Transportation Asset Management Webinar Series

Webinar 5: Asset Management and Performance-Based Planning

Sponsored by FHWA and AASHTO

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Please do not put your phone on hold.

U.S. Department of Transportation
Federal Highway Administration

AASHTO
The Voice of Transportation

Webinar 5 — July 10, 2013

FHWA-AASHTO Asset Management Webinar Series

- Sharing of knowledge is a critical component of advancing asset management practice

- This is the fifth of a 12-part webinar series that will run over a two year period

- Webinars will be held every two months with topics such as asset management plans, AM data needs, etc.

- Welcome ideas for future webinar topics and presentations

- Submit questions using the webinar's Q&A feature

- Next webinar: **Addressing Preservation and Maintenance in Asset Management Plans – September 18, 2013 2:00 EST**

Welcome

- FHWA is pleased to sponsor this webinar series on Asset Management and Performance-based Planning, in cooperation with the AASHTO Sub-Committee on Asset Management

- FHWA's Office of Asset Management is working closely with the Office of Planning to collaborate on the integration of asset management and planning

- There is a close relationship between AM and performance-based planning
  - The planning process is integrated throughout the entire asset management process as a strategic connector to decision-making throughout an agency's priority setting and resource allocation process.

AM and Performance-Based Planning Overview

- MAP-21 requires states to develop a transportation asset management plan (TAMP) for pavement and bridge assets on the expanded National Highway System (NHS)
  - State DOTs and MPOs will need to work together since some NHS roads are managed by local agencies
  - Understanding both state and local perspectives is important to develop a TAMP
- There are many benefits of tying planning and programming decisions to asset management goals and objectives
  - Having asset management well integrated into a performance-based planning process is an important ingredient in the value a transportation agency gets from asset management.
  - We'll be hearing more on this topic today

AM and Performance-Based Planning Overview

- Recently, progress has been made in improving the integration of AM and performance-based planning.
- FHWA Office of Planning has focused on improving performance-based planning practices in transportation agencies including:
  - Identifying performance measures that support policies, goals, & objectives.
  - Understanding the role of performance measures and performance-based thinking during the planning process.
  - Knowing what data resources are needed to support better decision-making.
- Important issues to address include:
  - Optimal resource allocation strategy for AM versus other funding needs
  - Growing importance of preservation and maintenance of assets.
  - Addressing the importance of asset management and safety relationships.
- Visit the FHWA Office of Planning and the Office of Asset Management websites for more resources.

Framework for PBPP

PLANNING

Strategic Direction
Where do we want to go?

Goals and Objectives

Performance Measures

Analysis
How are we going to get there?

Identify Trends and Targets

Identify Strategies and Analyze Alternatives

Develop Investment Priorities

PUBLIC INVOLVEMENT

DATA

Investment Plan

Resource Allocation

Program of Projects

Programming
What will it take?

Monitoring

Evaluation

Reporting

Implementation and Evaluation
How did we do?

PERFORMANCED-BASED PLANNING AND PROGRAMMING

From draft FHWA Performance-Based Planning and Programming Guidebook

Webinar Overview

- Today presentation includes three perspectives on asset management and performance-based planning.

- Presenters will discuss their agencies' efforts to integrate asset management and performance-based planning

- Presentations will address specific challenges, success factors, and key benefits obtained and will highlight successful approaches for strengthening the relationship between asset management and performance-based planning

- Together, we will explore the strategic and operational benefits that State DOTs are achieving by tying planning and programming decisions to asset management goals and objectives.

Learning Objectives

- Building working knowledge of key concepts and definitions in the areas of asset management and performance-based planning

- Understanding specific approaches to integrating asset management and performance-based planning

- Applying this knowledge to begin to answer the following questions:
  - What steps can your agency take to better connect components of asset management and performance-based planning?
  - What are the benefits that your DOT can expect from tying planning and programming to asset management goals and objectives?

- **SHARE LESSONS LEARNED, IDEAS, KNOWLEDGE!!!**

Webinar Agenda

2:00 **Webinar introduction and overview**
Matt Hardy (AASHTO) Steve Gaj and Harlan Miller (FHWA) and Hyun-A Park (Spy Pond Partners, LLC)

2:15 **Performance-Based Planning in a Round Transportation World**
Keith Damron (Kentucky Transportation Cabinet)

2:40 **The 2040 Plan for Southeast Michigan**
Tom Bruff (Southeast Michigan Council of Governments)

3:10 **Q&A and wrap up**

$1 Billion

Construction Letting Annually

Public Roads in Kentucky

79,321 Miles

State Maintained Roads

Over 27,616 Miles

The Transportation World Was Seen As Flat

6 YR HIGHWAY PLAN

PLANNING

Conceptual Design & Environmental Analysis

Final DESIGN

Right of Way & Utilities

CONSTRUCTION

OPERATIONS
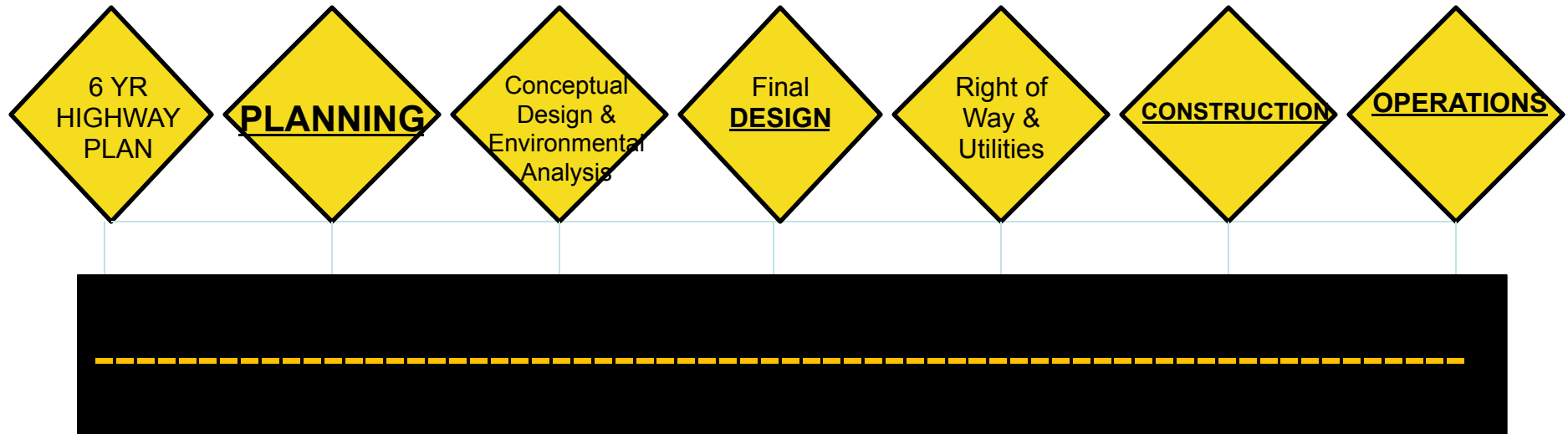
Kentucky's
Previous Linear
Process

Asset Management
Should lead
Decision Making
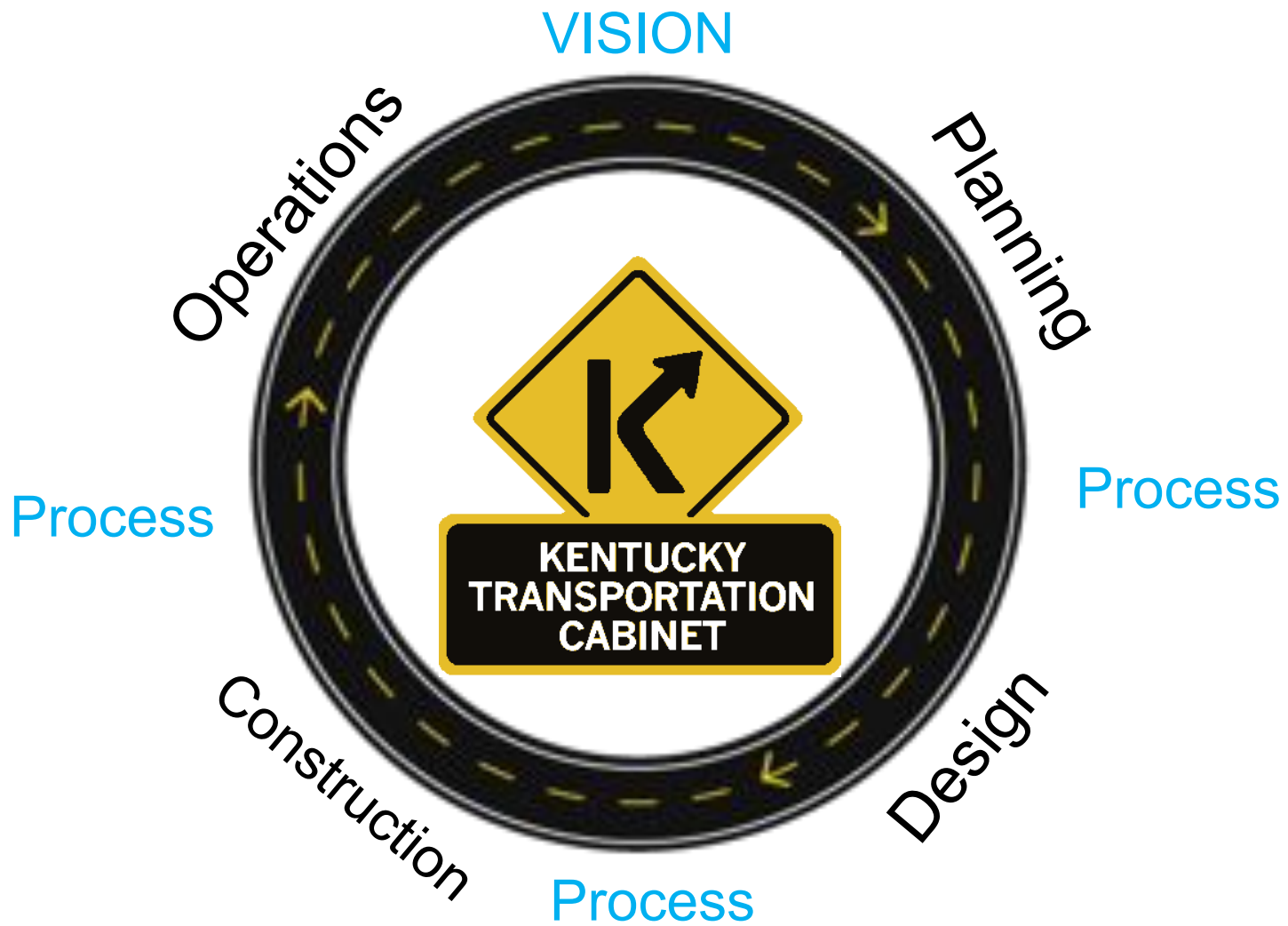
The Transportation World is Round

TRANSPORTATION ASSET MANAGEMENT CHALLENGE

KYTC Secretary Mike Hancock

1 KYTC Definition – Use data to define needs.

2 Prioritize & Rank Needs based on quality information and well-defined objectives.

3 Make better decisions about resource allocation and utilization.

Maintenance Asset Management Focus Areas

Initial Focus
- Pavements
- Bridges

Under Development
- Signs
- Pipes/Culverts

Future Plans
- Guardrail
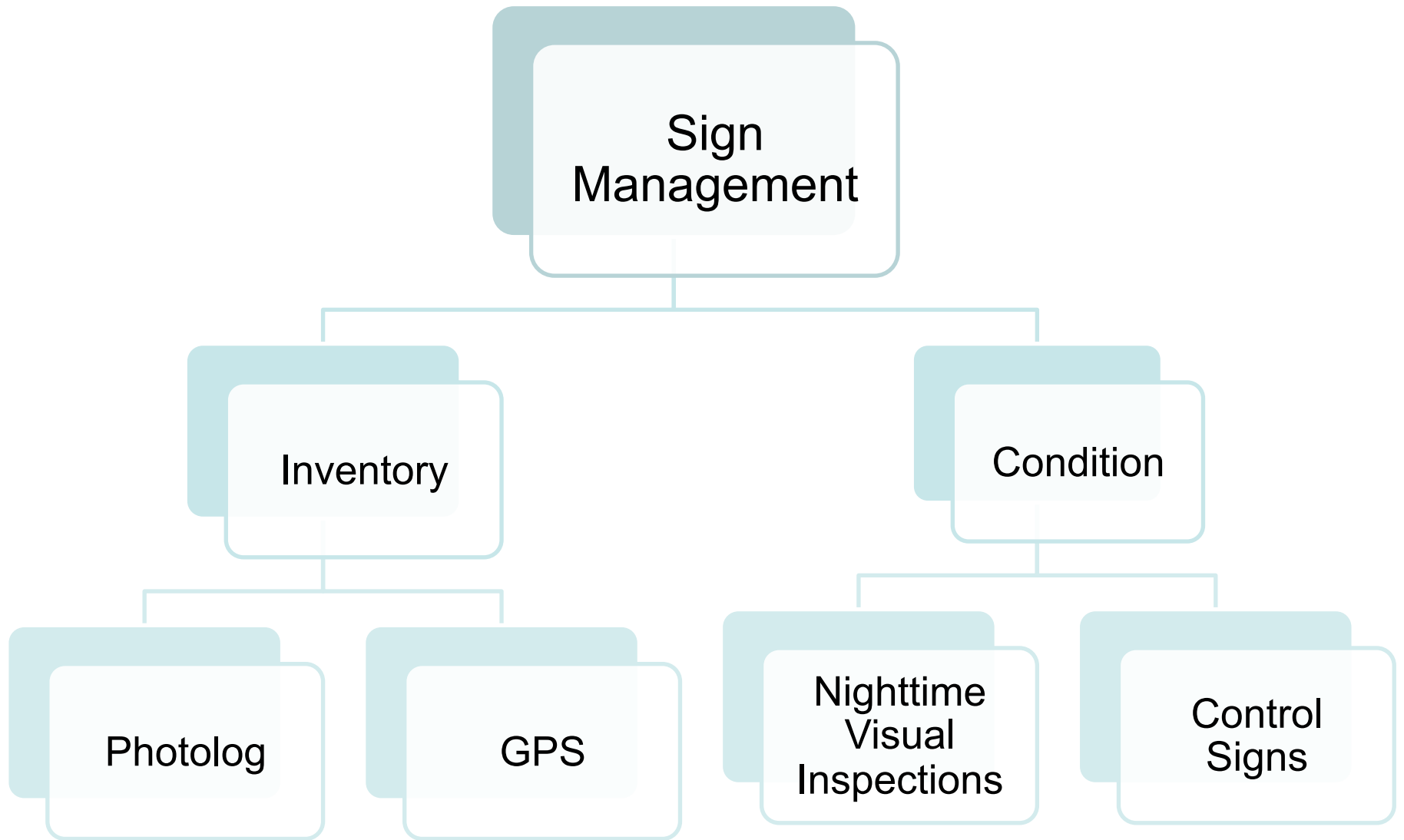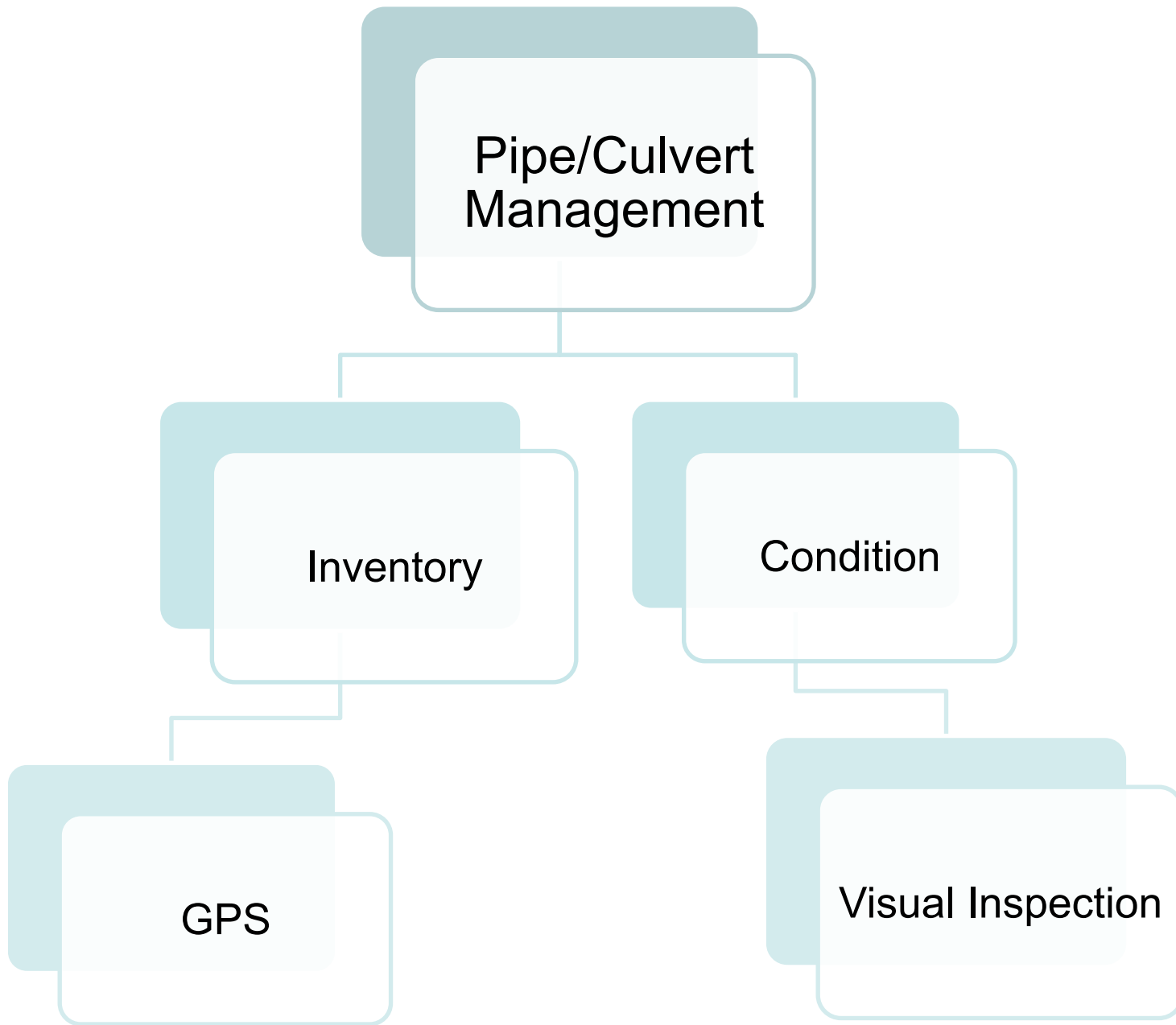- Striping
- Cable Barrier
- Etc.

Pavement and Bridge Management

Maintenance Rating Program

- Identifies general areas of concern (guardrail, ditching, signage, etc.)
- Does not identify specific locations
- Additional funding to address issues
- Moving toward Asset Management

```
                        Sign
                     Management


         Inventory                    Condition


    Photolog      GPS          Nighttime      Control
                               Visual          Signs
                               Inspections
```

```
                    ┌─────────────────┐
                    │  Pipe/Culvert   │
                    │   Management    │
                    └────────┬────────┘
              ┌──────────────┴──────────────┐
        ┌─────┴─────┐                 ┌──────┴──────┐
        │ Inventory │                 │  Condition  │
        └─────┬─────┘                 └──────┬──────┘
        ┌─────┴─────┐                 ┌──────┴───────────┐
        │    GPS    │                 │ Visual Inspection│
        └───────────┘                 └──────────────────┘
```

Traffic Asset Management Focus Areas

High Friction Surface

Roadway Data Used

Crash	Milepoint	Curve Data	Pavement

Rumble Strips

Roadway Data Used

Crash	Milepoint	Lane Width	Shoulder Width	Speed Limits	Auxiliary Lanes (TWLTL)

Roadway Data Used

Milepoint

Crash

Functional Class

Speed Limit

# of Lanes

Roadway Departure Corridors

Using usRAP–US Road Assessment Program

usRAP -Below are a few data sets HSIP is currently using:

•Distance

•Length

•Traffic Flow

•Setting

•# of Lanes

•Paved Shoulder Width

•Unpaved Shoulder Width

•Speed

•Roadside Hazards

•Intersection types

MAP 3. Crash Rate Ratio
(Crash Rate Compared to Average for Similar Road Types)
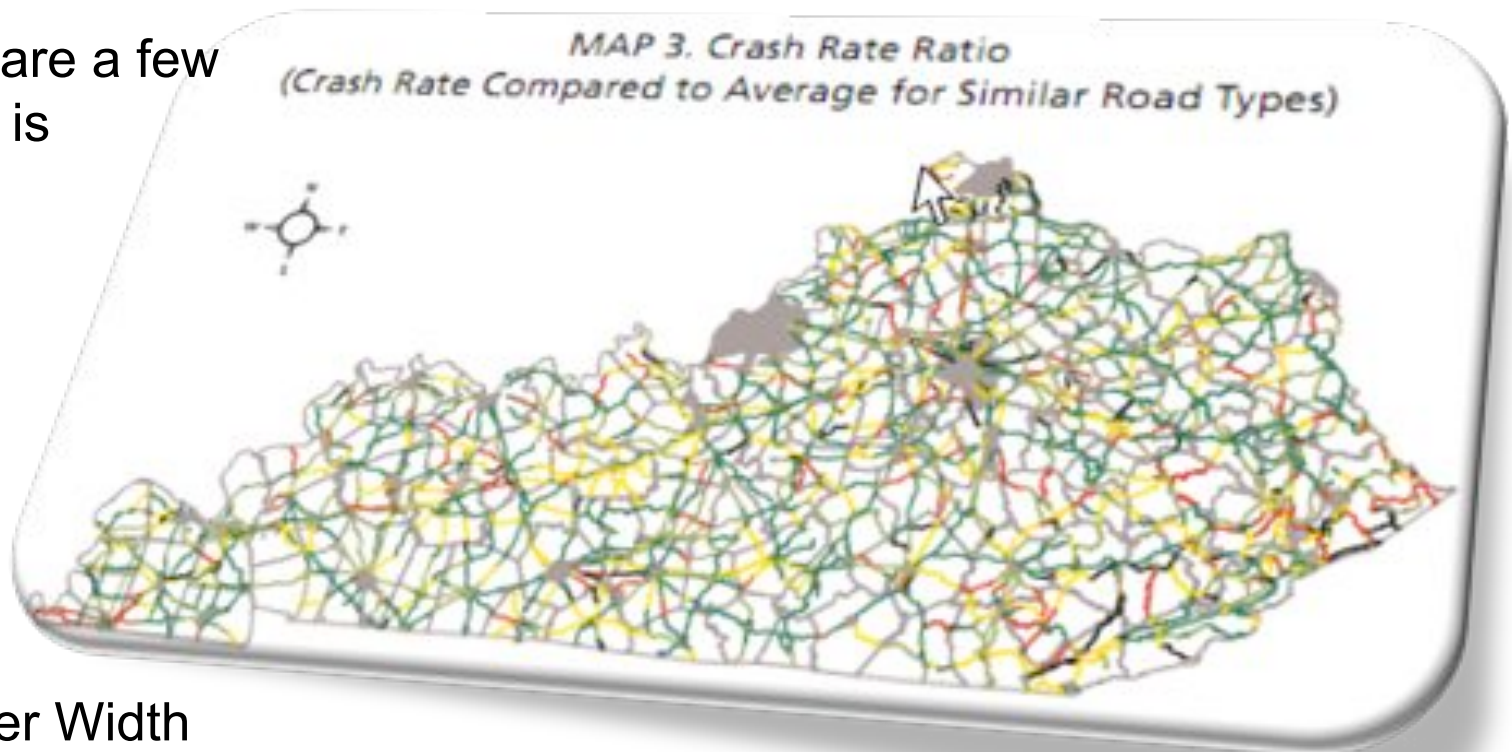
Kentucky's Unscheduled Needs List

2013

- **Over 2,453 projects**
- **Over $60 billion**
- **Over 6,300 miles of roadway**
- **Over $9.52 Million per Mile**
- **Over $2.17 Million Average Per mile of the 27,616 State Road Miles**

Components of a Successful Planning Process
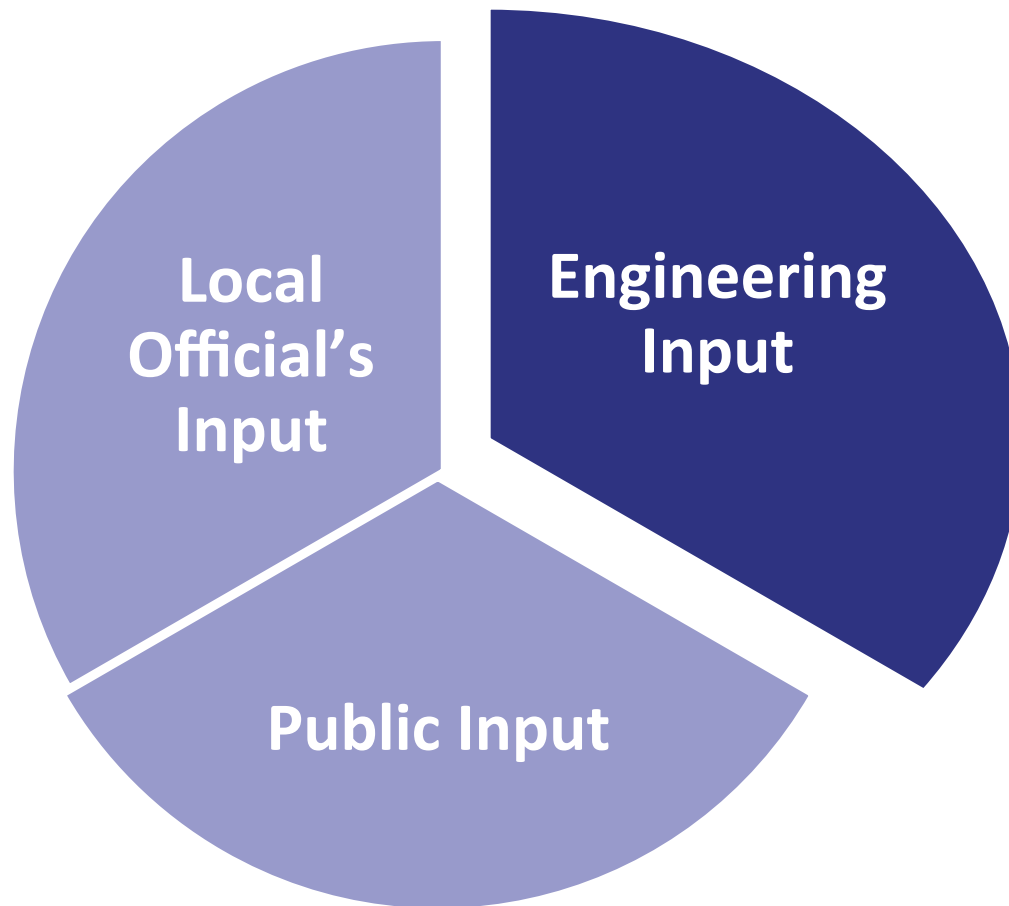
Statewide KYTC Planning Goals

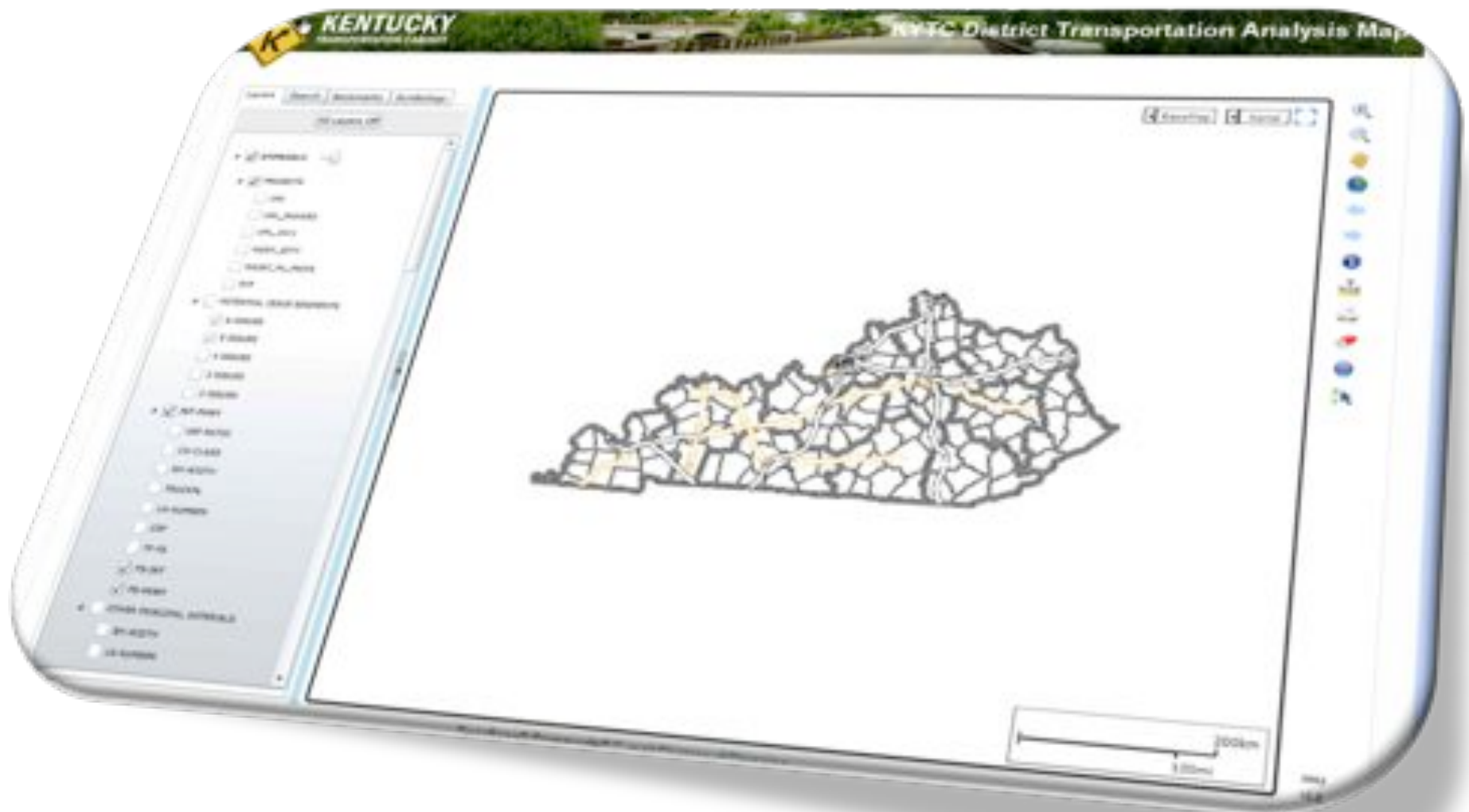GOAL 1 MOBILITY

GOAL 2 ACCESS

GOAL 3 CONNECTIVITY

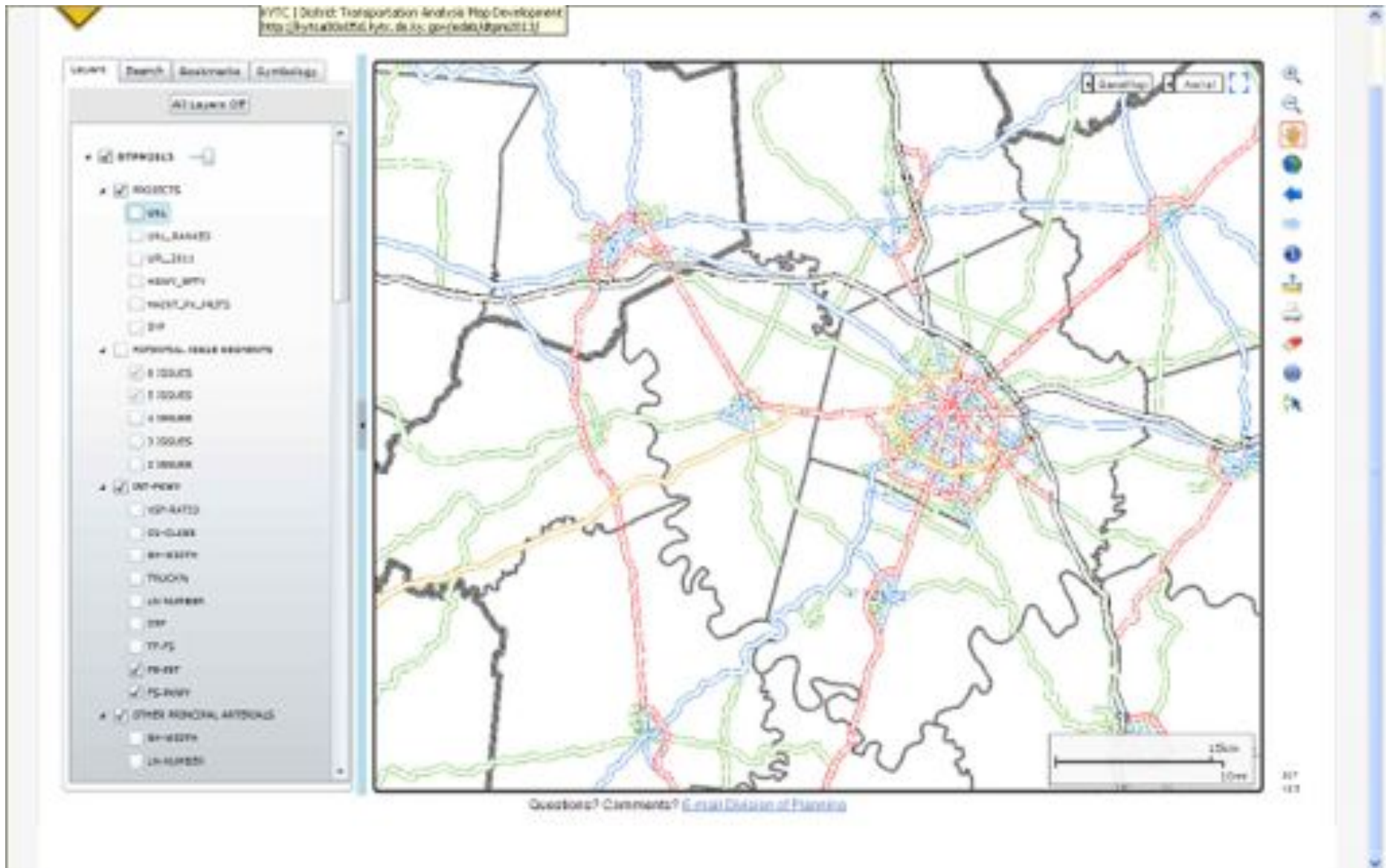GOAL 4 SAFETY

GOAL 5 SECURITY

Goal 6 Economic Stewardship

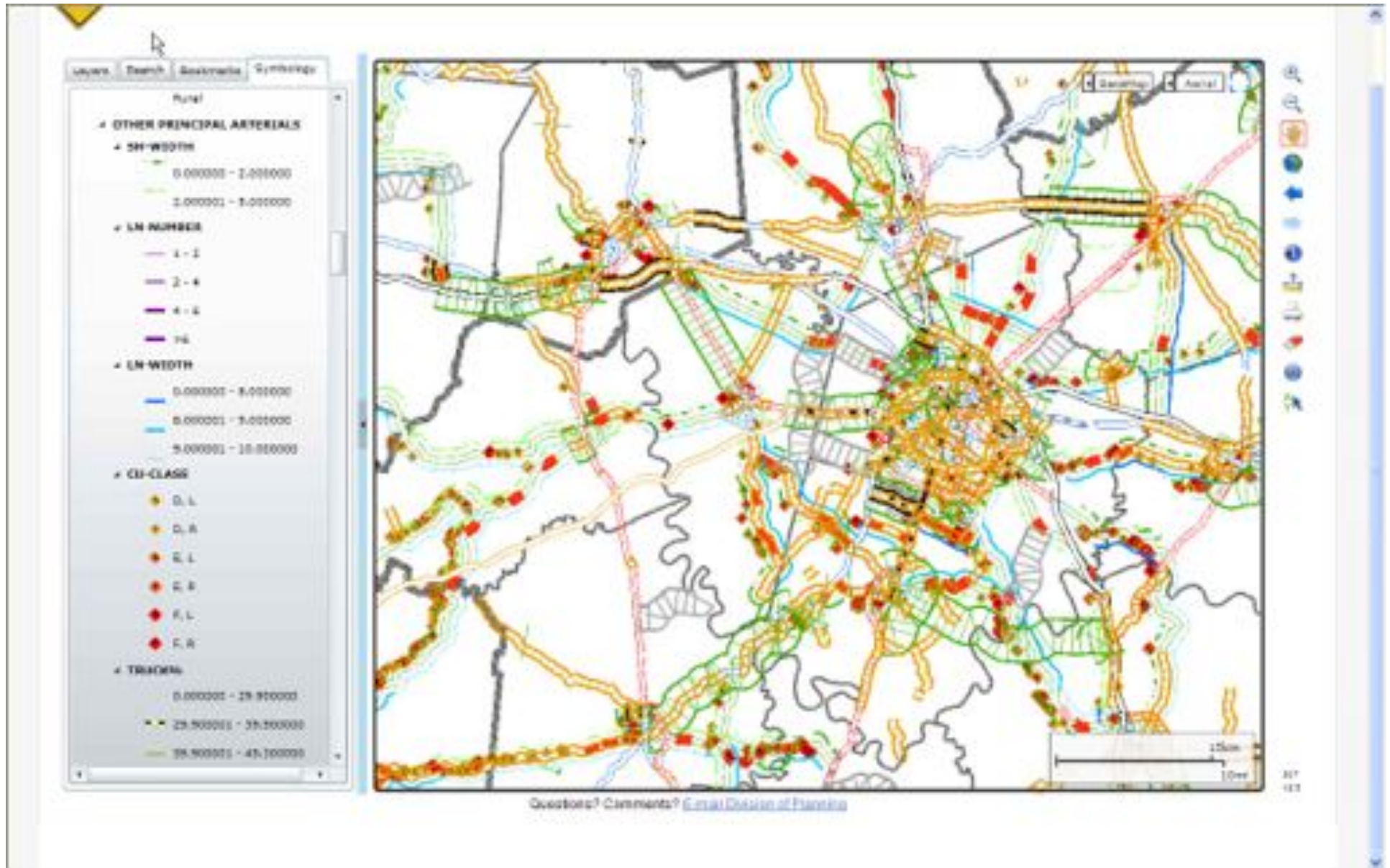GOAL 7 ENVIRONMENTAL STEWARDSHIP

Goal 8 Involvement

SPATIAL TRANSPORTATION ANALYSIS MAP

PRIORITY ROUTES

CRF-VSF-Lane & Shoulder Width

Interactive Mapping System

Highway Data Layers include:

- Functional Classification
- Crash Critical Rate Factor (CRF)
- Volume-to-Service Flow (V/SF) Ratio
- Truck Percentages
- Number of Lanes
- Lane Widths
- Horizontal Degree of Curvature
- Vertical Grades
- Current Highway Plan Projects
- Current UNL Projects
- Composite Adequacy Ratings
- Landslide and Rockfall Locations
- Functionally Obsolete Bridges
- Structurally Deficient Bridges

District Transportation Plan

Highway District 12
Transportation Plan

Kentucky Department of Highways

October 2011

| District 1 |
| District 2 |
| District 3 |
| District 4 |
| District 5 |
| District 6 |
| District 7 |
| District 8 |
| District 9 |
| District 10 |
| District 11 |
| **District 12** |

KENTUCKY
TRANSPORTATION
CABINET

HIGHWAY DISTRICT 12 TOP 30 UNSCHEDULED PROJECTS LIST

Rank 24 KY 3
US 23 to KY 1185

Rank 8 KY 2565
Curve near KY 3

Rank 28 New Route
KY 3215 to KY 1185 @ Yatesville Lake

Rank 19 KY 40
Curve near KY 1884

Rank 26 New Bridge
KY 321 to KY 40

Rank 17 KY 321
KY 3 to KY 2381/Johnson CL

Rank 12 KY 40
Teays Branch Rd.

Rank 3 KY 40
KY 2031 to Gordon Hollow Rd.

Rank 4 KY 321
6th St. to KY 40

Rank 2 US 23
KY 80 to KY 3384

Rank 22 KY 1428
KY 321 Ramp to Broadway

Rank 15 KY 1384
Church at Hurricane Crk

Rank 21 KY 1427
Just W. of KY 1750

Rank 10 KY 3495
KY 3495 to Thompson Rd.

Rank 1 KY 114
Magoffin CL to Clerk Elem. Ent.

Rank 11 KY 194
S. of Revine Branch

Rank 25 KY 2030
Center Hunter Rd. to Hunter Rd.

Rank 23 KY 1438
Near Cager Br. Rd. to applfly Spears Br.

Rank 16 KY 550
Midax Curve S. of KY 650

Rank 5 KY 80
KY 80 at Garrett

Rank 20 US 460
KY 1460 Int.

Rank 18 KY 1460
Walter's Rd. to KY 1426

Rank 13 KY 80
KY 1087 Int.

Rank 14 KY 979
KY 680 Int. to Avery Rd.

Rank 25 KY 160
KY 899 to KY 3391

Rank 27 KY 1469
Marshall Branch Curve

Rank 7 KY 15
Letcher CL to Red Oak Br.

Rank 30 KY 805
From applfly US 23 to KY 3086

Rank 29 KY 15
KY 160 Int.

Rank 9 KY 899
Short Branch near Flppa Passes

Rank 7 KY 15
Whitesburg Bypass to Knott CL

Rank 6 US 119
KY 806 Curve

HIGHWAY DISTRICT 12 TOP 30 UNSCHEDULED PROJECTS LIST
PROGRAMMING INFORMATION

OVERALL RANK	COUNTY	ROUTE	PROJECT DESCRIPTION	BMP	EMP	PLANNING	...	...CTION	TOTAL COST	COST TIER	DTP RANK BY TIER
1	FLOYD	KY 114	ADDRESS TRAFFIC FLOW AND EFFICIENCY, SAFETY ISSUES AND TRAVEL TIMES ON ... SECTION OF KY 114... CEMETERY RD...						$63,000,000	3	1
1	FLOYD	KY 114	ADDRESS... SAFETY... SECTION... COUNT...								
1	FLOYD	KY 114	ADDRESS... SAFETY... SECTION... OF RICHA...								
2	FLOYD	US 23	MITIGATE... POOR ACC... AND IN...								
3	MARTIN	KY 40	IMPROVE AL... THIS CURVE... JUNCTION... MILES BEFO... AND IMPRO... DESIGN TO... PED...								
4	JOHNSON	KY 321	ADDRESS THE... ISSUES ON KY... THE JUNCTION...								
5	FLOYD	KY 80	IMPROVE ACCES... ER, AND ELIMI... CROSSING WILA...								
6	LETCHER	US 119	RECONSTRUCT... IMPROVE THE...					$150,000	$165,000	$400,000	$915,000	1	2

Goal 1. Mobility
Provide the highest possible level of mobility to users.

- Objective 1.1: Preserve the ability of the existing system to move traffic efficiently.
- Objective 1.2: Improve and expand the... of the existing system to meet future traffic demands.

Goal 2. Access
Provide a balanced transportation sys... District and to other regions.

- Objective 2.1: Support th... the improvements neces... communities and vital... etc.).
- Objective 2.2: Supp... (public and semi-...
- Objective 2.3: Su... transportation...
- Objective 2.4: S...
- Objective 2.5: S... bike facilities.

Goal 3. Connectivity
...hance the integration and connectivity of the tra...

	GOAL 1 MOBILITY	GOAL 2 ACCESS	GOAL 3 CONNECTIVITY	GOAL 4 SAFETY							GOAL 4 SAFETY AND GOAL 5 SECURITY		OBJECTIVE(S)
V/SF	TRUCK %	TRAFFIC/ FREIGHT	TRAFFIC/ FREIGHT	CRF	TRUCK %	GRADES	CURVES	ADEQUACY RATINGS	FALLS AND SLIDES	LANE WIDTH	SHOULDERS		
		x	x							x	x	2.1, 4.1, 6.1, 6.2,
	x	x	x	x	x			x				1.1, 2.1, 4.1, 6.1, 6.2
		x	x									1.2, 2.1, 5.1, 6.1, 6.2,
		x	x									1.2, 2.1, 5

HIGHWAY DISTRICT PLANNING PROCESS

PLAN INTENT

- Provide a <u>data-driven</u> foundation for recommend projects.

- Provide <u>quantifiable</u>, <u>documented</u> information related to needs and deficiencies across Kentucky's highway system.

- Provide <u>support</u> & a <u>process</u> for progressing projects from an idea to the Highway Plan.

- Meet the <u>Goals</u> and <u>Objectives</u> of the Cabinet & the Highway District through the <u>Engineering</u> Review.

- Utilize the current <u>metropolitan</u> and <u>regional</u> planning processes that provide the <u>Public</u> and <u>Local Officials</u> Input.

Kentucky's Scorecard
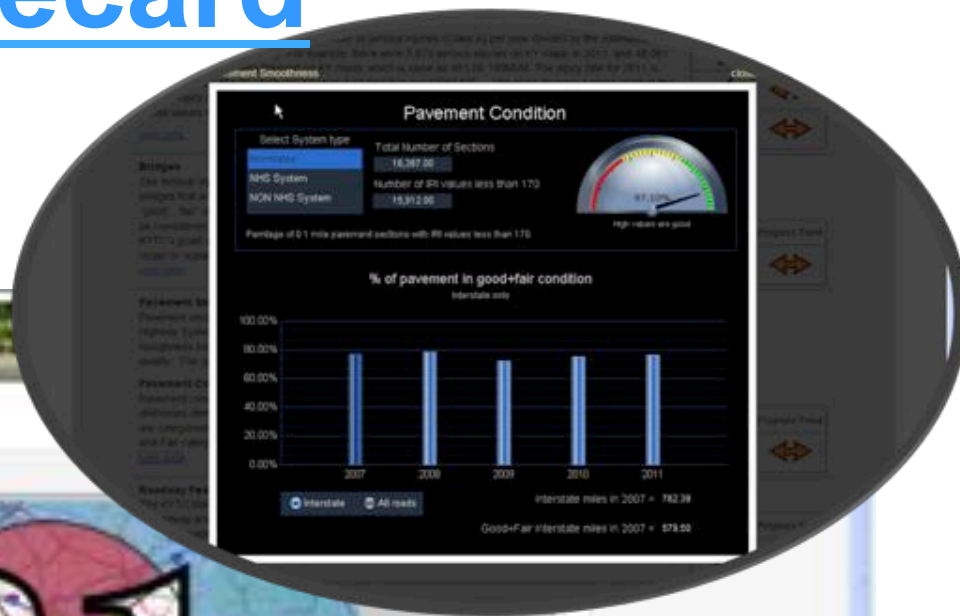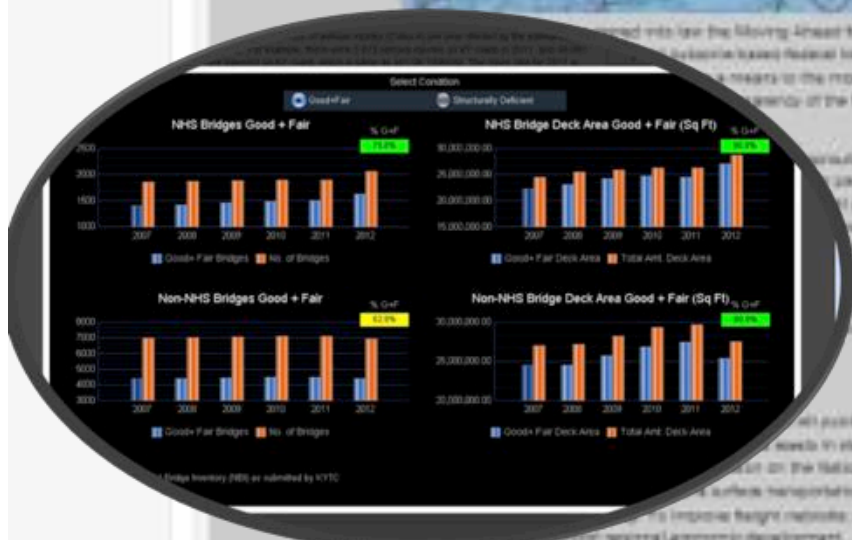
Asset Management For
Future Performance Based Decision Making

- Improve Existing Management Programs
- Include More Assets
- Identify Comprehensive List of Needs
- Develop New Strategies to Address Needs
- Train Staff

Thank You?

DIRECTION
REGIONAL TRANSPORTATION PLAN
2035
FOR SOUTHEAST MICHIGAN

Establishing a Regional Investment Direction

Exploring Transportation Investment Choices

Creating Success with Our Transportation Assets:
2040 Regional Transportation Plan
for Southeast Michigan

SOUTHEAST
CREATING SUCCESS
MICHIGAN

SEMCOG

SEMCOG

St. Clair

Oakland

Macomb

Livingston

Washtenaw

Wayne

* City of Detroit

Monroe

4.7 million people

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Employment and population similar to 2000 levels
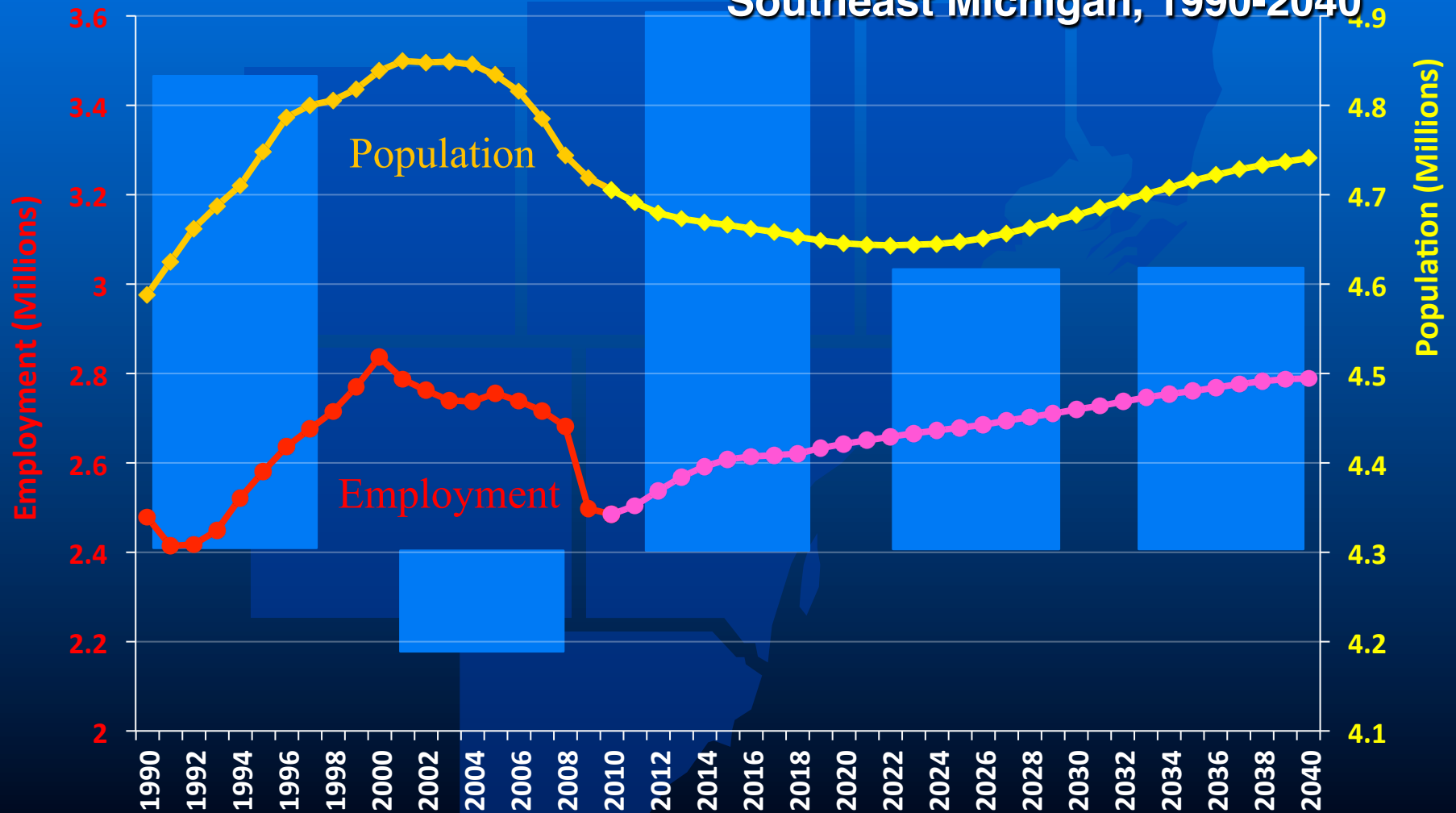
Is the glass half full or half empty?

System supports millions of trips and millions of dollars of commerce everyday

SEMCOG

This requires that we align our scarce resources

Aligning resources requires focusing on shared outcomes

Measuring the Condition of Our Transportation System
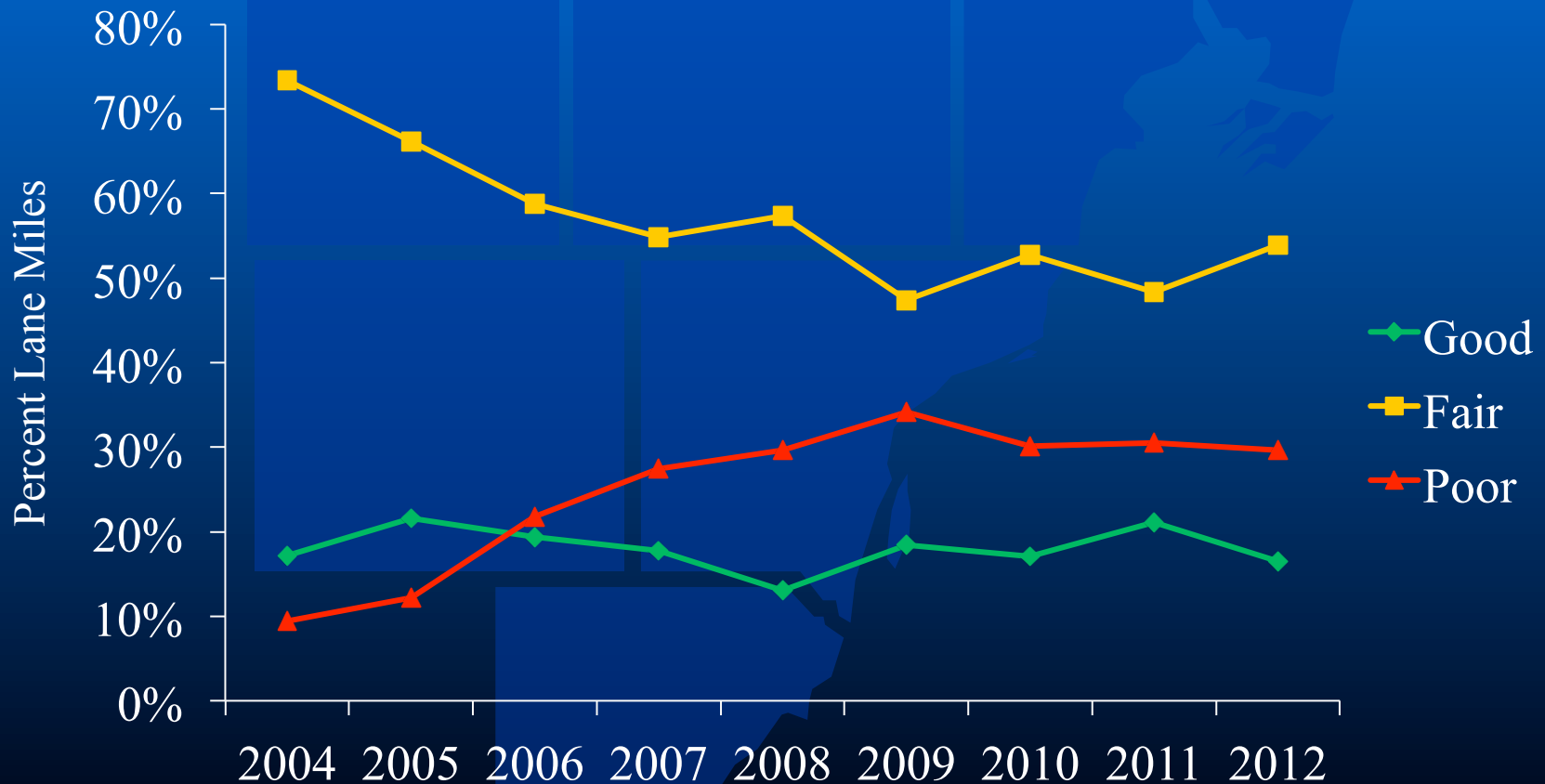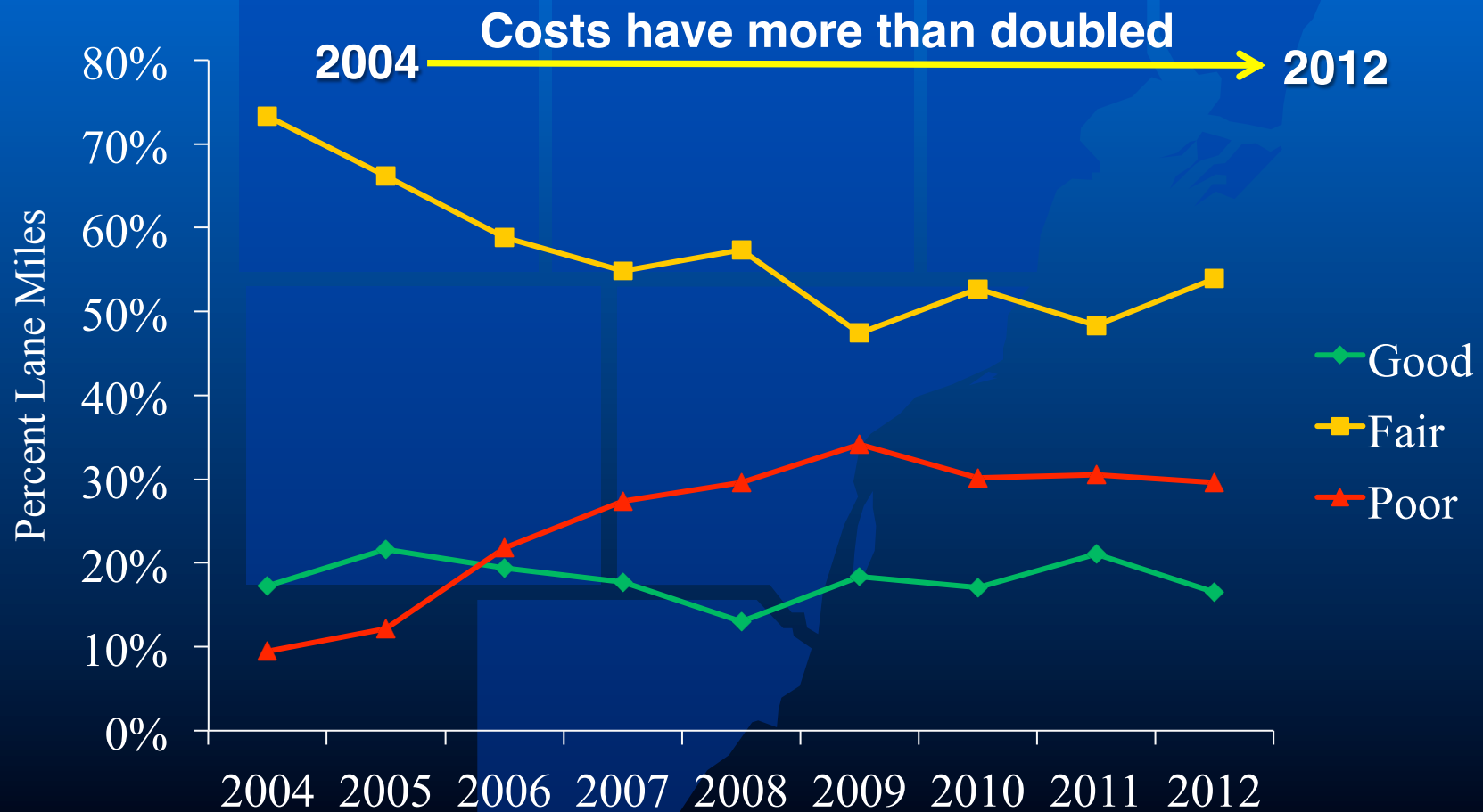
Analysis of Pavement Strategies

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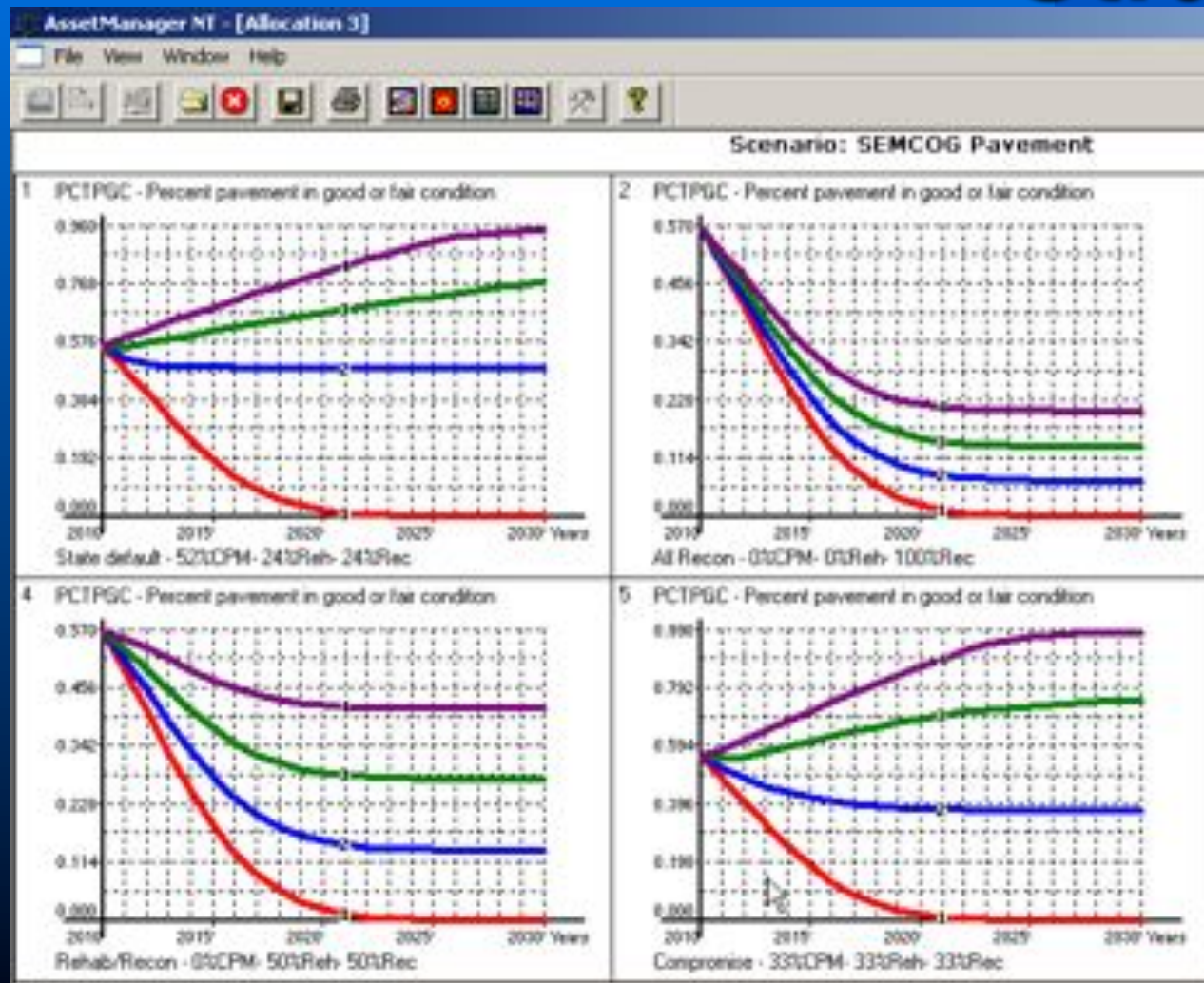
Investment vs. Performance
Pavement
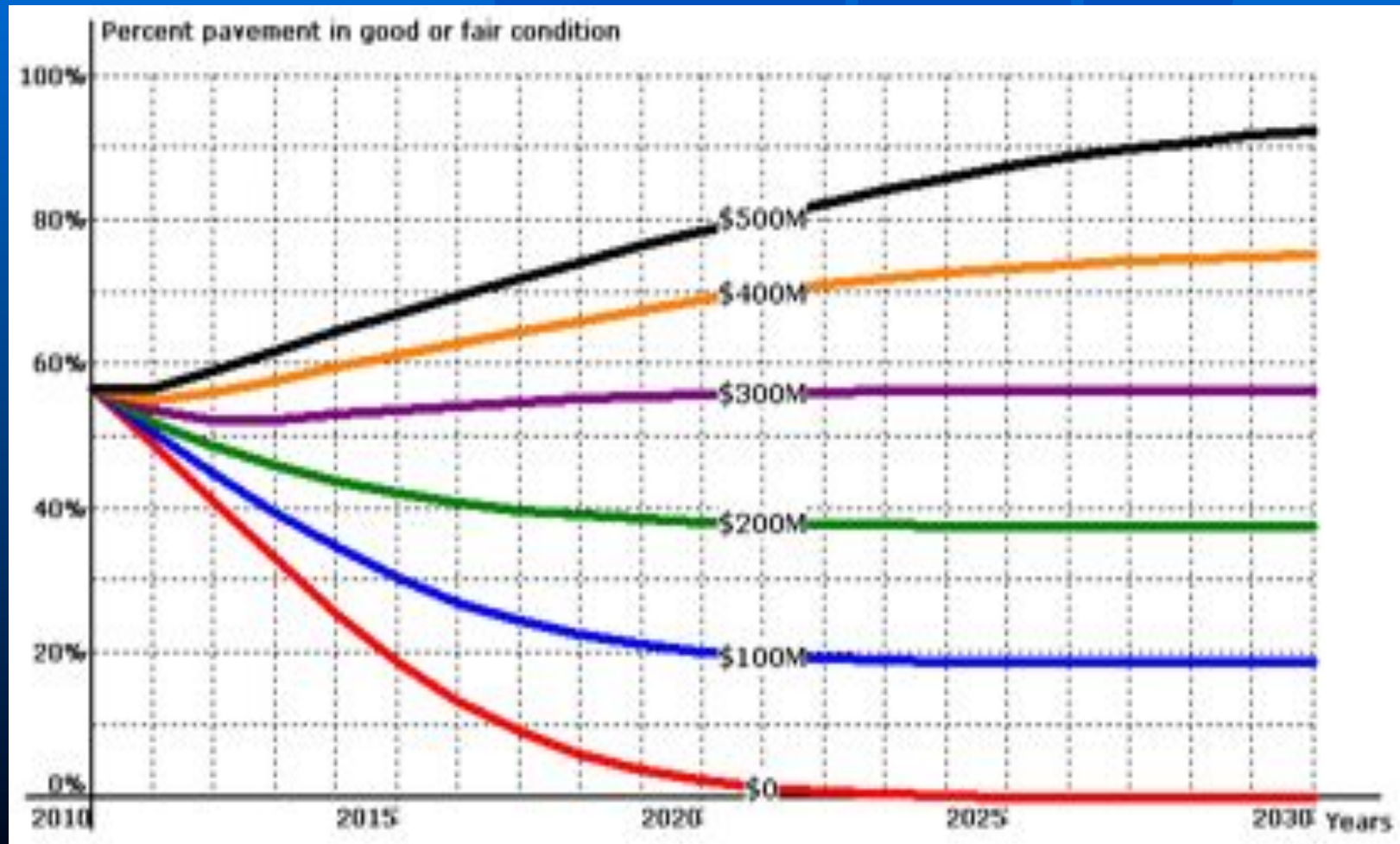
It's not just what we spend, It's how we spend it

Spend 10% on Prevention

Condition declines

From 70% to 40% good/fair

Spend 50% on Prevention

Current condition sustained

70% good/fair

Same $400 million, much different result

Other Program Areas Analyzed

- Transit
- Bridge preservation
- Roadway capacity expansion
- Non-motorized
- Safety
- Operations

Performance-based Planning

Fiscal Sustainability

Funding formula out of alignment with reality

Revenues rely
on consumption

Policies emphasize
conservation

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Infrastructure funding formulas are increasingly obsolete

Impact of Federal Fuel Economy Standards

$204 million per year

Annual Revenue (in million)

Gas Tax Revenue w/pre-2009 CAFE standards
Gas Tax Revenue w/2012-2016 CAFE standards
Gas Tax Revenue w/2017-2025 CAFE standards

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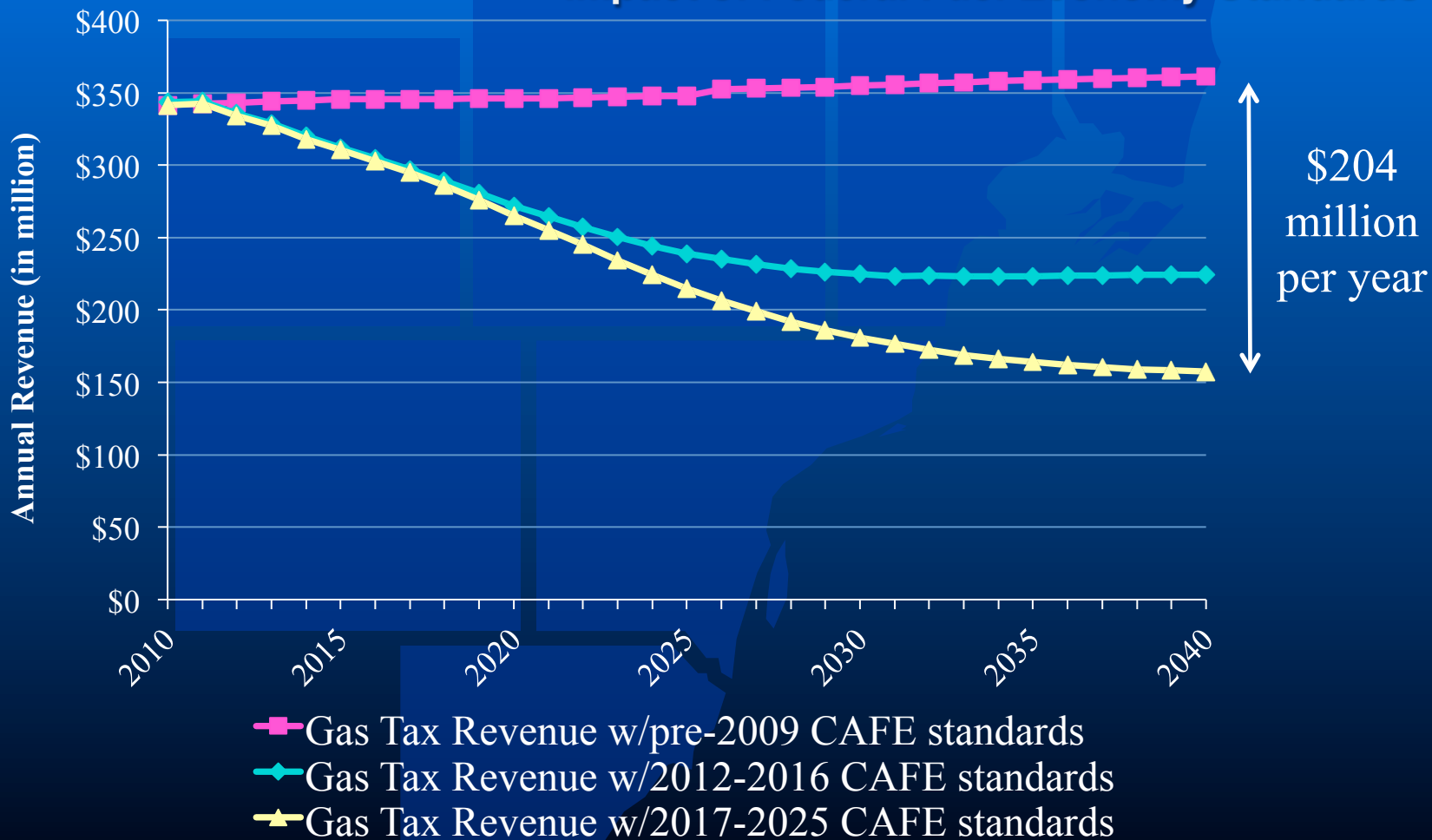
Measure:
Transit ridership

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Our Transit System Ranks Low

Service Miles

Service Hours

Operating Funds

Ridership
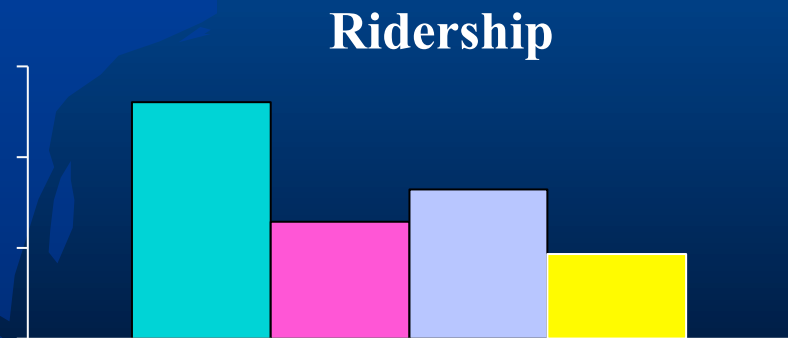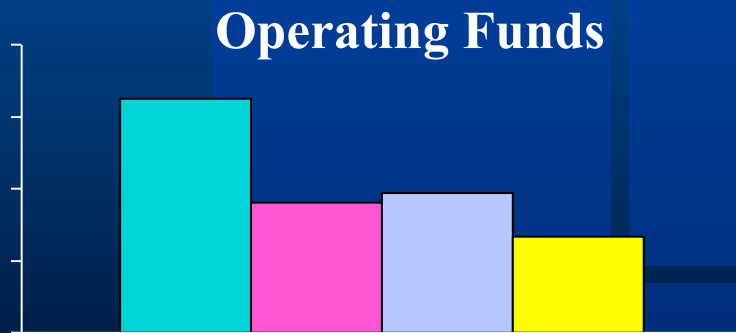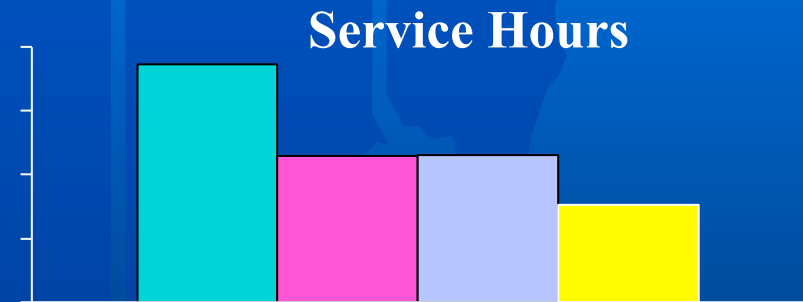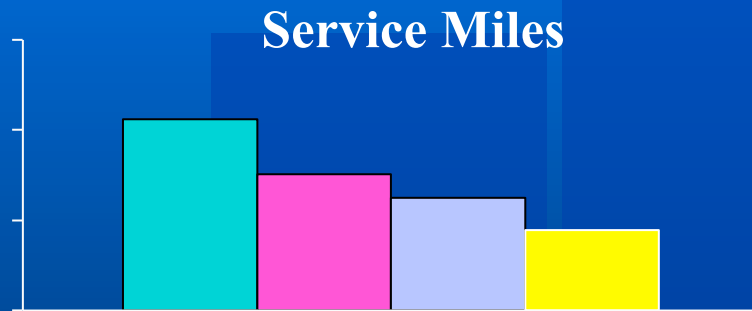
- Pittsburgh
- St. Louis
- Cleveland
- Southeast Michigan

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Sources: FTA National Transit Profiles, 2010

Measure:
Peak demand

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Peak demand is ¼ of day but almost ½ of daily travel happens in those 6 hours

Portion of day

Portion of travel

Peak

Off-Peak

Off-Peak

Peak

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Measure:
System utilization

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Regional Corridors
Congested During
AM and PM Peak

7%
congested

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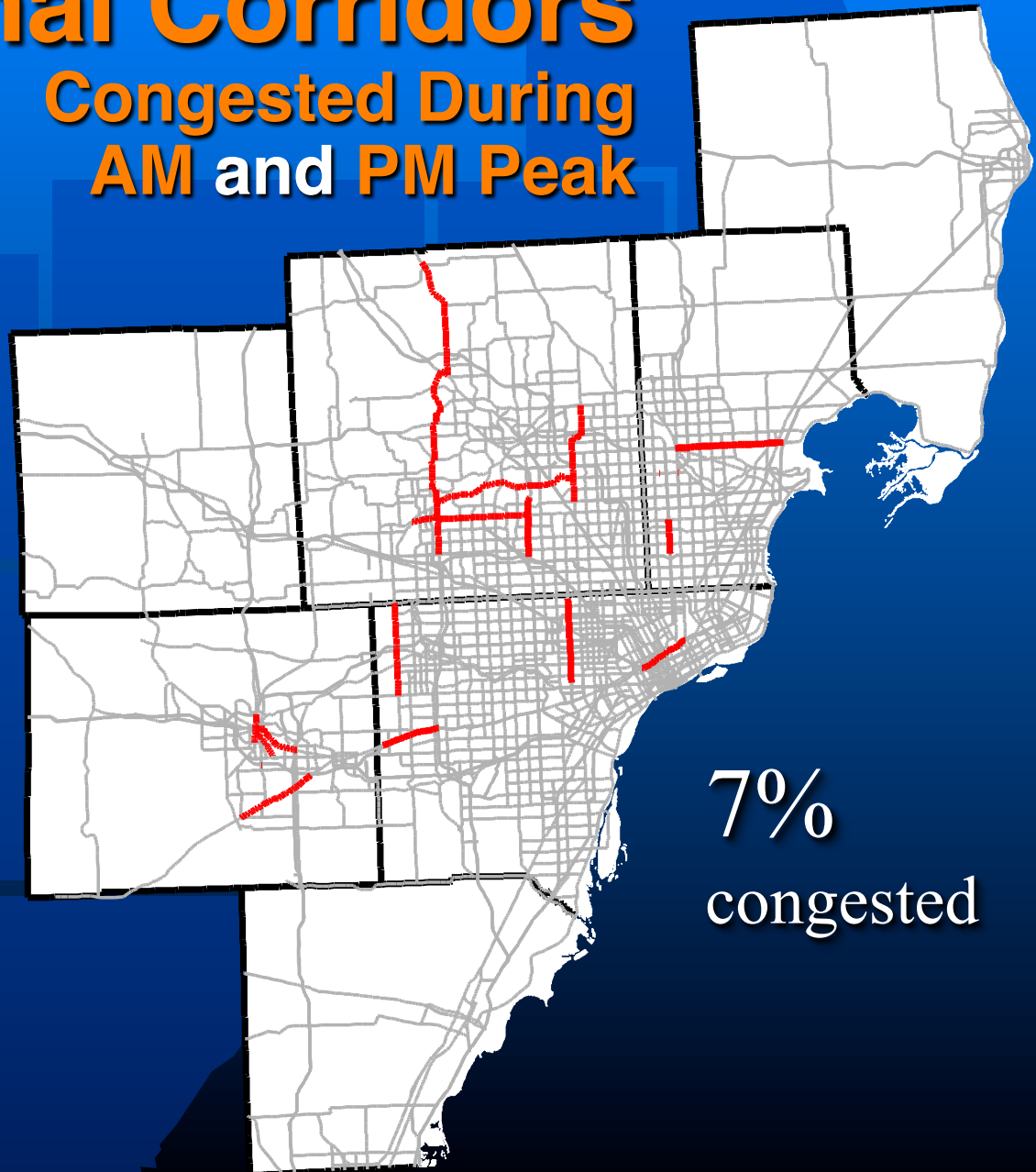
The Flip Side:
Some roads have more capacity than needed

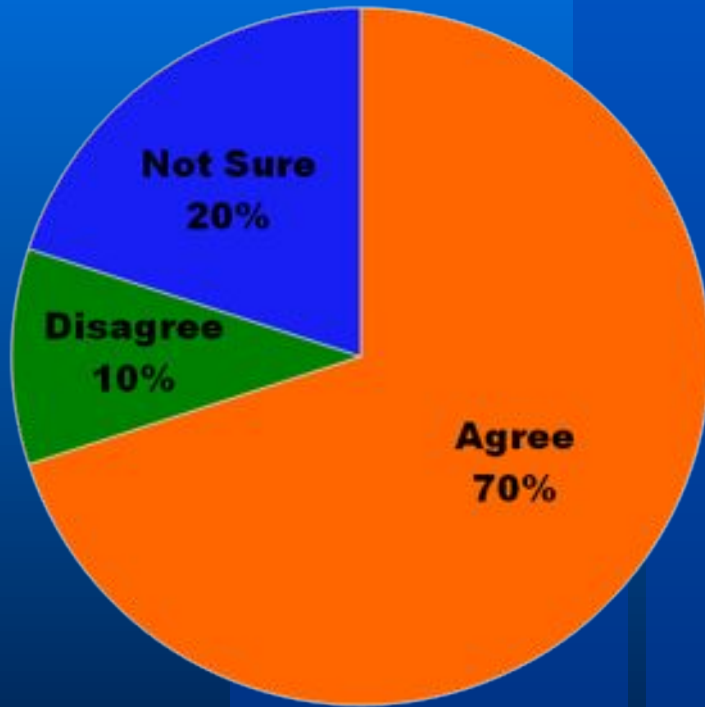Over 600 miles of roadway could potentially be downsized or repurposed.

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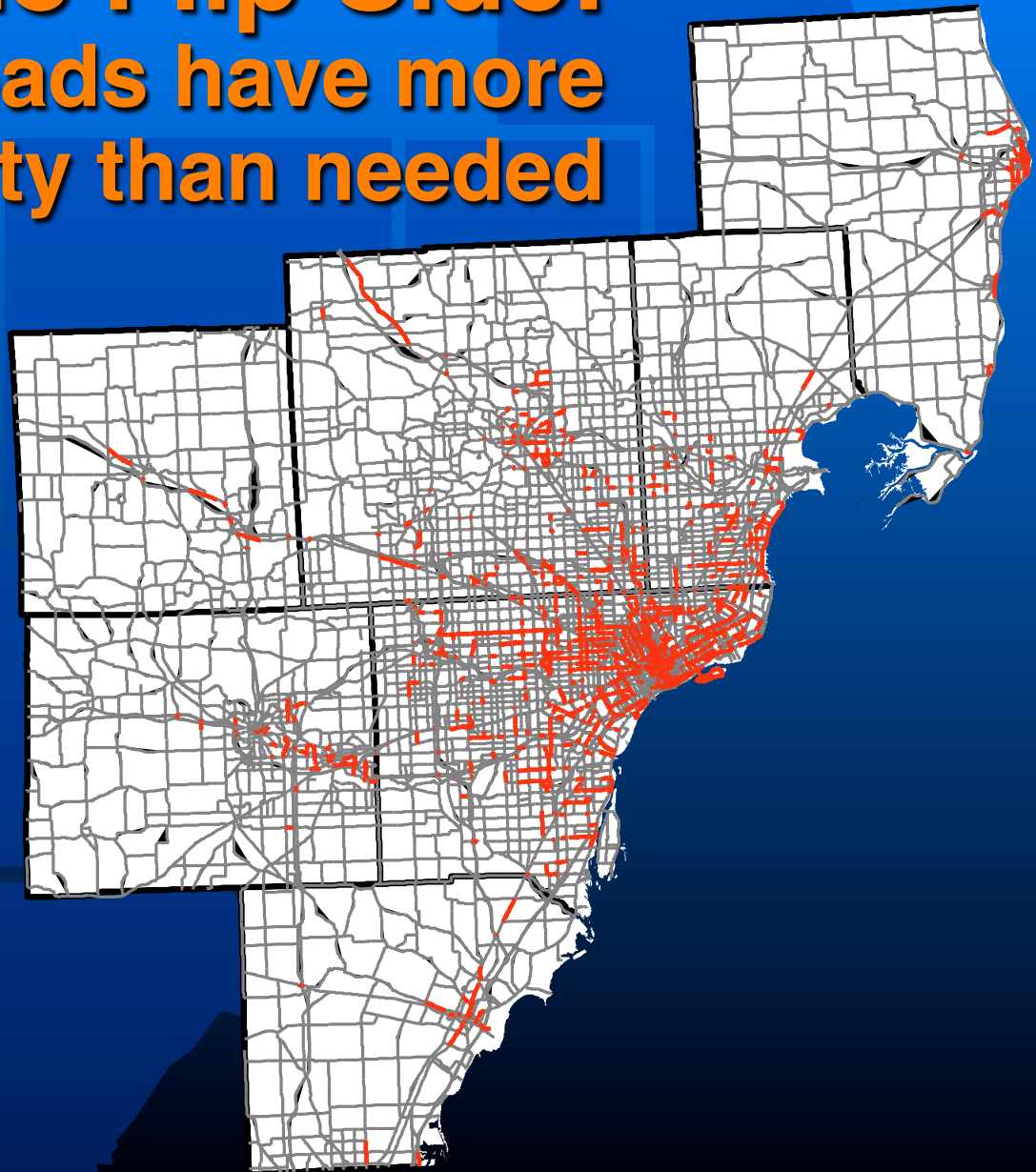
Measure:
Public Sentiment

SEMCOG
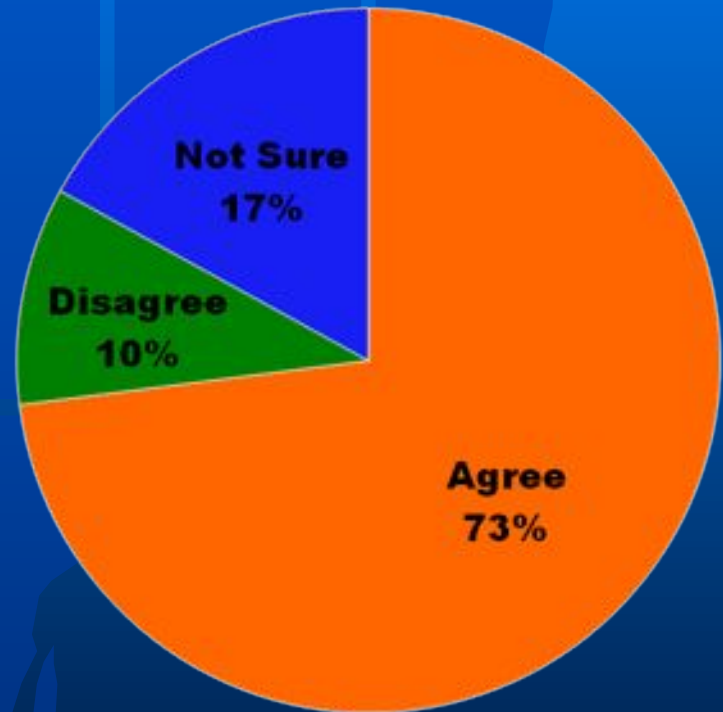
Only 11% think current funding methods will work in future
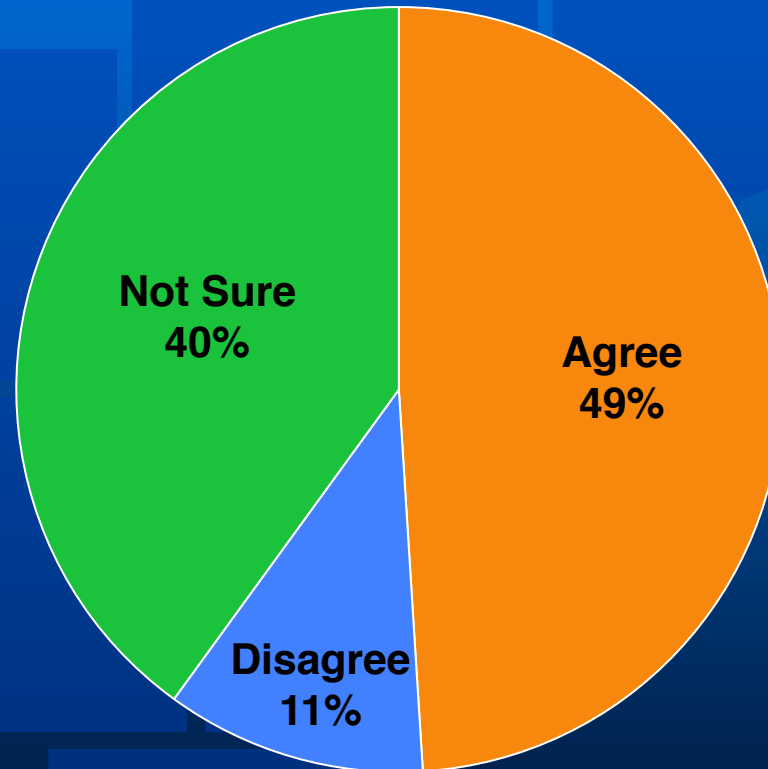
Current ways of funding won't work in future?

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Funding Paradox

Not Sure
20%

Disagree
10%

Agree
70%

More funding is needed to
ensure infrastructure is
properly maintained.

Not Sure
17%

Disagree
10%

Agree
73%

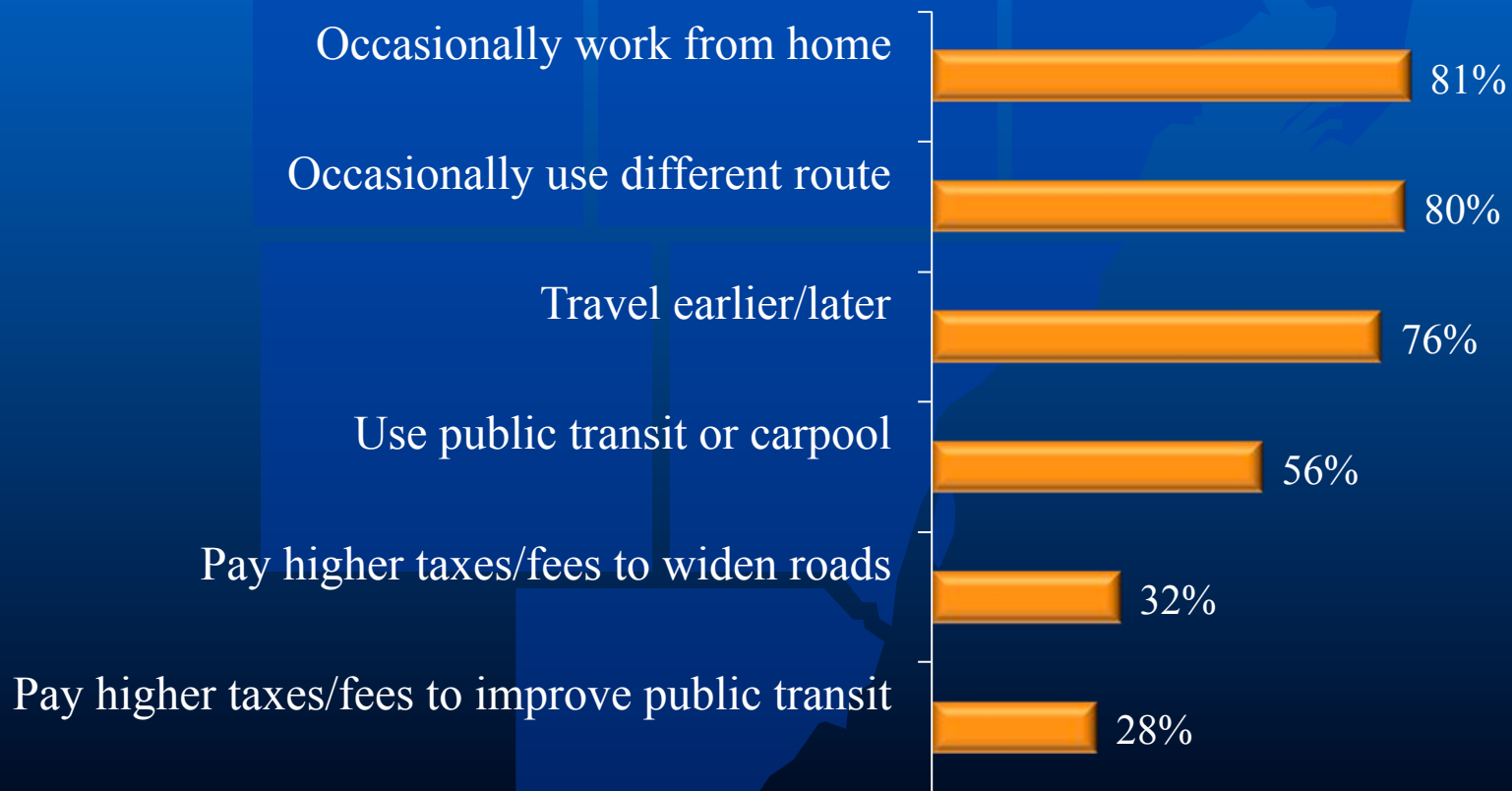It's not the amount we
spend, it's how efficiently
we spend it.

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Residents understand its condition personally affects them

	Agree
• Condition of our road system impacts each one of us	89%
• Quality of our public transportation system impacts each one of us	62%
• Condition of our water and sewer systems impact each one of us	87%
• Better roads extend vehicle life	90%

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Good news: Significant majority are willing to act

Actions Willing to Take

Action	Percent
Occasionally work from home	81%
Occasionally use different route	80%
Travel earlier/later	76%
Use public transit or carpool	56%
Pay higher taxes/fees to widen roads	32%
Pay higher taxes/fees to improve public transit	28%

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Except for transit, most think they know how infrastructure is funded

But…

- 25% are "Not sure" or "Don't know"
- Many basics are not well understood

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Now let's discuss where the rubber hits the road

Do we:

- Think regionally and act locally?

Yes and Yes!

- Think locally and act regionally?

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Aligning our actions

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Breaking the silos requires some adjustments in our thinking
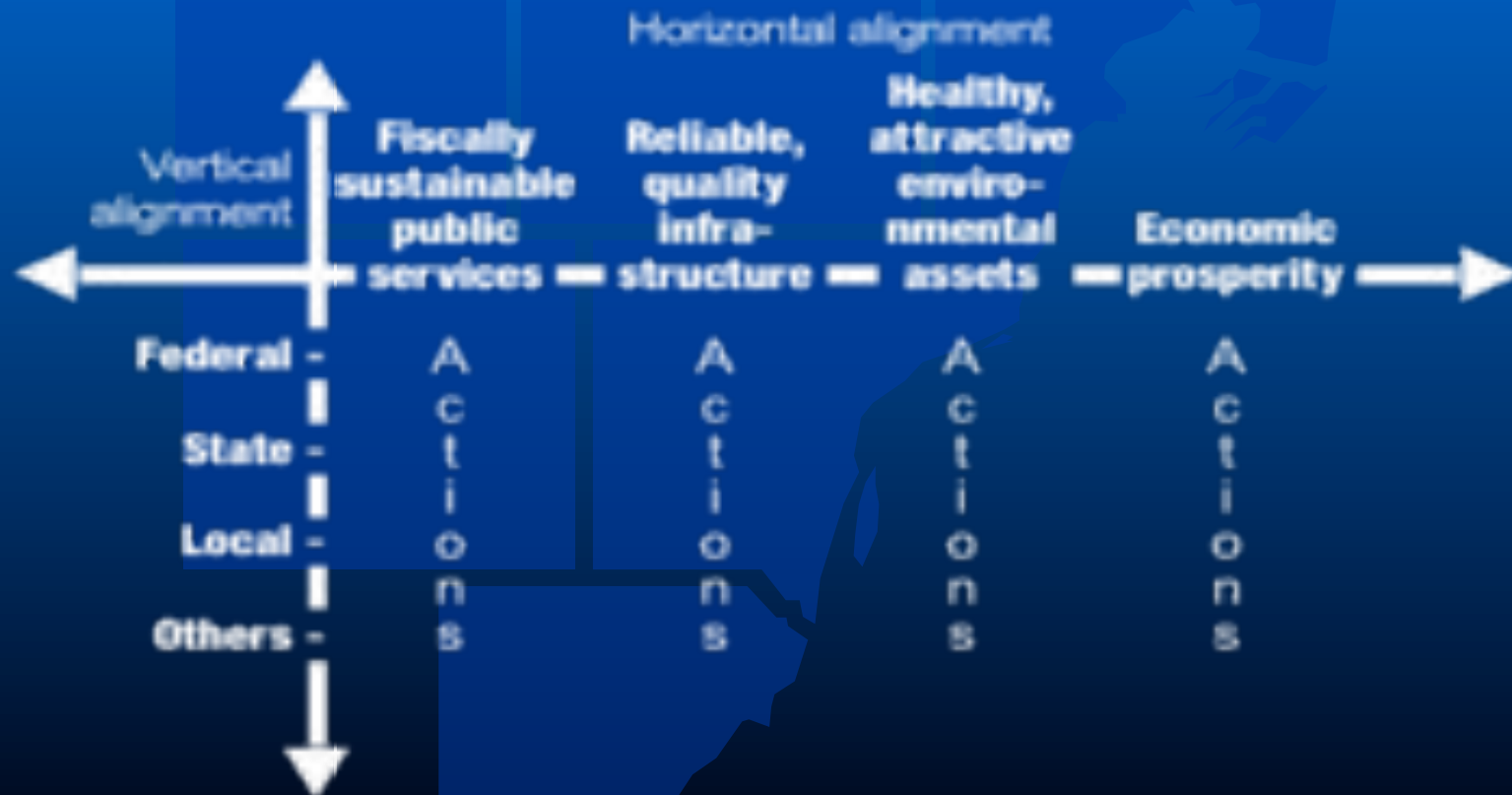
Water/ Sewer   **Roads**   **Environment**   **Transit**

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Actions in an outcome-focused decision structure are more aligned

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Develop a Strategic Investment Process and Implement it!

Technical

- What is the cost effectiveness of different strategies?

- What is the total cost of different targets?

Develop a Strategic Investment Process and Implement it!

Policy

- What are the implications for the transportation system?

- How do differing targets impact other outcomes?

- Select targets

- Assure actions and revenue allocation reflects targets

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Setting Targets

Category	Cost-Effective Target	Real Cost	Interim Target	Strategic Spending Level
Pavement	80%	$500	70%	$250
Bridges	90%	$300	80%	$200
Other…	85%	$700	65%	$250
Total cost effective target:		$1500	Total strategic target:	$700

The glass is half full:
We have much to be proud of

System supports millions of trips and millions of dollars of commerce every day

SEMCOG

These actions help fill the glass positioning us for greater success

Thank you

- www.semcog.org
  (www.semcog.org/2040RegionalTransportationPlan.aspx)

- Tom Bruff
  SEMCOG
  Plan and Policy Development Group
  bruff@semcog.org
  313-324-3340 (direct)

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Questions?

- Submit your questions using the webinar's Q&A feature

Next webinar:

Addressing Preservation and Maintenance in Asset Management Plans – September 18, 2013 2:00 EST

Save the Dates!

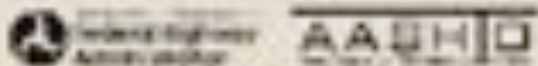A bimonthly webinar series, Wednesdays at 2:00 PM EST

Announcing the next four webinars in the series:

July 10, 2012 2:00 PM EST – Asset Management and Performance-based Planning

September 18, 2013 2:00 PM EST – Addressing Preservation and Maintenance in Asset Management Plans

November 13, 2013 2:00 PM EST – Asset Management and Adaptation to Climate Change and Extreme Weather Events

January 22, 2014 2:00 PM EST – Data Needs, Issues, and Governance for Improved Management of Highway Assets

For more information or to register:
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