian access:

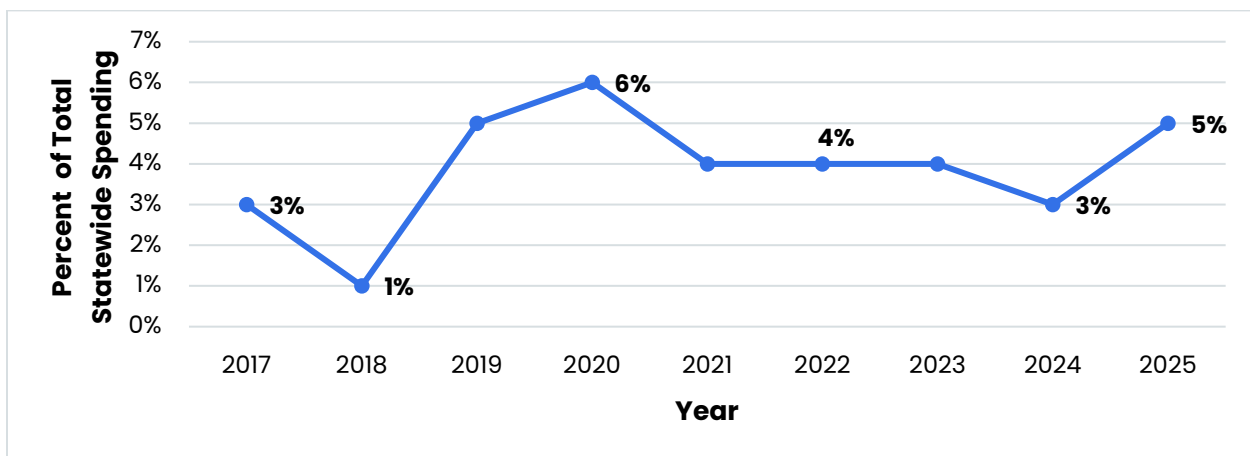
1. Bicycle and Pedestrian Access Investments
2. Number of Non-Motorized Fatalities and Serious Injuries

Alongside performance metrics, ensuring the safety of bicyclists and pedestrians remains a top priority across the state. CTDOT monitors safety data related to active transportation users to identify which roadway users, locations, and behaviors are contributing to or impacted by crashes. Analyzing how these conditions have evolved over time is essential to improving safety for all users.

3.2.1 Bicycle and Pedestrian Access Investment

CTDOT publishes annual bicycle/pedestrian access investment data to track the progress on their policy objective to “provide mobility choice, connectivity, and accessibility.” The data tracks the percentage and total amount of dollars spent and/or programmed for projects containing items that improve accessibility for pedestrians and bicyclists.

In 2009, the Connecticut General Assembly passed Public Act 09-154, which established a target of 1% of funds received by CTDOT or any municipality for construction, restoration, rehabilitation, or relocation of roads to be spent on facilities for all users, including at least bikeways and sidewalks with curb cuts and ramps. Since 2009, this target has been achieved.



Source: [CTDOT Performance Measures Dashboard](#)

Figure 3.12: Percentage of Total Funding Spent on Bike and Pedestrian Accessibility

Figure 3.12 shows the percentage of dollars programmed or spent on projects containing items that improve accessibility for pedestrians and bicyclists. In SFY 2025, approximately \$42.6 million total dollars was spent on 60 capital projects to improve pedestrian and bicyclist accessibility and safety, which is approximately 5% of the total funds awarded for roadway projects. These capital projects included

elements for pedestrians or bicyclists, such as sidewalks, ramps, pedestrian signals, push buttons, signs, and shared use trails.

3.2.2 Number of Non-Motorized Fatalities and Serious Injuries

CTDOT also publishes annual non-motorized fatalities and serious injuries from crash data to track the progress on their policy objective to “provide safe and secure travel.” Non-motorized users include pedestrians, bicyclists, persons in wheelchairs, skaters, persons using pedestrian conveyances, and other pedal powered vehicles such as a unicycle or an adult tricycle. **Section 2.1** summarizes CTDOT’s performance measures related to non-motorized fatalities and serious injuries.

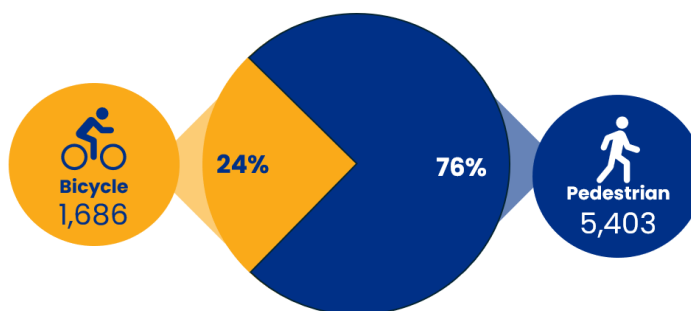
3.2.3 Bicycle and Pedestrian Safety

Transportation safety for all users is a statewide priority. As articulated in Connecticut’s SHSP, the state has established a **Toward Zero Deaths** vision with a goal of 15% or more reduction in the number of fatalities and serious injuries on all public roads in Connecticut by 2026.

As part of the Active Transportation Plan, a statewide crash analysis involving pedestrians and bicyclists was conducted using data from the UCONN’s Connecticut Crash Data Repository (CTCDR).

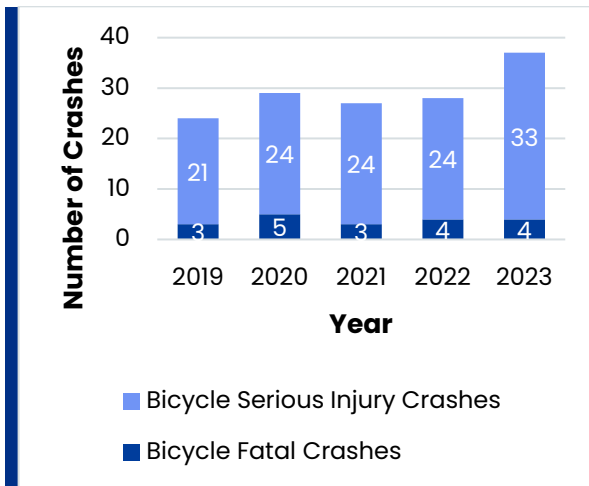
Between 2019 and 2023, there were over 7,000 crashes that involved at least one person biking or walking (see **Figure 3.13**). There were three times as many pedestrian crashes as bicycle crashes. Approximately 17% of these crashes resulted in fatal or serious injuries. For comparison, of all motorist-only crashes between 2019 and 2023, approximately 1% lead to a fatal or serious injury.

Figure 3.14 and **Figure 3.15** show that serious injury and fatal injury crashes involving bicyclists and pedestrians have remained largely steady in recent years. Small decreases in 2020 and 2021 are likely a result of lower traffic volumes during the COVID-19 pandemic. Serious injury pedestrian crashes show a slight decrease over the study period and serious injury bicycle crashes show an increase over the study period, largely stemming from a spike in 2023.



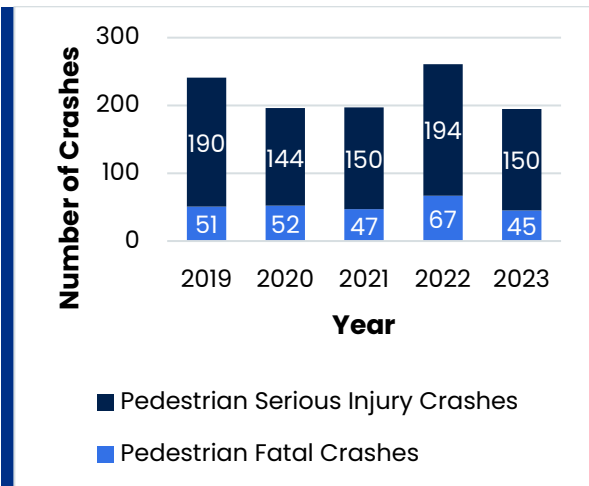
Source: CTDOT Active Transportation Plan Existing Conditions Summary Report

Figure 3.13: Total Pedestrian and Bicycle Crashes, 2019–2023



Source: CTDOT Active Transportation Plan Existing Conditions Summary Report

Figure 3.14: Bicycle Fatal and Serious Injury Crashes



Source: CTDOT Active Transportation Plan Existing Conditions Summary Report

Figure 3.15: Pedestrian Fatal and Serious Injury Crashes

CTDOT is committed to improving active transportation infrastructure through data-driven investment, ongoing performance monitoring, and targeted safety initiatives. While progress has been made in expanding and upgrading pedestrian and bicycle facilities, the rising number of non-motorist fatalities and serious injuries underscores the continued need for focused safety improvements. By finalizing the Statewide Active Transportation Plan and advancing programs that support multimodal access, CTDOT aims to create a safer, more inclusive transportation network. These efforts, guided by performance metrics and public accountability, are central to achieving the state’s broader vision for secure mobility for all.

3.3 Supplemental Statewide Performance Measures

In addition to national performance measures and the statewide transit, bicycle, and pedestrian system performance measures, CTDOT tracks several supplemental statewide performance indicators to provide a comprehensive view of system management, asset condition, and program delivery. These measures are integral to CTDOT’s internal performance management framework and inform strategic decision-making across planning, maintenance, and capital programming functions. They are also used to assess progress toward agency goals such as safety, maintaining a state of good repair, optimizing project delivery, and ensuring

fiscal accountability. These performance measures are actively tracked and results are available to the public through a [Power BI dashboard on the CTDOT website](#).

Supplemental performance measures that are tracked include:

- **Roadway Ride Quality** – This measure tracks pavement smoothness and overall user comfort. It is used to help identify areas requiring preservation treatments and supports pavement management decisions at both the network and project levels. This metric further supplements national PM2 pavement condition measures (**Section 1.2.2**).
- **Backlogged Bridge Work Items** – This measure tracks the progress of maintaining the conditions of highway bridges in terms of the backlogged number of outstanding maintenance, rehabilitation, and repair needs.
- **Bridge Work Items Completed** – This measure reflects CTDOT’s effectiveness in addressing identified bridge needs by tracking the total number of completed bridge work items over a defined period.
- **Construction Contracts on Budget** – This measure tracks the percentage of construction contracts delivered within the original budget. This metric helps assess the accuracy of cost estimates, monitor cost control during construction, and identify opportunities for improving financial predictability.
- **Construction Contracts on Time** – This measure tracks the percentage of construction contracts completed within the original contract time. Delivering projects on time is critical to minimizing disruptions to the traveling public, managing costs, and maintaining trust with stakeholders.
- **Construction Contracts Awarded in 60 Days** – This measure tracks the share of construction contracts awarded within 60 days of bid opening. Timely awards ensure continuity in the project pipeline and support broader goals related to economic development, workforce utilization, and infrastructure renewal.
- **Seatbelt Usage** – This measure tracks seat belt usage by Connecticut’s motorists, a key way to reduce fatalities and serious injuries from crashes.