

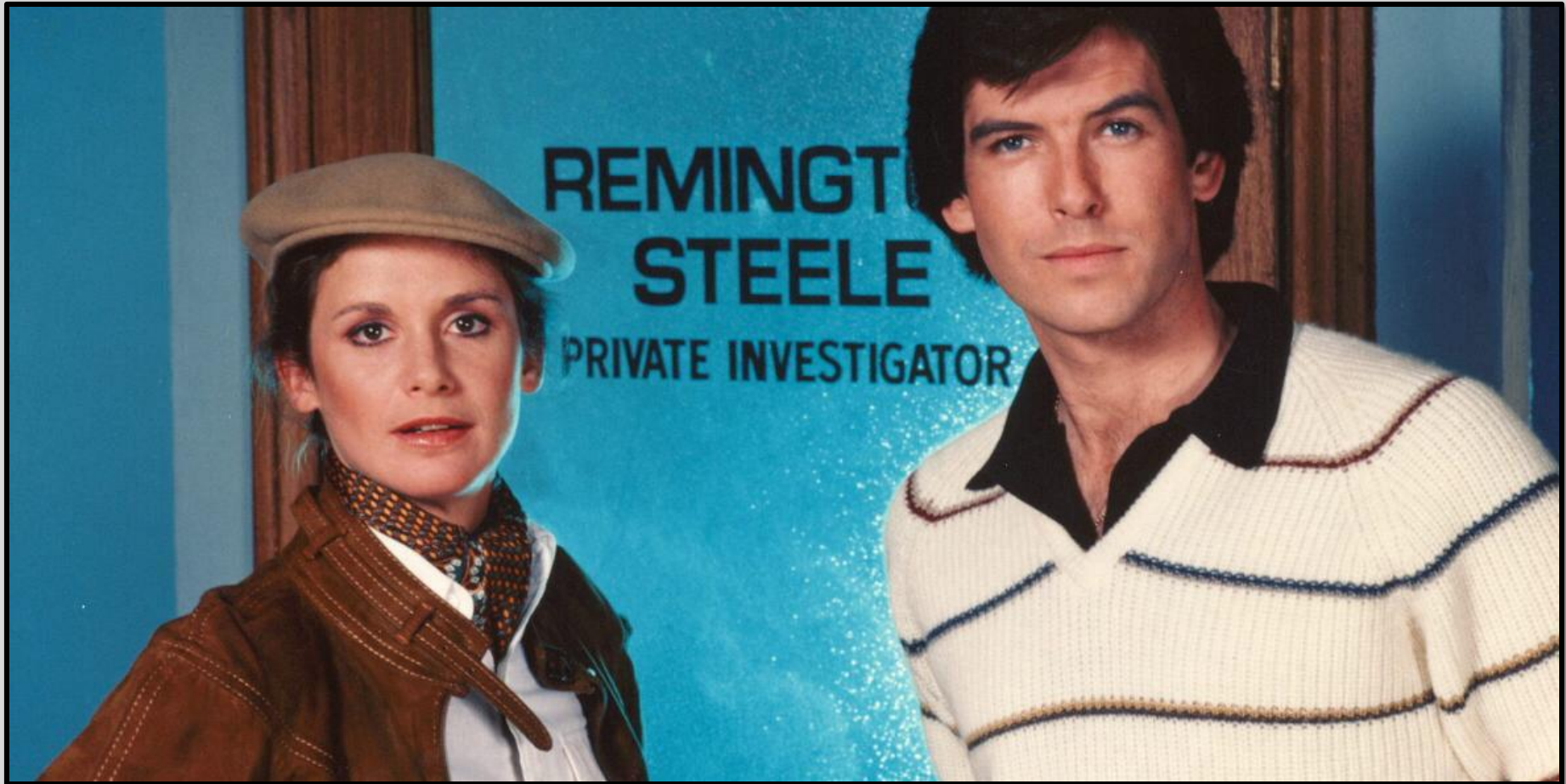
# Bang for the Buck?

## *Following the Money from Transportation Decisions to Outcomes*

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# Pair of PIs



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# Grad Students: “Follow the Money”



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# Advisors: T4A & NRDC



**Transportation**  
for America



**NATURAL  
RESOURCES  
DEFENSE  
COUNCIL**



UNIVERSITY OF OREGON



Sustainable Cities Initiative

3/21/17

4

# Research Questions

**Effectiveness (“Bang for the Buck”):** How effectively are states and metropolitan planning organization (MPOs) advancing their own economic development, public health, and other *livability* goals with transportation investments?

**Accountability & Transparency:** How are states and MPOs making transportation investment decisions? How could (performance-based) decision-making processes be improved to provide better outcomes?



# Best & Worst Practices



# Methodology

- **Case Studies**

- Considered 10 states/MPOs; studied 6 states/MPOs in detail

- **Document Analysis**

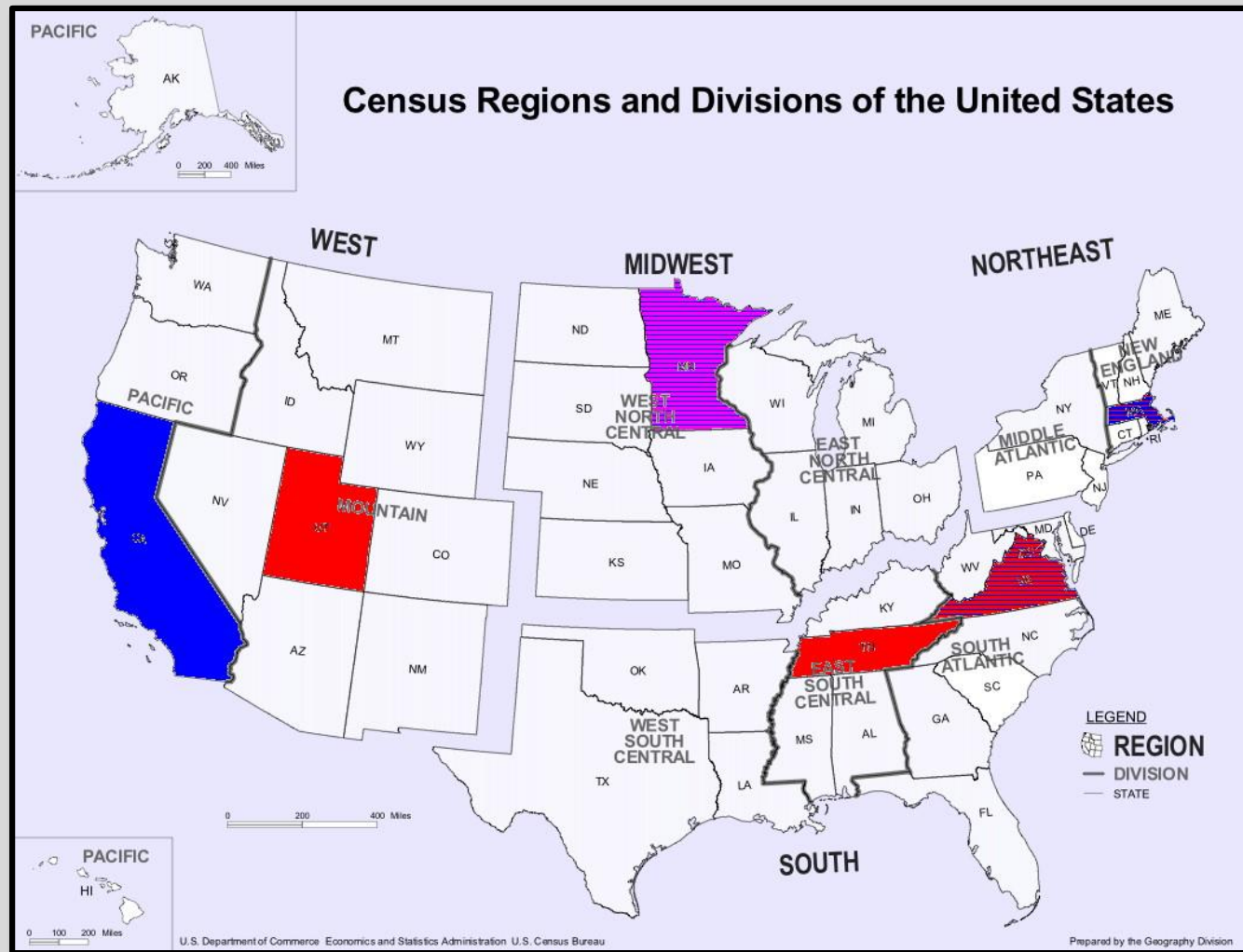
- Organizational structures
- Constitutions & statutes
- Long-range plans & goals
- State & metropolitan transportation improvement Programs (STIPs & MTIPs); budgets
- Other reports

- **Stakeholder Interviews**

- Contacted 6 states & 6 MPOs with follow up questions



# Case Studies



# Findings



# Questions

The End.

Actually, just the beginning.



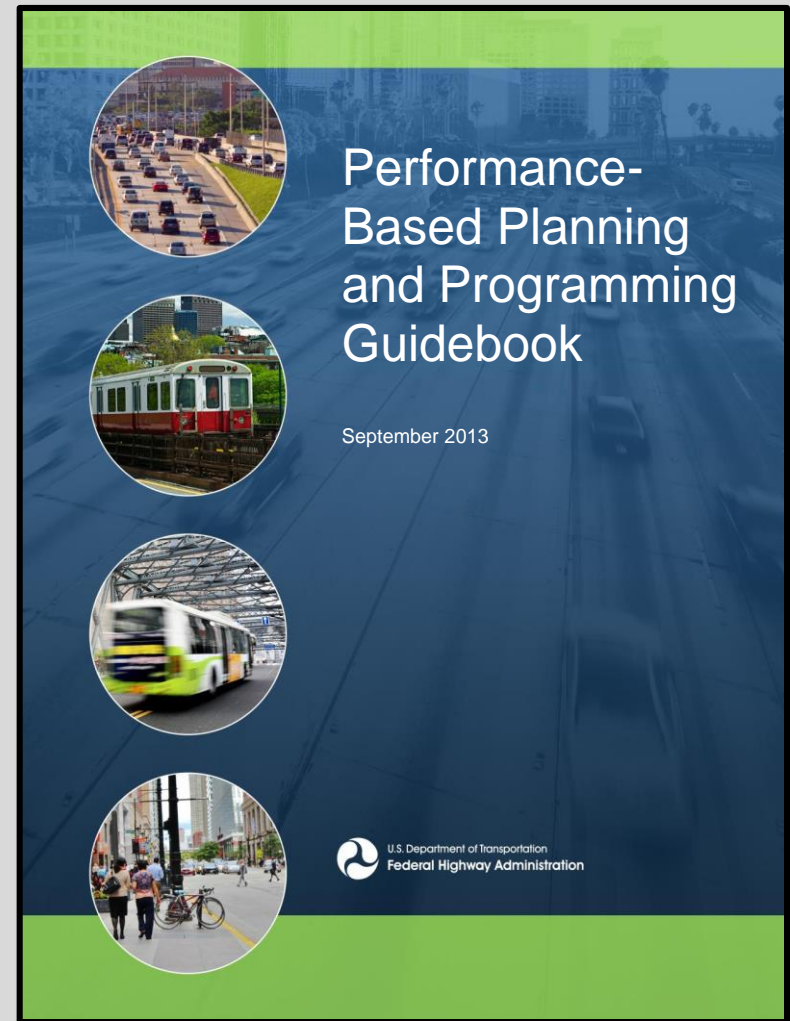
# Outline

1. Problem

2. Solutions

3. MAP-21 →

4. Conclusion



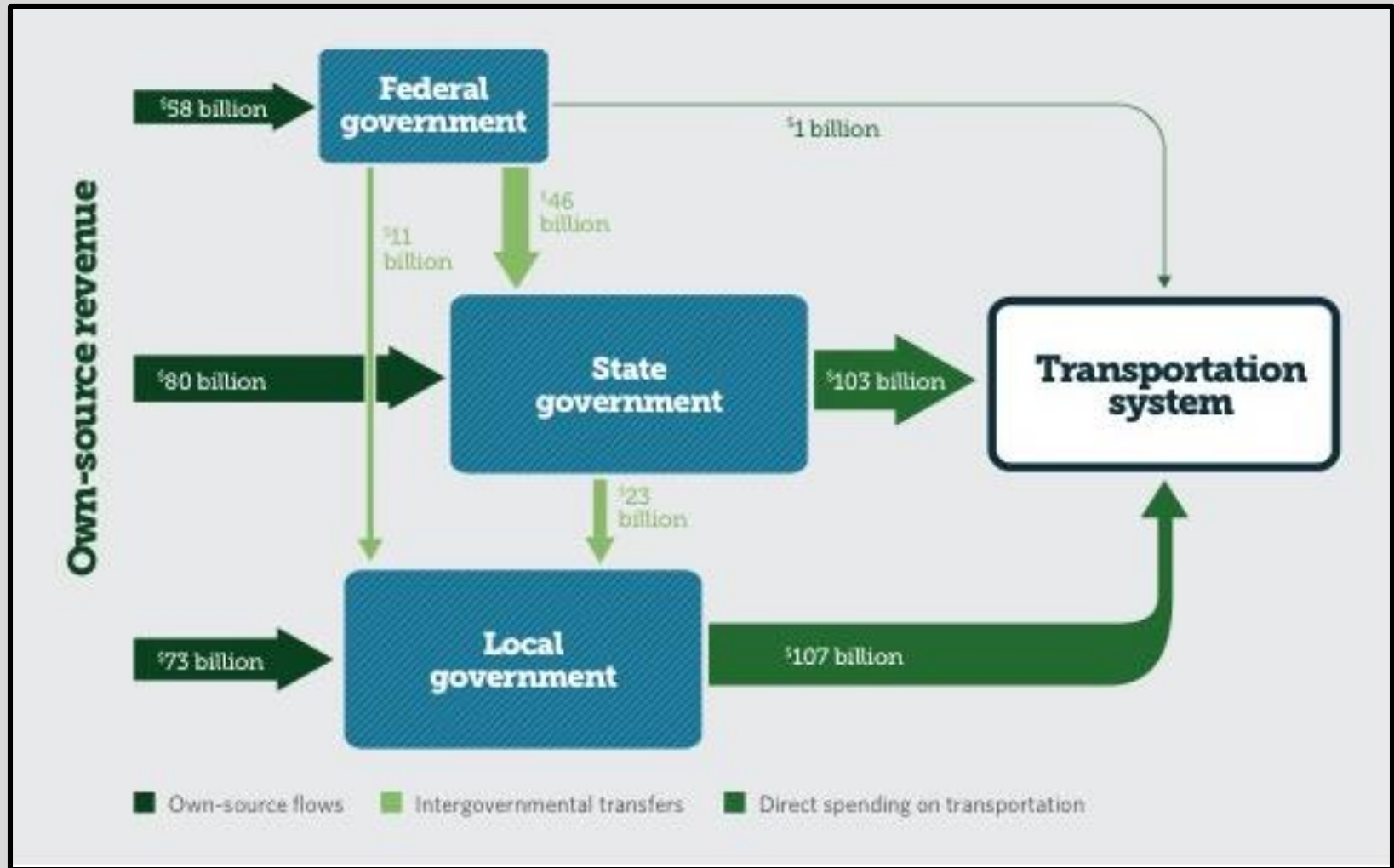
# “Houston, we have a problem”



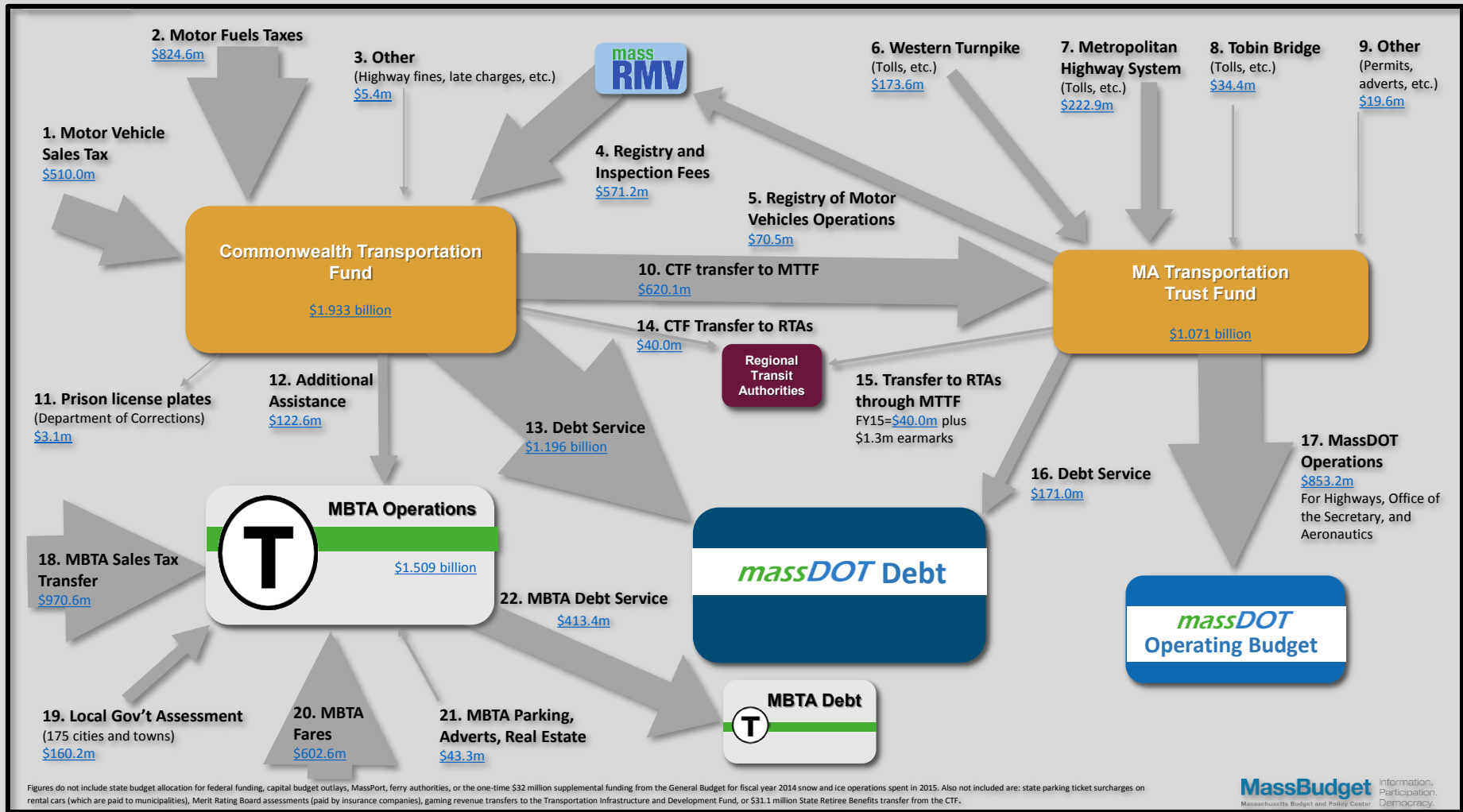
# Government Transportation Expenditures

Mode	Expenditures (millions of \$)	
Highway	206,251	64.5%
Transit	55,150	17.2%
Rail	1,752	0.5%
Air	41,794	13.1%
Water	13,261	4.1%
Pipeline	86	0.0%
General Support	1,523	0.5%
<b>Total</b>	<b>319,817</b>	<b>100.0%</b>

# \$ Flows Between Levels of Government



# \$ Flows in Massachusetts



# \$ Flows in Massachusetts

## Mass. Gen. Laws ch. 29, § 2ZZZ

(a) There shall be established and set up on the books of the commonwealth a separate fund to be known as the *Commonwealth Transportation Fund*, which shall be used exclusively for financing transportation-related purposes. ...

(c) In addition to those revenues credited to the fund under subsection (a) there shall be credited to the fund all monies received by the commonwealth from the receipts from sales of motor vehicles under sections 3, 25 and 26 of chapter 64H and all monies received by the commonwealth on the sales price of purchases of motor vehicles under sections 4, 26 and 27 of chapter 64I, from the taxes imposed under said chapters 64H and 64I as excises upon the sale and use at retail of motor vehicles and upon the storage, use or other consumption of motor vehicles, including interest thereon or penalties; provided however, such amount shall not include any portion of the taxes that constitute special receipts within the meaning of subsection (b1/2) of section 10 of chapter 152 of the acts of 1997. The amount credited to the fund under this subsection shall be net of the *dedicated sales tax* revenue amount transferred to the Massachusetts Bay Transportation Authority State and Local Contribution Fund under section 35T of chapter 10 and to the School Modernization and Reconstruction Trust Fund under section 35BB of said chapter 10.

(d) Not less than the following amounts shall annually be distributed from the fund to the Massachusetts Bay Transportation Authority and regional transit authorities:

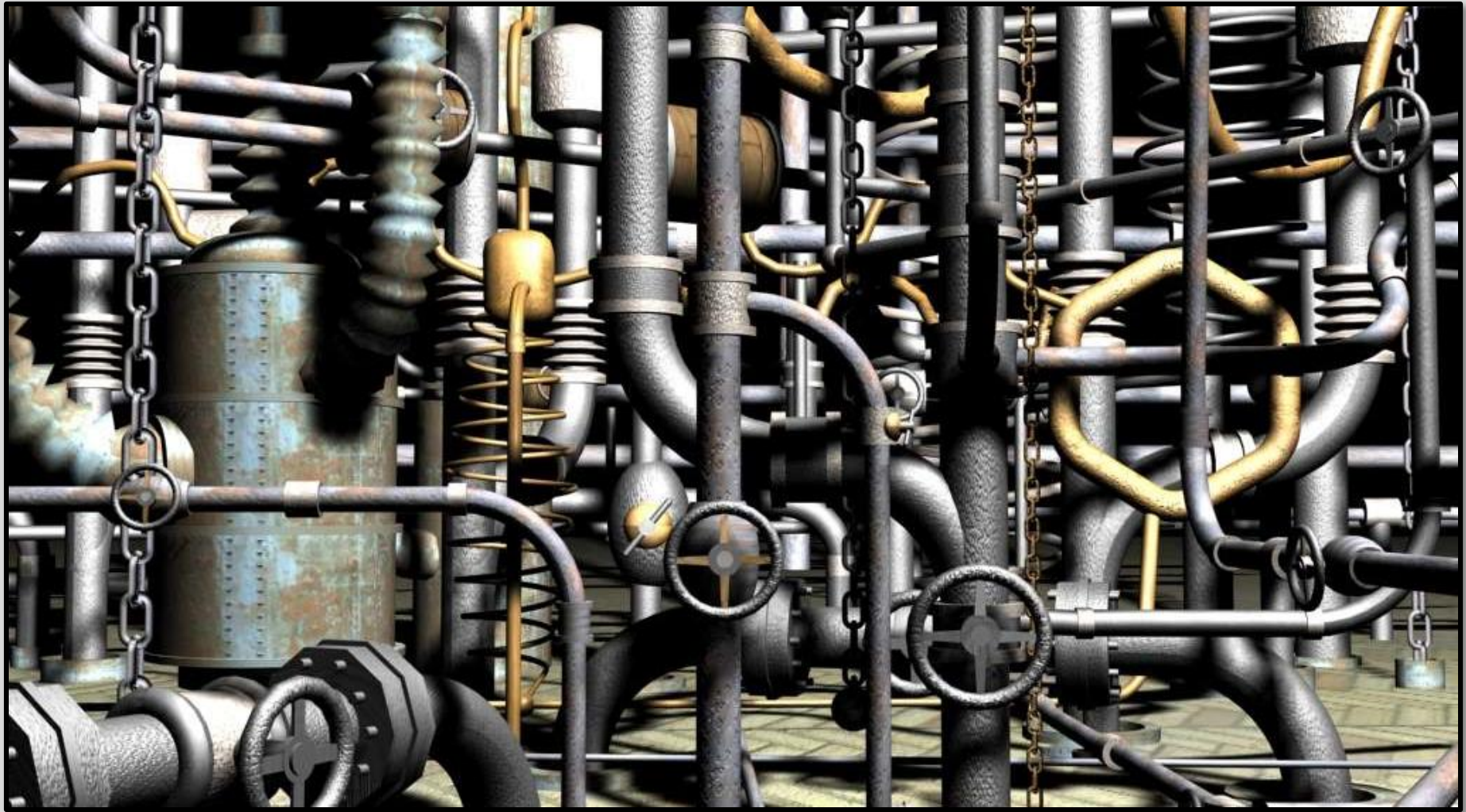
- (1) *\$160,000,000 to the Massachusetts Bay Transportation Authority* or any fund controlled by the authority in each fiscal year; and
- (2) *\$15,000,000 to regional transit authorities* organized under chapter 161B or predecessor statutes in each fiscal year. ...



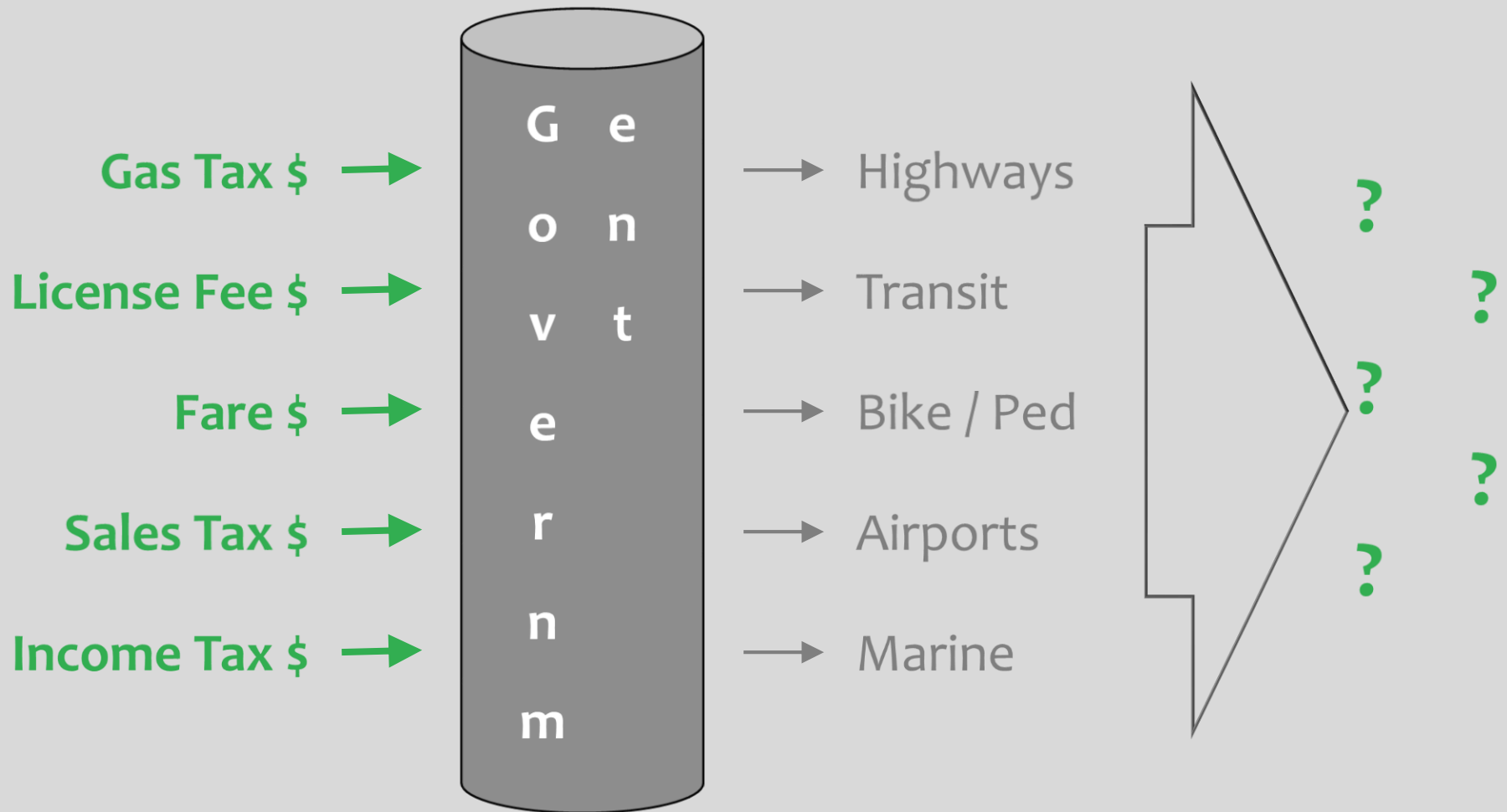
# \$ Flows in California

Location, Project Limits, Description, Scope of Work	
Near Cholame, from 0.7 miles west of Davis Road to 0.5 miles west of Antelope Road. Convert to a 4 lane expressway.	
<input type="checkbox"/> Includes ADA Improvements <input checked="" type="checkbox"/> Includes Bike/Ped Improvements	
Component	Implementing Agency
PA&ED	
PS&E	Caltrans
Right of Way	Caltrans
Construction	Caltrans
Purpose and Need	
Heavy trucks and RV's comprise a very high percentage of the total traffic on this portion of Route 46. These vehicles typically experience a reduction in running speed of 31 km/h. There are limited passing opportunities on this segment, which contributes to driver frustration and passing miscalculations. Route 46 will continue to serve as a vital conduit for traffic to and from the San Joaquin Valley region and beyond, to the Central Coast. This project will reduce congestion, enhance safety and provide passing opportunities, improve the facilitation of goods movement, improve recreational travel and major east/west route from the San Joaquin Valley and Interstate 5 to the Central Coast and Rout101.	
Project Benefits	
The Project benefits include: Safety Improvements, reduction of fatalities and injuries. The project supports a growing economy, improves the livability of the region, and reduces greenhouse gases. It is a Primary Goods Movement Route, and will provide Bike/Ped Improvements.	
<input checked="" type="checkbox"/> Supports Sustainable Communities Strategy (SCS) Goals <input checked="" type="checkbox"/> Reduces Greenhouse Gas Emissions	

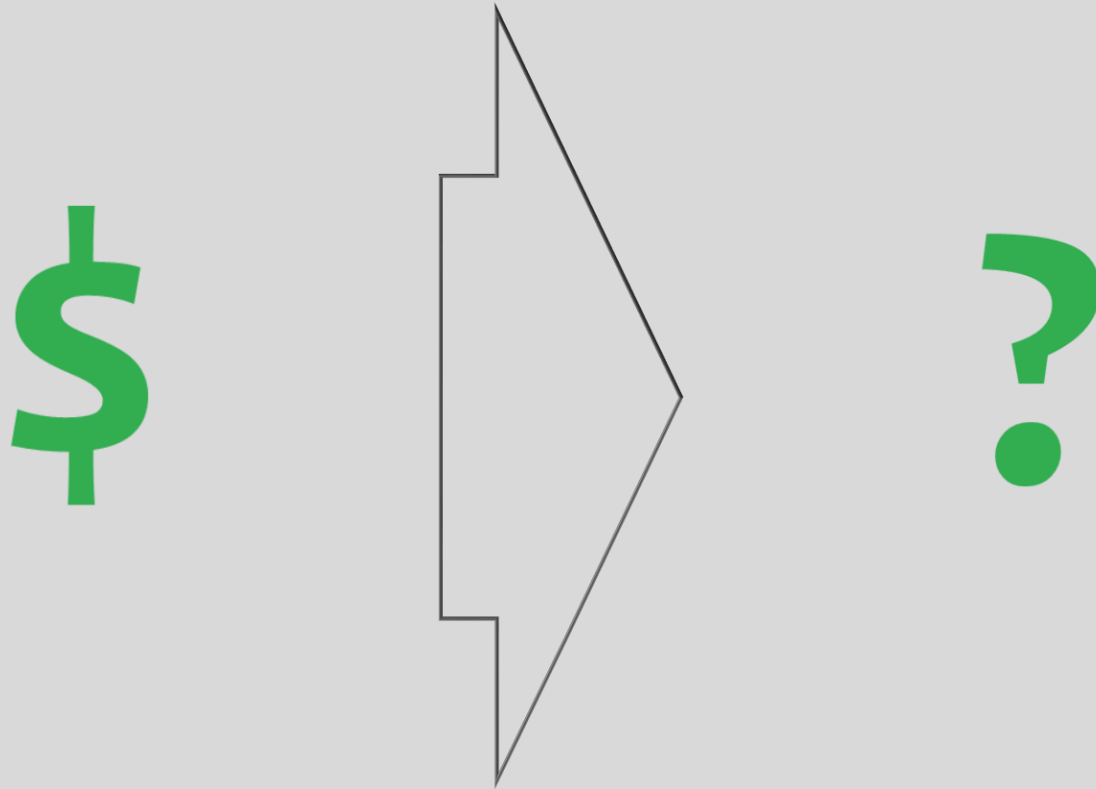
# It's Complicated



# What the Public Sees



# What the Public *REALLY* Sees



# Problem: Lack of Transparency

## 1. **Accountability:** Delivering desired results

- “The continuous effort to use public dollars in the most efficient and cost-effective way” —Wisconsin DOT
- “Demonstrating wise stewardship of public funds or generating a positive return on investment” —T4America

## 2. **Transparency:** In an understood manner

- “In a free society, transparency is government’s obligation to share information with citizens. It is at the heart of how citizens hold their public officials accountable.”  
—Sunshine Review
- “Broadly understood and accepted decision-making process” —T4America

# Need: Report Outcomes to Taxpayers



# Solutions: Outcomes-Based Decision-Making

## *A proposed 4-phase approach*

### 1. Planning

- Set real-world goals that matter
- Determine actions to achieve outcomes

### 2. Funding

- Levy taxes to raise needed revenues
- Empower well-positioned decision-makers

### 3. Programming

- Invest in effective projects

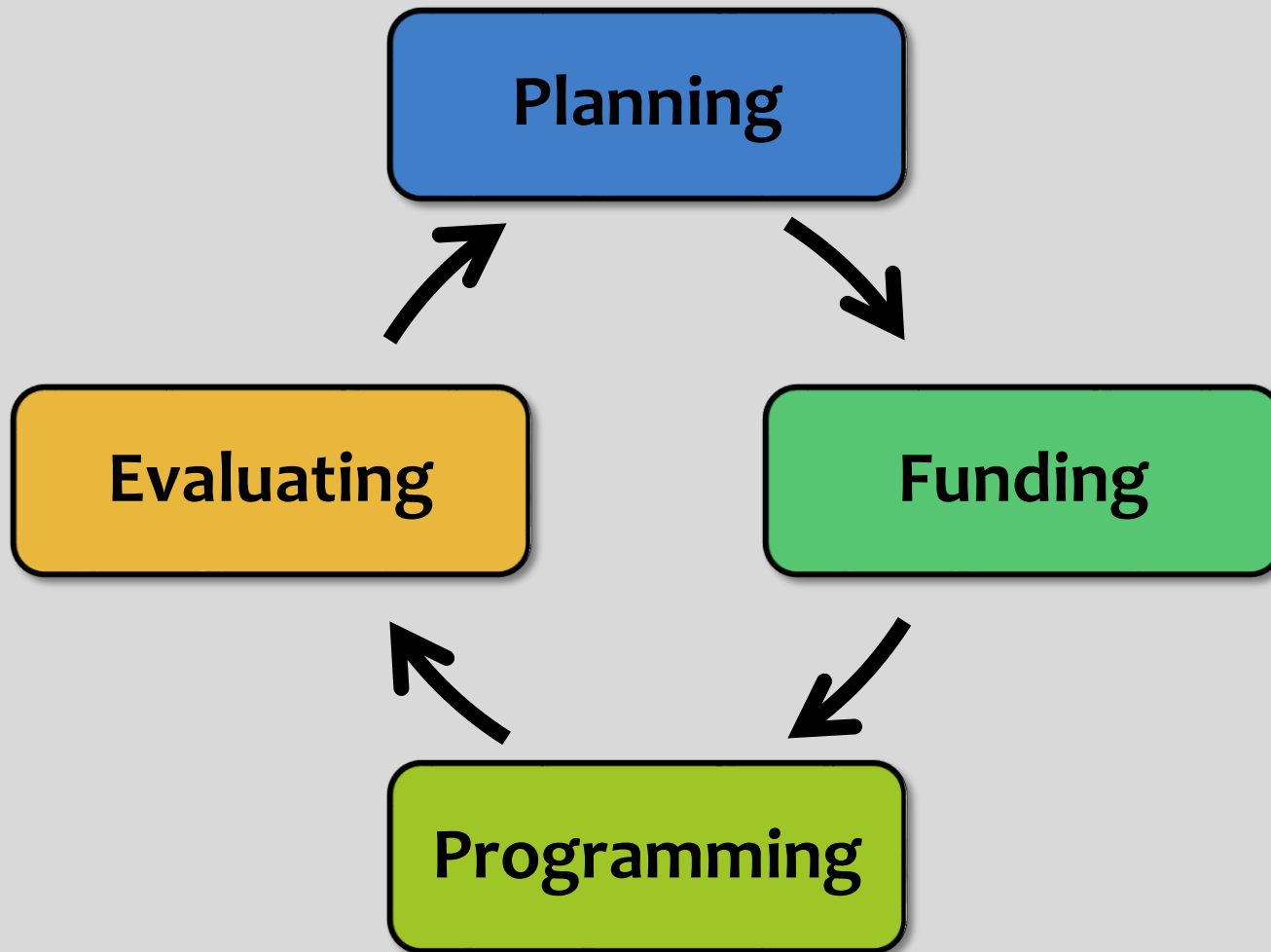
### 4. Evaluating

- Monitor outcomes on the ground
- Report returns on investments to taxpayers
- Adjust expectations in light of experience

# Benefits of Outcomes-Based Approach

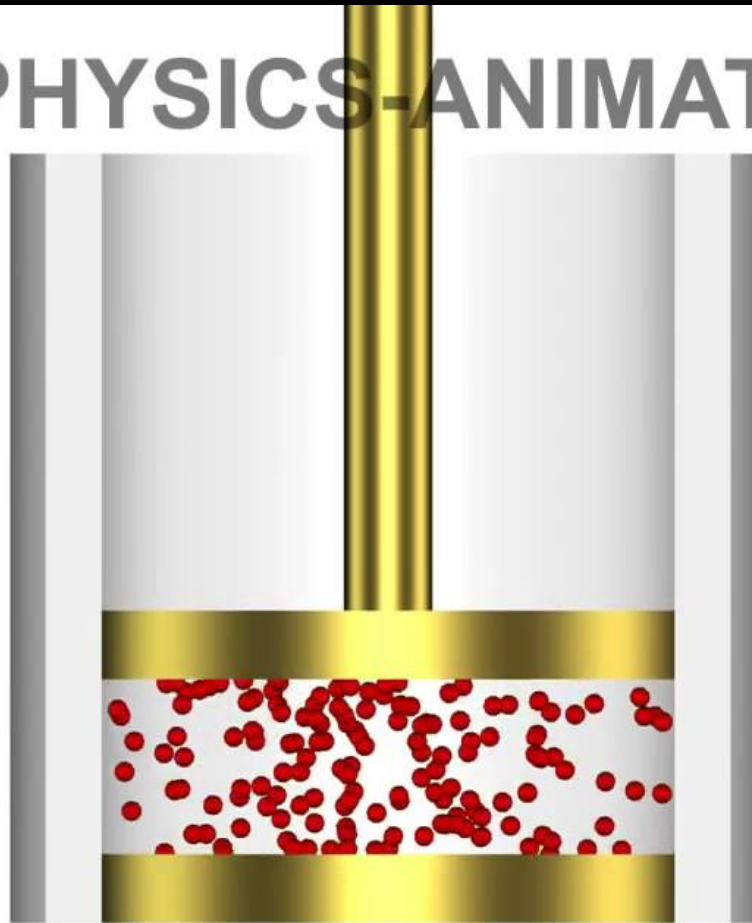
- **Transparency:** Maintaining taxpayer confidence
- **Accountability:** Delivering value to the public
- **Bang for the Buck:** More value on the ground
- **Resolve Conflicts:** Amongst and between transportation and other policies
- **Additional Funding:** Make case to taxpayers

# Four Phases in a Cycle

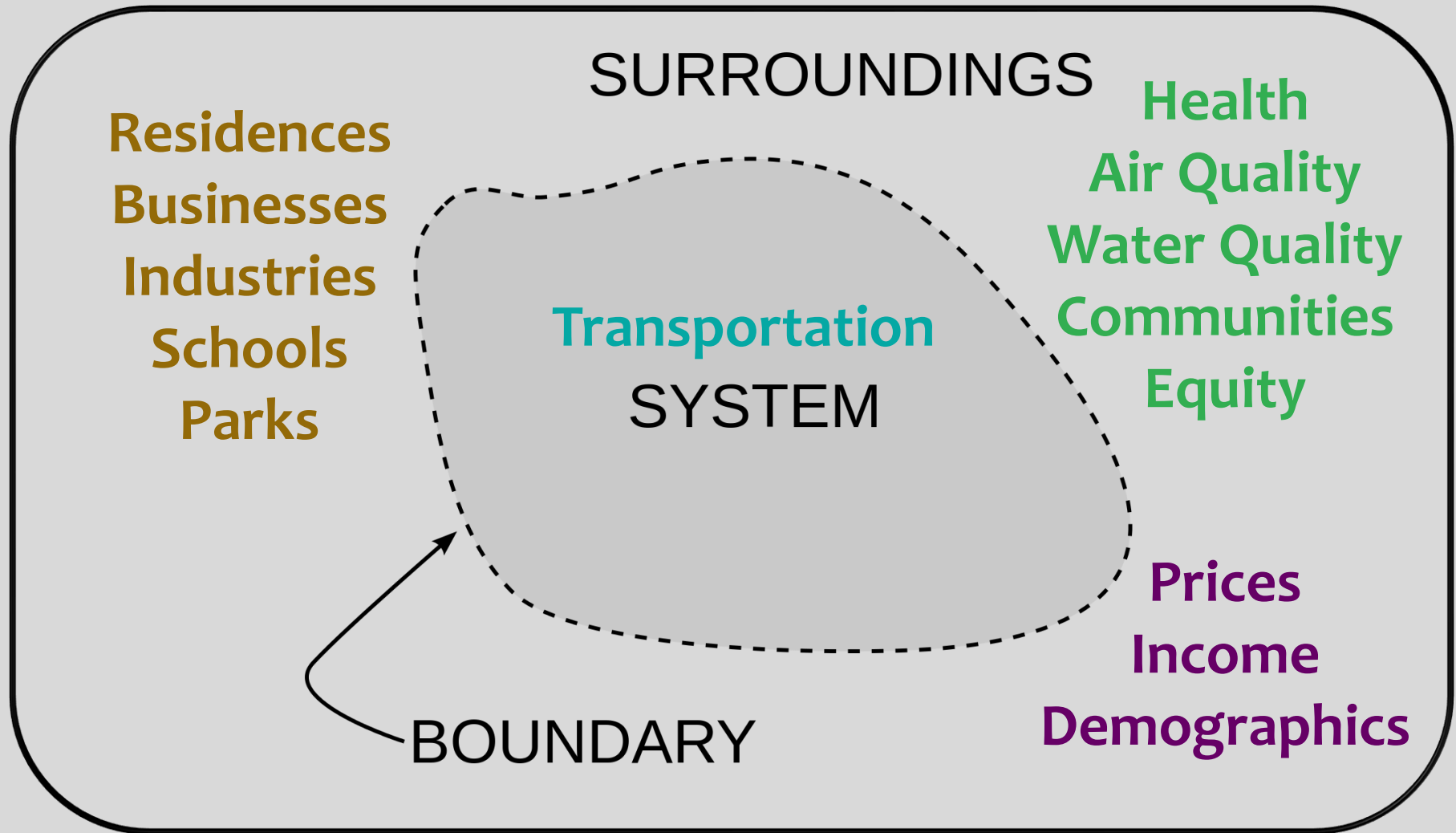


# Physics Analogy: Adiabatic Expansion

PHYSICS-ANIMATIONS.COM



# What Counts as “Transportation”?



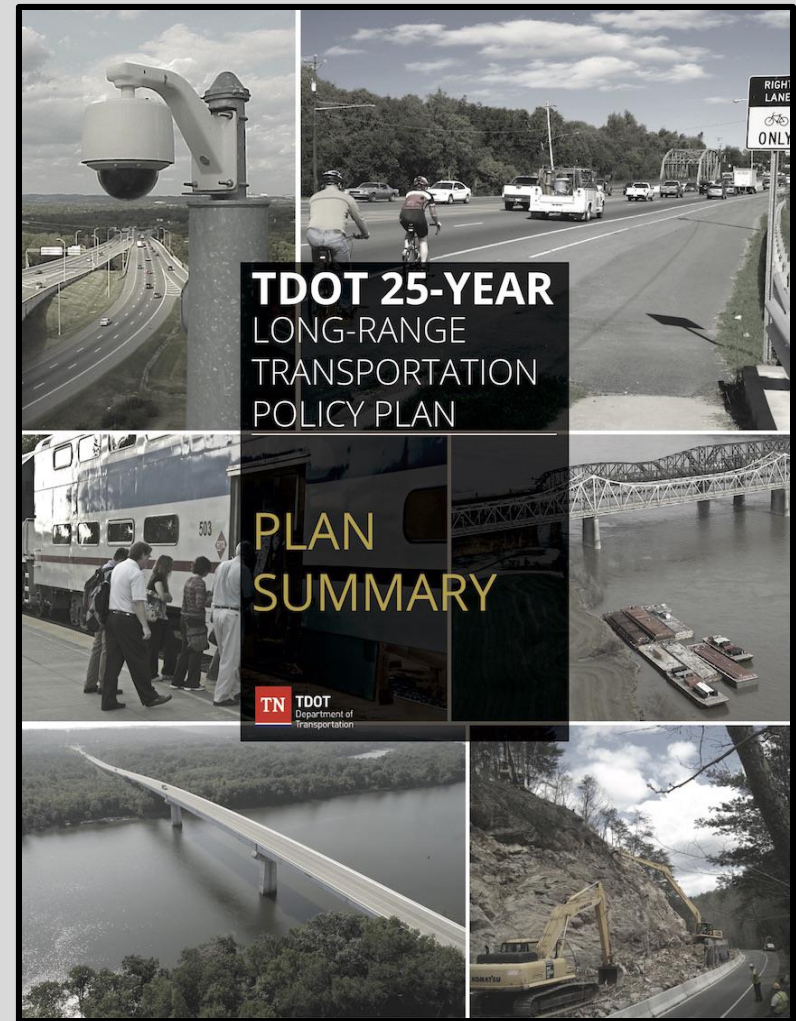
# 1. Planning – Set Goals

*Set real-world goals that matter*

- **Identify Goals:** Learn what the public wants
- **Consider the “Three P’s / E’s”:** Think beyond traditional goals to prosperity, people & planet, i.e., economy, (social) equity & environment
- **Set Priorities:** Especially when goals conflict
  - *Example: Is mobility or safety more important?*
- **Quantify Performance:** Establish objectives, measures & targets

# Tennessee: LRTP Guiding Principles

1. Preserve & manage the existing system
2. Support the state's economy
3. Maximize safety and security
4. Provide for the efficient movement of people & freight
5. Build partnerships for sustainable & livable communities
6. Protect natural, cultural & environmental resources
7. Emphasize financial responsibility



# 1. Planning – Determine Actions

## *Determine actions to achieve outcomes*

- **Identify Actions:** Consider a broad range of potential actions that affect the goals of interest
- **Develop Scenarios:** Determine a package of actions to achieve outcomes cost-effectively
- **Plan for Uncertainty:** As not all factors can be controlled and models are imperfect, plan for imperfect predictions













# San Francisco: Plan Bay Area

## Goals & Targets

TABLE 4: Adopted Plan Bay Area Performance Targets\*

Goal/Outcome		Performance Target
<b>Required</b>		
<b>Climate Protection</b>	1	Reduce per-capita CO <sub>2</sub> emissions from cars and light-duty trucks by 15 percent (Statutory requirement is for year 2035, per SB 375)
<b>Adequate Housing</b>	2	House 100 percent of the region's projected growth (from a 2010 baseline year) by income level (very-low, low, moderate, above-moderate) without displacing current low-income residents (Statutory requirement, per SB 375)
<b>Voluntary</b>		
<b>Healthy and Safe Communities</b>	3	Reduce premature deaths from exposure to particulate emissions: <ul style="list-style-type: none"> <li>• Reduce premature deaths from exposure to fine particulates (PM<sub>2.5</sub>) by 10 percent</li> <li>• Reduce coarse particulate emissions (PM<sub>10</sub>) by 30 percent</li> <li>• Achieve greater reductions in highly impacted areas</li> </ul>
	4	Reduce by 50 percent the number of injuries and fatalities from all collisions (including bike and pedestrian)
	5	Increase the average daily time walking or biking per person for transportation by 70 percent (for an average of 15 minutes per person per day)
<b>Open Space and Agricultural Preservation</b>	6	Direct all non-agricultural development within the urban footprint (existing urban development and urban growth boundaries) (Note: Baseline year is 2010.)
<b>Equitable Access</b>	7	Decrease by 10 percentage points (to 56 percent, from 66 percent) the share of low-income and lower-middle income residents' household income consumed by transportation and housing
<b>Economic Vitality</b>	8	Increase gross regional product (GRP) by 110 percent — an average annual growth rate of approximately 2 percent (in current dollars)
<b>Transportation System Effectiveness</b>	9	<ul style="list-style-type: none"> <li>• Increase non-auto mode share by 10 percentage points (to 26 percent of trips)</li> <li>• Decrease automobile vehicle miles traveled per capita by 10 percent</li> </ul>
	10	Maintain the transportation system in a state of good repair: <ul style="list-style-type: none"> <li>• Increase local road pavement condition index (PCI) to 75 or better</li> <li>• Decrease distressed lane-miles of state highways to less than 10 percent of total lane-miles</li> <li>• Reduce share of transit assets past their useful life to 0 percent (Note: Baseline year is 2012.)</li> </ul>

## Projected Outcomes

<u>TARGET ACHIEVED (5)</u>	<u>RIGHT DIRECTION (5)</u>	<u>WRONG DIRECTION (3)</u>
 Climate Protection	 Healthy and Safe Communities	 Housing + Transportation Affordability
 Adequate Housing	 Affordable Housing	 Displacement Risk
 Open Space and Agricultural Preservation	 Non-Auto Mode Shift	 Access to Jobs
 Middle-Wage Job Creation	 Road Maintenance	
 Goods Movement/ Congestion Reduction	 Transit Maintenance	

## 2. Funding – Levy Taxes

### *Levy taxes to raise needed revenues*

- **Secure Revenues:** Levy taxes & fees to fund transportation actions
- **Be Accountable:** Needed to maintain taxpayer support
- **Price Efficiently:** Taxes & fees aren't merely sources of revenue, but also actions that create incentives & disincentives that impact the transportation system

# weMove Massachusetts

## weMOVE MASSACHUSETTS

The key findings of the scenario analysis are the following:



Under the **“Historical Funding”** scenario, performance of all assets would deteriorate with the most significant declines occurring in roadway pavement, bridges, and delay; and all MBTA assets except accessibility.



**“Current Funding”** improves performance relative to the Historical Funding scenario. MassDOT will be able to maintain roadway performance at close to Current Funding levels through at least 2023, while performance of MBTA and RTA buses and trains will be improved.

### Appendix Figures Key:



Historical Funding



Current Funding

Figure A.1 Bridge Condition

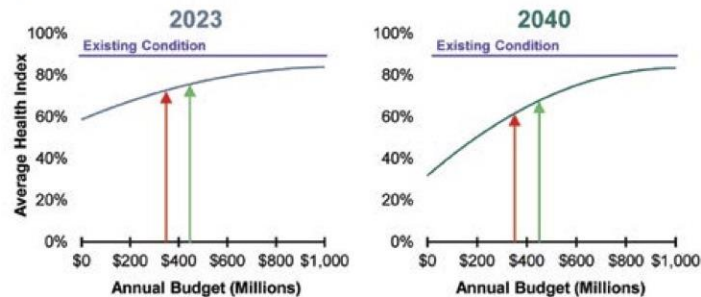


Figure A.2 Pavement Condition

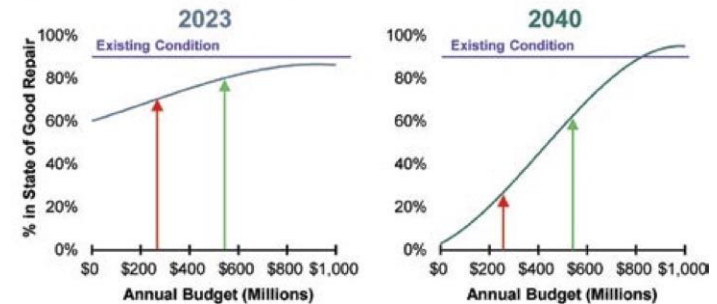
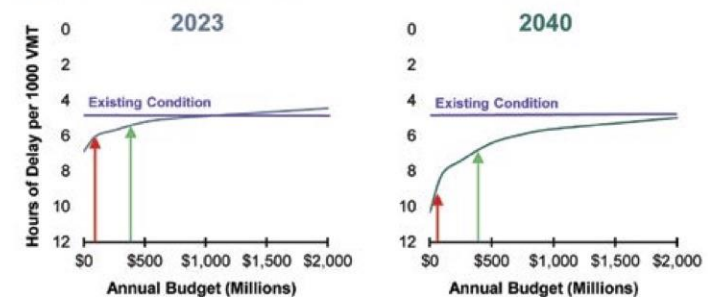


Figure A.3 Mobility Condition

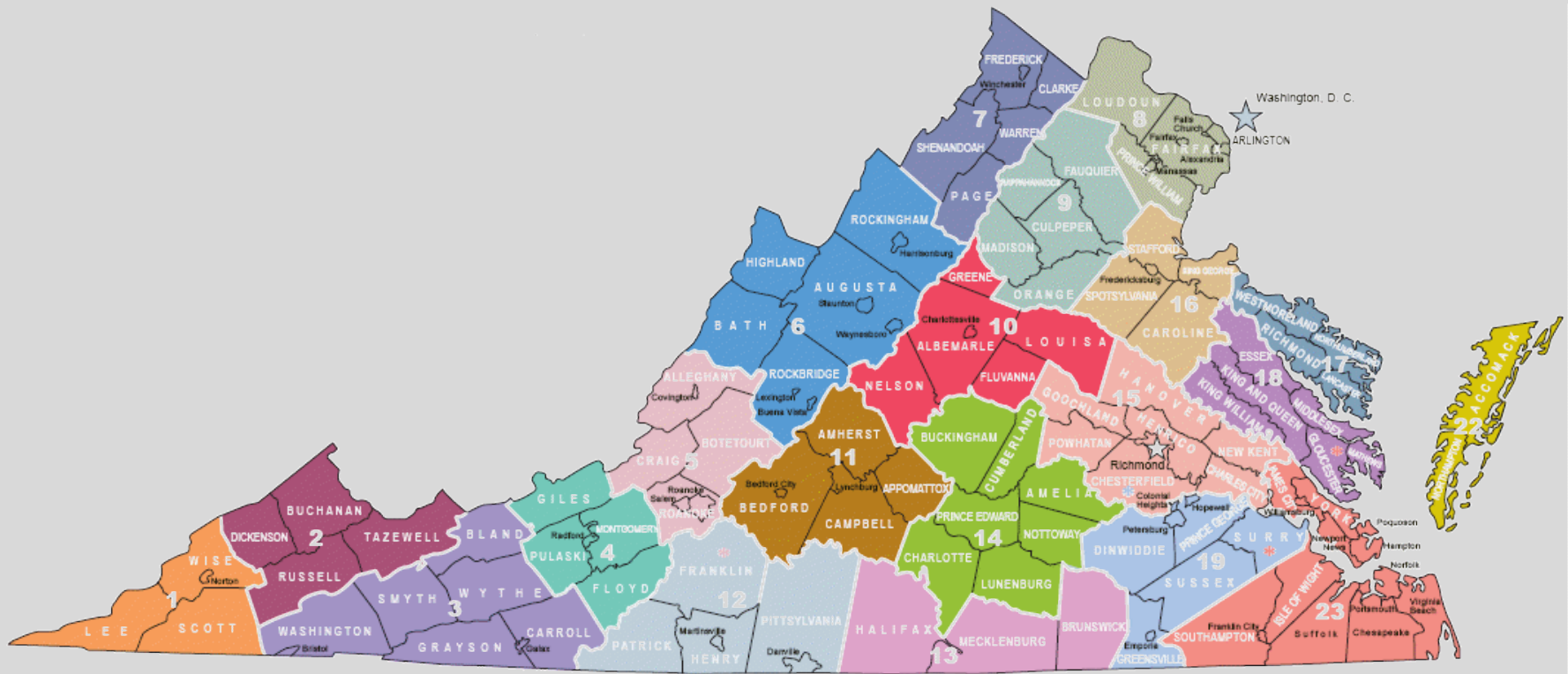


## 2. Funding – Empower

### *Empower well-positioned decision-makers*

- **Allocate:** Provide funding to decision-makers with sufficient breadth of responsibility and familiarity with issues
- **Give Flexibility / Eliminate Constraints:** Decision-makers need sufficient flexibility—lack of constraints—to fund the most effective actions
- **Hold Accountable:** Hold decision-makers accountable for achieving outcomes

# Appropriate Decision-Makers?



“Transportation decision making in Virginia suffers from an inability to marshal the resources and the authority to make transportation funding and investment decisions that both offer the appropriate nexus of decision making and provide an appropriate level of funding to address regional transportation challenges.” —Office of Intermodal Planning and Investment, 2009

# Constitutional & Statutory Constraints

Table 25. Dedications of State Fuel Taxes in State Law

State	Dedications of State Fuel Taxes				
	To Roads and Bridges Only		To Transportation Purposes		Other
	Constitutional	Statutory	Constitutional	Statutory	
Alabama	•				
Alaska					No restrictions
Arizona	•				
Arkansas	Constitutional and statutory				
California			Roads and bridges, fixed guideway transit		
Colorado	With a limited exception for local entities				
Connecticut				•	
Delaware				•	Session law, constitutional restriction pending
Florida				With exceptions	
Georgia	With an emergency exception				
Hawaii		Includes bikeways and trails			
Idaho	•				
Illinois				Roads and bridges, public transit	
Indiana		•			
Iowa	•				
Kansas	Constitutional and statutory				
Kentucky	•				
Louisiana			•		
Maine	•				
Maryland			Constitutional and statutory, with exceptions		
Massachusetts			Roads and bridges, public transit, with exceptions		
Michigan			At least 90 percent must be used for roads, streets, and bridges		
Minnesota	•				
Mississippi		With exceptions			
Missouri	•				
Montana	With exceptions				

State	Dedications of State Fuel Taxes				
	To Roads and Bridges Only		To Transportation Purposes		Other
	Constitutional	Statutory	Constitutional	Statutory	
Nebraska				Roads and bridges, public transit	
Nevada	•				
New Hampshire	•				
New Jersey			•		
New Mexico				With exceptions	
New York				•	
North Carolina				With exceptions	
North Dakota	•				
Ohio	•				
Oklahoma				•	
Oregon	•				
Pennsylvania	•				
Rhode Island				•	
South Carolina				•	
South Dakota	•				
Tennessee				With exceptions	
Texas					State constitution dedicates three-fourths of fuel tax revenues to roads and bridges and one-fourth to the Available School Fund
Utah	•				
Vermont				With exceptions	
Virginia				•	
Washington	•				
West Virginia	•				
Wisconsin			•		
Wyoming	•				
District of Columbia				•	

# 3. Programming

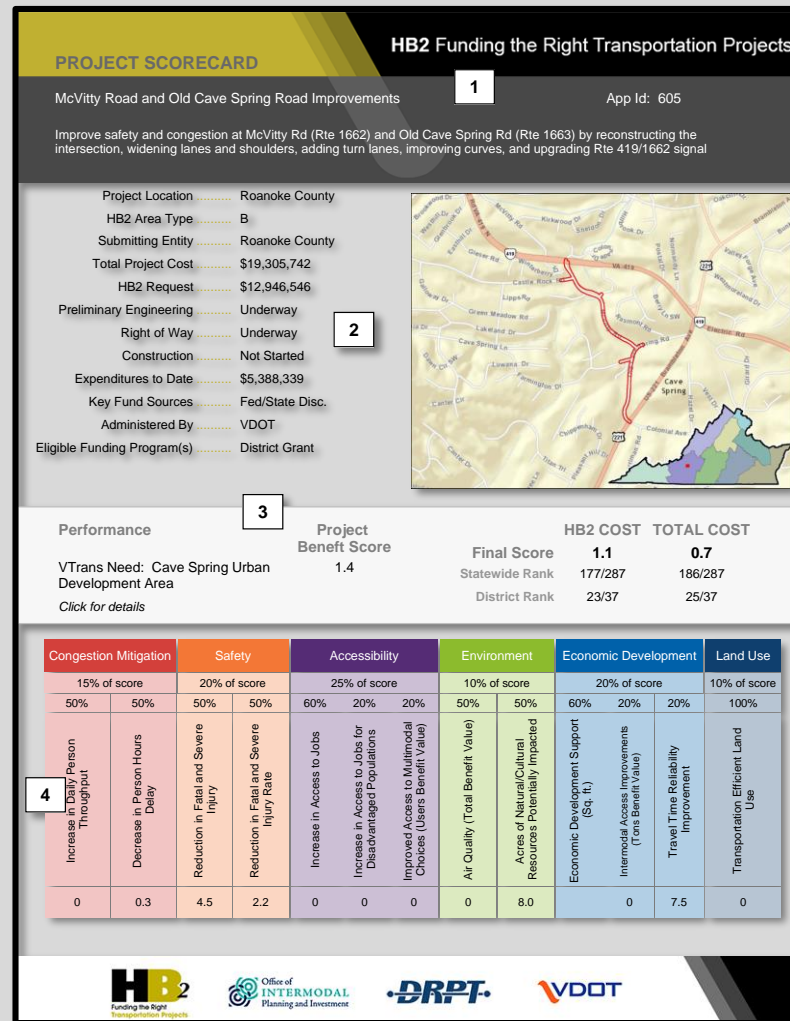
## *Invest in effective projects*

- **Fund What's Planned:** Ideally, the most effective projects are already planned, making programming a lesser exercise in timing
- **Think Multi-Modal / Jurisdictional:** Fund the most effective projects, regardless of mode or jurisdiction
- **Assess Benefits & Costs:** Review not only benefits but also costs—“bang for the buck”

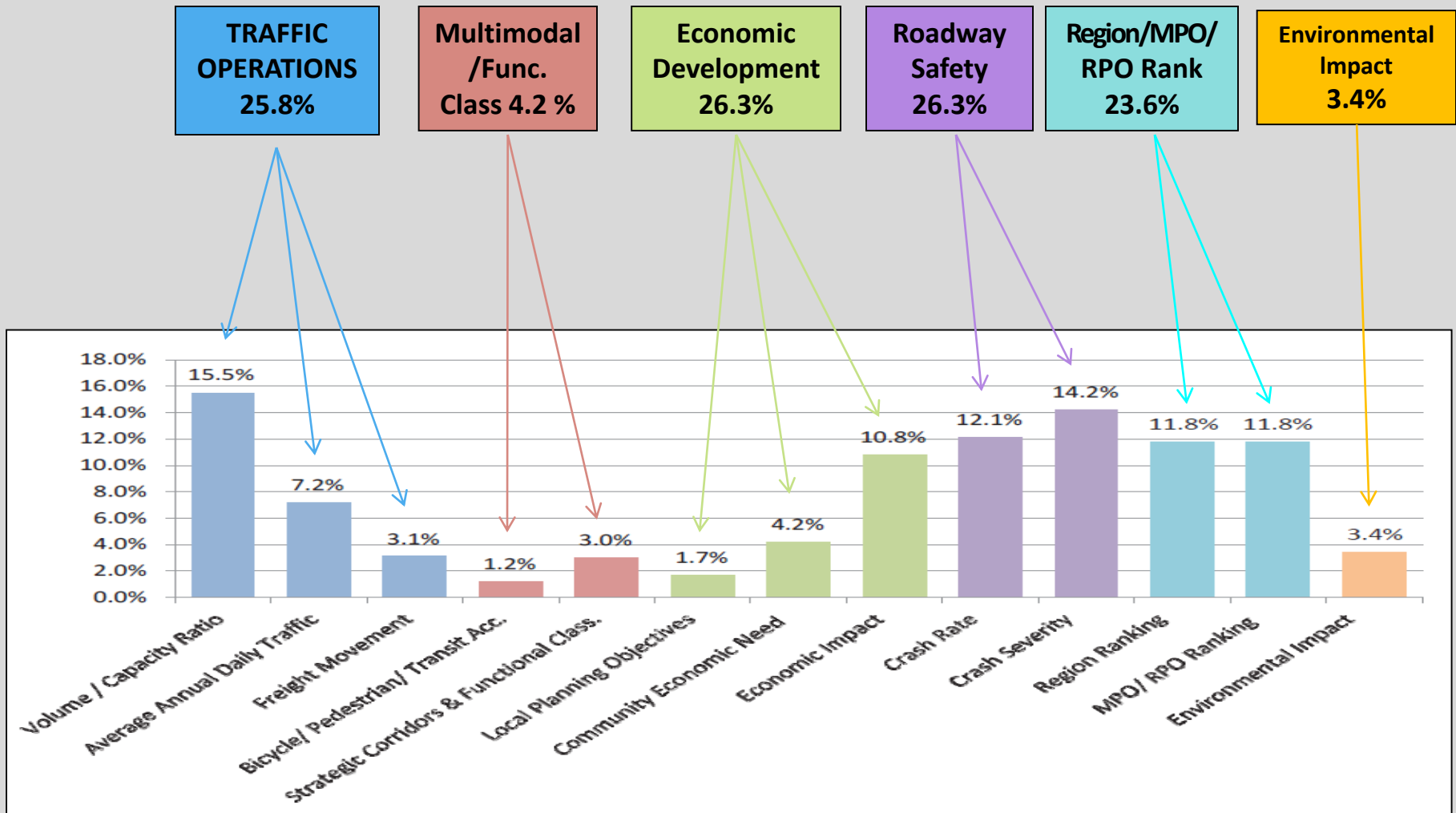
# Virginia: SMART SCALE Measures

Factor Area	Measure
<b>Safety</b>	S.1 Number of Fatal and Injury Crashes (50%)
	S.2 Rate of Fatal and Injury Crashes (50%)
<b>Congestion Mitigation</b>	C.1 Person Throughput (50%)
	C.2 Person Hours of Delay (50%)
<b>Accessibility</b>	A.1 Access to Jobs (60%)
	A.2 Access to Jobs for Disadvantaged Persons (20%)
	A.3 Access to Multimodal Choices (20%)
<b>Environmental Quality</b>	E.1 Air Quality and Environmental Effect (50%)
	E.2 Impact to Natural and Cultural Resources (50%)
<b>Economic Development</b>	ED.1 Project Support for Economic Development (60%)
	ED.2 Intermodal Access and Efficiency (20%)
	ED.3 Travel Time Reliability (20%)
<b>Land Use*</b>	L.1 Transportation-Efficient Land Use (100%)
* for areas over 200,000 in population	

# Virginia: SMART SCALE Scorecard



# Tennessee: DL3 Criteria Weights

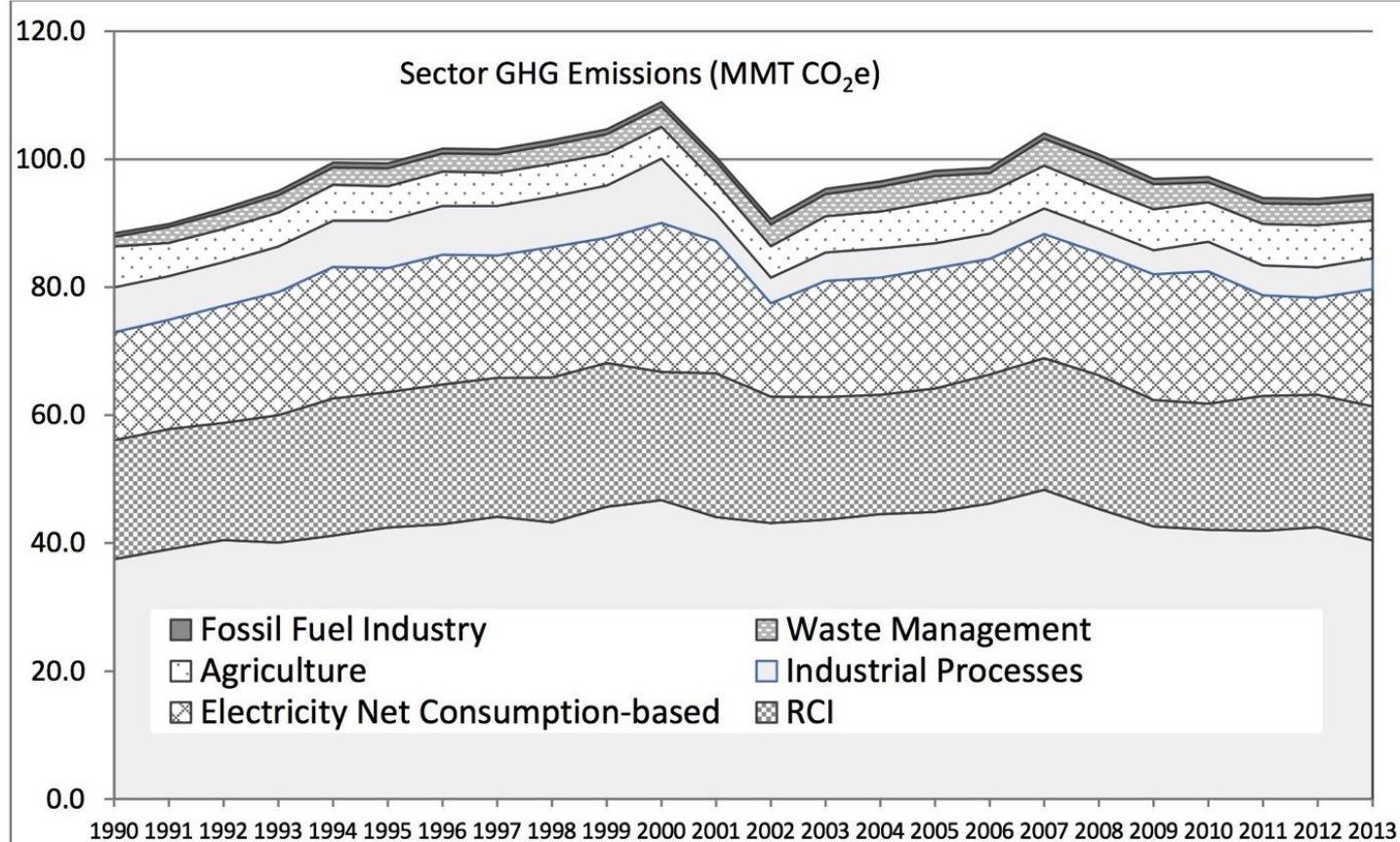


# 4. Evaluating – Monitor Outcomes

## *Monitor outcomes on the ground*

- **Measure Outcomes:** Measure outcomes on the ground over time after projects are implemented (as opposed to just modeling before)
- **Track Cause & Effect:** Link outcomes back to actions (as opposed to those due to external factors)

# Washington: Greenhouse Gas Emissions



**Figure 1: Total Annual Greenhouse Gas Emissions (MMT CO<sub>2</sub>e) by Sector from 1990 – 2013**

# 4. Evaluating – Report Returns

## *Report returns on investments to taxpayers*

- **Be Accountable:** Report what outcomes were delivered—at what cost
- **Be Transparent:** Report how were decisions made
- **Be Accessible:** Report succinctly in plain English to the general public

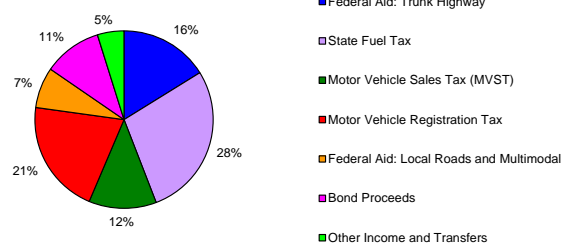
# Utah's Unified Plan

Goals	Key Objectives	Key Performance Measures
<b>Safety</b>	Reduce the number of fatal and serious injuries on the transportation system	Fatalities + serious injuries per capita
<b>Economic Vitality</b>	Increase the number of jobs and services that Utahns can reach within a certain travel time	Increase the number of jobs and services that Utahns can reach within a certain travel time
<b>State of Good Repair</b>	Keep infrastructure in good condition	Cost/benefit savings from proper maintenance
<b>Air Quality</b>	Reduce emissions that adversely affect health, quality of life and the economy	Key mobile source ozone and PM <sub>2.5</sub> emissions
<b>Mobility &amp; Accessibility</b>	Reduce the likelihood of driving long distances daily	Vehicle miles traveled per capita
	Increase the share of trips using non-single-occupant vehicle modes	Commute mode split percentages

# Minnesota: Sources & Uses of Funding

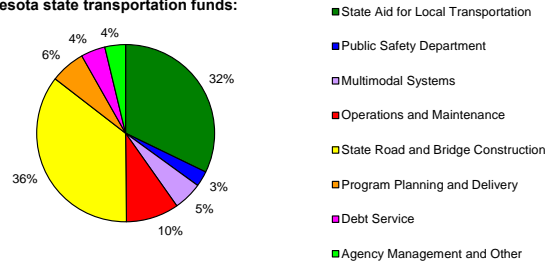
## Transportation Funding, Fiscal Year 2014 Where it comes from and where it goes \$3.14 billion

### Sources of Minnesota state transportation funds:



About 80 percent of MnDOT funds are appropriated by the legislature and 20 percent are statutorily appropriated. Sources of legislative appropriations include state motor fuel taxes, motor vehicle registration fees, motor vehicle sales taxes (MVST), and federal motor fuel tax grants.

### Uses of Minnesota state transportation funds:



MnDOT is a multi-modal agency. Its activities include transit, aeronautics, freight and commercial vehicles, construction, maintenance, and operation of 12,000 miles of state highways. Approximately 30% of MnDOT's appropriations are state aid to local governments for road and bridge projects and other activities.

Note 1: Revenues and expenditures of the Metropolitan Airports Commission (MAC) and Metro Transit are not included.  
Note 2: Data from the State of Minnesota Revenue and Expenditures for Transportation Purposes flowchart (budgetary basis). Includes bond expenditures. Total of Sources; differs from Uses due to fund balance changes.



# 4. Evaluating– Adjust Expectations

## *Adjust expectations in light of experience*

- **Analyze Outcomes:** Compare expected to actual outcomes to improve understanding of effectiveness of actions and accuracy of models
- **Revisit Goals:** Revise performance targets based on progress

# Outcomes-Based Summary

## 1. Planning

- **Set real-world goals that matter**
  - ✓ Identify goals
  - ✓ Consider the “three P’s / E’s”
  - ✓ Set priorities
  - ✓ Quantify performance
- **Determine actions to achieve outcomes**
  - ✓ Identify actions
  - ✓ Develop scenarios
  - ✓ Plan for uncertainty

## 2. Funding

- **Levy taxes to raise needed revenues**
  - ✓ Secure revenues
  - ✓ Be accountable
  - ✓ Price efficiently
- **Empower well-positioned decision-makers**
  - ✓ Allocate
  - ✓ Give flexibility / eliminate constraints
  - ✓ Hold accountable

## 3. Programming

- **Invest in effective projects**
  - ✓ Fund what’s planned
  - ✓ Think multi-modal / jurisdictional
  - ✓ Assess benefits & costs

## 4. Evaluating

- **Monitor outcomes on the ground**
  - ✓ Measure outcomes
  - ✓ Track cause & effect
- **Report returns on investments to taxpayers**
  - ✓ Be accountable
  - ✓ Be transparent
  - ✓ Be accessible
- **Adjust expectations in light of experience**
  - ✓ Analyze outcomes
  - ✓ Revisit goals

# MAP-21: Declaration of Policy

“Performance management will *transform* the Federal-aid highway program and provide a means to the *most efficient investment* of Federal transportation funds by refocusing on national transportation goals, increasing the *accountability and transparency* of the Federal-aid highway program, and *improving project decision-making* through performance-based *planning and programming*.”



# MAP-21: National Goals

1. **Safety:** To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
2. **Infrastructure Condition:** To maintain the highway infrastructure asset system in a state of good repair.
3. **Congestion Reduction:** To achieve a significant reduction in congestion on the National Highway System.
4. **System Reliability:** To improve the efficiency of the surface transportation system.
5. **Freight Movement & Economic Vitality:** To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
6. **Environmental Sustainability:** To enhance the performance of the transportation system while protecting and enhancing the natural environment.
7. **Reduced Project Delivery Delays:** To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

# MAP-21: Performance Measures

## *Highways*

- **National Highway Performance Program (NHPP):** condition of pavement & bridges; performance of Interstate System & National Highway System
- **Highway Safety Improvement Program (HSIP):** serious injuries & fatalities
- **Congestion Mitigation & Air Quality Program (CMAQ):** traffic congestion & emissions
- **National Freight Movement:** freight movement on the Interstate System

## *Public Transportation*

- **Transit Asset Management:** condition assessment
- **Public Transportation Safety Program:** safety risk management & safety assurance

# MAP-21: Responsibilities

- **U.S. DOT**

- Establish performance measures

- **States**

- Set targets (within 1 year)
- Report progress (within 4 years and then every 2 years)

- **MPOs**

- Set targets (within 1 year)
- Report progress (within 4 years and then every 2 years)

# Performance-Based Planning & Programming



# MAP-21 vs. Outcomes-Based?

	MAP-21	Outcomes-Based
Planning	<ul style="list-style-type: none"><li>• State DOTs &amp; MPOs focus narrowly on transportation system</li></ul>	<ul style="list-style-type: none"><li>• Account for factors interacting with transportation system: land use, economy, etc.</li></ul>
Funding	<ul style="list-style-type: none"><li>• Do not see taxing &amp; allocating as performance-based decisions</li></ul>	<ul style="list-style-type: none"><li>• Focus especially on allocating to ensure flexibility / eliminate constraints to invest in most effective projects</li></ul>
Programming	<ul style="list-style-type: none"><li>• Not necessarily tightly linked with planning</li></ul>	<ul style="list-style-type: none"><li>• Strong planning should mostly inform programming</li></ul>
Evaluating	<ul style="list-style-type: none"><li>• Not tracking cause &amp; effect</li></ul>	<ul style="list-style-type: none"><li>• Integrate planning, programming &amp; evaluating to analyze cause &amp; effect</li></ul>

# Summary

- Focus on outcomes that matter, and set priorities
- Develop scenarios, and plan for uncertainty
- Empower decision-makers with broad responsibilities, allocate flexible funding, and hold accountable
- Invest in projects that achieve performance measures effectively: “bang for the buck”
- Monitor outcomes over time, and track cause & effect
- Be accountable, transparent & accessible to the public
- Adjust expectations in light of experience



# Conclusion

## 1. Planning

- **Set real-world goals that matter**
  - ✓ Identify goals
  - ✓ Consider the “three P’s / E’s”
  - ✓ Set priorities
  - ✓ Quantify performance
- **Determine actions to achieve outcomes**
  - ✓ Identify actions
  - ✓ Develop scenarios
  - ✓ Plan for uncertainty

## 2. Funding

- **Levy taxes to raise needed revenues**
  - ✓ Secure revenues
  - ✓ Be accountable
  - ✓ Price efficiently
- **Empower well-positioned decision-makers**
  - ✓ Allocate
  - ✓ Give flexibility / eliminate constraints
  - ✓ Hold accountable

## 3. Programming

- **Invest in effective projects**
  - ✓ Fund what’s planned
  - ✓ Think multi-modal / jurisdictional
  - ✓ Assess benefits & costs

## 4. Evaluating

- **Monitor outcomes on the ground**
  - ✓ Measure outcomes
  - ✓ Track cause & effect
- **Report returns on investments to taxpayers**
  - ✓ Be accountable
  - ✓ Be transparent
  - ✓ Be accessible
- **Adjust expectations in light of experience**
  - ✓ Analyze outcomes
  - ✓ Revisit goals

# Thank You

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*“Effectiveness of Transportation Funding Mechanisms  
for Achieving National, State, and Metropolitan  
Economic, Health, and Other Livability Goals”*

<http://nitc.trec.pdx.edu/research/project/875/>

