

# Tiering Workshop



COLORADO TRANSPORTATION  
COMMISSION

December 14, 2011



# WHAT IS TIERING?

- Identification of various levels of priority for corridors or programs.
- Each tier has expressed targets or standards for condition and/or service level.
- Criteria for tiering relate to overall system goals and objectives.

# WHY TIER?

- To best allocate limited resources.
- To best address volatile revenues.
  - How to allocate sudden, one-time inflows (e.g. ARRA).
  - How to allocate when there are large fluctuations from year to year.
- To prioritize allocations.
  - How and when to shift priorities.
  - How to make prioritization and flexibility compatible.
- To define performance goals for the system.





## WHAT WE HEARD FROM THE COMMISSION IN NOVEMBER:

- Provide some level of equity.
  - Consider “fair share.”
- Provide flexibility.
- Maintain safety.
  - Allow RTDs discretion in identifying projects that maintain and promote safety.
- Establish consistent process.
- Establish a system that works for both urban and rural areas.

# WHAT'S HAPPENING IN OTHER STATES?

## – Example Tiering Criteria:

- Function
- Traffic Volume
- Truck Volume
- Multiple Modes
- Mobility
- Safety
- Population
- Employment
- Connectivity to “Activity Centers”
- Economic Development
- Freight Transport

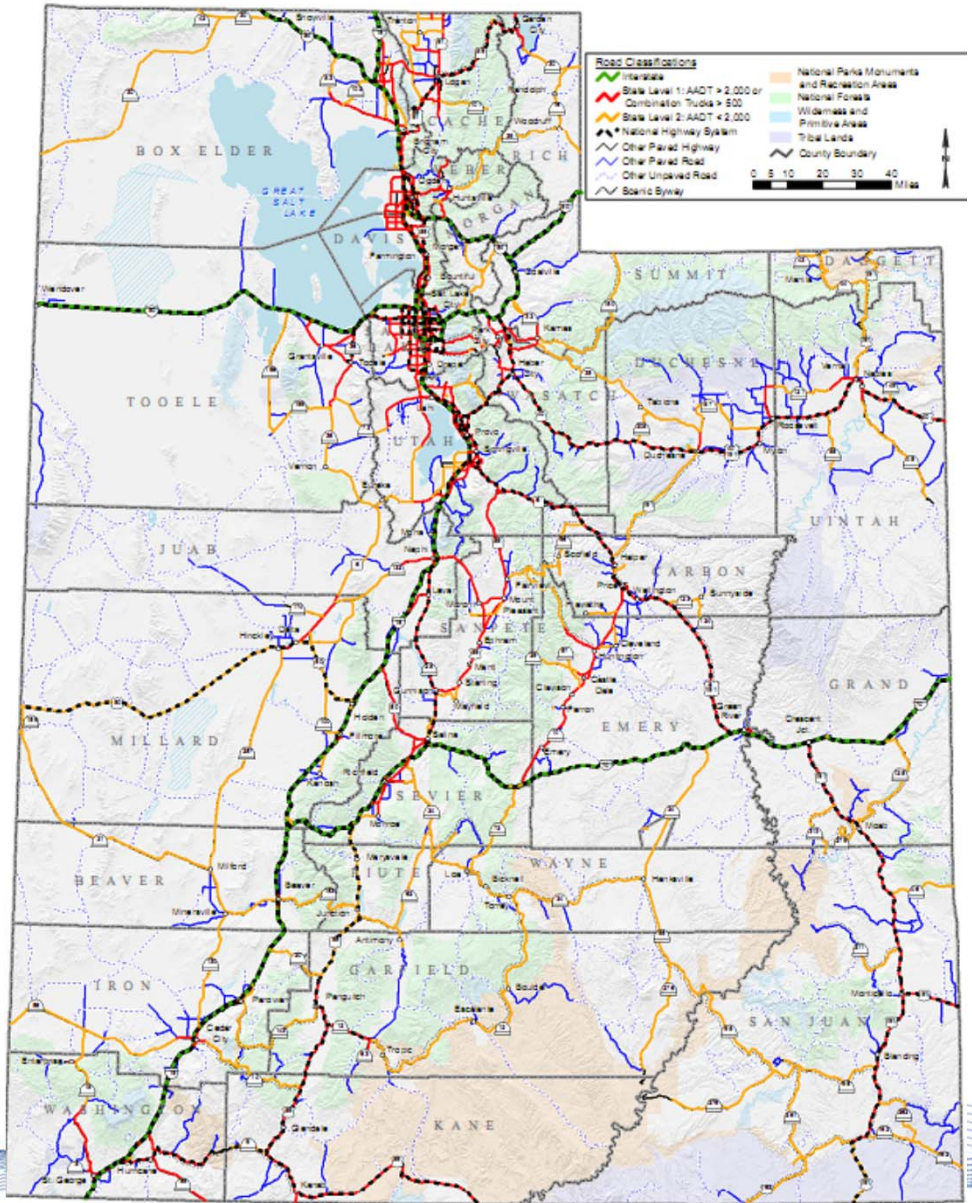


# UTAH

- **Goal:** Allocate limited resources to maintain pavement condition on the most heavily used parts of the system.
- **Structure:** 3 Maintenance Management Levels (MMLs)
  - Interstate
  - Level 1
  - Level 2
- **Tiering Criteria:** AADT and truck volume
- **Outcomes/Other Considerations:**
  - Maintain the overall condition index (OCI) of Interstate and Level 1 roads for the next ten years.
  - Provide, on average, one surface treatment for Level 2 roads within the same ten year time frame.
  - Limit maintenance of Level 2 routes to minor treatments such as pot-hole patching, crack sealing, lane leveling and chip seals.



State of Utah  
 UTAH DEPARTMENT OF TRANSPORTATION  
 Pavement Management  
 Strategic Direction



# MICHIGAN

- **Goal:** Identify strategic corridors for priority in project programming and funding.
- **Structure:** *11 Corridors of Highest Significance*
  - Corridors of International Significance
  - Corridors of National Significance
  - Corridors of State Significance
- **Tiering Criteria:** "Activity Center" approach - location and concentration of population, employment, tourism, transportation, and economic activity.
- **Outcomes/Other Considerations:**
  - Michigan's State Long-Range Transportation Plan articulates that priority in project programming and funding be given to the Corridors of Highest Significance.





# VIRGINIA

- **Goal:** Focus statewide investment on high priority multimodal projects within corridors.
- **Structure:** 11 Corridors of Statewide Significance (CoSS)
- **Tiering Criteria:** Corridors must meet all of the following criteria:
  - Multimodal – involve multiple modes or be an extended freight corridor.
  - Connectivity – connect regions, states, and/or major activity centers.
  - High Volume – involve a high volume of travel.
  - Function – provide a unique statewide function and/or address statewide goals.
- **Outcomes/Other Considerations:**
  - Legislation requires corridor designations and requires local governments to note the corridors on transportation maps and in comprehensive plans.



**Legend**

-  Airport
-  Railroad
-  Port
-  County Line
-  Southside Corridor (U.S. 58)
-  Seminole Corridor (U.S. 29)
-  Western Mountain Corridor (I-77)
-  Crescent Corridor (I-81)
-  Heartland Corridor (U.S. 460)
-  Tidewater Corridor (U.S. 17)
-  Eastern Shore Corridor (U.S. 13)
-  East-West Corridor (I-64)
-  Washington to North Carolina Corridor (I-95)
-  Northern Virginia Connector (I-66)
-  North Carolina to West Virginia Corridor (U.S. 220)



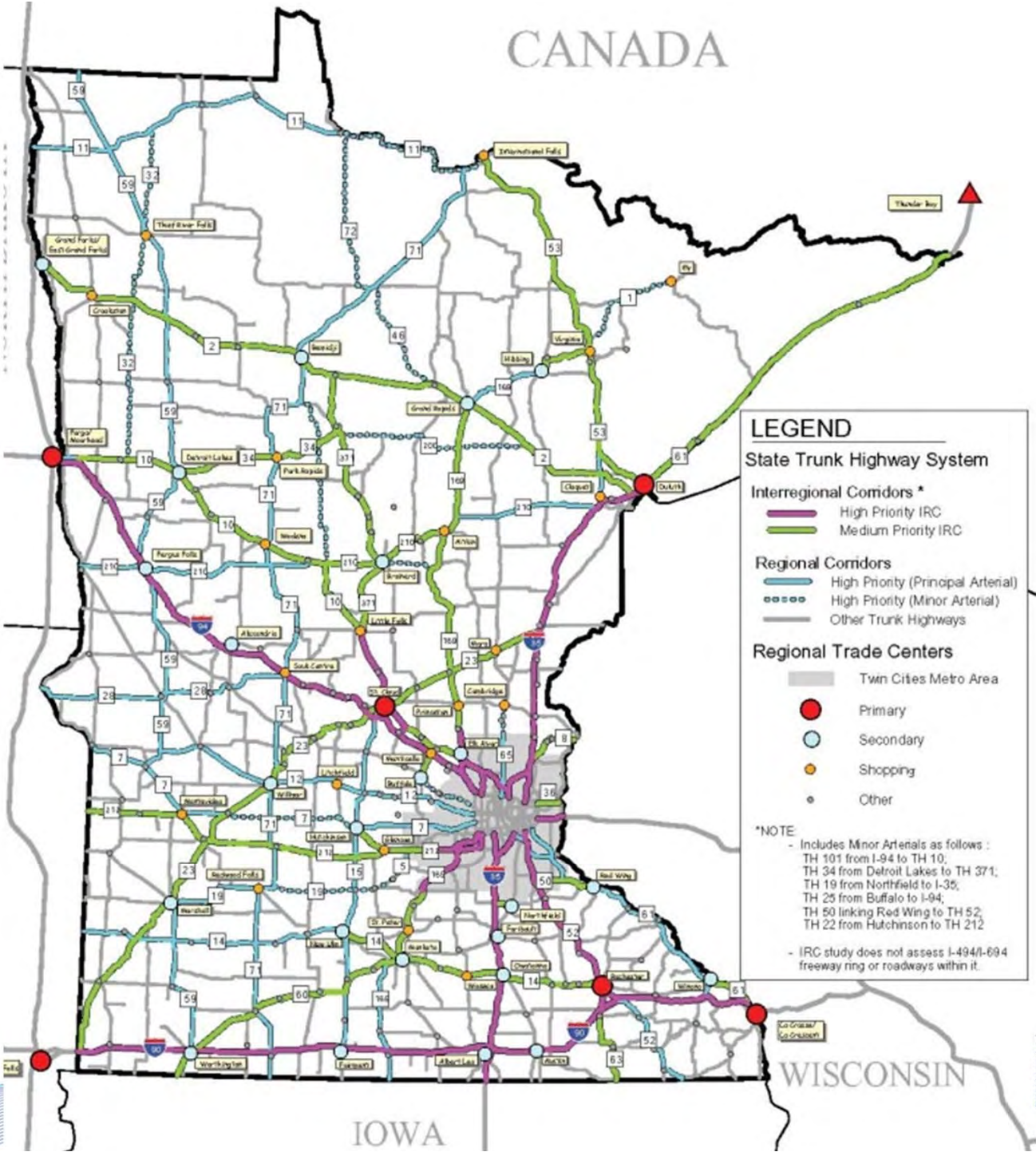


# MINNESOTA

- **Goal:** Identify important economic corridors; maintain safe, timely, efficient transportation between regional centers.
- **Structure: Interregional Corridor System**
  - High Priority Interregional Corridors (HPI)
  - Medium Priority Interregional Corridors (MPI)
  - High Priority Regional Corridors (HPR)
- **Tiering Criteria:** "Regional Trade Center" approach – multiple criteria, emphasis on population and economic activity.
- **Outcomes/Other Considerations:**
  - HPI – "free-flow" level of operation, min. 60 mph speeds
  - MPI – min. 55 mph speeds
  - HPR – min. 50 mph speeds (depending upon proximity to urban centers)



CANADA



**LEGEND**

**State Trunk Highway System**

**Interregional Corridors \***

- High Priority IRC
- Medium Priority IRC

**Regional Corridors**

- High Priority (Principal Arterial)
- High Priority (Minor Arterial)
- Other Trunk Highways

**Regional Trade Centers**

- Twin Cities Metro Area
- Primary
- Secondary
- Shopping
- Other

**\*NOTE:**

- Includes Minor Arterials as follows :  
 TH 101 from I-94 to TH 10;  
 TH 34 from Detroit Lakes to TH 371;  
 TH 19 from Northfield to I-35;  
 TH 25 from Buffalo to I-94;  
 TH 50 linking Red Wing to TH 52;  
 TH 22 from Hutchinson to TH 212
- IRC study does not assess I-494/I-694 freeway ring or roadways within it.

IOWA

WISCONSIN

# GEORGIA

- **Goal:** Project based- Prioritize investments in mobility and freight capacity according to project type and funding level.
- **Structure:** 3 Investment Tiers
  - Address today's "burning platform" (most critical projects).
  - Enable and support economic growth engines.
  - Transform Georgia's transportation network.
- **Tiering Criteria:** cost-effectiveness of projects/programs to achieve desired outcomes
- **Outcomes/Other Considerations:**
  - Used as a planning tool and included in GDOT's Statewide Strategic Plan 2010-2030.



			Level 1: Existing funds, no direct fees (\$12-19B <sup>1</sup> avail.)	Level 2: Existing funds with direct fees (\$20-29B <sup>1</sup> avail.)	Level 3: Burning platform and econ. growth (\$57B <sup>1</sup> avail.)	Level 4: Transform GA's transp. network (\$63B <sup>1</sup> avail.)	
Address today's burning platform	People mobility: Metro Atlanta	▪ HOT lanes					
		– Base network (~240 miles)		✓	✓	✓	
		– Full network (add'l 120 miles)				✓	✓
		▪ BRT/Express			✓	✓	✓
		▪ Arterials					
		– Suburban network (~1500 miles)	✓				
		– Base central network (~300 miles)		✓	✓	✓	✓
		– Full central network (add'l 200 miles)				✓	✓
		▪ Core transit system					
		– Reduced operations (70% of current)	✓	✓			
– Full (100%) operations				✓	✓		
People mobility: Rest of State	▪ Base network (~\$7B)	✓	✓	✓	✓	✓	
	▪ Full network (add'l \$7B)				✓	✓	
Freight transport	▪ Savannah port last-mile	✓	✓	✓	✓	✓	
	▪ Interstate interchanges	✓	✓	✓	✓	✓	
Enable and support economic growth engines	People mobility: Metro Atlanta	▪ Streetcars and "short trip" transit					
		– Beltline		✓	✓	✓	
		– Other streetcars/ premium circulators				✓	✓
	Freight transport	▪ NW bypass				✓	✓
		▪ Rail improvements				✓	✓
	▪ Intermodal/GRIP connectivity				✓	✓	
Transform Georgia's transportation network	People mobility: Metro Atlanta	▪ MARTA extensions				✓	
		▪ "Long distance" commuter and light rail				✓	
		▪ "Big ticket" projects					✓

<sup>1</sup> In 2008 dollars through 2030; available resources allocated towards CapEx and O&M costs; O&M costs through 2040 add an additional \$1B to Level 3 and \$2B to Level 4

SOURCE: Kimley-Horn; team analysis

# HOW MIGHT AUTHORIZATION AFFECT TIERING?

- MAP-21 approved by the Senate Environment and Public Works Committee on November 9.
- Includes provisions relating to asset management and performance measures:
  - Requires State NHS Asset Management Plans.
  - Establishes outcome-driven approach that tracks performance and holds states and MPOs accountable.
  - Requires establishment of performance targets by the States, and by the MPOs in coordination with the states.
  - Includes performance based requirements for both Statewide and MPO Transportation Plans.



## HOW MIGHT AUTHORIZATION AFFECT TIERING?

- MAP-21 requires 50% of federal funds be spent on Interstate, NHS and Bridges.
- CDOT needs to consider the compatibility of tiering with potential federal requirements.
- MAP-21 requires establishment of data needs, minimum standards, performance measures, and State targets for pavement condition, bridge condition and performance of:
  - Interstates
  - Non-Interstate NHS

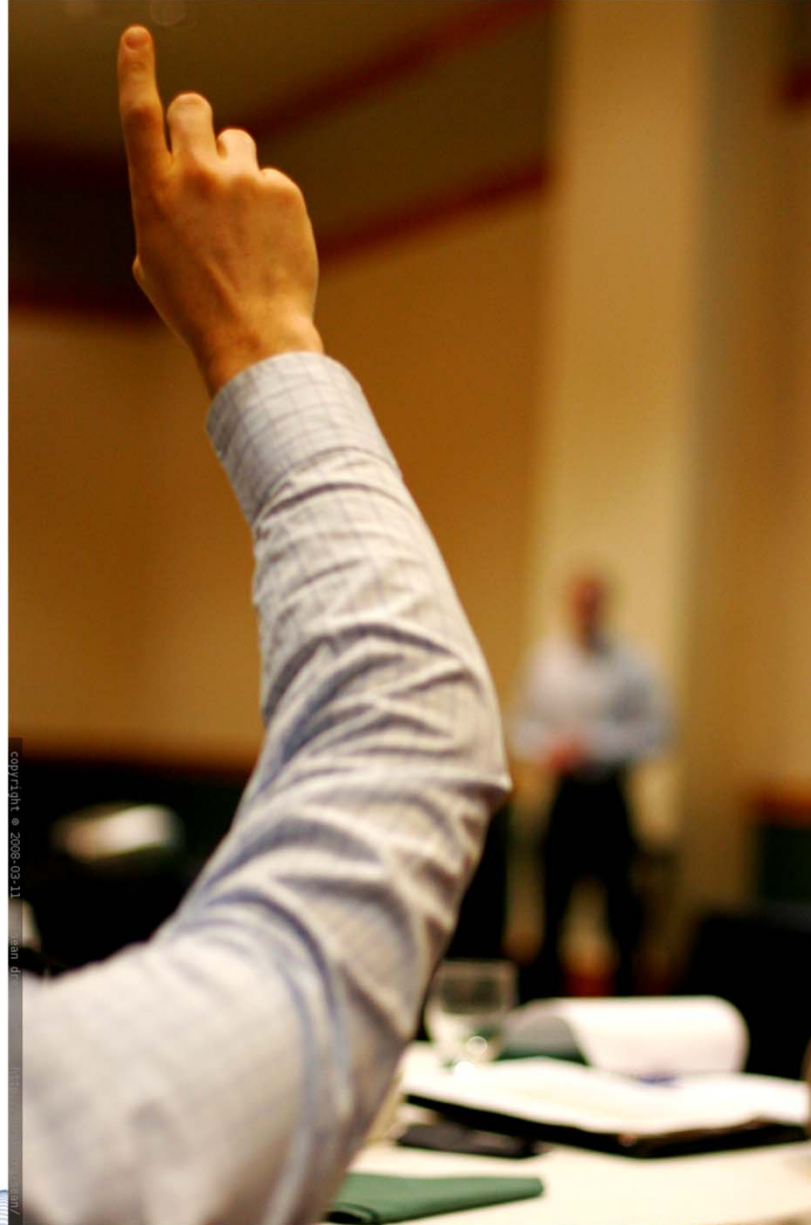


# WHAT ARE OUR GOALS FOR TIERING?

## Potential Goals

- To establish priority levels for corridors or programs
- To allocate funds to corridors or programs in order of priority
- To identify distinct performance goals for condition or level of service by tier
- For system preservation only
- For both system preservation and improvement projects
- Others?

# QUESTIONS



# Transportation Commission

## Workshop on Tiering

### Session II – Where We Are Today

January 18, 2012

Presented by:  
Scott McDaniel



# History of Tiering at CDOT

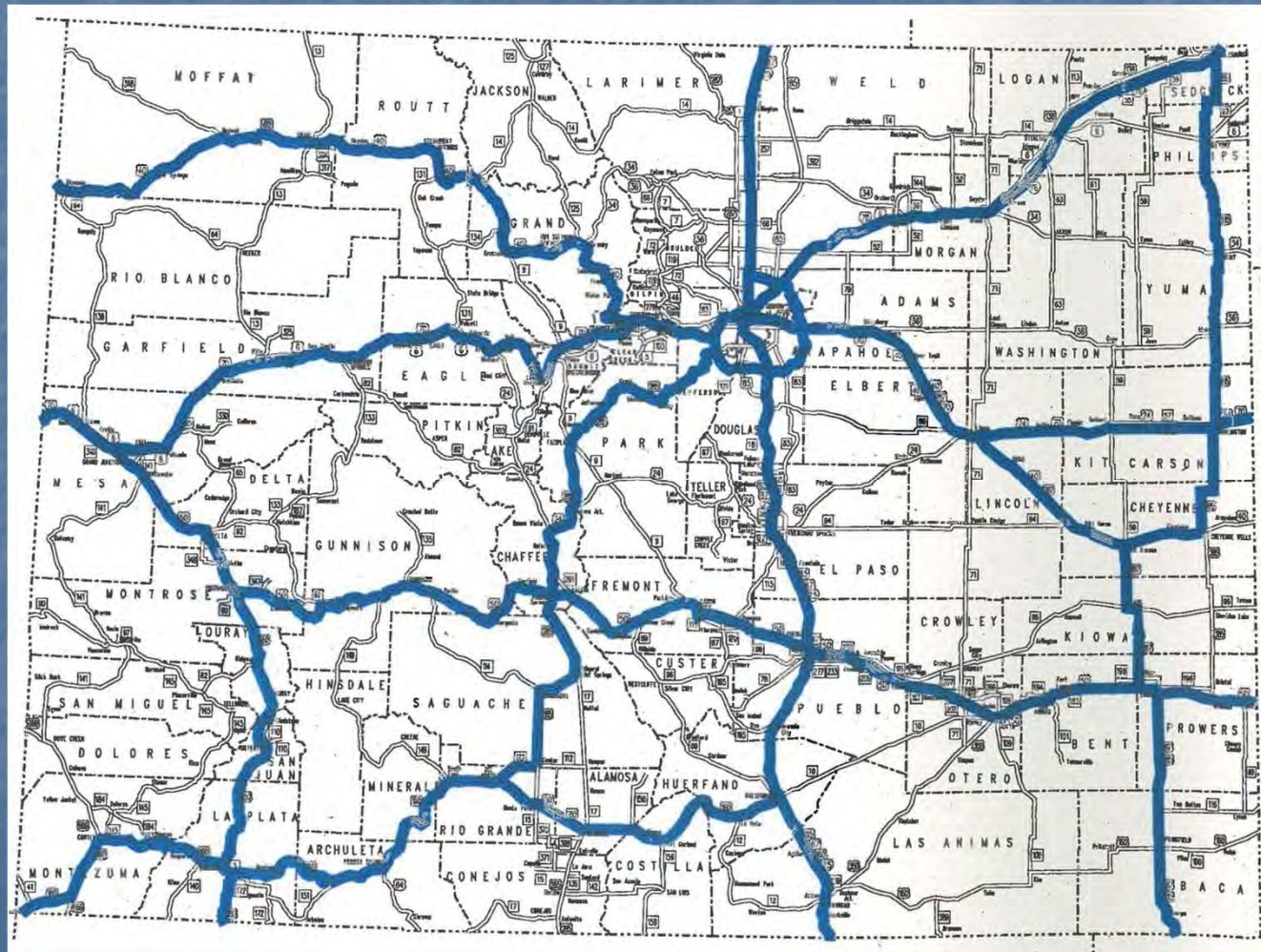
- 1996 - Established the Statewide Significant Corridors for the 2015 Long Range Statewide Plan
- 2001 - CDOT commissioned the "Tiering Transportation System Steering Committee"
- 2004 – "Tiering The State Highway System" Research Project
- 2008 – Transportation Commission Refresher on "Tiering"
- Today – Pipeline Project

# Statewide Significant Corridors

- Based on multiple criteria such as:
  - Functional class
  - Traffic volume
  - Freight volume (truck/rail)
  - Congestion
  - Condition
  - Population/Employment
  - Connectivity
  - Economic Development



# Statewide Significant Corridors Map





# Today's Workshop

- Review of current CDOT practices regarding tiering
- Potential approaches for tiering
- Discussion of scenarios for further development

# Facility Size and Distribution of Dollars

	Interstate	NHS(non-Int)	Other
Percent of Network (lane miles)	19.0%	29.0%	52.0%
Percent of Vehicle Miles Traveled	45.0%	35.0%	20.0%
Actual Distribution of Dollars	36.6%	36.4%	27.0%



# Current Practices Naturally Result in Tiering

- Practical Design
- Pavement Management System
- Bridge Program
- Maintenance and Operations



# Practical Design for CDOT

- Was originally pursued as a cost saving measure
- Emphasize the concept of developing and defining projects in context of a corridor
- Construction of just what is necessary to address safety and transportation need

# Pavement Management

- Tier Based On:
  - Pavement Management Model – AADT
  - Practical Design Guide – AADT and Truck Traffic
- Result: Higher Volume Roads Receive the most Attention.....Lower Volume Roads Receive Less



# Practical Design Guide Pavement Management

- Category I Pavements – New Construction and reconstruction projects follow current version of the Pavement Design Manual (PDM).
- Category II Pavements – Surface treatment projects where focus is maintaining existing functionality



# Facility Size and Distribution

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Percent of Vehicle Miles Traveled	45.0%	35.0%	20.0%
Actual Distribution of Dollars	36.6%	36.4%	27.0%
Distribution of Pavement Management Dollars	18.5%	39.8%	41.7%

# Bridge Program

- Replacement & Major Rehabilitation
  - \$8.6 M FY12 exclusive of Bridge Enterprise.
  - Importance of route is included in sufficiency rating.
- Essential Repairs
  - \$8.1 M FY12
  - Safety critical work. Tiering is not used.
- Preventative Maintenance
  - \$4.1 M FY12
  - Prioritized based on cost benefit. Could be further prioritized based on tiering.
- Scour Critical Plans of Action
  - \$3 M Study
  - Bridges are prioritized by ADT.



# Condition of Tiers

Based on Deck Area

Tiers	Good	Fair	Poor	Total
Interstate	85.5%	10.5%	4.0%	100.0%
Non-Interstate NHS	88.1%	7.7%	4.2%	100.0%
Other State Highways	86.2%	10.6%	3.1%	100.0%

- Result: Focus based on Safety Critical Elements, not Tier Based.

# Maintenance Program

- Tier Based On:
  - 85% of Preventative Maintenance funds go to Interstate and Non-Interstate NHS.
  - Approximately 50% Maintenance (MLOS) Surface Treatment Resources are allocated to Interstate and Non-Interstate NHS.
  - CDOT Maintenance performs a significant amount of Preventative and Reactive Maintenance on Poor or RSL=0 Roadways to maintain an acceptable LOS.
  - Maintenance bases all of its budgets and planned labor days around the Maintenance Program Area (MPA).
- Result: Interstate and Non-Interstate NHS roadways receive the most attention.....lower volume roadways receive less.



# Snow Removal

- Tier Based On:
  - AADT
  - Functional Classification
- Result: Interstate and Non-Interstate NHS roadways receive the most attention.....lower volume roadways receive less.

# What Tiering Could Look Like

- Tier on Statewide bases
- Tier per Regional Allocation
- Tier by Functional Classification
- Tier by AADT
- Tier by Significant Corridors