Safety Performance Targets Guide

Overview

The Public Transportation Agency Safety Plan (PTASP) regulation, at 49 CFR Part 673, requires covered public transportation providers and States to establish Safety Performance Targets (SPTs) to address the Safety Performance Measures (SPMs) identified in the National Public Transportation Safety Plan (NSP) (49 CFR § 673.11(a)(3)).

An **SPT** is a quantifiable level of performance or condition expressed as a value for the measure related to safety management activities an agency plans to achieve within a set period (§ 673.5). An **SPM** is a quantifiable indicator of performance or condition that is used to establish targets related to safety management activities and assess progress toward meeting the established targets (§ 673.5). Transit providers may choose to establish additional targets for Safety Performance Monitoring and Measurement.[1]

This guide provides information to help transit providers develop SPTs based on the SPMs in FTA's NSP.

NSP Safety Performance Measures

In order to reflect the broad and varied nature of public transportation, FTA's NSP relies on SPMs that (1) can be applied to all modes of public transportation, and (2) are based on data currently submitted to the National Transit Database (NTD). Certain transit providers and States report this data following the *NTD Safety and Security Policy Manual*.

As described in the NSP, transit providers must establish, by mode, **seven** SPTs across four SPM categories:

Fatalities:

1. **Total number** of fatalities reported to the NTD (deaths confirmed within 30 days), **excluding** trespassing and suicide-related fatalities. *Please note that transit agencies may opt to include all fatalities in their calculation.*
2. **Rate per total Vehicle Revenue Miles (VRM)** by mode.

[1] The contents of this document do not have the force and effect of law and are not meant to bind the public in any way. This document is intended only to provide clarity to the public regarding existing requirements under the law or agency policies. Grantees and subgrantees should refer to FTA's statutes and regulations for applicable requirements.

Injuries:

3. **Total number** of injuries reported to the NTD (events on the S&S-40 [major] form for a Full Reporter), **excluding** injuries resulting from assaults and other crimes (security events). *Please note that transit agencies may opt to include all injuries in their calculation*.
4. **Rate per total VRM** by mode.

Safety Events:

5. **Total number** of ***safety*** events (not security events) meeting a major event reporting threshold reported to the NTD by a Full Reporter on the S&S-40 form.
6. **Rate per total VRM** by mode.

System Reliability:

7. **Mean distance** between major mechanical failures by mode. The NTD defines a major mechanical system failure as a failure of some mechanical element of the revenue vehicle that prevents the vehicle from completing a scheduled revenue trip or starting the next scheduled revenue trip because vehicle movement is limited or due to safety concerns. NTD Full Reporters report major mechanical failures to the NTD on the Maintenance Performance form (R-20).

System Reliability example:

An agency with 10,000,000 total VRM and 60 major mechanical failures in the past year would calculate the System Reliability SPM as follows:

VRM / major mechanical failures

1,000,000 / 60

16,667 miles

Modal Categories

Transit agencies may use modal categories to address the requirement to develop SPTs "by mode." For example, agencies may use categories as general as "fixed-route bus," "non-fixed-route bus," and "rail" when setting SPTs. The following table presents these modal categories and the associated modes as reported to the NTD.

PTASP Modal Category	Rail	Fixed-Route Bus	Non-Fixed-Route Bus
NTD Modes	• Heavy Rail (HR)[2] • Light Rail (LR) • Streetcar (SC) • Hybrid Rail (YR)[2] • Monorail/Automated Guideway (MG) • Inclined Plane (IP) • Cable Car (CC)	• Motorbus (MB) • Commuter Bus (CB) • BusRapidTransit (RB) • Trolley Bus (TB) • Publico (PB)	• Demand Response (DR) • Purchased Transportation – Taxi (TX) • Vanpool (VP)

Reduced Reporters

Reduced Reporters[3] report the total annual number of fatalities and injuries that occur in their systems, the total number of reportable events, and their annual VRM. They can use this information to support the development of SPTs for fatalities, injuries, and safety events.

Reduced Reporters are not required to report major mechanical failures to the NTD. To set the system reliability performance target, Reduced Reporters may review vehicle maintenance records to determine the number of major mechanical failures experienced in the prior year or the average number of major mechanical failures over a certain number of years.

Coordination with State and Metropolitan Planning Organizations

Transit providers must make their SPTs available to their State and Metropolitan Planning Organizations (MPOs) (§ 673.15(a)). Transit providers also must coordinate with States and MPOs in the selection of State and MPO SPTs, to the maximum extent practicable (§ 673.15(b)). During this coordination process, to ensure consistency across the transportation modes represented in the State/regional planning process, States and MPOs may request that transit agencies use a specific time frame for "total number" of SPTs and specific VRM values for "rate" SPTs.

[2] Part 673 **excludes** service under the safety jurisdiction of the Federal Railroad Administration.

[3] A Reduced Reporter receives or benefits from Section 5307 funding, operates 30 vehicles or less across all modes and types of service, and does not operate fixed guideway and/or high intensity busway. (NTD Reporting Policy Manual)

SPTs: Total Numbers and Rates

Required SPTs include SPTs expressed as total numbers and SPTs expressed as rates. When establishing **SPTs for total numbers**, transit providers may consider the total number of fatalities, injuries, and safety events they expect to experience **per year** (calendar, fiscal, or NTD reporting year). They may establish an annual time frame to ensure consistency with the State/regional planning process.

Likewise, in setting **rates per VRM**, transit providers may start with the total number of fatalities, injuries, and safety events they expect to experience per year and divide that by the number of VRM they expect to provide in the year. When establishing SPTs for rates, agencies may choose to express the SPT as "per VRM," or they may multiply the value (by 1,000,000, for example) in order to express the SPT as "per 1 million VRM" or some other standardizing value. Transit agencies may want to coordinate with external agencies to ensure **consistency with State/regional planning requirements**.

Transit providers are not required to report their SPTs to FTA at this time; however, FTA will ensure that transit agencies comply with the PTASP regulation by reviewing safety plans through the existing Triennial Reviews and State Management Reviews. **FTA has not established and does not impose penalties for transit providers that do not meet the SPTs they set.**

Examples of SPTs

Tables 1 and 2 provide SPTs for a representative small and large transit provider using a format based on FTA's PTASP Template for Bus Transit.

In these examples, total number and rate SPTs are provided as annual calendar year targets. The total SPTs recorded in the table are the total number of fatalities, injuries, and safety events the transit agencies expect to experience in 2022.

For these sample agencies, rate SPTs are calculated by taking the total number of annual fatalities, injuries, and safety events identified in the table, dividing by the total expected VRM for the year, and multiplying by a standardizing measure. The small transit provider in the example below standardizes its rates by 100,000 VRM and the large transit provider standardizes its rates by 10,000,000 VRM.

Small Transit Provider

Table 1: Sample SPTs for a Small Public Transit Provider.
Annual SPTs based on the safety performance measures established under the National Public Transportation Safety Plan.

Mode of Service	Fatalities (total)	Fatalities (per 100,000 VRM)	Injuries (total)	Injuries (per 100,000 VRM)	Safety Events (total)	Safety Events (per 100,000 VRM)	System Reliability (VRM between failures)
Fixed-Route Bus	0	0	5	0.20	7	0.28	9,506
Non-Fixed Route Bus	0	0	1	0.10	1	0.10	62,500

Fatalities

The small transit provider in this example has not experienced a fatality in its operating history, so it opted to select a total number SPT of 0 fatalities and a corresponding SPT rate of 0 fatalities per 100,000 VRM.

Injuries

The small transit provider has experienced injuries and set a total number SPT of 5 injuries in its fixed-route bus service for 2022. The small transit provider also expects to provide 2.5 million VRM of service in its fixed-route bus service in 2022. To establish the SPT injury rate, the small transit provider sets its SPT to match its current injury rate by performing the following calculation:

- Total SPT injuries divided by annual expected VRM multiplied by 100,000 = (5 injuries / 2,500,000 VRM × 100,000) = 0.2 injuries per 100,000 VRM

For the non-fixed-route bus mode, the small transit provider followed the same process. The agency set an injury SPT of 1 injury in 2022 and expects to provide 1,000,000 VRM of non-fixed-route bus service. The agency used the following calculation:

- (1 injury / 1,000,000 VRM × 100,000) = 0.1 injuries per 100,000 VRM

Safety Events

To establish the safety event rate, the small provider performed a similar calculation:

- (7 safety events / 2,500,000 VRM × 100,000) = 0.28 safety events per 100,000 VRM

For the non-fixed-route bus mode, the small transit provider expects 1 reportable safety event in 2022:

- (1 safety event / 1,000,000 VRM × 100,000) = 0.1 safety events per 100,000 VRM

System Reliability

Finally, the small transit provider reviewed its vehicle maintenance log to establish its system reliability SPT in terms of total VRM between failures. The small transit provider selected a target of 9,506 miles between failures for its fleet of fixed-route buses and 62,500 miles between failures for its fleet of non-fixed-route vehicles. The agency selected these targets based on calculations using agency data:

- Fixed-route bus: 2,500,000 VRM / 263 failures = 9,506 miles
- Non-fixed-route bus: 1,000,000 VRM / 16 failures = 62,500 miles

Large Transit Provider

The large transit provider in this example operates three modal categories: rail, fixed-route bus, and non-fixed-route bus. This large agency has experienced fatalities in its rail transit and fixed-route bus modes, where it expects to provide 16,000,000 VRM and 40,000,000 VRM of service, respectively, in 2022. This large provider has never experienced a fatality in its non-fixed-route mode, where it expects to provide 1,000,000 VRM in service in 2022.

Table 2: Sample SPTs for a Large Public Transit Provider.
Annual SPTs based on the safety performance measures established under the National Public Transportation Safety Plan.

Mode of Service	**Fatalities** (total)	**Fatalities** (per 10 million VRM)	**Injuries** (total)	**Injuries** (per 10 million VRM)	**Safety Events** (total)	**Safety Events** (per 10 million VRM)	**System Reliability** (VRM between failures)
Rail	4	2.5	20	12.5	30	18.75	35,000
Fixed-Route Bus	3	0.75	35	8.75	45	11.25	10,000
Non-Fixed-Route Bus	0	0	1	10	1	10	50,000

Fatalities

Based on its experience, the large transit provider established total number SPTs of 4 rail transit fatalities, 3 fixed-route bus fatalities, and 0 non-fixed-route bus fatalities for 2022. Due to its more significant service levels, and as recommended through the State/regional transportation planning process, the large transit provider calculated its fatality rate SPTs in terms of 10,000,000 VRM as follows:

- Rail: (4 fatalities / 16,000,000 VRM × 10,000,000) = 2.5 fatalities per 10,000,000 VRM
- Fixed-route bus: (3 fatalities / 40,000,000 × 10,000,000) = 0.75 fatalities per 10,000,000 VRM
- Non-fixed-route bus: (0 fatalities / 1,000,000 × 10,000,000) = 0 fatalities per 10,000,000 VRM

Injuries

For 2022, the large transit provider in this example established total number SPTs of 20 rail transit injuries, 35 fixed-route bus injuries, and 1 non-fixed-route bus injury. The large transit provider calculated its injury rate SPTs per 10,000,000 VRM as follows:

- Rail: (20 injuries / 16,000,000 VRM × 10,000,000) = 12.5 injuries per 10,000,000 VRM
- Fixed-route bus: (35 injuries / 40,000,000 VRM × 10,000,000) = 8.75 injuries per 10,000,000 VRM
- Non-fixed-route bus: (1 injury / 1,000,000 VRM × 10,000,000) = 10 injuries per 10,000,000 VRM

Safety Events

For 2022, the large transit provider in this example established total number SPTs of 30 rail transit safety events, 45 fixed-route bus transit safety events, and 1 non-fixed-route bus safety event. The large transit provider calculated its safety event rate SPTs per 10,000,000 VRM as follows:

- Rail: (30 safety events / 16,000,000 VRM × 10,000,000) = 18.75 safety events per 10,000,000 VRM
- Fixed-route bus: (45 safety events / 40,000,000 VRM × 10,000,000) = 11.25 safety events per 10,000,000 VRM
- Non-fixed-route bus: 1 safety event / 1,000,000 VRM × 10,000,000) = 10 safety events per 10,000,000 VRM

System Reliability

Finally, the large transit provider reviewed its major mechanical failure data as reported to the NTD to establish its system reliability SPT in terms of total VRM between failures. The large transit provider selected a target of 35,000 miles between failures for its fleet of light rail vehicles, 10,000 miles between failures for its fixed-route bus fleet, and 50,000 miles between failures for its non-fixed-route bus fleet.

- Rail: 16,000,000 VRM / 456 failures = 35,088 miles
- Fixed-route bus: 40,000,000 VRM / 4,000 failures = 10,000 miles
- Non-fixed-route bus: 1,000,000 VRM / 20 failures = 50,000 miles

Strategies for Establishing SPTs

When establishing SPTs, transit providers may choose to set aspirational SPTs (for example, zero fatalities or injuries) or targets that represent improvement over current safety performance levels, among other options. To the extent possible, FTA recommends that transit providers set realistic SPTs that consider relevant safety goals and objectives. **While transit providers may select SPTs that reflect an improvement in safety performance, they do not necessarily have to do so and could focus on maintaining current safety performance.**

Three sample strategies for establishing initial SPTs include:

- **Setting SPTs based on five-year trends:** A transit provider could review its fatality, injury, safety event, major mechanical failures, and VRM data over the previous five years by mode. See Table 3 below for an illustrative example for a fixed-route bus mode.

  Once this five-year picture has been established, by mode, the public transportation provider may choose to adopt the 5-year average total numbers and rates, by mode, as its performance targets, reflecting a goal to maintain the current level of safety performance while addressing new Part 673 requirements. Alternatively, an agency may choose to select as SPTs the highest or lowest numbers and rates documented in its tables for the 5-year period or average the highest and lowest numbers and rates to develop SPTs that reflect its operating characteristics.

Table 3: Sample 5-Year Safety Performance for a Large Fixed- Route Bus Transit Mode
(Based on NTD Reporting Year)

SPT Category	2014	2015	2016	2017	2018	5-Year Average
Annual VRM	9,700,000	10,000,000	10,100,000	10,200,000	10,500,000	10,100,000
Total Number of Fatalities	0	1	2	0	1	0.8
Fatality Rate per 10,000,000 VRM	0.00	1.00	1.98	0.00	0.95	0.79
Total Number of Injuries	30	22	40	32	25	29.8
Injury Rate per 10,000,000 VRM	30.93	22.00	39.60	31.37	23.81	29.54
Total Number of Safety Events	40	35	50	42	35	40.4
Safety Event Rate per 10,000,000 VRM	41.24	35.00	49.50	41.18	33.33	40.05
Total Number of Major Mechanical System Failures	950	925	975	1,000	975	965
Mean Distance between Major Mechanical System Failures	10,211	10,811	10,359	10,200	10,769	10,470

- **Number and rate reduction:** A transit provider could also set its SPTs in terms of a rate reduction. For example, an agency could decide to reduce the number of total injuries by two percent per year, then determine the number and rate of injuries that that reduction would present for a particular year's SPTs.
- **Benchmarking peers:** Some transit providers may not have sufficient data to set SPTs for each of the NSP safety performance measures. This could be because the transit agency does not experience fatalities, injuries, safety events, or major mechanical failures often enough to develop meaningful data trends or because the transit agency is new and does not have historical data. Also, some agencies are not required to report data on mechanical failures to the NTD based on the size or type of their operations, so they may not have a historical record of this information.

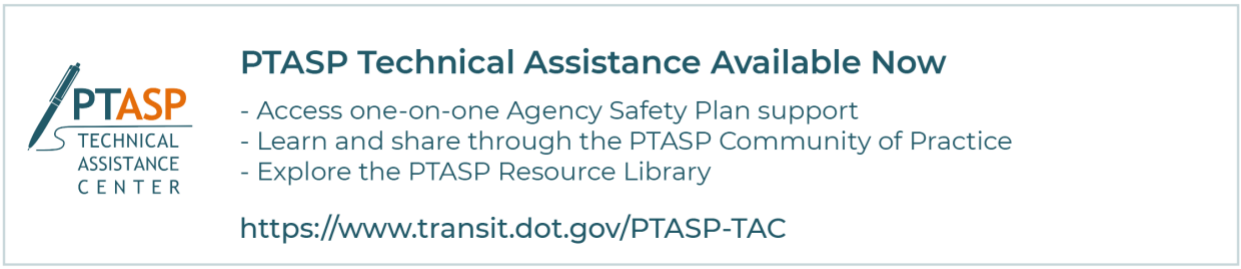
  For these agencies, benchmarking against peer transit agencies can help provide baseline data to inform their SPTs. For example, if a transit agency with limited data to draw on determines that six peer (similarly sized) transit agencies experienced an average of 50 total safety events in fixed-route bus service over the last five years, then the transit agency may choose to set an SPT such as: "10 total safety events for the fixed-route bus mode in 2022." The NTD provides safety time series data to support peer benchmarking.

Coordination with Statewide and Metropolitan Planning

States and MPOs will take transit SPTs into account as they prepare appropriate highway and public transportation SPTs for their planning jurisdictions. The recent Federal Highway Administration (FHWA) and FTA joint planning rule governs the planning activities of transit agencies, States, and MPOs. (For more information, see FTA's web page about the Final Rule on Statewide and Nonmetropolitan Transportation Planning and Metropolitan Transportation Planning.)

See the below resources for additional information on State and MPO coordination under the FHWA and FTA joint planning rule:

- FTA's overview of the Final Rule on Statewide and Nonmetropolitan Transportation Planning and Metropolitan Transportation Planning
- FAST Act Fact Sheet: Metropolitan, Statewide, & Non-Metropolitan Planning
- PTASP Informational Guidance: Roles and Responsibilities Fact Sheet
- MPO PTASP Frequently Asked Questions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