



COLORADO
Department of Transportation
Division of Transportation Development

Performance and Asset Management Branch
2829 W. Howard Place, 4th Floor
Denver, CO 80204-2305

MEMORANDUM

DATE: Jan. 20, 2021
TO: Transportation Commission
FROM: Herman Stockinger, Deputy Executive Director and OPR Director
Rebecca White, Division of Transportation Development Director (“DTD”)
Toby Manthey, Asset Management Analyst, DTD
SUBJECT: Adopting Policy Directive 1609.0 — “Transportation Asset Management”

Purpose

This memorandum summarizes a new policy directive that describes the structure, key functions and principles of the Transportation Asset Management (TAM) program at the Colorado Department of Transportation (“CDOT” or the “Department”).

Action

To pass a resolution adopting the New Policy Directive 1609.0 — “Transportation Asset Management”.

Background

CDOT’s TAM program, which has been developed in conjunction with the Transportation Commission (“Commission”), has lacked its own policy or procedural directives since formation in 2012. This policy directive was created to signal support for the program and to ensure that the program remains consistent and transparent by enshrining its principles, structure, and key functions into policy.

Details

PD 1609.0 provides a high-level description of CDOT’s TAM program, including key definitions, principles, requirements for asset classes, a list of the program’s asset classes, key program functions, and citations of related CDOT policy directives. The directive also describes federal asset management requirements and related federal legislation.

The directive begins with key definitions and a description of the purpose of asset management which is “to achieve and sustain a state of good repair for Department assets over their life cycles at a minimum practicable cost.”¹ The directive emphasizes the program’s importance in achieving CDOT’s mission.

¹ *This approach aligns with the purpose of asset management in 23 CFR 515.9.*

The TAM program maintains 12 asset classes (e.g., bridges, pavement, culverts). As noted in the directive, the addition or removal of an asset must be approved by the Commission. The directive lists the current assets in the program. In addition, the directive outlines the requirements for these classes. For example, classes must maintain an inventory, performance metrics, performance targets, an asset model to forecast condition, and more.

The directive continues by outlining key functions of the TAM program, including developing planning budgets and a four-year program of asset treatments (e.g., asset replacements, rehabilitations, preventive maintenance activities, etc.). The directive outlines a brief development and approval process for each of these functions. As noted in the directive, the Commission ultimately adopts the planning budgets for the assets by resolution.

The directive then cites other key policy directives that guide the TAM program:

- PD 14.0 contains a list of the primary performance metrics and targets for the 12 asset classes.
- PD 1905.0 includes direction on CDOT's risk and resiliency efforts, including as it pertains to asset management.
- PD 703.0 describes processes related to approving final asset management program budgets and budget changes to asset management projects.

Finally, the directive recognizes several federal requirements that the TAM program helps meet. CDOT must comply with the Federal Highway Administration's (FHWA) requirements for National Performance Metrics for pavement and bridge assets. This directive notes that the federal performance metrics and targets apply to Interstate and non-Interstate National Highway System (NHS) pavement, and to bridges on the NHS. The directive also lists requirements for Transportation Asset Management Plans as stated in 23 CFR § 515. CDOT's most recent plan was approved by FHWA in 2019.

Next Steps

Staff is developing a comprehensive companion procedural directive that describes the TAM program's practices and procedures in greater detail.

Staff will continue to execute the policies outlined in PD 1609.0 by developing planning budgets, developing and approving treatment lists, meeting federal requirements for transportation asset management programs, and otherwise maintaining the TAM program.

Attachments

- Attachment A: Policy Directive 1609.0 "Transportation Asset Management"
- Attachment B: Policy Directive 1609.0 Briefing Presentation

COLORADO DEPARTMENT OF TRANSPORTATION		<input checked="" type="checkbox"/> POLICY DIRECTIVE <input type="checkbox"/> PROCEDURAL DIRECTIVE
Subject Transportation Asset Management		1609.0
Effective	Supersedes New	Originating Office Division of Transportation Development/Transportation Asset Management Program

I. PURPOSE

The purpose of this policy directive is to describe the structure, key functions and principles of the Transportation Asset Management (TAM) program at the Colorado Department of Transportation (“CDOT” or the “Department”). The directive also defines key terms used in the program.

II. AUTHORITY

§ 43-1-106(8)(a), C.R.S. Colorado Transportation Commission (“Commission”)

23 CFR § 515, *Asset Management Plans*

23 CFR § 490, *National Performance Management Measures*

III. APPLICABILITY

This policy directive applies to all CDOT employees and to all Asset Classes within the TAM program.

IV. DEFINITIONS

“Asset” means a physical object that is part of CDOT’s infrastructure; for example, a road, bridge, culvert, tunnel, or wall.

“Asset Class” generally means a set of fixed assets having similar characteristics and attributes that differentiate them from other assets by kind, type, or function. There are twelve (12) asset classes in CDOT’s TAM program. “Asset class” can also refer to a program whose activities maintain other infrastructure (e.g., Geohazards or Maintenance Levels of Service).¹

“Asset Management” refers to a strategic and systematic process of operating, maintaining, upgrading, and replacing physical assets effectively throughout their life cycle. It focuses on business and engineering practices for resource allocation and utilization, with the objective of better decision making based upon quality information and well-defined objectives.²

“Planning Budget” refers to the budget levels planned for each asset in future years, before they become actual budgets. These levels are typically set four years in advance.

“Transportation Asset Management Cap (“TAM Cap”)” means the sum of the annual planning budgets for all assets in the TAM program.

“Transportation Asset Management Plan (“TAMP”)” refers to a document required by the Federal Highway Administration (“FHWA”) that includes asset performance measures, a financial plan, and other elements as described in federal law and regulation. The TAMP is designed to help improve or preserve the condition and performance of assets on the highway system.

“Transportation Asset Management (“TAM”) program” means a specific collection of CDOT asset programs that meet established criteria and help manage CDOT’s critical

¹ CDOT’s Maintenance Levels of Service (MLOS) program is considered an asset class due to the close relationship of maintenance activities and the condition of pavement, bridges and other assets. The program also helps fund the replacement of maintenance assets such as signs, striping, delineators and fencing. Similarly, the Geohazards program funds activities that protect other assets, such as pavement, while also maintaining geohazards assets such as rockfall fencing.

² This passage is based on a definition from the American Association of State Highway and Transportation Officials.

infrastructure assets. The program is coordinated by CDOT's Division of Transportation Development ("DTD"). Individual asset classes are managed by various work units throughout the Department.

V. POLICY

A. CDOT TAM Principles and Purpose

The purpose of asset management is "to achieve and sustain a state of good repair for Department assets over their life cycles at a minimum practicable cost."³ This approach assists CDOT in pursuing its mission by maintaining assets comprising the transportation system, ensuring the system is effective and safe.

The asset-management program focuses on maintenance, asset preservation and replacement. The program does not fund projects that increase the capacity of Colorado's transportation system.

B. Requirements for Asset Classes

Asset Classes in the TAM program must meet criteria including the following:

1. Each Asset Class must maintain an inventory of its assets.
2. Each Asset Class must maintain a performance metric (e.g., "Good," "Fair" and "Poor" condition ratings for bridges, or letter grades for buildings and rest areas.)
3. Each Asset Class must provide a target for their performance metric.
4. Each Asset Class must maintain an asset management system. These systems should have, at minimum, the ability to forecast condition; the ability to inform the selection of a performance target; and the ability to minimize the cost in achieving that performance target by recommending treatments or activities.
5. Each Asset Class must be able to distinguish annual maintenance activities, capital preservation, replacement activities, and expansion projects. Asset Classes should only fund annual maintenance, capital preservation and replacement activities.

C. Asset Classes in the TAM program:

The Commission has approved 12 Asset Classes in the TAM program and shall give final approval to the addition or removal of any Asset Class from the program. The 12 asset classes include:

³ This approach aligns with the purpose of asset management in 23 CFR 515.9.

1. Bridges
2. Buildings
3. Culverts
4. Geohazards
5. Intelligent Transportation Systems (“ITS”)
6. Maintenance Levels of Service (“MLOS”)
7. Pavement
8. Rest Areas
9. Road Equipment (Fleet)
10. Signals
11. Tunnels
12. Walls

D. Establishing TAM Planning Budgets and Approving Treatment Lists

Primary functions of the TAM program include establishing the following:

1. TAM Cap:
 - a. The total dollars dedicated to the TAM program for a given fiscal year. Typically set four years in advance.
2. Planning Budget:
 - a. The portion of the TAM Cap allocated for each Asset Class. Typically set four years in advance.
3. Treatment lists:
 - a. Each Asset Class in the TAM program, except for MLOS, develops an annual list of treatments (e.g., asset replacements or rehabilitations). Treatments are typically submitted four years in advance and ultimately become standalone projects or are bundled by staff into projects that may encompass multiple treatments.

Both the TAM Cap and the planning budgets are developed by staff and adopted by resolution of the Commission. Treatment lists are developed by staff and are approved by CDOT executive management. The TAM Cap, Planning Budgets, and treatment lists are typically set four years in advance to provide predictability to CDOT’s Transportation Regions and to construction stakeholders. Knowing the Planning Budgets four years in advance gives CDOT staff the time to plan, develop, and design projects, so that when the year arrives for construction funding to be allocated, projects are ready to be delivered.

The Commission supports CDOT's adherence to a procedural directive that outlines how the TAM Cap and the planning budgets are developed, and how treatment lists are approved and modified.

E. Asset Performance Metrics

1. The Commission has adopted PD 14.0 ("Policy Guiding Statewide Plan Goals & Objectives") to measure the success of the Department's efforts to improve in asset management and other goal areas. Performance targets for each Asset Class in the TAM program can be found in Appendix A of PD 14.0. The performance targets help implement the Statewide Transportation Plan by focusing transportation investments in the Statewide Transportation Improvement Program (STIP) and the annual budget.

F. Federal Asset Management Requirements

1. National Performance Measures for National Highway System ("NHS") pavement and bridge assets.

CDOT must comply with federal requirements (see 23 CFR § 490) to track and periodically report performance measures for NHS pavement and bridges and to periodically set targets for those measures. These metrics include:

- a. The percentage of Interstate pavements in good condition, and the percentage in poor condition.
- b. The percentage of non-Interstate NHS pavement in good condition, and the percentage in poor condition.
- c. The percentage of NHS bridge deck area in good condition, and the percentage in poor condition.

States not meeting minimum condition levels for the bridge metrics, and the pavement metrics for Interstates, face penalties regarding their use of federal transportation funds, such as National Highway Performance Program funds.

2. Transportation Asset Management Plan (TAMP).

CDOT must comply with federal requirements (see 23 CFR § 515) to produce a Transportation Asset Management Plan (TAMP) or face penalties regarding the Department's use of National Highway

Performance Program funds. The plan must include a summary listing of NHS pavement and bridge assets in Colorado, regardless of ownership. The plan must span at least 10 years and must include investment strategies, a financial plan, and other elements described in federal code. The Federal Highway Administration (FHWA) requires the plans to be updated at least every four years.

G. Risk Policy Directive

For a description of CDOT's approach to risk, including for asset management, see Policy Directive 1905.0—*Building Resilience into Transportation Infrastructure and Operations*.

H. Approving Final Asset Management Budgets and Project Changes

For processes related to approving final⁴ asset management program budgets and budget changes to asset management projects, see Policy Directive 703.0—*Annual Budget, Project Budgeting, and Cash Management Principles*.

VI. DOCUMENTS RELEVANT TO OR REFERENCED IN THIS POLICY DIRECTIVE

Policy Directive 14.0—*Policy Guiding Statewide Plan Goals & Objectives*

Policy Directive 703.0—*Annual Budget, Project Budgeting, and Cash Management Principles*

Policy Directive 1905.0—*Building Resilience into Transportation Infrastructure and Operations*

23 CFR § 515—*Asset Management Plans*

23 CFR § 490—*National Performance Management Measures*

VII. IMPLEMENTATION PLAN

This Policy Directive shall be effective upon signature.

⁴ "Planning" budgets for asset management programs are adopted by the Commission, as mentioned earlier in this directive (1906.0). Planning budgets do not become final budgets for those programs until approved by the Commission as part of CDOT's Annual Budget.

The Office of Policy and Government Relations shall post this Policy Directive on CDOT's intranet as well as on public announcements.

VII. REVIEW DATE

This directive shall be reviewed on or before January 2026.

Herman Stockinger
Transportation Commission Secretary

Date of Approval



COLORADO

Department of Transportation

Transportation Asset Management Policy Directive 1609.0

Rebecca White/Toby Manthey
Jan. 20, 2021



CDOT's TAM Program

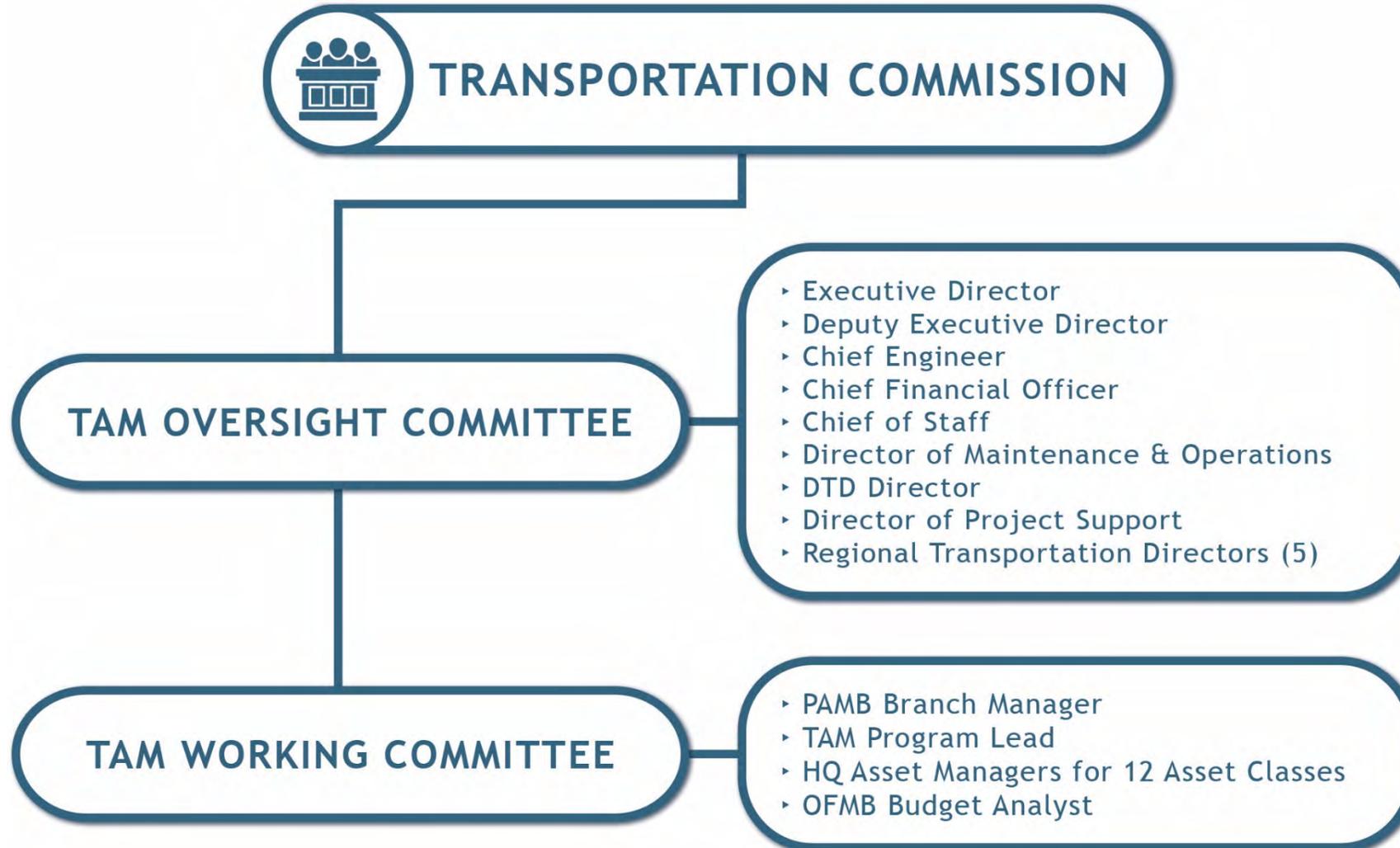
Transportation Asset Management (TAM) Program

- Created in 2012.
- Absorbed asset programs with dedicated annual funding allocation (e.g., pavement, bridge, maintenance, ITS) and combined with other classes that typically requested ad hoc funding from the Transportation Commission.

12 Asset Classes

- Pavement
- Bridges
- Maintenance
- Intelligent Transportation Systems (ITS)
- Road Equipment
- Buildings
- Culverts
- Tunnels
- Geohazards
- Walls
- Traffic Signals
- Rest Areas







Why a Policy Directive?

- Signifies support for program developed jointly by staff and TC, starting in 2012.
- Documents **existing** TAM program principles, structure and functions—not new program elements.
- Defines key terms.
- Recognizes federal asset management requirements (e.g., performance metrics, asset management plan, etc.)
- Links to other directives related to asset management.



- PD 1609.0 defines key terms for the TAM program:
 - Asset
 - Asset class
 - Planning budget
 - Transportation Asset Management Cap
 - Transportation Asset Management Plan (TAMP)
 - Transportation Asset Management (TAM) Program



Planning Budget

- Refers to the budget levels planned for each asset in future years, before actual budgets are approved. Planning budgets are typically set four years in advance.

TAM Cap

- The sum of the annual planning budgets for all assets in the TAM program. The total funding dedicated to the TAM program each year.





- Section A: CDOT TAM Principles and Purpose
 - The purpose of asset management is to achieve and sustain a state of good repair for Department assets over their life cycles at a minimum practicable cost.
- Section B lists requirements for asset classes
 - Each Asset Class must maintain an inventory.
 - Each Asset Class must maintain a performance metric (e.g., “Good,” “Fair” and “Poor” condition ratings for bridges.)
 - Each Asset Class must provide a performance target.
 - Each Asset Class must maintain an asset management system/model.
 - Each Asset Class must be able to distinguish annual maintenance activities, preservation activities, replacement projects, and expansion projects. Expansion projects are not funded through the TAM program.
- Section C lists asset classes in the TAM Program





TAM Budgets and Treatment Lists

- Primary functions of the TAM program include establishing:
 - TAM Cap
 - Planning Budget
 - Treatment lists:
 - Each Asset Class in the TAM program develops an annual treatment list. Treatments are typically submitted four years in advance and ultimately become standalone projects or are bundled by staff into projects that may encompass multiple treatments.





Federal Requirements and Performance Metrics

- CDOT must track and periodically report to FHWA performance measures for NHS pavement and bridges and to periodically set targets for those measures. These metrics include:
 - % Interstate pavement in good condition and poor condition.
 - % non-Interstate NHS pavement in good condition and poor condition.
 - % NHS bridge deck area in good condition and poor condition.





Transportation Asset Management Plan Summary

- CDOT must comply with federal requirements to produce a Transportation Asset Management Plan (TAMP)
 - Must include a summary listing of National Highway System (NHS) pavement and bridge assets in Colorado, regardless of ownership.
 - Must span at least 10 years and include investment strategies and a financial plan.
 - Must include a life-cycle analysis and a risk management analysis.
 - Updated at least every four years.
 - CDOT's plan approved in 2019.





Relevant Documents

- Policy Directive 14.0—Policy Guiding Statewide Plan Goals & Objectives.
- Policy Directive 1905.0—Building Resilience into Transportation Infrastructure and Operations
- Policy Directive 703.0—Annual Budget, Project Budgeting and Cash Management Principles
- 23 CFR § 515—Asset Management Plans
- 23 CFR § 490—National Performance Management Measures





- Adopt Policy Directive 1609.0
- Develop companion procedural directive to further document staff processes and procedures.





Questions?