

Chapter IX

Regional Performance – Last Updated April 2022

INTRODUCTION

NCTCOG uses a performance-based planning and programming process to develop its long-range and short-range plans, including the Transportation Improvement Program (TIP). Performance measurement is particularly important in short-range planning processes like the TIP, because the projects it funds can meaningfully improve key performance measures relatively quickly.

WHAT IS PERFORMANCE-BASED PLANNING AND PROGRAMMING?

In the context of regional transportation planning, performance-based planning and programming is the process of using quantitative observations of the state of the transportation system to drive the planning process and ultimately inform funding decisions. These quantitative observations are often collected and formally adopted as performance measures, which are typically observed over time and may be associated with target values. Performance measures can serve as a means of assessing progress towards meeting goals (particularly when coupled with realistic targets) and are often directly associated with adopted goals. Performance-based planning processes exist at the federal, state, and regional levels, and NCTCOG is an active participant in these processes at all levels.

A typical framework for performance measurement includes the following core components:

- Goals: Visionary, long-term statements of priorities
- Objectives: Measurable, specific strategies for achieving goals
- Measures: Repeatable, quantitative measurement of how the system is performing
- Targets: Specific milestones for measures that represent a desired future condition

ADDRESSING PERFORMANCE IN THE 2021-2024 TIP

NCTCOG has used a performance-based approach to its planning processes for some time, but recent federal transportation funding legislation created a framework for Transportation Performance Management (TPM) at the federal level. Subsequent TPM-related federal rulemakings require MPOs like NCTCOG to incorporate performance-based planning and programming into the development of Metropolitan Transportation Plans (MTP) and the TIP. This chapter outlines the performance measures and targets considered and tracked when conducting transportation planning and programming activities in the region, grouped by the categories established by the federal government. It will also highlight current and future efforts to consider these measures, and work toward achieving established targets in the current and future TIPs. Performance measurement also played an integral role in project selection and prioritization for Mobility 2045 and subsequently, the 2021-2024 TIP. Examples of projects that were programmed fully or partially in response to these measures are listed as well.

NATIONAL PERFORMANCE REQUIREMENTS

Five Transportation Performance Management rules released by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) are now effective. Each rule lists the required measures, data sources, and calculation procedures. The final rules include:

- Highway Safety Improvement Program, known as PM1 (81 FR 13881, 23 CFR 490)
- Assessing Pavement Condition for the National Highway Performance Program and Bridge Condition for the National Highway Performance Program, known as PM2 (82 FR 5886, 23 CFR 490)

- Assessing Performance of the National Highway System, Freight Movement on the Interstate System, and Congestion Mitigation and Air Quality Improvement Program (CMAQ), known as PM3 (82 FR 5970, 82 FR 22879, 23 CFR 490)
- Transit Asset Management (81 FR 48889, 49 CFR 625, 49 CFR 630)
- Public Transportation Agency Safety Plans (83 FR 34418, 49 CFR 673)

Each of these rules established deadlines for target setting and reporting processes. For the measures identified in each rule, MPOs are required to report adopted targets, baseline performance measures, and progress toward the targets in TIPs adopted two years after the effective date of the final rule. Each of the performance measure final rules were established at different times; and therefore, have different target-setting and implementation deadlines, as seen in Exhibit IX-1.

Exhibit IX-1: Implementation and Target-Setting Schedules for Federal Performance Measures

Final Rule	Rule Effective Date	Required to be Included in TIPs ¹	Last Target-Setting Action	Next Target-Setting Action	Target-Setting Schedule
Highway Safety (PM1)	4/14/2016	4/14/2018	2/14/2019	Early 2023	Annually (Targets are reductions over 5-year period)
Pavement and Bridge Condition (PM2)	5/20/2017	5/20/2019	12/10/2020	Late 2022	Biennially (Four-year performance periods)
System Performance, Freight, and CMAQ (PM3)	5/20/2017	5/20/2019	9/10/2020	Late 2022	Biennially (Four-year performance periods)
Transit Asset Management (TAM)	10/01/2016	10/01/2018	2/14/2019	Mid 2022	Every four years
Public Transportation Agency Safety Plans (PTASP)	07/19/2018	7/20/2021	5/13/2021	Early 2025	Every four years

As of this writing, NCTCOG has adopted targets and established update processes for every performance measure rule as required. Updates on these measures including assessments of progress towards achieving adopted targets are reported regularly to the Regional Transportation Council (RTC) and Surface Transportation Technical Committee (STTC).

REGIONAL FOCUS ON PERFORMANCE MEASURES AND MONITORING

The Regional Transportation Council (RTC) has a long history of measuring performance of the Dallas-Fort Worth surface transportation system. For more than a decade, the RTC has produced an annual state of the region report, entitled Progress North Texas, which includes statistics that show regional performance in terms of congestion, safety, project delivery and many more criteria. This performance report is published annually, and the last several documents are available online at: <https://www.nctcog.org/trans/about/publications/pnt>.

In addition, since March 2018, NCTCOG has been tracking the applicability of items being presented to the RTC to various performance categories. Items on all RTC agendas include a check mark by each of the performance measurement categories to indicate which aspects of performance are impacted by the policy, program, or project that is being presented. This strategy keeps performance measurement fresh in the minds of NCTCOG staff, as well as the RTC policy board members.

¹ 23 CFR 450.340(f)

HIGHWAY SAFETY (PM1)

The safety performance measure rule includes five measures related to the safety of the transportation system, including:

- The number of traffic fatalities
- The rate of fatalities per 100 million vehicle miles traveled
- The number of serious injuries
- The rate of serious injuries per 100 million vehicle miles traveled
- The number of non-motorized fatalities and non- motorized serious injuries

This rule establishes an annual reporting and target-setting schedule. The Regional Transportation Council (RTC) initially adopted targets for these measures in December 2017. While the RTC has adopted quantitative targets for this measure as required, this has been accompanied by a policy that even one death on the transportation system is unacceptable. Subsequently, the RTC directed NCTCOG staff to work with regional and State partners to develop projects, programs, and policies that assist in eliminating serious injuries and fatalities across all modes of travel. The Transportation Improvement Program has incorporated these measures in project selection processes and includes many projects intended to lead directly to improvements in these measures.

NCTCOG worked closely with the Texas Department of Transportation (TxDOT) to establish annual targets for these measures. As part of the TxDOT Strategic Highway Safety Plan (SHSP) development process, stakeholders from TxDOT, NCTCOG, local governments, law enforcement, emergency medical services, educators, and others worked collaboratively utilizing a data-driven, multi-year process to develop both statewide and regional safety performance measure targets. Due to increasing population in both the region and the state, number of vehicles on the roadway system, and congestion, it is unlikely that a decrease in the number of crashes could be achieved. Therefore, the consensus of the SHSP stakeholder and executive teams was to establish targets that by 2022 would reduce the rate at which each measure is increasing. Specifically, the targets call for a 2 percent reduction from the original projection for 2022. The proposed reduction of 2 percent by 2022, which only applies to trends where measures are increasing over time, would be achieved by reducing each intermediate year by the reduction percentages listed in Exhibit IX-2.

Exhibit IX-2: Growth Reduction Percentages for PM1 Measures

Year	Reduction Target
2017	0.0%
2018	0.4%
2019	0.8%
2020	1.2%
2021	1.6%
2022	2.0%

In May of 2019, the Texas Transportation Commission (TTC) adopted Minute Order 115481, directing TxDOT to work toward the goal of reducing the number of deaths on Texas roadways by half by the year 2035 and to zero by the year 2050. As a result of this action, TxDOT modified its fatality and fatality rate performance measures and target calculations accordingly starting with the 2021 target year. The serious injury and serious injury rate as well as the non-motorized fatalities and serious injury rate targets of a 2% reduction by 2022 remains the same. NCTCOG will continue to utilize the identified 2 percent reduction schedule for all targets through the 2022 target year.

NUMBER OF TRAFFIC FATALITIES

The 2022 target seeks to reduce the expected increase in fatalities by 2022. This target expressed as a five-year rolling average would reduce the projected number of fatalities to 3,563 for the state and a reduction in the region to 579.5.

Exhibit IX-3: Five-Year Rolling Average for the Number of Traffic Fatalities

Year	Source	Statewide Data			Regional Data			
		Projection or Actual Data	Percent Reduction	Target or Actual Data	Percent Reduction	Projection or Actual Data	Target or Actual Data	Fatalities Reduced
2018	FARS	3,648	0.4%	3,648	0.4%	539	536.8	2
2019	FARS	3,615	0.8%	3,615	0.8%	569.0	564.4	5
2020	FARS	3,896	1.2%	3,896	1.2%	635.0	627.4	8
2021	Target	3,384*	50% by 2035	3,384	1.6%	604*	593.9	10
2022	Target	3,272*	50% by 2035	3,272	2%	609*	596.8	12

*Based on linear trend analysis from 2018-2022 FARS data. 2018 – 2020 observed and 2021 – 2022 projected.

FARS: National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System

ARF: FARS Annual Report File

CRIS: TxDOT Crash Records Information System

** 2022 Regional Target for Traffic Fatalities expressed as 5-year average: 579.5 2022 Statewide Target for Traffic Fatalities expressed as 5-year average: 3,563
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** Calculated by applying current year percent reduction (2%) to regional Projection or Actual Data 5-year average.

RATE OF FATALITIES PER 100 MILLION VEHICLE MILES TRAVELED

The 2022 target seeks to reduce the expected increase in deaths per 100 million vehicles miles traveled (MVMT) in 2022 to not more than 1.27 per 100 MVMT statewide. The regional target, expressed as a five-year rolling average for 2022 is 0.755, which is less than one death per 100 MVMT.

Exhibit IX-4: Five-Year Rolling Average for the Rate of Fatalities

Year	Source	Statewide Data			Regional Data			
		Projection or Actual Data	Percent Reduction	Target or Actual Data	Percent Reduction	Projection or Actual Data	Target or Actual Data	Rate Reduction
2018	FARS	1.37	0.4%	1.29	0.4%	0.738	0.736	0.002
2019	FARS	1.315	0.8%	1.25	0.8%	0.756	0.750	0.006
2020	FARS	1.27	1.2%	1.33	1.2%	0.833	0.823	0.01
2021	Target	1.50*	50% by 2035	1.24	1.6%	0.768*	0.755	0.013
2022	Target	1.29*	50% by 2035	1.23	2%	0.756*	0.741	0.015

*Based on linear trend analysis from 2018-2022 FARS data. 2018 – 2020 observed and 2021 – 2022 projected.

** 2022 Regional Target for the Rate of Fatalities expressed as 5-year average: 0.755 2022 Statewide Target for the Rate of Fatalities expressed as 5-year average: 1.27

** Calculated by applying current year percent reduction (2%) to regional Projection or Actual Data 5-year average.

NUMBER OF SERIOUS INJURIES

The 2022 target seeks to reduce the expected increase in serious injuries to not more than 16,677 in 2022 statewide and 3,032.9 at the regional level expressed as a five-year rolling average. The 2022 target expressed as a five-year rolling average is shown in Exhibit IX-5.

Exhibit IX-5: Five-Year Rolling Average for the Number of Serious Injuries

Year	Source	Statewide Data			Regional Data			
		Projection or Actual Data	Percent Reduction	Target or Actual Data	Percent Reduction	Projection or Actual Data	Target or Actual Data	Serious Injury Crashes Reduced
2018	CRIS	14,997	0.4%	14,975	0.4%	3,174	3,161.3	13
2019	CRIS	15,970	0.8%	15,855	0.8%	3,530.0	3,501.8	28
2020	CRIS	18,825	1.2%	14,656	1.2%	3,135.0	3,097.4	38
2021	Target	19,136*	50% by 2035	18,835	1.6%	2,920.8*	2,874.1	47
2022	Target		50% by 2035	19,065	2%	2,707.8*	2,653.6	54

*Based on linear trend analysis from 2018-2022 CRIS data. 2018 – 2020 observed and 2021 – 2022 projected.

**** 2022 Regional Target for the Number of Serious Injuries expressed as 5-year average: 3,032.9**
2022 Statewide Target for the Number of Serious Injuries expressed as 5-year average: 16,677

** Calculated by applying current year percent reduction (2%) to regional Projection or Actual Data 5-year average.

RATE OF SERIOUS INJURIES PER 100 MILLION VEHICLE MILES TRAVELED

The 2022 target seeks to reduce the expected increase in the rate of serious injuries per 100 million vehicle miles traveled in 2022 statewide to 5.76 and 3.939 regionally expressed as a five-year rolling average. The 2022 target expressed as a five-year rolling average is shown in Exhibit IX-6.

Exhibit IX-6: Five-Year Rolling Average for the Rate of Serious Injuries

Year	Source	Statewide Data			Regional Data			
		Projection or Actual Data	Percent Reduction	Target or Actual Data	Percent Reduction	Projection or Actual Data	Target or Actual Data	Rate Reduction
2018	CRIS	5.32	0.4%	5.31	0.4%	4.357	4.339	0.018
2019	CRIS	5.57	0.8%	5.50	0.8%	4.690	4.653	0.037
2020	CRIS	6.64	1.2%	5.00	1.2%	4.110	4.061	0.049
2021	Target	6.72*	50% by 2035	6.51	1.6%	3.669*	3.610	0.059
2022	Target		50% by 2035	6.47	2%	3.261*	3.196	0.065

*Based on linear trend analysis from 2018-2022 CRIS data. 2018 – 2020 observed and 2021 – 2022 projected.

**** 2022 Regional Target for Rate of Serious Injuries expressed as 5-year average: 3.939**
2022 Statewide Target for Rate of Serious Injuries expressed as 5-year average: 5.76

** Calculated by applying current year percent reduction (2%) to regional Projection or Actual Data 5-year average.

NUMBER OF NON-MOTORIZED FATALITIES AND NON-MOTORIZED SERIOUS INJURIES

The 2022 target seeks to reduce the expected increase in non-motorized fatalities and serious injuries in 2022. The target expressed as a five-year rolling average would reduce the statewide non-motorized fatalities and serious injuries to 2,367 and the regional target to 594.7. The 2022 targets expressed as a five-year rolling average are shown in Exhibits IX-7 and IX-8.

Exhibit IX-7: Five-Year Rolling Average for the Number of Non-Motorized Fatalities and Serious Injuries (Statewide)

Year	Source	Percent Reduction	Target or Actual Data
2018	FARS-CRIS	0.4%	2,104
2019	FARS-CRIS	0.8%	2,291
2020	FARS-CRIS	1.2%	2,238
2021	Target	50% by 2035	2,560
2022	Target	50% by 2035	2,642

*Based on linear trend analysis from 2018-2022 FARS and CRIS data. 2018 – 2020 observed and 2021 – 2022 projected.

Exhibit IX-8: Five-Year Rolling Average for the Number of Non-Motorized Fatalities and Serious Injuries (Regional)

Year	Source	Fatalities				Serious Injuries		
		Percent Reduction	Projection/Actual Data Bike & Ped (Fatal)	Target or Actual Data	Fatalities Reduced	Projection/Actual Data Bike & Ped (Incap. Injury)	Target or Actual Data	Serious Injury Crashes Reduced
2018	FARS-CRIS	N/A	162	161.4	1	440	438.2	2
2019	FARS-CRIS	0.4%	151	149.8	1	424	420.6	3
2020	FARS-CRIS	0.8%	193	190.7	2	425	419.9	5
2021	Target	1.2%	181.5*	178.6	3	432.9*	426.0	7
2022	Target	1.6%	187.0*	183.3	4	436.6*	427.9	8

*Based on linear trend analysis from 2018-2022 FARS and CRIS data. 2018 – 2020 observed and 2021 – 2022 projected.

**** 2022 Regional Target for Number of Non-Motorized Fatalities and Serious Injuries expressed as 5-year average: 594.7**
2022 Statewide Target for Number of Non-Motorized Fatalities and Serious Injuries expressed as 5-year average: 2,367

** Calculated by applying current year percent reduction (2%) to regional Projection or Actual Data 5-year average.

ADDRESSING HIGHWAY SAFETY IN THE TIP

The TIP directly addresses many of the measures in the PM1 rulemaking and the Dallas-Fort Worth region has selected projects using criteria that improve the safety of the region’s transportation system for many years. When conducting project evaluation and selection, safety is one of the major considerations. When evaluating projects being considered for inclusion in the region’s 10-Year Plan (and eventually the TIP), safety (i.e., fatal and incapacitating crash rate) is part of the Technical Selection criteria that are used to score the projects. Staff also considers safety when evaluating projects outside of the 10-Year Plan. Crash data from TxDOT is gathered and corridors with high numbers of fatalities and serious injuries receive greater consideration.

In addition to these efforts, several recent funding initiatives focused on safety issues specifically. The first was the 2017-2018 CMAQ/STBG Funding Program: Safety, Innovative Construction, and Emergency Projects Funding Program. This effort was dedicated to funding projects and programs that sought to mitigate safety issues and/or system resilience or include benefits for incident management and first responders. The program included funding for two projects that address flooding issues in the region, improvements near a major airport that aim to reduce crashes, and funding for a region-wide program that will focus on mitigating safety issues (e.g., wrong-way driving,

dangerous intersections). Safety was a technical criterion used to evaluate projects in several other programs that were part of the larger 2017-2018 CMAQ/STBG Funding Program, including Strategic Partnerships (Rounds 3) and the Sustainable Development Phase 4: Turnback Program, Context Sensitive, Transit Oriented Development (TOD) Projects. Second, the 2020 Traffic Incident Management Equipment Purchase Call for Projects was completed. Funding was awarded to local government entities that are responsible for clearing crashes or other incidents in order to purchase equipment (e.g., cones, traffic barriers, signage, flares, and lighting) that will help first responders clear incidents in a more efficient and safe manner. Improving incident clearance times will reduce the potential for secondary crashes to occur. In addition, the RTC approved the 2022 Incident Management Freeway Blocking Equipment Call for Projects, where approximately \$1.4 million in regional funds were awarded to safety projects to help incident responders operate more safely during incident clearance. Finally, safety was a consideration in the RTC’s latest COVID #XX Infrastructure Program.

To mitigate non-motorized fatalities and serious injuries, safety benefits are a significant component of NCTCOG’s Transportation Alternatives (TA) Set Aside Call for Projects’ scoring criteria. Projects are prioritized that address areas with high numbers of crashes involving pedestrians and/or bicyclists by implementing countermeasures such as bicycle/pedestrian signalization, traffic calming, and separate facilities for non-motorized modes of travel. Projects that improve the ability to traverse roadways or other obstacles, such as grade-separated crossings, are also given higher priority during project selection.

Some examples of specific programs and projects included in the TIP that may directly address the PM1 measures are listed in Exhibit IX-9.

Exhibit IX-9: Performance Impacts of Selected Programs and Projects

TIP Code	Program/Project Name	PM1 Measures Addressed	Potential Impact
11618.1, 11619.1	Mobility Assistance Patrol	All	Mobility Assistance Patrols lead to reduced safety hazards by shortening the time that disabled vehicles disrupt through traffic movement
13003	IH 30 from SS 580 (E. of Linkcrest) to IH 820 Asset Optimization Project	All	Strategic improvements to the roadway and interchanges along this corridor will include safety upgrades
55108.1, 55108.2	Northaven Trail at US 75	Non-Motorized Fatalities and Serious Injuries	Providing grade separated trail connections over major obstacles prevents bicycle/pedestrian crashes.

PAVEMENT AND BRIDGE CONDITION (PM2)

The Pavement and Bridge Condition measures (commonly collectively known as PM2) are six measures related to roadway infrastructure condition. As with the System Performance, Freight, and CMAQ (PM3) measures discussed below, the final rule for these measures established a cycle of four-year performance periods, the first of which began on January 1, 2018. Most measures require a target for both the midpoint and end of the performance period. In the case of this initial performance period, the relevant target years are 2020 and 2022. The TIP has incorporated these measures in project selection processes and includes many projects that may directly lead to improvements in these measures.

Measures in this rulemaking include:

- Percentage of Pavements on the Interstate System in “Good” Condition
- Percentage of Pavements on the Interstate System in “Poor” Condition
- Percentage of Pavements on the Non-Interstate National Highway System (NHS) in “Good” Condition
- Percentage of Pavements on the Non-Interstate National Highway System (NHS) in “Poor” Condition
- Percentage of Bridge Deck Area on the National Highway System (NHS) in “Good” Condition
- Percentage of Bridge Deck Area on the National Highway System (NHS) in “Poor” Condition

“Good” and “Poor” condition are defined using specific infrastructure condition metrics in the rulemaking. With these and most other measures, MPOs have the option to either support the state DOT’s targets or to adopt their own quantitative targets. In 2018, NCTCOG chose to support the state’s initial targets for these measures for the first performance period, with policy statements related to certain pavements and bridges in poor condition. In 2020, TxDOT exercised its option to adjust statewide 2022 targets for these measures, after which NCTCOG reaffirmed its support for the state’s adjusted targets.

The National Highway System (NHS) network within the 12-county North Central Texas region is the largest among the 25 metropolitan areas in Texas with over 12,000 lane-miles of pavement. Approximately 70% of the NHS network in this region are state highways under the jurisdiction of TxDOT (i.e., “on-system” roadways) and about 30% are county roads, city streets, and non-TxDOT toll roads managed by other agencies (i.e., “off-system” roadways). The NHS network in the region also includes more than 3,600 bridges with about 87 percent maintained by TxDOT and about 13 percent maintained by other agencies. Managing the condition of these assets is a priority for NCTCOG, TxDOT, local governments, and other agencies that fund and/or maintain the region’s transportation system.

Related rulemaking requires each state department of transportation (including TxDOT) to develop a risk-based transportation asset management plan (TAMP) that includes an assessment of existing infrastructure conditions; identification of asset management objectives, measures and performance gaps; and a lifecycle cost and risk management analysis, financial plan, and identification of investment strategies. In recognition of the importance of holistic asset management planning to the region’s transportation system, NCTCOG supports and is working with TxDOT on its asset management process.

PAVEMENT CONDITION

NCTCOG has chosen to support the pavement performance targets set by TxDOT. In recognizing that NHS Local Off-System Arterials only represent about 24 percent of DFW’s NHS network, but have a disproportionately high “poor” rating of about 74 percent, NCTCOG also approved a policy statement to work with local governments to focus on the improvement of NHS Local Off-System Arterials in “poor” condition. NCTCOG initially adopted this policy statement in 2018 and reaffirmed it in 2020 along with its reaffirmation of support for the state’s adjusted 2022 targets.

BRIDGE CONDITION

NCTCOG has chosen to support the bridge performance targets set by TxDOT. In addition, NCTCOG approved a policy statement to expedite the programming of funding to improve NHS bridge in “poor” condition.

ADDRESSING PAVEMENT AND BRIDGE CONDITION IN THE TIP

Many of the roadway projects programmed in the 2021-2024 TIP will improve the condition of the region’s roadway infrastructure, reflecting NCTCOG’s response to these measures and commitment to holistically managing transportation assets. As previously discussed, most NHS facilities in the region are TxDOT facilities. Staff is seeking to reduce the number of deficient pavement lane miles and bridges on these facilities by incorporating pavement and bridge condition as a criterion in the Regional 10-Year Plan, as that funding is reserved for roadways on the TxDOT system. Corridors that have poorer pavement conditions and/or a lower Bridge Sufficiency Rating are given more priority during project selection. Pavement and bridge conditions are also improved when roadway capacity is increased and the project includes the reconstruction of existing pavement.

Staff has also pursued other sources of funding to improve pavement and bridge conditions in the region. A specific example is NCTCOG’s partnership with TxDOT on the submittal of a grant application to the Infrastructure for Rebuilding America (INFRA) program for the North Texas Strategic NHS Bridge Program, which involves the reconstruction or replacement of multiple NHS bridges in the counties of Dallas, Denton, Hunt, Johnson, Kaufman, Parker, and Tarrant. As a result of this effort, a total of \$8,775,000 was awarded and will be utilized on a \$45

million overall project addressing seven of the 14 bridges originally identified for the Program. These projects are programmed in the 2021-2024 TIP. NCTCOG continues to work with TxDOT to ensure that bridges rated in Poor Condition are targeted for approval. All 11 bridges rated as poor condition in the 2019 report have been funded or completed. Once NCTCOG receives later reports of bridges in poor condition, efforts will be made to improve the affected bridges. These projects and additional examples are listed in Exhibit IX-10.

Exhibit IX-10: Performance Impacts of Selected Programs and Projects

TIP Code(s)	Program/Project Name	PM2 Measures Addressed	Potential Impact
13056, 25070, 53086, 55044	North Texas Strategic NHS Bridge Program	Bridge Condition	Improvements to seven “Poor” condition bridges in the region will improve the condition of the region’s bridge assets
13003	IH 30 West Fort Worth	Pavement Condition, Bridge Condition	Improvements to this corridor will replace 14 bridges and/or culverts dating from the 1960s and resurface or reconstruct nearly 16 lane-miles of general-purpose lane pavement
53086, 53108, 53109, 53110	US 80 – Dallas/Kaufman County	Bridge Condition	Reconstructing portions of this corridor built in the 1960s will replace multiple “Poor” condition bridges, some of which include the IH 635/US 80 direct connector ramps

SYSTEM PERFORMANCE, FREIGHT, AND CMAQ (PM3)

The System Performance, Freight and CMAQ measures (commonly collectively known as PM3) cover a broad variety of observed measures across multiple modes of the transportation system. As with the Pavement and Bridge Condition (PM2) measures, the final rule for these measures establishes a cycle of four-year performance periods, the first of which began on January 1, 2018. Most measures require a target for both the midpoint and end of the performance period. In the case of this initial performance period, the relevant target years are 2020 and 2022. NCTCOG has been monitoring these measures continuously since initial target adoption and exercised its option to revisit 2022 targets for most of these measures in late 2020. With these and most other measures, MPOs have the option to either support the state DOT’s targets or to adopt their own quantitative targets.

For most PM3 measures, NCTCOG chose to adopt its own targets. The TIP has incorporated these measures in project selection processes and includes many projects that may directly lead to improvements in these measures.

Measures in this rulemaking include:

- Percent of Person Miles of Travel on the Interstate System that is Reliable (Interstate Reliability), and Percent of Person Miles of Travel on the Non-Interstate National Highway System that is Reliable (Non-Interstate Reliability)
- Truck Travel Time Reliability (TTTR)
- Percent Non-Single Occupant Vehicle (Non-SOV) Travel
- Peak-Hour Excessive Delay (PHED)
- Total Emissions Reductions

INTERSTATE AND NON-INTERSTATE RELIABILITY

These measures quantify the proportion of travel occurring on Interstate segments and Non-Interstate National Highway System (NHS) segments where travel times are reliable throughout the day. Reliable travel is predictable, though it may be consistently congested or consistently free flowing. Unreliable travel is unpredictable; on some days it may congested while on others it may be free flowing. Reliability can be influenced by operational inefficiencies, bottlenecks, crashes, weather, and other factors.

As seen in Exhibits IX-11 and IX-12, these measures have been improving for the MPA during the time period for which reliable data is available, and the region appears to currently be on track to meet or exceed existing targets. Recent changes to travel behavior due to the ongoing COVID-19 pandemic are reflected in the latest available data and are having a substantial impact on these measures. As a result, observed values for 2020 greatly exceeded NCTCOG’s original 2020 targets. These measures will be monitored to track long-term impacts of the pandemic and resulting changes to traveler behavior, and any lasting impacts may be reflected in the next round of target-setting for these measures. The latest observed values for these measures and adopted targets are listed in Exhibit IX-13.

Exhibit IX-11: Observed Data, Trends, and Targets for Interstate Reliability

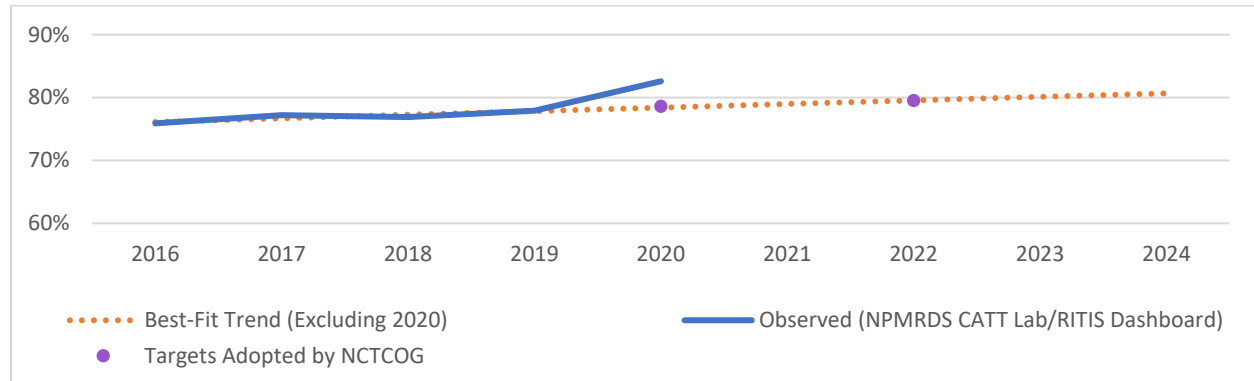


Exhibit IX-12: Observed Data, Trends, and Targets for Non-Interstate Reliability

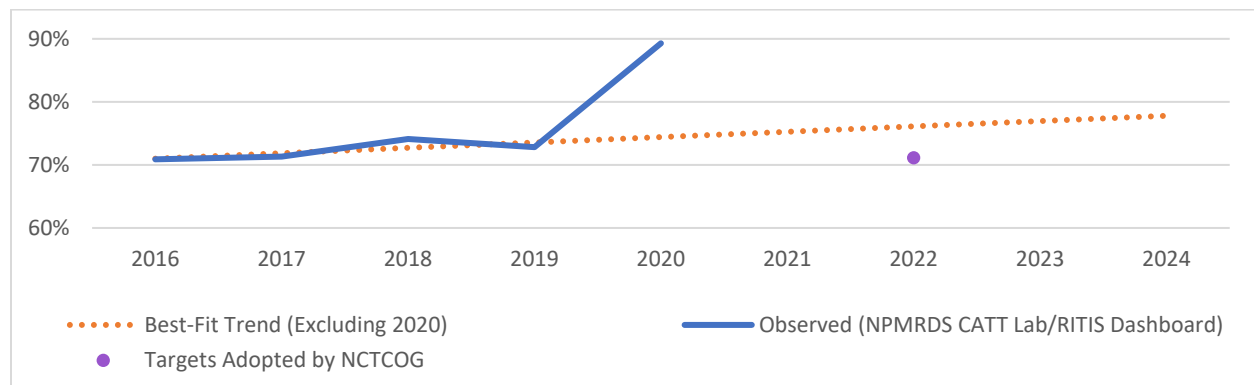


Exhibit IX-13: Latest Observations and Targets for Interstate and Non-Interstate Reliability

	Latest Observed Value (2020)	2020 Target	2022 Target
Interstate Reliability	82.6%	78.6%	79.5%
Non-Interstate Reliability	89.3%	N/A*	71.1%

*As part of phase-in requirements in the rulemaking, MPOs were only required to adopt a 2022 target for Non-Interstate Reliability.

While a majority of person miles of travel on both the Interstate System and Non-Interstate NHS are reliable in the region, reliability can be increased by implementing programs and projects that reduce non-recurring congestion and boost the overall reliability of the system. Improvements in these measures seen as a result of changes to traveler behavior in response to the ongoing COVID-19 pandemic reflect the strong influence that traveler behavior has on these measures as well. NCTCOG is actively using these performance measures to select programs and projects for the TIP. See “Addressing System Performance, Freight, and CMAQ Measures in the TIP” below for more information.

TRUCK TRAVEL TIME RELIABILITY

Efficient and predictable freight movement in the region is key to the region’s economic health. This measure quantifies the reliability of the region’s Interstate system for freight movement. It is calculated as an index representing the amount of extra travel time that drivers and logistics planners need to factor into trips in the region to consistently arrive on time. Higher values indicate worsening reliability and less predictable travel times. As with the preceding Interstate and Non-Interstate Reliability measures, Truck Travel Time Reliability is influenced by operational inefficiencies, bottlenecks, crashes, and weather, but operational issues for trucks near freight hubs and other freight-specific issues can contribute to this measure.

As seen in Exhibit IX-14, this measure has been worsening in the MPA for the time period for which reliable data is available. This measure gradually worsened during 2016-2019, but recent changes in travel behavior due to the COVID-19 pandemic caused a significant improvement in this measure during 2020. Additionally, there is evidence to indicate that the previously adopted targets were set based on data that may have been inconsistent with the current data. Due to the sharp decrease from 2013 to 2014, the past downward trend proved to be misleading, causing staff to calculate more aggressive targets. It is important to realize that the source of data for 2013-2016 was from a different data set than the current observations for 2017-2019, as FHWA changed data providers.

Exhibit IX-14: Historic Adjusted TTTR Trends

Historic Adjusted TTTR Trends			
2013	2014	2015	2016
1.87	1.72	1.70	1.74

Source: NCTCOG

To evaluate the targets set in 2018, further analysis was completed using the new or trusted data (2016-2019 Trends), and the trendline matches cohesively with the observed data, which means that the 2018 targets needed to be adjusted. The table shows how the different possible targets compare. NCTCOG exercised its option to adjust the 2022 target for this measure to 1.90 based on this analysis, with an additional aspirational target to hold this measure steady at 1.83, as illustrated in Exhibit IX-15.

Exhibit IX-15: TTTR Trends

TTTR Trends		
Trend	2020	2022
Original Targets (Adopted 2018)	1.71	1.66
2016 -2019 Trends (New Targets)	1.83	1.90

The latest observed value and adopted targets are shown in Exhibit IX-16.

Exhibit IX-16: Observed Data, Trends, and Targets for Truck Travel Time Reliability

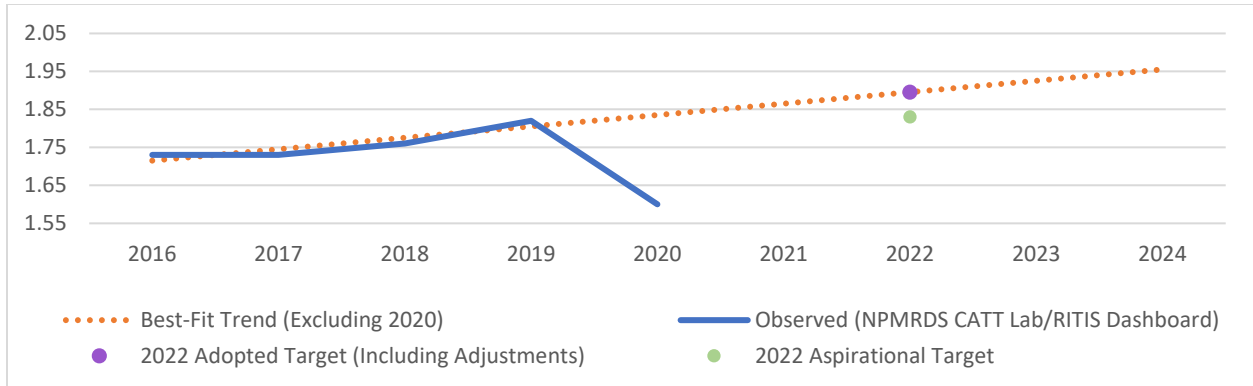


Exhibit IX-17: Latest Observations and Targets for Truck Travel Time Reliability

Measure	Latest Observed Value (2020)	2020 Target	2022 Target (Adjusted)	2022 Target (Aspirational)
Truck Travel Time Reliability	1.60	1.71	1.90	1.83

This measure will be monitored closely during the recovery from the COVID-19 pandemic to determine if previous worsening trends resume. Regardless, NCTCOG’s TIP, MTP, and other planning process will need to continue to develop, recommend, and fund projects and programs that prioritize freight reliability. In addition to utilizing the updated data sets, the 2021-2024 TIP incorporates this measure into selection processes and includes several specific projects that address it. See “Addressing System Performance, Freight, and CMAQ Measures in the TIP” below for more information.

PERCENT NON-SINGLE OCCUPANT VEHICLE (NON-SOV) TRAVEL

Driving alone is an inefficient use of resources and the transportation system when compared to other modes. This measure quantifies the proportion of commute travel that uses modes other than driving alone in the Dallas-Fort Worth-Arlington Urbanized Area, including transit, carpooling, telecommuting, bicycling, walking, and other modes.

During the time period for which reliable data is available, this measure has been either steady or slightly improving, as seen in Exhibit IX-18. Recent changes to traveler behavior due to the ongoing COVID-19 pandemic are likely to have a significant impact on traveler behavior that is not yet reflected in the available data. The latest observed value and adopted targets are listed in Exhibits IX-18 and IX-19.

Exhibit IX-18: Latest Observed Data and Targets for Non-SOV Travel

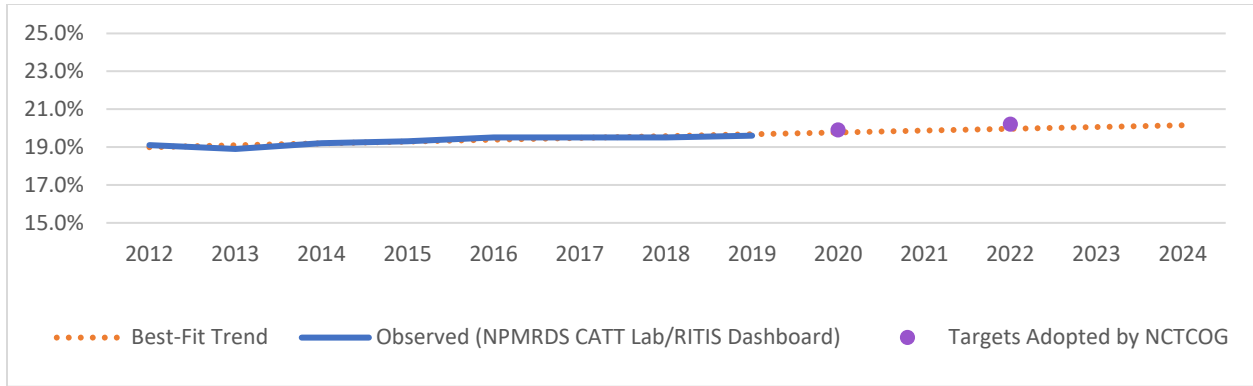


Exhibit IX-19: Latest Observation and Targets for Non-SOV Travel

Measure	Latest Observed Value (2019)	2020 Target	2022 Target
Percent Non-SOV Travel	19.6%	19.9%	20.2%

While this measure may already be improving slightly or at least holding steady in the region, the rate of increase for this measure can be improved by implementing programs and projects that shift mode share to alternative modes. NCTCOG is actively using this performance measure to select programs and projects for the TIP. See “Addressing System Performance, Freight, and CMAQ Measures in the TIP” below for more information.

PEAK HOUR EXCESSIVE DELAY

Excessive congestion delay impacts both roadway users and region’s air quality. Delays are determined to be excessive if the average annual delay exceeds an established threshold experienced by the average resident of the region during peak travel times. The NHS facilities in the Dallas-Fort Worth-Arlington Urbanized Area are measured. This calculation provides an absolute measure of congestion quantifying overall congestion rather than its variability. Variability in congestion, or “non-recurring congestion” is addressed by the reliability measures discussed above.

This measure has been improving slightly during 2016-2019, and dropped dramatically in 2020 due to significant changes in traveler behavior due to the ongoing COVID-19 pandemic. The latest observed value and adopted targets are shown in Exhibits IX-20 and IX-21.

Exhibit IX-20: Observed Data, Trends, and Targets for Peak Hour Excessive Delay

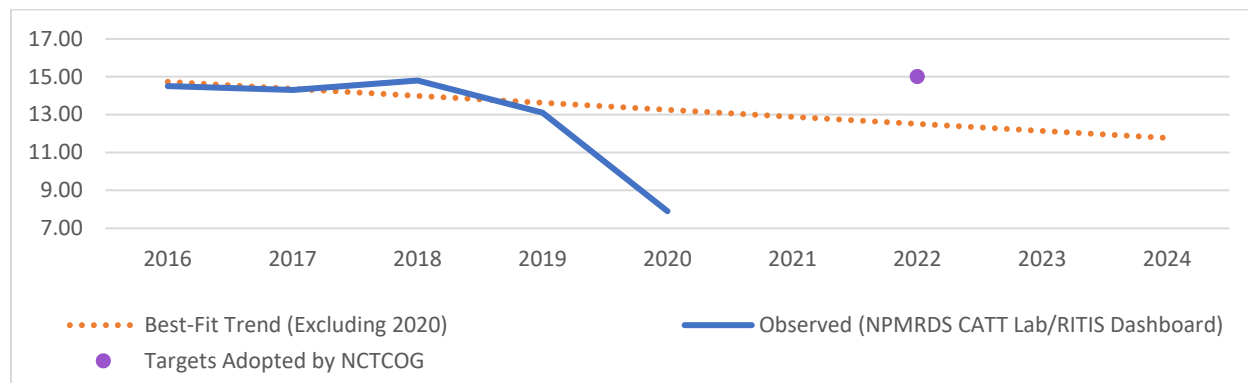


Exhibit IX-21: Latest Observations and Targets for Peak Hour Excessive Delay

Measure	Latest Observed Value (2020)	2020 Target	2022 Target
Truck Travel Time Reliability	7.90 hours	N/A*	15.00 hours

*As part of phase-in requirements in the rulemaking, MPOs were only required to adopt a 2022 target for Peak Hour Excessive Delay.

While Peak Hour Excessive Delay already was already improving in the region even prior to the COVID-19 pandemic, congestion can be further improved by implementing programs and projects that reduce recurring congestion. NCTCOG is actively using this performance measure to select programs and projects for the TIP. See “Addressing System Performance, Freight, and CMAQ Measures in the TIP” below for more information.

TOTAL EMISSIONS REDUCTIONS

The on-road mobile source emissions performance measure is the total emissions reduction for each applicable pollutant and precursor (two- and four-year cumulative estimated emissions reductions) for all CMAQ (or air quality) funded projects. For the Dallas-Fort Worth nonattainment area, the pollutants measured are Nitrogen Oxides (NOx) and Volatile Organic Compounds (VOCs).

To develop the baseline, NCTCOG staff compared existing local TIP projects from 2014 to 2017 with projects included in the Federal Highway Administration’s User Profile and Access Control System (UPACS) database for the same period. The results showed only a certain percentage of TIP projects were reported in the database, due the nature of UPACS reporting. UPACS was found to include an average of 78 percent of emissions benefits reported in the TIP for NOx and 75 percent for VOC. The averages were applied to the total emission reductions for CMAQ-funded TIP projects (2014-2017). Due to NCTCOG’s 2019-2022 TIP not being fully programmed at the time, staff previously chose these amounts as the established baseline provided in Exhibit IX-22. NCTCOG staff is developing a new baseline and targets for the second performance measure reporting period. Staff will compare existing local TIP projects from 2021 to 2024 with projects included in the Federal Highway Administration’s Public Access System for that same time period. Based on the results, staff will apply the percentage of the emissions benefits reported in the TIP for NOx and VOC to determine the new baseline and future targets. NCTCOG staff plans to update the baseline and targets starting in Summer 2022 and submit them to TxDOT in Fall 2022.

NCTCOG coordinates with local stakeholders and TxDOT in selection of CMAQ projects for deployment in the Dallas-Fort Worth ozone nonattainment area. These projects are selected to meet the program goals of reducing congestion and/or reducing emissions of ozone precursor pollutants. Emissions estimates for these projects are estimated by NCTCOG using methodologies developed as part of the Texas Guide to Accepted Mobile Source

Emission Reduction Strategies (MOSERS). In cases where no practical MOSERS methodology exists, verified past emission reduction performance is used to create an emissions reduction estimate.

To establish targets for these measures, staff analyzed the behavior of emission factors over time and applied percentage reductions to the baseline in an effort to better correlate with potential future reductions. In late 2020, NCTCOG exercised its option to revise 2022 targets for these measures due to better than expected performance. These cumulative targets are reported in Exhibit IX-22.

Exhibit IX-22: Emissions Reductions Measures and Targets

Pollutant	Baseline	2020 Target	2022 Target (Original)	2022 Target (Adjusted)
NOx (kg/day)	2,410.80	2,892.96	5,062.68	7,403.95
VOC (kg/day)	499.72	599.67	1,079.40	1,814.02

ADDRESSING SYSTEM PERFORMANCE, FREIGHT, AND CMAQ (PM3) MEASURES IN THE TIP

The TIP directly addresses many of the measures in the PM3 rulemaking and has included projects using similar criteria for many years. In recent years, the RTC has approved several major funding initiatives and calls for projects that sought to continue investments in projects that will address these measures.

Funds have been devoted to projects that will increase efficiency at intersections across the region, including the addition of turn lanes, installation of traffic signals, and the re-timing of existing traffic signals. These projects and programs reduce congestion, improve travel times, increase reliability of the transportation system, and reduce air quality emissions.

Investments in bicycle/pedestrian projects are addressing multiple PM3 measures, specifically Non-SOV Travel and Total Emissions Reduction, by facilitating walking and biking. These projects take single-occupant vehicles off the road and provide an associated air quality benefit. NCTCOG’s TA Set Aside Call for Projects includes specific criteria that give higher scores to projects that provide these benefits.

The RTC has also continued investments in various initiatives led by NCTCOG staff to address these measures, including programs and projects that identify and implement ways to reduce emissions from vehicles, deploying new vehicle technologies, and assisting the public and private sectors with adopting various low-emission technologies.

Travel time reliability is being addressed in several ways by the RTC. The Regional 10-Year Plan includes level of travel time reliability as one of the metrics in the evaluation process. An additional benefit of the previously discussed Traffic Incident Management Call for Projects is that quicker clearance of incidents will lead to less non-recurring congestion, and as a result, provide an air quality benefit.

Some examples of specific programs and projects included in the TIP that are anticipated to address the PM3 measures are listed in Exhibit IX-23.

Table IX-23: PM3 Performance Impacts of Selected Programs and Projects

TIP Code	Program/Project Name	PM3 Measures Addressed	Potential Impact
11616	Signal Retiming Program	Interstate Reliability, Non-Interstate Reliability, PHED, Total Emission Reductions	Retiming signals on the region’s arterials lead to more efficient utilization of the system and higher Interstate and Non-Interstate Reliability with resulting air quality benefits as well.
13058	SH 360 from IH 30 to SH 183 Asset Optimization Project	Interstate Reliability, TTTR, PHED	Strategically adding capacity and operational improvements to this corridor are anticipated to improve Interstate Reliability and Truck Travel Time Reliability.
55041, 55042, 55043, 55044, 55045	Southeast Connector Corridor Project on US 287/IH 820/IH 20 in Tarrant County	Interstate Reliability, TTTR, PHED	Adding capacity to this key transportation corridor is anticipated to alleviate recurring congestion and improve reliability of the system.
14080, 14013.2, 14013.4, 40041	Regional Veloweb Trail in Grand Prairie, Cotton Belt Trail, South Clark Road Trail	Non-SOV Travel, Total Emission Reductions	Completing these portions of the Regional Veloweb enables more of the region’s population to switch to non-motorized commutes.

TRANSIT ASSET MANAGEMENT (TAM)

Public transportation provides thousands of people in North Central Texas with daily access to life-essential opportunities. It is critical to have well maintained, reliable transit assets to help ensure safe, dependable, and accessible transit services. The North Central Texas region has a variety of transit assets. The three major transit authorities, Dallas Area Rapid Transit, Trinity Metro (formerly the Fort Worth Transportation Authority), the Denton County Transportation Authority, and smaller transit providers have transit assets, including over 700 buses, 300 small buses, and 150 light rail vehicles; 150 miles of rail track; transit support vehicles like service trucks and police cars; and rail stations, park-and-ride locations, and maintenance facilities. NCTCOG coordinated with public transportation providers in the region to ensure all agencies either developed their own TAM Plan or participated in a group-sponsored plan offered by NCTCOG or TxDOT. A new group plan will be adopted by October 2022. Five transit providers, as listed below, participated in NCTCOG’s current TAM Plan:

- City of Arlington
- City of Grand Prairie
- City of McKinney
- City of Mesquite
- Northeast Transportation Services (NETS)

Transit asset management (TAM) is a business model that prioritizes funding based on the condition of transit assets to achieve or maintain transit networks in a state of good repair. TAM supports a series of practices to achieve a transit state of good repair including, but not limited to:

- Regular maintenance
- Inspections
- Tracking asset condition over time
- Planning for maintenance and replacement costs
- Replacing each asset at the appropriate time

The TAM final rule establishes four performance measures related to the condition of transit assets. MPOs are required to coordinate with transit providers to report on these measures, establish regional targets, and integrate individual transit providers’ performance targets and TAM plans into planning documents. NCTCOG coordinated with all transit providers in the region, requesting transit asset data and agency-level metrics and targets. Based on the data received, the RTC established initial regional targets for the four transit asset categories in December 2017. These targets have been reaffirmed regularly since that time, with the next action planned for August 2022. Exhibit IX-24 lists the measures and adopted targets.

Exhibit IX-24: Transit Asset Management Targets for 2021

Asset Category	Target	Metric
Rolling Stock (transit vehicles)	0%	Vehicles that meet or exceed the industry standard, defined as the Federal Transit Administration’s Default Useful Life Benchmark
Infrastructure (rail track)	0%	Rail track segments with performance restrictions
Equipment (transit support vehicles)	0%	Vehicles that meet or exceed the industry standard, defined as the Federal Transit Administration’s Default Useful Life Benchmark
Facilities (buildings, stations, park and rides)	0%	Transit facilities rated below “Adequate” (3.0) on the industry standard Transit Economic Requirements Model (TERM) scale

*These vehicles are as old as or older than the industry standard.

PERCENTAGE OF REVENUE VEHICLES MET OR EXCEEDED USEFUL LIFE BENCHMARK (ROLLING STOCK)

This measure assesses the percentage of rolling stock revenue vehicles, such as buses and paratransit vehicles operated by a transit provider that have met or exceeded the Useful Life Benchmark (ULB). The ULB is the expected lifecycle of a capital asset for a particular transit provider’s operating environment, based on recommended mileage or the acceptable period of use in service. NCTCOG has set the regional target for this measure with the goal that the percent of revenue vehicles that have met or exceeded their ULB does not exceed the target percentage. Exhibit IX-25, below, summarizes the FY 2021 target and comparative performance in FY 2017-2020 for rolling stock revenue vehicles in the region.

Exhibit IX-25: Rolling Stock Performance Compared to Targets

(Percent of revenue vehicles that have met or exceeded their useful life benchmark)

Asset Type ¹	FY 2017 Performance	FY 2018 Performance	FY 2019 Performance	FY 2020 Performance	FY 2021 Target
Bus	6%	4%	5%	6%	0%
Small Bus	3%	9%	18%	11%	0%
Light Rail Vehicle	0%	0%	0%	0%	0%
Commuter Rail Locomotive	0%	0%	0%	0%	0%
Commuter Rail Passenger Car	0%	0%	0%	0%	0%
Articulated Bus	0%	0%	0%	0%	0%
Commuter Rail Passenger Coach ²	35%	40%	18%	40%	0%

¹Rolling stock assets include a small number of vehicles reported to the National Transit Database as “inactive”

²Includes assets rebuilt near the end of their useful life with the assumption of a minimum useful life extension of 10 years, which may be too conservative (i.e., vehicles may be in better condition than expected based on completed rebuild activities).

NCTCOG is actively using this performance measure to select programs and projects for the TIP. See “Addressing Transit Asset Management in the TIP” below for more information.

PERCENTAGE OF TRACK SEGMENTS WITH PERFORMANCE RESTRICTIONS (INFRASTRUCTURE)

This measure assesses the performance of rail infrastructure operated by transit providers in the region by measuring the percentage of track segment with performance restrictions. A performance restriction exists on a segment of rail fixed guideway when the maximum permissible speed of transit vehicles is set to a value that is below the guideway’s full-service speed. These restrictions are often referred to as “slow zones.” NCTCOG has set the regional target for this measure with the goal that the percentage of track segments with performance restrictions does not exceed the target percentage. Exhibit IX-26, below, summarizes the FY2021 target and comparative performance in FY 2018-2020 for rail infrastructure.

Exhibit IX-26: Infrastructure Performance Compared to Targets

Rail Mode	Fiscal Year 2018 Performance	Fiscal Year 2019 Performance	Fiscal Year 2020 Performance	Fiscal Year 2021 Target
Light Rail	0.20%	0.20%	0.20%	0%
Commuter Rail	0.09%	0.05%	12.55%	0%
Streetcar Rail	0%	0%	0%	0%
Hybrid Rail	2.05%	0%	0%	0%

PERCENTAGE OF NON-REVENUE VEHICLES MET OR EXCEEDED USEFUL LIFE BENCHMARK (EQUIPMENT)

This measure assesses the percentage of non-revenue vehicles, including transit service and maintenance vehicles, that have met or exceeded their ULB. NCTCOG has set the regional target for this measure with the goal that the percent of revenue vehicles that have met or exceeded their ULB does not exceed the target percentage. Exhibit IX-27, below, summarizes the FY 2021 target and comparative performance in FY 2018-2020 for non-revenue equipment.

Exhibit IX-27: Equipment Performance Compared to Targets

Asset Type	Fiscal Year 2018 Performance	Fiscal Year 2019 Performance	Fiscal Year 2020 Performance	Fiscal Year 2021 Targets
Automobiles	32%	15%	50%	0%
Steel Wheel Vehicles	0%	25%	25%	0%
Trucks & Other Rubber Tire Vehicles	19%	52%	66%	0%

PERCENTAGE OF FACILITIES ASSETS WITH CONDITION RATING BELOW 3.0 ON FTA TERM SCALE (FACILITIES)

This measure tracks the percentage of facility assets, such as maintenance, administrative, passenger, and parking facilities with a condition rating below 3.0 on the FTA Transit Economic Requirements Model (TERM) scale. NCTCOG set the regional target for this measure with the goal that the percent of facilities with a condition rating below 3.0 on the TERM scale does not exceed the target percentage. Exhibit IX-28, below, summarizes the FY 2021 target and comparative performance in FY 2018-2020 for this measure.

Exhibit IX-28: Facilities Performance Compared to Targets

Asset Type	Fiscal Year 2018 Performance	Fiscal Year 2019 Performance	Fiscal Year 2020 Performance	Fiscal Year 2021 Targets
Administrative/Maintenance	0%	5%	5%	0%
Passenger/Parking	0%	0%	0%	0%

ADDRESSING TAM IN THE TIP

The TIP directly addresses many of the measures in the TAM rulemaking and projects are selected with transit asset management principles in mind. Given the goal of Transit Asset Management to achieve and maintain transit fleets, non-revenue vehicles, rail infrastructure, and facilities in a state of good repair, NCTCOG has advanced several projects in the TIP that center on planning, procurement, and implementation of projects that would further the maintenance or replacement of transit assets. As of FY 2021, TAM has been addressed in the TIP through regular maintenance of transit assets and the purchasing of new vehicles in cooperation with the region’s transit agencies and NCTCOG’s subrecipients using FTA 5307 (Urbanized Area Formula) and 5339 (Bus and Bus Facilities) funds.

Moving forward, NCTCOG will be conducting a Cooperative Vehicle Procurement (CVP) on behalf of small transit providers, nonprofits and health and human service agencies. The CVP began in late 2021, with vehicle delivery estimated to begin in early 2022. The CVP will ease the administrative burden on several small transit providers by leveraging nearly \$6 million in funding for both replacement and expansion of ADA-accessible transit fleets across the region. Through this CVP, NCTCOG will ensure compliance with federal procurement requirements, deliver savings and efficiencies to regional partners, and continue efforts to implement regional transit vehicle standards. The CVP will help meet the regional targets for the rolling stock performance measure.

A summary of specific programs and projects included in the TIP that will help address the TAM measures are listed in Exhibit IX-29. The current transit listings will be updated each TIP modification cycle as FTA releases additional funds for each fiscal year.

Exhibit IX-29: Summary of TIP Projects that Address TAM Performance Measures

Project Description	Performance Measures
Purchase Replacement Vehicles	Rolling Stock, Equipment
Bus Preventive Maintenance	Rolling Stock
Preventive Maintenance	All
System Preventive Maintenance	All
Rail Preventive Maintenance	Infrastructure
Purchase Replacement Vehicles- TRE Service	Equipment
Acquisition of Security Equipment	Equipment

PUBLIC TRANSPORTATION AGENCY SAFETY PLANS (PTASP)

Public Transit Agency Safety Plans are a means for transit providers and MPOs to monitor and improve the agency of transit systems under their jurisdiction. A core component of the process is monitoring and establishing targets for four required performance measures:

- Fatalities (total number of reportable fatalities and rate per total vehicle revenue miles by mode)
- Injuries (total number of reportable injuries and rate per total vehicle revenue miles by mode)
- Safety Events (total number of reportable events and rate per total vehicle revenue miles by mode)
- System Reliability (mean distance between major mechanical failures by mode)

Transit providers in the region were required to establish initial safety targets by December 31, 2020, after which NCTCOG had 180 days to establish regional targets in a cooperative process with transit providers. Transit provider targets are established annually. Regional targets will be updated every four years.

Regional transit providers have all established and published their safety targets for each of the required performance measures in their agency safety plans. NCTCOG assessed each of these plans and coordinated with the transit providers, TxDOT, and the FTA PTASP Technical Assistance Center to determine the method and overall goal for the regional safety targets. Exhibit IX-30, below, summarizes NCTCOG’s regional safety targets for each of the seven performance measures. While individual providers created targets for each mode they operate, the regional safety performance data is aggregated for the regional baseline average performance and safety targets to ensure consistency and applicability across the region. The overall goal of the targets is to achieve a 5% improvement over the regional baseline average performance by FY 2025. However, fatality targets are set to zero, in line with the regional safety position that, “Even one death in the transportation system is unacceptable.” These targets were approved by the RTC on May 13, 2021.

Exhibit IX-30: PTASP Baseline Average Performance and Regional Safety Targets

Performance Measure	Baseline Average	Regional Safety Target
Fatalities – Total Number	6.00	0.00
Fatalities – Rate per 100k Miles	0.01	0.00
Injuries – Total Number	150.50	142.98
Injuries – Rate per 100k Miles	0.23	0.22
Safety Events – Total Number	516.00	490.20
Safety Events – Rate per 100k Miles	0.81	0.77
System Reliability – Average Miles Between Major Mechanical Failures	18,896.00	19,841.00

ADDRESSING PTASP IN THE TIP

Strategies for addressing transit safety will become clearer in the coming years as transit safety principles are more strongly integrated into planning processes. However, the safety of the transit system is an important regional value and many programs and projects that are currently programmed in the 2021-2024 TIP directly or indirectly address the safety of the transit system. An example project in Appendix F of the TIP is 25079, which is implementing positive train control along the Trinity Railway Express (TRE) and DART rail systems. The RTC previously funded the larger positive train control program, and this latest effort represents the final steps to bring this important safety measure to fruition. Double tracking projects, like TIP 25072 (TRE Double tracking), represent added capacity to the rail system, but they also provide important safety functions. The rail will be reconstructed, allowing for higher speeds, on a previously speed restricted corridor. In addition, by allowing the trains to pass one another on separate tracks, potential conflicts are reduced, thereby increasing safety across the system.

OVERALL PERFORMANCE-BASED APPROACH

When working to select and program projects, MPO staff factor in a variety of performance measures. Given that projects and programs in an MPO's TIP must be included in and consistent with its MTP, the MTP and the performance measures that support it are critical to the development of the TIP. The projects that are recommended in the MTP and eventually programmed in the TIP go through a review process to determine if they are warranted.

The RTC selects projects through one of two primary methods: calls for projects and funding initiatives. Funding initiatives can take one of two forms, funding programs that have one or two primary objectives and larger funding initiatives that do not focus on a single objective. Performance measures and targets are being addressed through both of these options.

As previously noted, two project selection programs (Sustainable Development Round 4: Turnback Program, Context Sensitive, & Transit Oriented Development and the Transit Program) funded projects in the 2021-2024 TIP that will invest in transit projects and projects that emphasize non-vehicular modes of transportation and context-sensitive design. Both programs address parts of PM3 and the Transit Asset Management performance measures.

Performance targets related to transit projects approved by the RTC are also addressed through the annual transit funding process. While many transit projects relate to maintaining existing operations of public transportation services, other transit projects relate directly to the maintenance, repair, and replacement of capital assets. These projects are evaluated against the TAM regional performance targets and individual transit provider's TAM plans to ensure consistency.

Each TAM plan addresses capital assets used in the provision of public transportation and requires prioritization of investments for repair, maintenance, and replacement. This requirement allows transit providers to strategically plan for funding of capital assets and allows the MPO to make effective funding decisions for projects included in the TIP. All TAM plans include investment prioritization tools to assist in determining funding priorities to maintain an overall state of good repair. NCTCOG developed decision support tools for each asset category that includes various weighted categories based on common factors that affect overall life of the asset. The transit projects in the TIP will help the region meet the adopted transit state of good repair performance targets by providing funding to replace vehicles that meet or exceed the industry standard, defined as the Federal Transit Administration's default useful life benchmark.

Performance targets are also being addressed via larger funding initiatives that do not necessarily specify achieving progress toward a certain target as the reason for the initiative. One of the RTC's recent project selection initiatives, the Regional 10-Year Plan, includes many projects that address congestion reduction, connectivity, and safety issues, in addition to other criteria like pavement and bridge condition. A notable example is the proposed reconstruction of the Southeast Connector in Southern Tarrant County. The implementation of the Southeast Connector project helps address congestion reduction, connectivity and accessibility, and safety issues for all users, in addition to other benefits like air quality and economic development. The project is predicted to reduce total crashes by 22.9 percent and reduce fatal and serious injury crashes by 26.0 percent as compared to the no-build, or do nothing, alternative. This equates to an estimated \$380 million (in 2045 dollars) in overall crash cost savings, or \$214 million (in 2020 dollars). In addition, the Southeast Connector incorporates shared use paths and sidewalks along the entire project limits, including a portion of the Veloweb. And, it reconstructs cross street under and overpasses with sidewalks and shared use paths and/or buffer separated bicycle lanes connecting neighborhoods, schools, parks, and businesses on both sides of the project corridor. The project provides connectivity and accessibility by providing ADA-compliant ramps and crosswalks along the frontage roads and intersections.

The Southeast Connector project will also bring improved traffic operations with signals and turn lanes, collector-distributor roads, and reconstructed ramps to allow more efficient ingress and egress. The highways' directional

interchanges (IH 20 at IH 820, IH 20 at US 287, and IH 820 and US 287) will be reconstructed to eliminate the current left-hand exits and entrances. And, it will reduce congestion by adding roadway capacity. Ultimately, the project will address multiple performance measures, which is what made it a regional priority.

This emphasis on projects that have multi-faceted benefits also applies to the other performance measures and targets that will be utilized in the coming years. Many projects that have been selected by the RTC fall into this category where the improvements do not strictly address one issue. An interchange project may be selected primarily for its expected congestion relief, but it can address a structurally deficient bridge at the same time. A project that increases capacity will often also address a pavement deficiency through the reconstruction of all existing lanes in addition to constructing the new ones.

In addition to the measures and targets described above, there are other focus areas that are being considered when determining whether a project is selected and programmed. These include environmental justice, geographic dispersion, and many more. When vetting projects, NCTCOG and the RTC consider a variety of measures pertaining to each of these areas when applicable.

SUMMARY

NCTCOG has a robust performance-based planning process in place, which has been bolstered in the 2021-2024 TIP and Mobility 2045 by new federal performance requirements. These requirements have been incorporated into planning and programming processes. Current processes include performance measures based on both observed and forecasted data sources, both of which will continue to be strengthened in future TIPs and MTPs. The region faces a continuing challenge to implement transportation improvements that will have a lasting positive benefit for the region. These improvements must address continued population growth, yet they are constrained by financial resources that are insufficient to meet the needs created by that growth. By continuing to evaluate and monitor the region's transportation system using a performance-based planning process, policymakers can ensure that the most beneficial and effective projects and programs are implemented.