



Washington State
Department of Transportation

A Guide to Preparing Your Transit Asset Management Plan

2018-2020

Prepared by the Washington State Department of Transportation
Public Transportation Division

Americans with Disabilities Act (ADA) Information

English

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Contact information:

WSDOT Public Transportation Division

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The purpose of this guide is to provide a resource for public transportation agencies to develop their transit asset management (TAM) plans. The Washington State Department of Transportation (WSDOT) is committed to the success of public transportation agencies and the effective management of transit assets. As such, it is important that WSDOT and public transportation agencies work from a common set of principles and resources, outlined in this document.

This guide may be used as a reference tool throughout a public transportation agency's TAM plan horizon period, a period of at least four years (c.f. *Plan Implementation, Horizon period and Amendments*), offering guidance and direction for maintaining compliance with the laws and regulations associated with TAM plans.

This guide will be reviewed and updated after October 2020, with the possibility of interim updates. When revisions are made to this guide, WSDOT will notify affected public transportation agencies that an updated version has been posted to the WSDOT Public Transportation Division (PTD) website at www.wsdot.wa.gov/business-wsdot/grants/public-transportation-grants.

This document is not intended to supersede any state or federal law, rule or regulation. In the event that any section of this document is inconsistent with any state or federal law, rule or regulation, the law, rule or regulation supersedes this guide and must be followed.

For general questions regarding TAM plans, please contact Hiep Tran, Transit Safety and Asset Management, at 360-705-7806 or tranh@wsdot.wa.gov.

Acronyms and Abbreviations

CFR	Code of Federal Regulations
FTA	Federal Transit Administration
MAP-21	Moving Ahead for Progress in the 21st Century Act
MPO	Metropolitan Planning Organizations
NTD	National Transit Database
PTD	Public Transportation Division
RCW	Revised Code of Washington
SGR	State of good repair
TAM	Transit asset management
TERM	Transit Economic Requirements Model
ULB	Useful life benchmark
WSDOT	Washington State Department of Transportation

A Note Regarding Resource Identification and Naming Convention

Every effort has been made to ensure the alignment of this guide with [49 Code of Federal Regulations \(CFR\) Part 625 – Transit Asset Management](#) and the Federal Transit Administration's (FTA) *Transit Asset Management Guide: Focusing on the Management of Our Transit Investments* (c.f. *Resources*). As such, many of the sections in this guide have been tied to one or more subsections in CFR Part 625 and/or pages in *Transit Asset Management Guide*. This alignment is indicated throughout this guide using the following abbreviations and naming convention:

Resource Identification and naming convention

- 49 CFR Part 625: CFR: §[SUBSECTION #]
- *Transit Asset Management Guide: TAM Guide*, pp. [PAGES]

Federal Law Related to Transit Asset Management

TAM is a business model that prioritizes funding based on the condition of public transportation capital assets to achieve or maintain such assets in a state of good repair (SGR).

In July 2016, FTA issued a final rule, 49 CFR Part 625, requiring public transportation agencies to maintain and document minimum TAM standards. The new standards are intended to help public transportation agencies to develop a strategic and systematic process of operating, maintaining and improving public transportation capital assets effectively through their life cycles.

49 CFR Part 625 applies to all recipients and subrecipients of federal financial assistance under 49 U.S.C Chapter 53 that own, operate or manage capital assets used for providing public transportation.

The standards in 49 CFR Part 625 are divided among five subparts:

- Subpart A – General Provisions
- Subpart B – National Transit Asset Management System
- Subpart C – Transit Asset Management Plans
- Subpart D – Performance Management
- Subpart E – Recordkeeping and Reporting Requirements for Transit Asset Management

To provide public transportation agencies with direct guidance as to how to develop their TAM Plan, this document focuses primarily on Subpart C – Transit Asset Management Plans, specifically §625.25 – Transit Asset Management Plan Requirements.

Though this document is designed to provide guidance in developing a TAM plan, each individual public transportation agency should review the new federal standards in 49 CFR Part 625, as well as the references and tools noted in this document.

Washington State Law Related to Transit Asset Management

The development of a TAM plan that meets the requirements of 49 CFR Part 625 fulfills state requirements for the development of a “maintenance management plan” or “maintenance and preservation management plans” as required in the following Revised Code of Washington (RCW):

- [RCW 35.84.060](#) Street railway extensions: City transit system
 - TAM plan must be submitted to the [Washington State Transportation Commission](#)
- [RCW 36.56.121](#) Metropolitan municipal corporations
 - TAM plan must be submitted to WSDOT
- [RCW 36.57A.191](#) Public transportation benefit areas
 - TAM plan must be submitted to WSDOT
- [RCW 81.112.086](#) Regional transit authorities
 - TAM plan must be submitted to WSDOT
- [RCW 47.04.082](#) Urban transportation systems
 - TAM plan must be submitted to WSDOT

Transit Asset Management Plans: Overview

Required Transit Asset Management Plan Elements

The following sections outline the nine elements of a TAM plan. These nine elements are:

<ol style="list-style-type: none"> 1. Asset inventory All capital assets a transit provider owns, operates or manages, including those acquired without FTA funds 2. Asset condition assessment Rating of inventoried assets, collected at individual or asset class level 3. Decision-support tools Analytical processes used to make investment prioritization 4. Investment prioritization Ranked list of proposed projects and programs ordered by year of planned implementation 	Tier I & II
<ol style="list-style-type: none"> 5. Transit asset management and state of good repair policy Public transportation agency's vision, defining, objectives, roles and responsibilities 6. Implementation strategy Operation level process for implementing TAM plan 7. Key activities Actions needed to implement TAM plan for each year of the plan's four-year horizon 8. Summary of resources Staff time, funding, technology requirements, etc. 9. Monitoring, updating, and evaluation outline How TAM activities will be monitored, evaluated and updated to ensure continuous improvement 	Tier I only

49 CFR: §625.25

TAM Guide: p. 44¹

¹ Table 3-2 on p. 44 of the *TAM Guide* shows six categories comprising a complete TAM plan. However, each category in the table contains one or more required TAM plan elements (i.e., Asset Inventory and Condition Assessment has both the asset inventory and asset condition assessment required TAM plan elements). Public transportation agencies must ensure that their TAM plan contains all required TAM plan elements, regardless of how their plan is organized.

Tier I and Tier II Agencies

For the purposes of developing TAM plans, [49 CFR Part 625](#) defines public transportation agencies as either tier I or tier II agencies.

Tier I agencies have fleets of either 101 or more vehicles, or rail transit. Tier I agencies must develop TAM plans that include all nine required TAM plan elements listed in the introduction above.

Tier II agencies have fleets of 100 or fewer vehicles, are subrecipients under the [5311 Rural Area Formula Program](#) (49 U.S.C. 5311), or are any American Indian tribe. Tier II agencies must develop TAM plans that include only the first four elements listed in *Required Transit Asset Management Plan Elements*.

49 CFR: §625.5, §625.25(a)(1) & (2)
TAM Guide: p. 46

Group Transit Asset Management Plans

Tier II agencies may also choose to participate in a group TAM plan, unless they are direct recipients under the [5307 Urbanized Area Formula Grant Program](#) (49 U.S.C. 5307). A tier II agency may participate in only one group plan.

A group TAM plan is developed by a sponsor. A group plan's sponsor must be a state², designated recipient or direct recipient.

A sponsor coordinates the development of the group TAM plan with each participating agency's accountable executive (c.f. *Required Element 5. Transit Asset Management and State of Good Repair Policy*). Participating agencies must provide their plan sponsor with any information that is needed to develop the group plan.

When the group plan is completed, the sponsor will make the plan available to all participating public transportation agencies.

Group plans must include a list of all public transportation agencies participating in the plan.

A participating agency must provide written notification to their sponsor if they choose to opt-out of the group plan. Upon opting-out, an agency must either develop its own TAM plan or participate in another sponsor's group plan.

49 CFR: §625.5, §625.25(a)(2), §625.27
TAM Guide: pp. 45-46

² The State of Washington through WSDOT is not a sponsor for group TAM plans at this time.

Plan Implementation, Horizon Period and Amendments

All initial TAM plans must be completed by October 1, 2018. Public transportation agencies may request an extension to this deadline from FTA by October 1, 2018. Requests will be considered on a case-by-case basis.

A TAM plan must cover a period of at least four years, known as a horizon period.

Agencies may amend their plan at any time, especially when there is a significant change to the asset inventory, condition assessments or investment prioritization.

An agency must update their plan at the end of the plan's horizon period. This update should coincide with the planning cycle for the [Washington Statewide Transportation Improvement Program](#).

49 CFR: §625.29, §625.31

Plan Reporting and Recordkeeping

Agencies must submit the following annual reports relevant to their TAM plan to FTA's National Transit Database (NTD):

- A data report that reflects:
 - The SGR performance targets (c.f. *Required Element 6. Implementation Strategy*) for the following year
 - Condition information for the agency's public transportation system
- A narrative report that:
 - Provides a description of any change in the condition of the agency's transit system from the previous year
 - Describes the progress made during the year to meet the performance targets set in the previous reporting year

Group plan sponsors must submit one consolidated annual data report and one consolidated annual narrative report in the format described above.

Agencies must maintain records and documents that support their plan. To this end, the following plan items must be made available to WSDOT upon request:

- Supporting records or documents
- Performance targets
- Investment strategies
- Annual condition assessment

49 CFR: §625.53, §625.55

Transit Asset Management Plans: Required Elements

Required Element 1 Asset Inventory (Tier I and Tier II Agencies)

TAM plans must include an inventory of capital assets that a public transportation agency owns and operates. The only exception to this inventory is equipment that is not a service vehicle and has an acquisition value under \$50,000.

The inventory must include, but is not limited to:

- **Rolling stock (revenue vehicles)**
 - Heavy-duty buses: 30-, 35-, 40-foot articulated; double decker; 45-foot over the road coaches
 - Medium duty-cutaway: >30' on truck chassis
 - Light-duty cutaway: <30' on van chassis
 - Light-duty: ADA accessible van and minivan
 - Van: 7-, 12- and 15-passenger vanpool vehicles
- **Facilities**
 - Passenger stations
 - Administrative buildings
 - Operations and maintenance buildings
 - Employee parking garages
 - Park and ride lots
- **Equipment**
 - Vehicles used to support revenue vehicles
 - Supervisor vehicles
 - Tow trucks
 - Service vehicles
 - Snow plows
- **Infrastructure**
 - Catenary systems
 - Signal systems
 - Tracks
 - Power substation

To assist agencies with developing their asset inventories, WSDOT created a transit asset inventory reporting template that meets FTA and Washington state TAM requirements. This reporting template is available at www.wsdot.wa.gov/business-wsdot/grants/public-transportation-grants.

Agencies should update their asset inventories at the end of every calendar year.

An asset inventory report is due annually on February 15. The asset inventory report should be submitted to WSDOT-PTD Capital Program staff via email along with a PDF copy of the first page of the rolling stock inventory report form with an authorized signature.

49 CFR §625.5, §625.25(b)(1)
TAM Guide: pp. 50-57

Required Element 2 Asset Condition Assessment (Tier I and Tier II Agencies)

TAM plans must include a condition assessment of all items in the public transportation agency's asset inventory.

The condition assessment must be detailed enough to allow the agency to monitor and predict the performance of the assets. The condition assessment informs the investment prioritization (c.f. *Required Element 4. Investment Prioritization*).

To assist agencies in developing their condition assessments, WSDOT created a condition assessment reporting template for rolling stock that meets FTA SGR analysis requirements. This reporting template is available at www.wsdot.wa.gov/business-wsdot/grants/public-transportation-grants.

For facility condition assessments, FTA and WSDOT recommend using *TAM Facility Performance Measure Reporting Guidebook: Condition Assessment Calculation*. This calculation is available at www.transit.dot.gov/regulations-and-guidance/asset-management/tam-facility-performance-measure-reporting-guidebook.

49 CFR: §625.25(b)(2)
TAM Guide: pp. 59-64

Required Element 3 Decision-Support Tools (Tier I and Tier II Agencies)

TAM plans must identify analytical processes or decision-support tools that a public transportation agency intends to use to estimate capital investment needs over time.

These analytical processes or decision-support tools may also be used to help the agency develop its investment prioritization.

The condition assessment reporting template presented in a previous section (*Required Element 2. Asset Condition Assessment*) contains equipment and facility condition rating matrices that identify capital investment needs to assist agencies in assessing the condition of their equipment and facilities.

49 CFR: §625.25(b)(3)

Required Element 4

Investment Prioritization (Tier I and Tier II Agencies)

TAM plans must include a project-based investment prioritization, identifying programs and projects that a public transportation agency has a responsibility to improve or manage.

An agency's investment prioritization should rank projects in order of priority and project year. The rankings must be consistent with the agency's TAM policy and strategies (c.f. *Required Element 5. Transit Asset Management and State of Good Repair Policy*).

Agencies should give special consideration to programs and projects that pose a safety risk, and to the estimated funding levels from all available sources in each fiscal year during the TAM plan horizon period.

The condition assessment reporting template presented in a previous section (*Required Element 2. Asset Condition Assessment*) creates equipment and facility condition rating points. These rating points are designed to assist agencies in developing a capital investment prioritization list to reasonably allocate financial resources to meet an agency's SGR goal.

49 CFR: §625.25(b)(4), §625.33
TAM Guide: pp. 67-75, 79-82

Required Element 5

Transit Asset Management and State of Good Repair Policy (Tier I Agencies Only)

Transit Asset Management Policy

A TAM policy is a public transportation agency's documented commitment to achieving and maintaining a SGR for all of its capital assets.

A TAM policy also defines a public transportation agency's TAM-related objectives, and assigns roles and responsibilities for meeting those objectives.

Important among the roles defined is the accountable executive. This individual has the following characteristics:

- Ultimate responsibility for implementing the agency's TAM plan
- Accepting and approving the SGR performance targets
- Responsibility for carrying out TAM practices
- Control over the resources needed to maintain both the agency's public transportation agency safety plan ([49 U.S.C. 5329\(d\)](#)) and transit asset management plan

49 CFR: §625.5, §625.25(b)(5)
TAM Guide: pp. 37-38

State of Good Repair Policy

An SGR policy incorporates principles relevant to SGR into a public transportation agency's documented commitment to achieving and maintaining a SGR for all of its assets.

SGR principles establish a basis for defining and managing a SGR.

The first principle defines a SGR as the condition in which a capital asset is able to operate at a full level of performance. An asset is in a SGR if:

- It is able to perform its designed function
- Its use in its current condition does not pose a safety risk
- Its life-cycle investment needs have been met or recovered, including all scheduled maintenance, rehabilitation and replacements
- Its useful life benchmark or FTA minimum useful life has not been met

The second SGR principle articulates the independence of assets, namely that each asset may operate at a full level of performance regardless of the SGR status of other assets.

The final SGR principal notes that the accountable executive must balance TAM, safety, day-to-day operations and expansion needs in approving and carrying out a agency's public transportation safety plan and TAM plan.

49 CFR: §625.5, §625.17, §625.25(b)(5), §625.41

Required Element 6 Implementation Strategy (Tier I Agencies Only)

The TAM plan implementation strategy is the approach a public transportation agency takes to carry out its TAM policy. The implementation strategy includes the agency's TAM-related objectives and performance targets.

TAM-related objectives and performance targets are set using SGR performance measures. SGR performance measures are:

- **Rolling stock**
 - The percentage of revenue vehicles within a particular asset class that have either met or exceeded their useful life benchmark (ULB).³
- **Facilities**
 - The percentage of facilities within an asset class condition rated below 3.00 points on the Transit Economic Requirements Model (TERM) scale.⁴
- **Equipment**
 - The percentage of non-revenue, support-service and maintenance vehicles equipment that have either met or exceeded their ULB.
- **Infrastructure**
 - The percentage of track segments with performance restrictions.

³ Useful life is either the expected life-cycle of an asset or the acceptable period of use in service determined by the FTA. A ULB is the expected life-cycle or the acceptable period of use in service for an asset, as determined by a public transportation agency, or the default benchmark provided by FTA.

⁴ TERM is the FTA's capital needs analysis tool used to assess the current physical condition and future investment needs of transit assets. Under the TERM scale, an asset in need of immediate repair or replacement is scored as one, whereas a new asset with no visible defects is scored as five.

Agencies must set one or more performance targets based on the SGR performance measures above.

Performance targets must be based on realistic expectations and the most recent data available. Performance targets must also take into consideration the financial resources that the agency expects to be available during the TAM plan horizon period.

After initial performance targets are set, agencies must set performance targets for the following fiscal year. The accountable executive must approve each annual performance target.

For group plan participants, the plan's sponsor must set one or more unified performance targets for each asset class reflected in the group TAM plan. The sponsor should coordinate its unified performance targets with each participating agency's accountable executive.

As a general note, individual agencies and sponsor of group plans should coordinate with states and Metropolitan Planning Organizations (MPO) in the selection of state and MPO performance targets.

49 CFR: §625.5, §625.25(b)(6), §625.43
TAM Guide: pp. 38-40, 84-88

Required Element 7

Key Activities (Tier I Agencies Only)

Key activities describe the steps that a public transportation agency must take that are critical to achieving its TAM-related objectives. Agencies should develop a list of such activities within their plan.

Examples key activities to initiate a TAM plan may include, but are not limited to:

- Developing a TAM policy approved by accountable executive
- Assembling a TAM Team
- Defining team member roles and responsibilities
- Attending training or developing training for team members
- Hiring contracted support to conduct facility assessments and estimate replacement costs
- Expanding use of software for asset management

Annual activities to implement objectives may include, but are not limited to:

- February: Updating asset inventory and condition assessment and submitting to WSDOT
- April: Reporting asset data to NTD
- September: Reviewing project prioritization for asset replacement
- September: Reviewing and updating agency Strategic Plan and Transit Development Plan
- Reviewing TAM plan

As a general note, TAM plan must be updated at least every four years. Asset conditions should be updated at least every year.

49 CFR: §625.5, §625.25(b)(7)
TAM Guide: pp. 43-45

Required Element 8

Summary of Resources (Tier I Agencies Only)

This element describes resources, including personnel and technologies, which a public transportation agency needs to develop and carry out the TAM plan.

Resources may include, but are not limited to:

- Planned capital replacement account
- State and federal capital grant opportunities
- Investment prioritization strategy
- Asset management software
- Asset engineering staff
- Risk management staff
- Asset performance management staff

49 CFR: §625.5, §625.25(b)(8)

Required Element 9

Monitoring, Update, and Evaluation Outline (Tier I Agencies Only)

Public transportation agencies must develop an outline to monitor, update, and evaluate their TAM plan to ensure the continuous improvement of their TAM practices for each asset category.

Agencies may choose to fulfill this element by determining performance measures. Performance measures assist in evaluating an agency's performance, understanding of what success means for the agency, and identifying areas for improvement and change. Agencies may decide to set targets and identify trends for chosen performance measures. Agencies that choose to use performance measures should determine a process for collecting and reporting performance measures. Agencies should also determine broadly what they intend to do with performance measures, including how they will inform agency decisions or process improvement.

Examples of performance measures for rolling stock may include, but are not limited to:

- Those measures related to vehicles in *Required Element 6. Implementation Strategy*
- Labor hours per vehicle
- Fuel economy
- Safety risk: incidents per 1,000 miles
- Capital cost: costs per mile, per passenger trip and per maintenance hour
- Operational cost: costs per mile, per passenger trip, per operational hour and per maintenance hour
- Maintenance cost: planned or unplanned preventive maintenance or repair

Examples of performance measures for facilities may include, but are not limited to:

- Those measures related to facilities in *Required Element 6. Implementation Strategy*
- Energy use per square foot
- Water use per square foot
- Operating cost per square foot
- Maintenance cost: planned or unplanned preventive maintenance or repair

Examples of performance measures for equipment may include, but are not limited to:

- Those measures related to equipment in *Required Element 6. Implementation Strategy*
- Percentage of equipment with a rating less than 3.00 on FTA TERM scale
- Age and mileage of equipment
- Safety risk: incidents per 1,000 miles and capital cost per mile and per maintenance hour
- Operation cost: costs per mile, per trip, per operation hour and per maintenance hour
- Maintenance cost: planned or unplanned preventive maintenance or repair

Examples of performance measures for infrastructure may include, but are not limited to:

- Those measures related to infrastructure in *Required Element 6. Implementation Strategy*

49 CFR: §625.5, §625.25(b)(9)

Transit Asset Management Plan Development

Transit Asset Management Guide: Focusing on the Management of Our Transit Investments

The *TAM Guide* provides a thorough overview of TAM and the business benefits for to public transportation agencies. The *TAM Guide* offers an enterprise asset management framework and business model that transportation agencies can refer to as best practice and describes the elements of a TAM plan.

The guide is available at: www.transit.dot.gov.

Asset Management Guide for Small Agencies: Focusing on the Management of Our Transit Investments

The *Asset Management Guide for Small Agencies* is a supplemental resource for small public transportation service agencies that have fewer assets and fewer asset classes to maintain than larger agencies and substantially fewer resources to direct toward how their assets are managed. The guide:

- Focuses on descriptions to assets, practices and requirements that are directly applicable to small agencies.
- Allows for tailoring to address outliers (e.g., rural agencies that maintain sizable fleets) and incorporate related state-level requirements that may differ among states.
- Provides a master template for small agencies to develop TAM plans.
- Offers example strategies and tips that can be applied to increase efficiency of day-to-day operations and maintenance efforts.

The guide is available at: www.transit.dot.gov.

Transit Asset Management Plan Template for Small Agencies

The FTA has provided a TAM plan template to assist small public transportation agencies in developing their TAM Plans according to best practice and in alignment with Moving Ahead for Progress in the 21st Century Act (MAP-21) requirements.

Please note, the template is not a tool to meet MAP-21 compliance. It is simply a technical assistance guide. As such, a completed template gives small public transportation agencies a TAM plan that can be modified as desired.

The template is available at: www.transit.dot.gov/tam/tamplans/smallagencyv2_0

Transit Asset Management Plan Reporting

TAM Infrastructure Performance Measure Reporting Guidebook

The *TAM Infrastructure Performance Measure Reporting Guidebook* details the methods for public transportation agencies in measuring and reporting TAM infrastructure assets under performance restrictions (slow zones) to the NTD.

The guidebook is available at: www.transit.dot.gov/regulations-and-guidance/asset-management/tam-infrastructure-performance-measure-reporting-guidebook

TAM Facility Performance Measure Reporting Guidebook

The *TAM Facility Performance Measure Reporting Guidebook* details the methods for public transportation agencies in measuring and reporting TAM facility condition assessments to the NTD.

The guidebook is available at: www.transit.dot.gov/regulations-and-guidance/asset-management/tam-facility-performance-measure-reporting-guidebook

Peer Resources

Callies, E., & Mrak, P. (2014). *Facilities: Building Inspection Procedure*. Denver, CO: Regional Transportation District – Denver. www.transit.dot.gov/sites/fta.dot.gov/files/FM%20Buildings%20Inspection%20Procedure.pdf

Krupske, C. & Hrmon, C. (2014). *Bridges: SGR Bridges & Tunnels Inspection Procedure*. Denver, CO: Regional Transportation District – Denver. www.transit.dot.gov/sites/fta.dot.gov/files/docs/SGR_Bridges_and_Tunnels_Inspection_Procedure_0.pdf

Krupske, C. & Harmon, C. (2015). *Rail Infrastructure: Rail Infrastructure Standards*. Denver, CO: Regional Transportation District – Denver. www.transit.dot.gov/sites/fta.dot.gov/files/docs/Rail_Infrastructure_Standards_0.pdf

Krupske, C. & Harmon, C. (2014). *State Of Good Repair: FM Building Inspection Standards*. Denver, CO: Regional Transportation District – Denver. www.transit.dot.gov/sites/fta.dot.gov/files/docs/FM_Building_Standards_0.pdf

Mrak, P. (2014). *Conveyance: Conveyance Scoring Procedure*. Denver, CO: Regional Transportation District – Denver. www.transit.dot.gov/sites/fta.dot.gov/files/docs/SGR_Conveyance_Scoring_Procedure_0.pdf

FTA and WSDOT Transit Asset Management Websites

FTA

www.transit.dot.gov/tam/tamplans

WSDOT

www.wsdot.wa.gov/business-wsdot/grants/public-transportation-grants