COLORADO
Department of Transportation
Division of Transportation Development

**DATE:** February 17, 2016
**TO:** Transportation Commission
**FROM:** Debra Perkins-Smith, Director, Division of Transportation Development
William Johnson, Performance and Asset Management Branch Manager
**SUBJECT:** Asset Management Overview

Purpose
This memo provides an overview of Asset Management efforts at CDOT and sets the stage for more in-depth discussions in future months, ultimately preparing the Commission for approval of the FY20 asset management planning budget, thereby continuing the 4-year program of projects.

Action
Informational item. Provides information for future Transportation Commission action.

Background
CDOT works with Asset Managers in 11 asset areas: surface treatment, bridge, maintenance, property management, intelligent transportation systems (ITS), road equipment, tunnels, geohazards, traffic signals, culverts and walls. These 11 asset managers, along with DTD and OFMB, form the Transportation Asset Management (TAM) Working Committee, which meets monthly to share information. Each year this group meets with the RTDs and the Transportation Oversight Committee members in a workshop to develop a budget for the Asset Management program. The Transportation Commission then reviews this Staff Recommendation, which is ultimately finalized during the annual budget cycle.

Details
The workshop will include an overview of Asset Management efforts at CDOT, including the organizational structure and each assets' current performance measures and targets.

Next Steps
During the next two months Asset Managers will present their asset programs to the Commission. In May William Johnson will present the CDOT Staff Recommendation for the FY20 Asset Management Budget to the Transportation Commission for approval. Additionally, staff expect to have a discussion with the Transportation Commission in subsequent months to discuss progress on metrics identified in Policy Directive 14 to start the budget process for FY18.

Summary of Presentations:
February: Overview
March: MLOS, buildings, signals, ITS, road equipment and geohazards
April: Bridge, walls, culverts, pavement, and tunnels
May: FY20 Planning Budget

Attachments
Attachment A: Asset Management Overview Presentation

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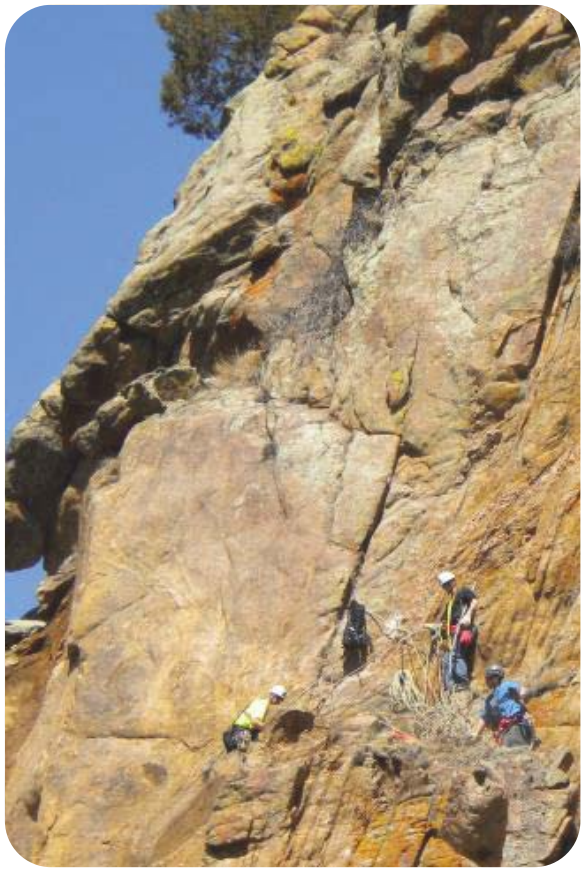


# Transportation Asset Management Overview
# February 17, 2016

# Transportation Commission Role

**Commissioner input is requested in these areas:**

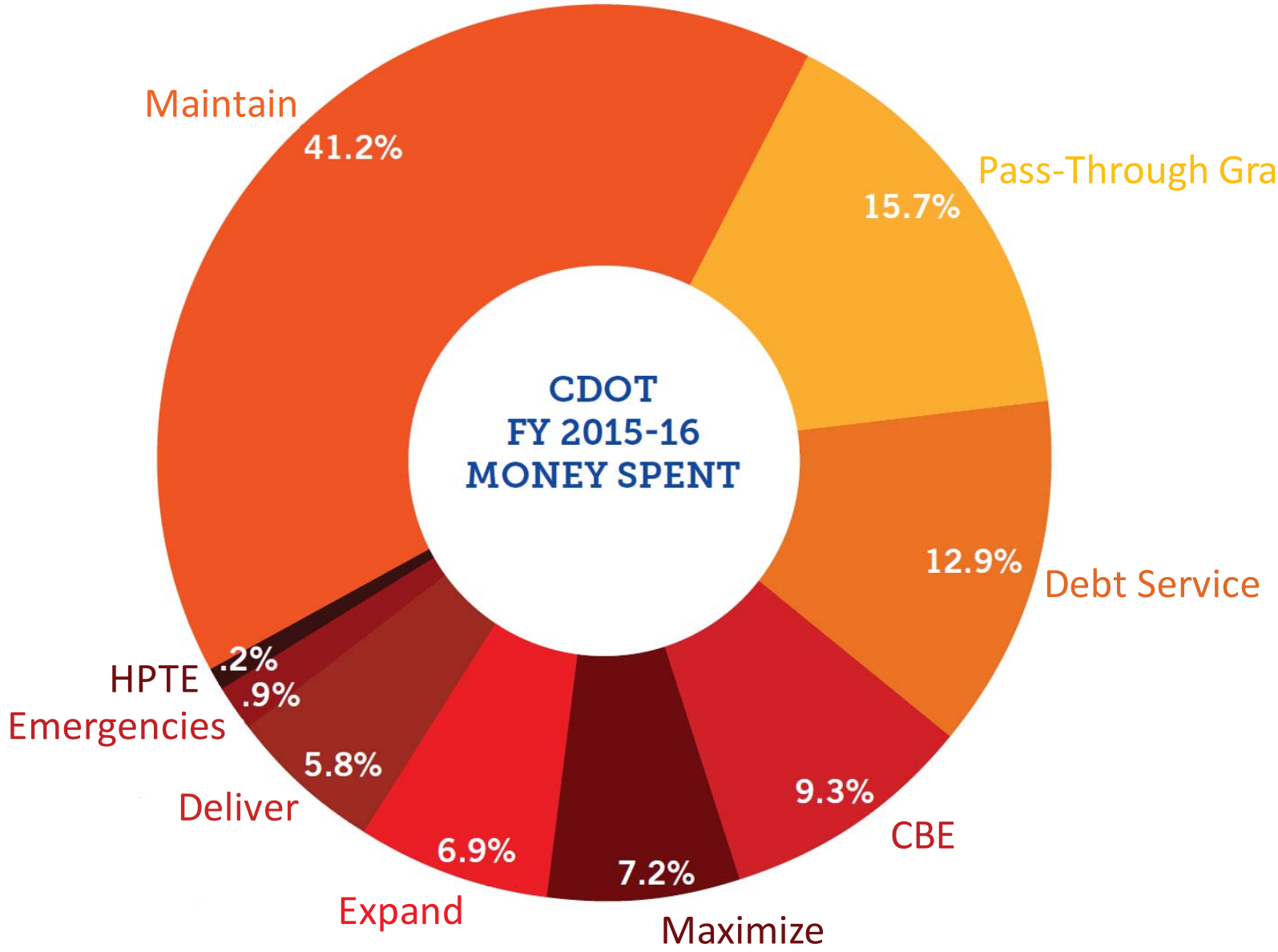
- Approve planning budgets for asset programs
- Approve targets for performance measures
- Adopt asset program budgets as part of budget setting process
- Provide input and direction to Asset Management Program
- Provide guidance via Policy Directive 14.0 (PD14)

# What is TAM?

*"Transportation Asset Management is a strategic and systematic process of operating, maintaining, upgrading and expanding 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."*

# Why Transportation Asset Management (TAM)?

# How much of CDOT's Budget is TAM?



# FAST Federal Requirements for Asset Mgmt.

Continues MAP-21 Asset Management Provisions:

Requires a Transportation Asset Management Plan (submitted to FHWA in 2014, waiting for Rules)

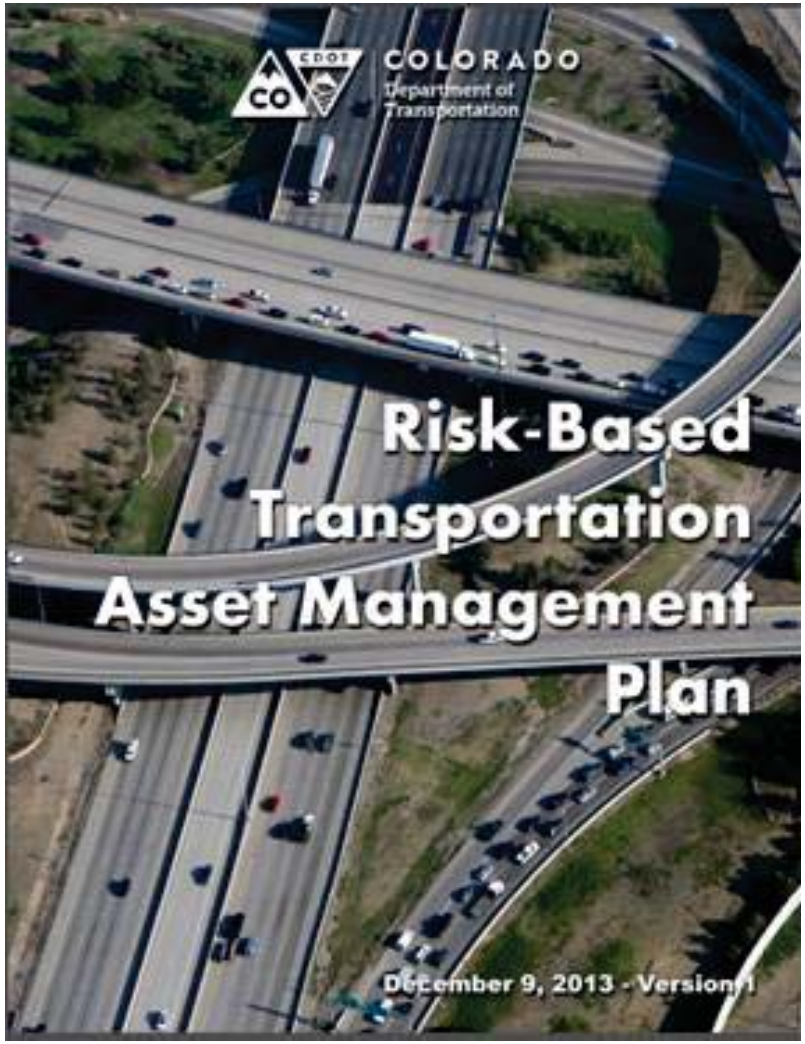
The plan must, at a minimum, include:

- a summary listing of the pavement and bridge assets on the National Highway System within the state, including a description of the condition of those assets;
- asset management objectives and measures;
- performance gap identification;
- lifecycle cost and risk management analysis;
- a 10-year financial plan; and
- investment strategies.

Requires performance goals for highways and bridges

*If a state fails to develop and implement a state asset management plan, that state's federal transportation funding will be reduced by 35 percent.*

# Risk-Based Asset Management Plan (RB-AMP)




## RB-AMP Content:

Executive Summary

1: Introduction

2: Value to Citizens

3: Asset Inventory and Condition

4: Asset Management Performance Measures and Targets

5: Current Asset Management Processes

6: Life-Cycle Cost Considerations

7: Incorporating Risk into the Asset Management Program

8: Financial Plan

9: Investment Strategies

10: Asset Management Gap Assessment

11: Asset Management Implementation Plan

12: RB AMP Governance

Appendices

**Assets Included:** Pavement, Structures, Culverts, MLOS, Buildings, ITS Equipment, Roadway Equipment, Tunnels, and Rockfall Mitigation Sites

http://coloradotransportationmatters.com/progress-made/your-cdot-dollar/asset-management/

## RB-AMP Updates

Addressed gaps identified in RB-AMP Gap Analysis including:

- Developed and documented project selection procedures for each asset
- Updated Risk Register with Mitigation Strategies and Costs
- Life Cycle Cost Analysis Recommendations for established assets
- Updated performance targets in Table 4.1 in conjunction with work in AIMS (Asset Investment Management System)

Currently:

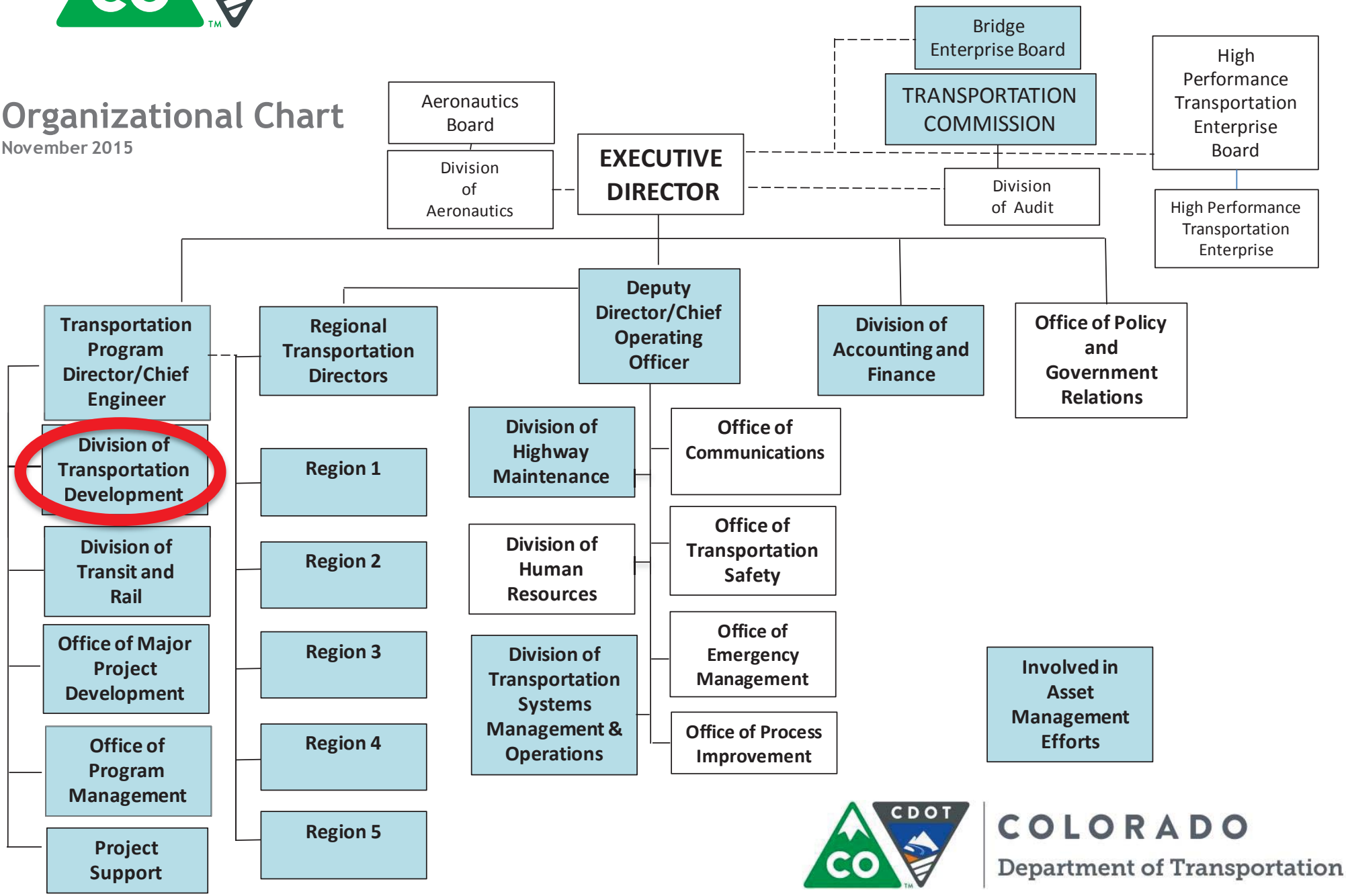
Awaiting rules and certification on Initial RB-AMP, while working on

- Asset Valuation Effort with OFMB
- Risk and Resiliency support

# CDOT Organizational Structure

## Organizational Chart

November 2015

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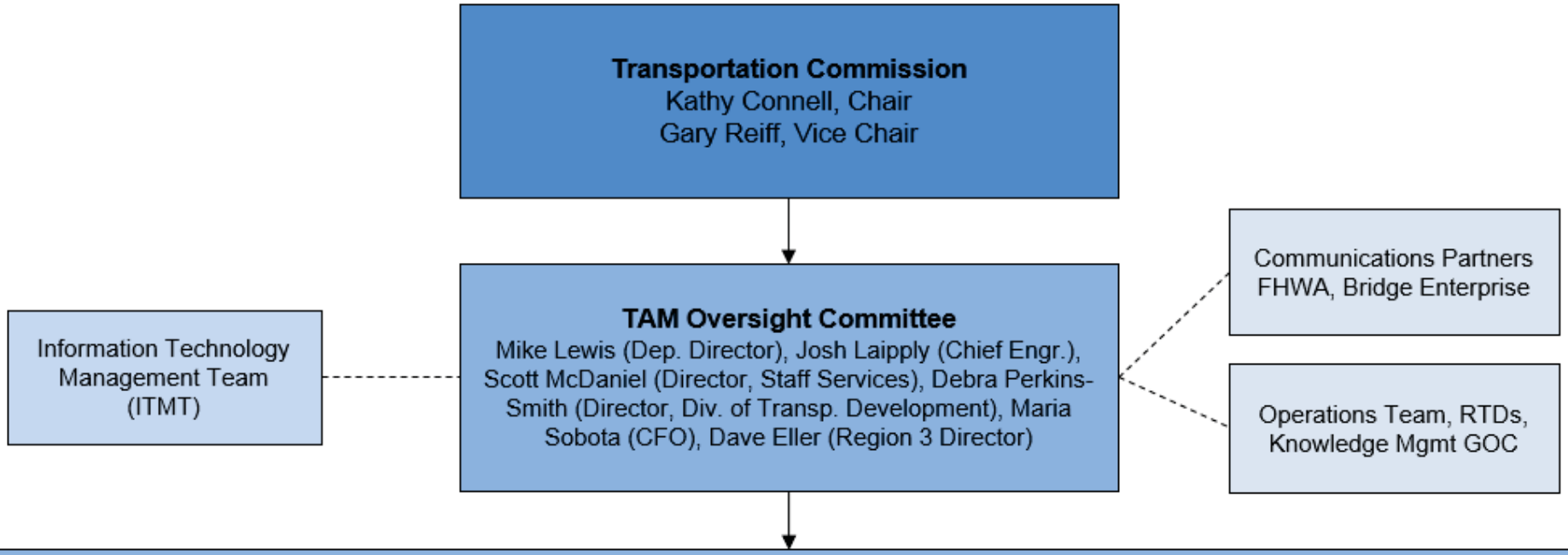
# TAM Organizational Structure




## TAM Working Committee

William Johnson, Comm. Chair, PAM Mgr.
JoAnn Mattson, Committee Vice Chair
Jeff Sudmeier, DTD Planning
Bob Haley, Chief Engineer's Office
Behrooz Far, Staff Bridge
Mike Collins, Staff Bridge
Brooke Podhajsky, Staff Bridge
Stephen Henry, Pavement
Bill Schiebel, Materials and Geotech

Al Martinez, Maintenance & Operations
Chris Volkert, Road Equipment
Hope Wright, Buildings
Rich Sembrat, ITS
Nitin Deshpande, Traffic Signals
Ty Ortiz, Geohazards
Tyler Weldon, Tunnels
Charles Meyer, Traffic
Director, Program Management Office

Andy Stratton, R1 Resident Engineer
Ajin Hu, R2 Program Engineer
Jason Ahrens, R2 Business Manager
Zane Znamenacek, R3 Traffic Engineer
Mike Goolsby, R3 Superintendent
Myron Hora, R4 Plng and Env. Manager
Mike McVaugh, R5 Trf and Safety Engr

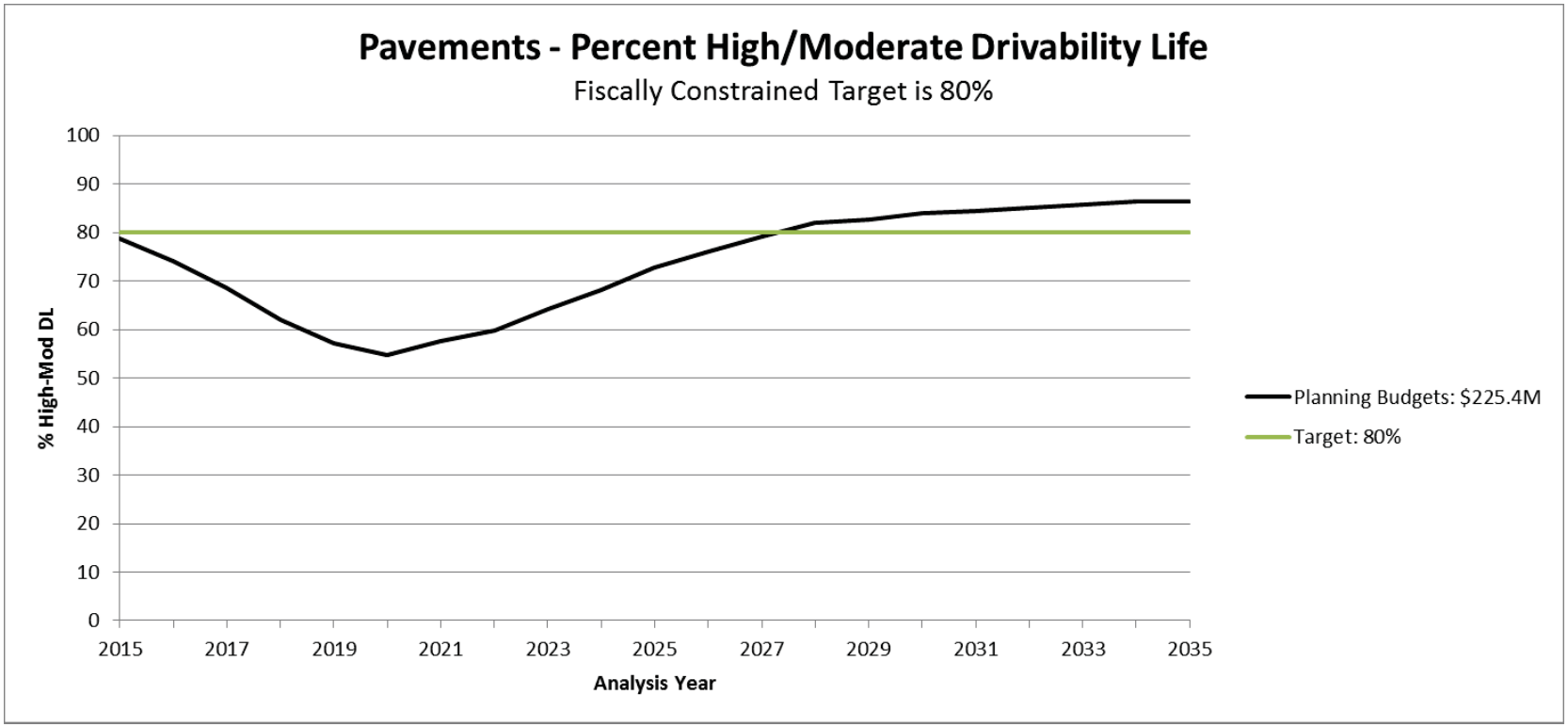
# Performance Metrics and Targets

**Table 4.1 CDOT RB-AMP Asset Management Metrics and Performance Targets: 1-14-16**

| Asset | Measure | Current Performance | Fiscally Constrained Target | Aspirational Target |
|---|---|---|---|---|
| Bridges | Percentage of deck area on structurally deficient CDOT-owned bridges | 5.4% | 10% [a] | 5% |
| | Percentage of deck area on structurally deficient bridges on the NHS | 5% | 10% [a] | 5% |
| | Percentage of CDOT-owned bridges over waterways that are scour critical | 7.1% | 5% | 1% |
| | Percentage of bridge crossings over Interstates, U.S. routes and Colorado state highways with a vertical clearance less than the statutory maximum vehicle height of 14 feet-6 inches | 0.4% | 0.4% | 0% |
| | Percentage of bridge crossings over Interstates, U.S. Routes and Colorado state highways with a vertical clearance less than the minimum design requirement of 16 feet-6 inches | 4.8% | 4.8% | 2% |
| | Percentage of CDOT-owned bridges posted for load | 0.1% | 0% | 0% |
| | Percentage of CDOT-owned bridges with a load restriction | 2.6% | 3% | 1% |
| | Percentage of leaking expansion joint by length on CDOT-owned bridges | 18.8% | 15% | 5% |
| | Percentage of CDOT-owned bridge deck area that is unsealed or otherwise unprotected | 31% | 30% | 5% |
| Pavement | Percentage high-moderate drivability life for Interstates based on condition standards and treatments set for traffic volume categories | 91% | 80% [a] | 90% |
| | Percentage high-moderate drivability life for CDOT-owned NHS, excluding Interstates based on condition standards and treatments set for traffic volume categories | 84% | 80% [a] | 90% |
| | Percentage high-moderate drivability life for the State highway system based on condition standards and treatments set for traffic volume categories | 79% | 80% [a] | 90% |
| Maintenance | Statewide Letter Grade | B- | B- [a] | B- |
| Buildings | Statewide Letter Grade | 80% C or Better | 90% C or Better | 100% C or Better |
| ITS | Average Percent Useful Life | 114% | 90% | 85% |
| Fleet | Average Percent Useful Life | 90% | 70% | 50% |
| Culverts [e] | Percent Culverts which are structurally deficient (have a culvert rating of 4 or less) | 4.4% | 5% | 3% |
| Geohazards | Percent of segments at or above risk grade C | 78% | 80% | 90%[b] |
| Tunnels | Percent of tunnels which have all classes that have Weighted Condition Indexes with a maximum of <=2.5 | 91% | 80% | 100% |
| Traffic Signals [c] | Percent intersections with at least one signal assembly beyond 100% Useful Life | 27% | 15% | 0% |
| Walls [d] | Percentage of CDOT-owned walls, by square foot, that are structurally deficient (have a Main Structure rating of 4 or less). | 4.8% | 1% | 0.5% |

# Surface Treatment

| FY15-FY19 Asset Management Planning Budgets (in millions) | | | | | |
|---|---|---|---|---|---|
| **Asset Class** | **FY15** | **FY16** | **FY17** | **FY18** | **FY19** |
| Surface Treatment | $235.2 | $235.9 | $242.1 | $231.4 | $225.4 |




**Metric Description:** Percentage high-moderate drivability life for all CDOT-owned highways, based on condition standards and treatments set for traffic volume categories.

**Current Performance:** 79%

**Fiscally Constrained Target:** 80%

# TAM Budget Setting Workshop

1. Demonstrate with a quantified performance measure the benefit of additional investment.

2. Establish a performance target.

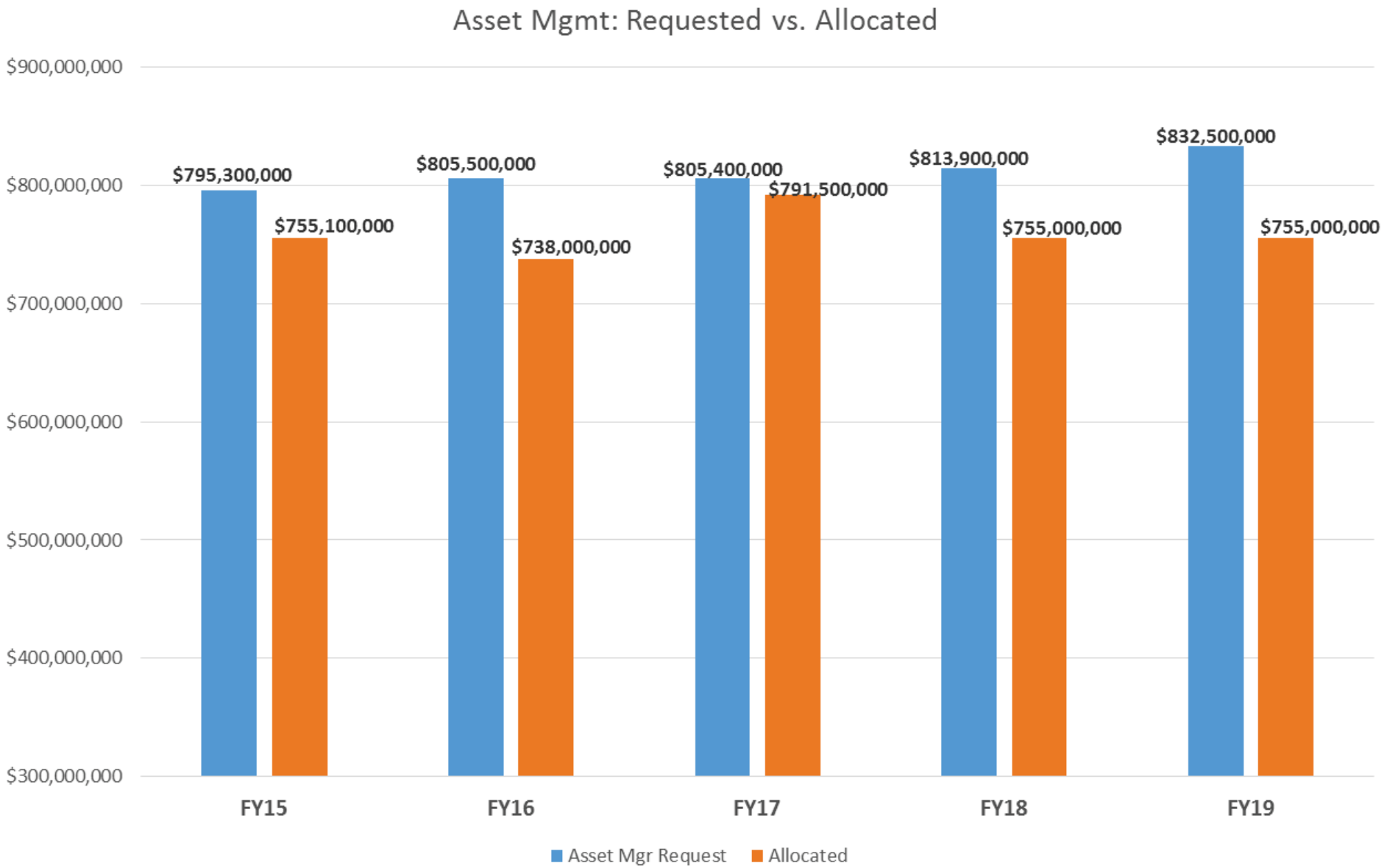
3. Fund only capital preservation and replacement with asset management funds.

4. Expend funding by the December following the fiscal year of allocation.

5. Demonstrate progress on previously funded projects through reporting percent of funds expended.

6. At least one slide in each assets' presentation should demonstrate the use of the Asset Investment Management System (AIMS) to show performance curves and need analysis.

# Past TAM Requests and Budgets



# Current TAM Planning Budgets

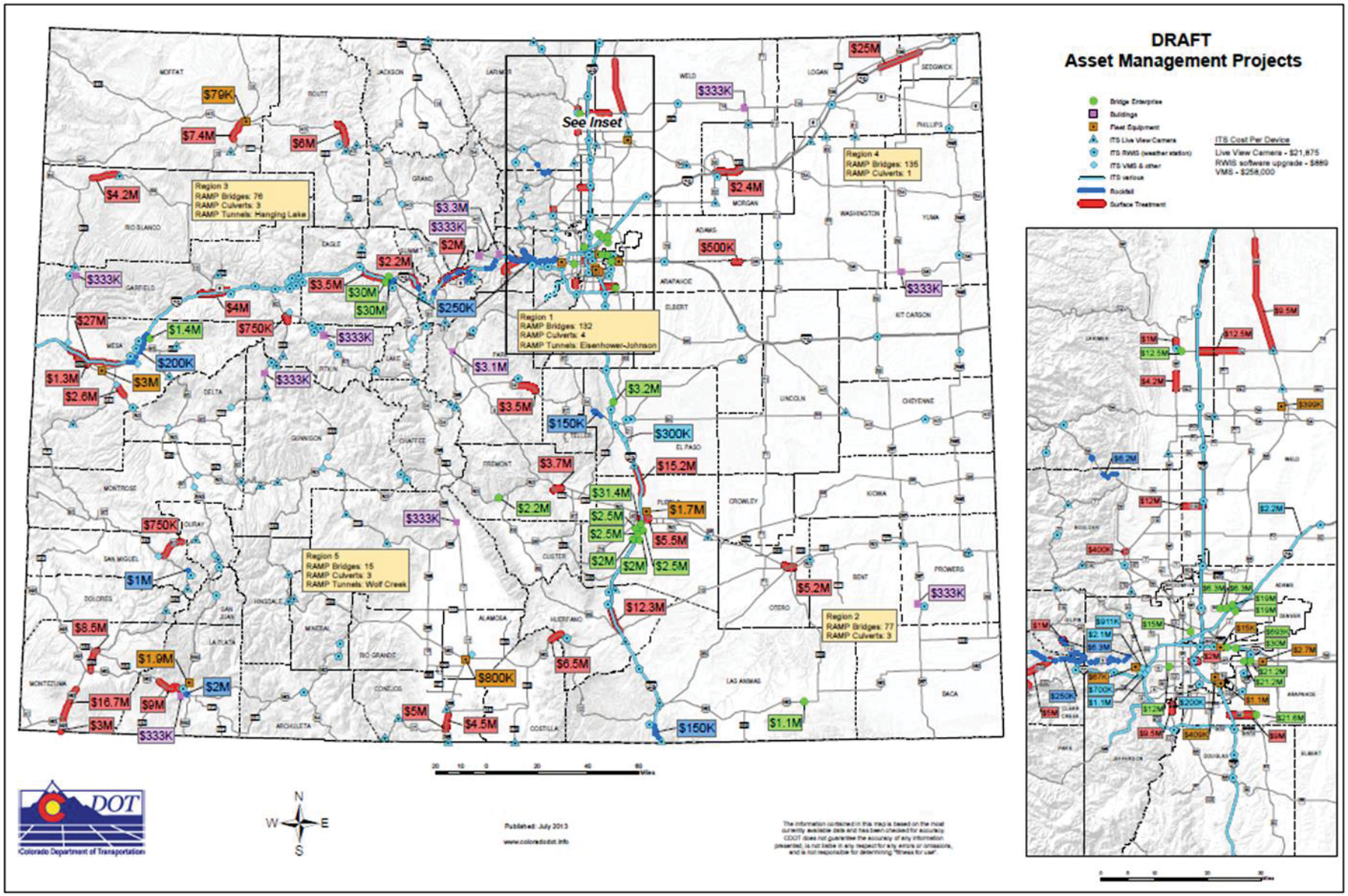
| FY15-FY19 Asset Management Planning Budgets (in millions) | | | | | |
|---|---|---|---|---|---|
| | Actual | | Proposed | | |
| **Asset Class** | **FY15** | **FY16** | **FY17** | **FY18** | **FY19** |
| Surface Treatment | $235.2 | $235.9 | $242.1 | $231.4 | $225.4 |
| Bridge, BE & Bridge Fixed Costs | $168.2 | $164.1 | $163.2 | $155.4 | $142.5 |
| MLOS | $251.3 | $254.4 | $262.6 | $263.5 | $272.8 |
| Road Equipment | $20.9 | $18.4 | $26.4 | $23.0 | $26.8 |
| ITS | $27.6 | $21.4 | $24.5 | $23.0 | $23.5 |
| Geohazards | $9.1 | $9.2 | $10.0 | $8.5 | $8.4 |
| Buildings | $20.8 | $12.9 | $21.4 | $17.5 | $20.2 |
| Tunnels | $12.4 | $5.2 | $7.6 | $6.4 | $8.4 |
| Culverts | $9.6 | $8.2 | $11.0 | $9.1 | $7.6 |
| Walls | $0.0 | $2.4 | $5.8 | $4.6 | $4.6 |
| Traffic Signals | $0.0 | $5.7 | $16.9 | $12.6 | $14.8 |
| **TOTAL** | **$755.1** | **$738.0** | **$791.5** | **$755.0** | **$755.0** |

# 4-Year Rolling Program of Projects

Benefits CDOT by:

1. Providing Regions with anticipated budget for planning projects
2. Providing public and potential contractors with understanding of expected projects on the horizon
3. Providing MPOs and TPRs with timetable for projects of interest

# Part of 4-Year Rolling Program of Projects



# Next Steps

**March:** MLOS, buildings, signals, ITS, road equipment & geohazards

**April:** Bridge, walls, culverts, pavement, and tunnels

**May:** FY20 Asset Management Planning Budget