



U.S. Department of Transportation
Federal Highway Administration

FHWA Pavement & Materials Technology Program

An Overview

Midwestern States In-Place Recycling Conference
Bloomington, MN
August 11, 2009

Keeping America Moving ➔

To improve mobility on our nation's highways through national leadership, innovation and project delivery

- National Highway System

- 1991 ISTEA
- Interstate System
- Key Corridors
- Principal Routes

- Facts

- 160,000 miles
- 4.1% US mileage
- 44.8% total travel
- 61% Flexible



Transportation Trends

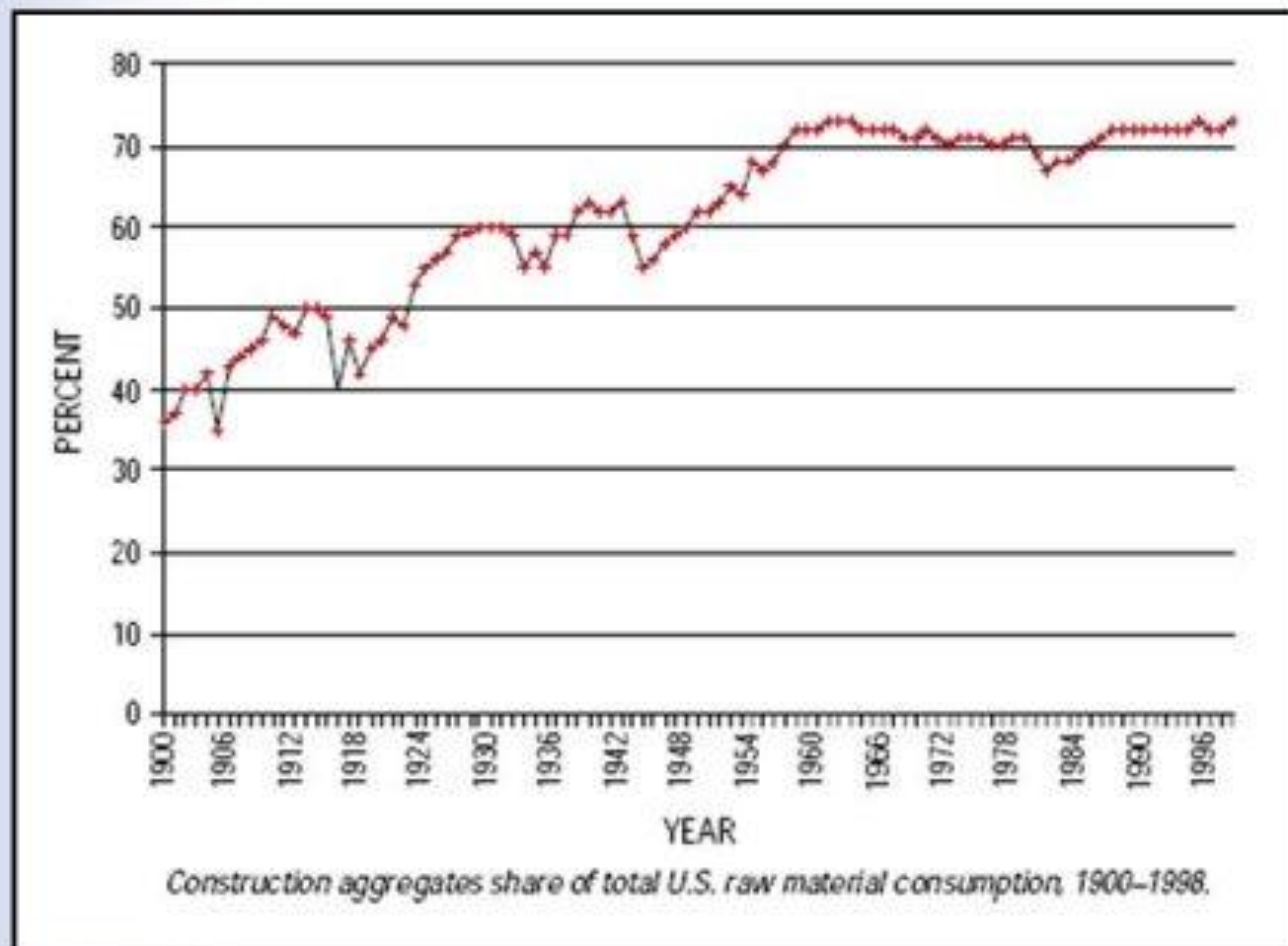
- System Performance
 - VMT has doubled from 1980 to 2006
 - Truck traffic has increased 105%
- Highway and Bridge Conditions
 - Condition of non-Interstates holding or dropping
 - Considerable backlog of unmet needs
- Safety
 - Conditions improving
 - 41,000 fatalities in 2007
 - Expend \$230 billion/yr in crash related costs

Highway Industry Trends

- Construction Cost Inflation
- Changing Construction Processes & Methods
- Project Cost and Complexity
- New Contracting Approaches and Outsourcing
- Program Delivery
- Workforce Attrition and Employee Shortages

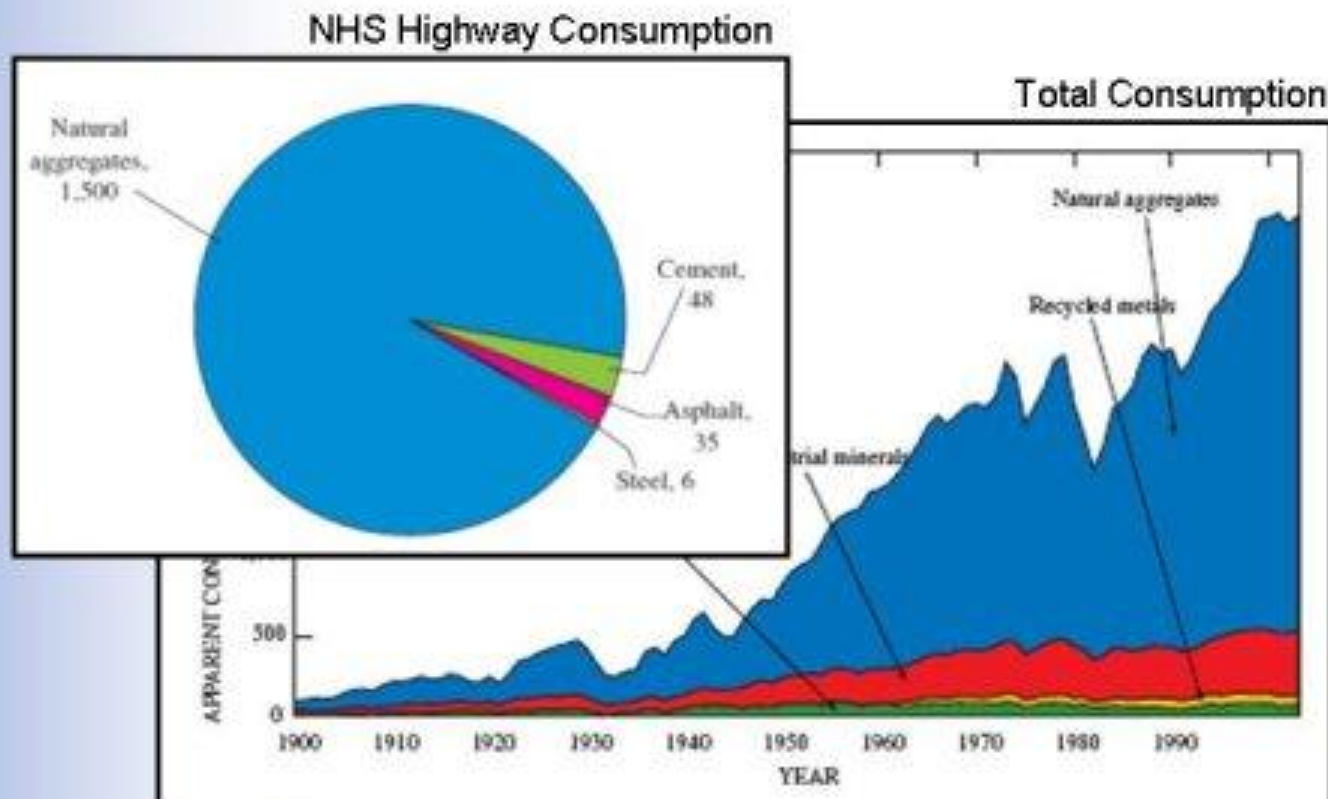


Aggregate Consumption



USGS Recycled Aggregates – Profitable Resource Conservation

Aggregates in Pavements



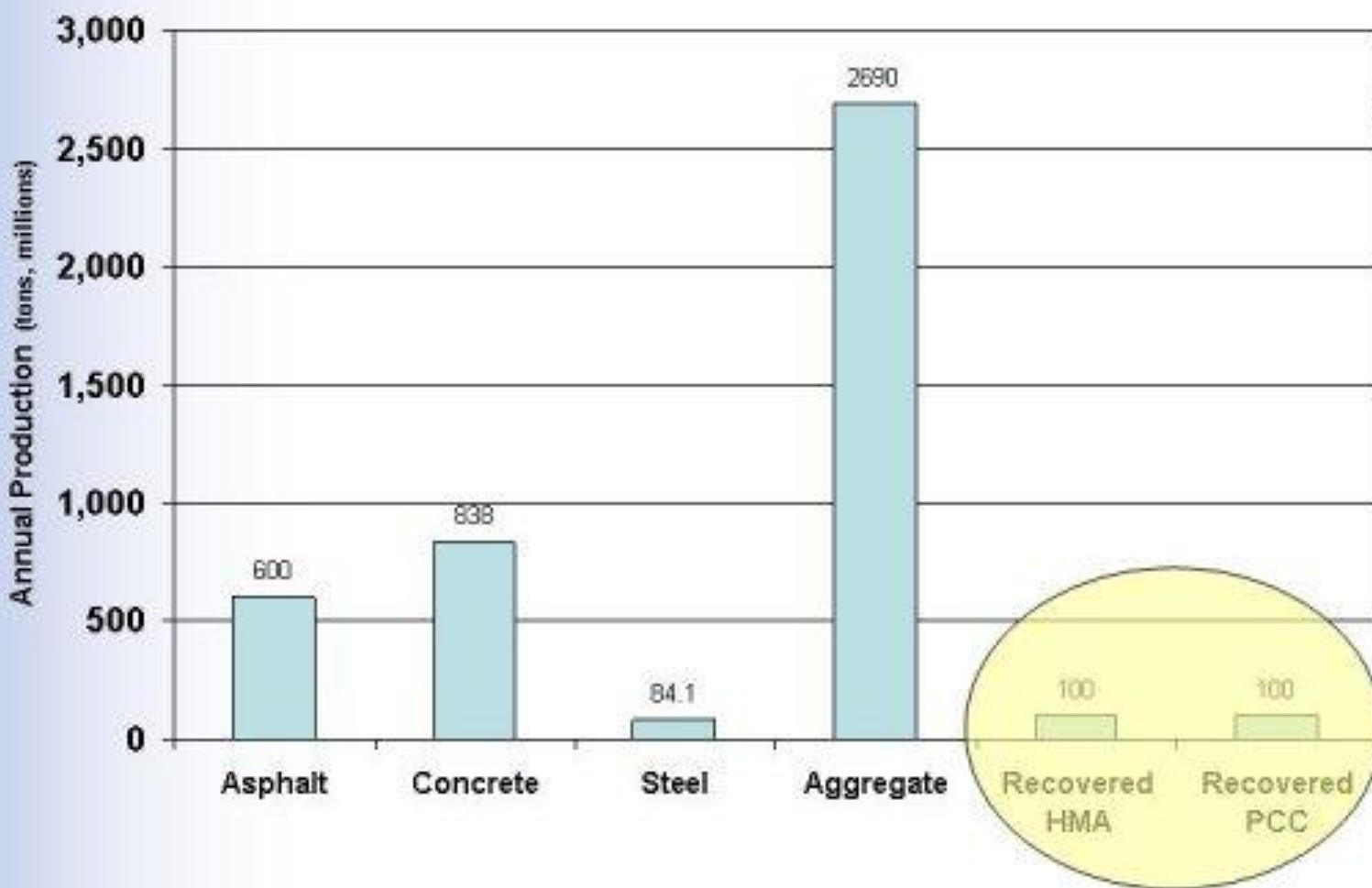
USGS – Materials in Use in US Interstate Highways

Demand for Materials

- 160,000 mile National Highway System
- 4 million miles of public roads
- Produce over 600 million tons of HMA annually & 85+ million SY of concrete for paving annually
- \$70 billion capital outlay to maintain pavements
- Demand for aggregates considerable requiring an estimated 700+ million tons to meet annual demand (15%-25% of annual production)



Material Production Quantities - US



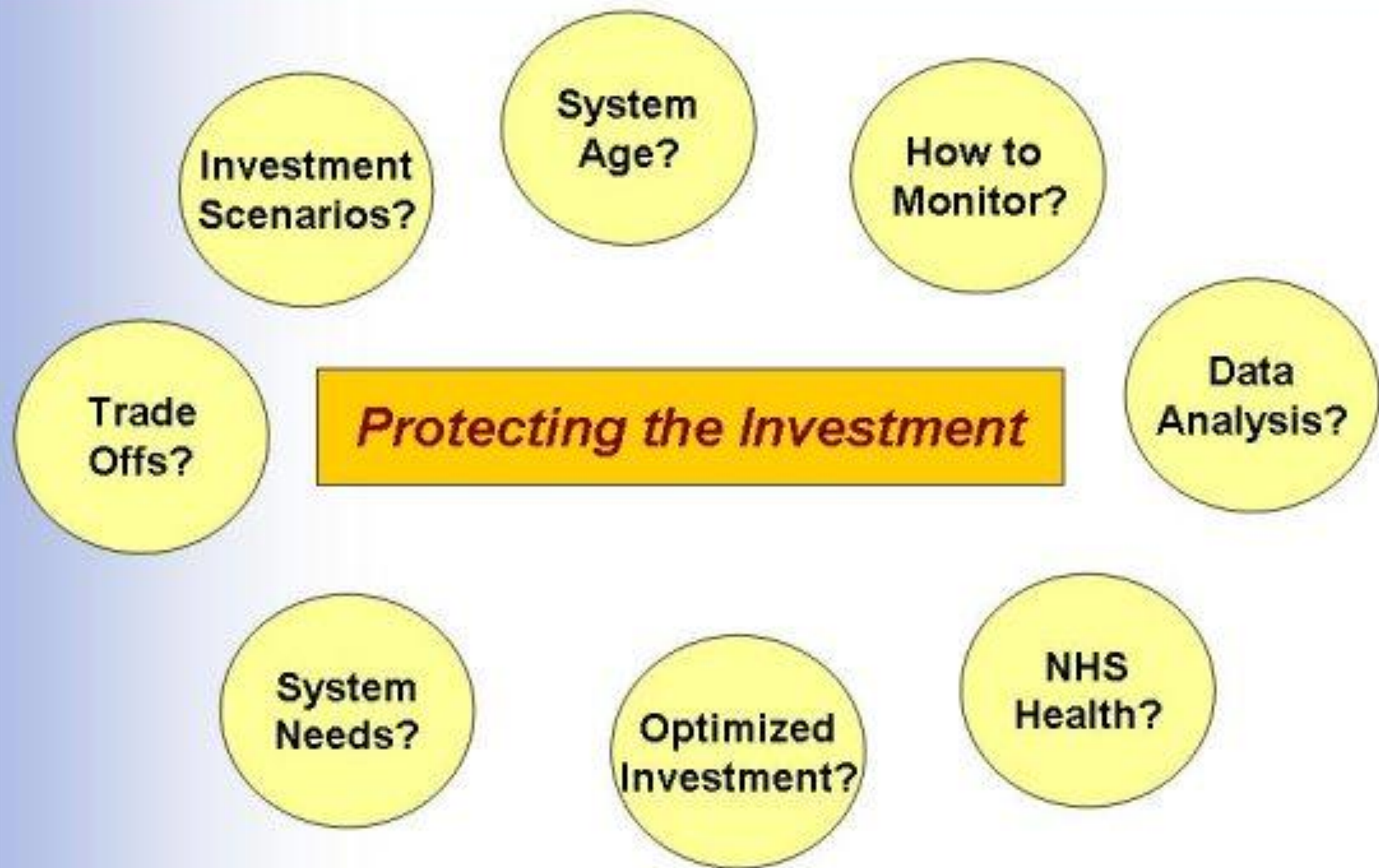
FHWA Policy - 2002

- Recycled/Re-Use materials are viable resources
- Recycled materials should get 1st consideration
- Consider use of recycled materials early in the planning/design process
- Economic benefits should be considered in the material selection process
- Restricting the use of materials should be technically based
- Material should not adversely impact the environment and should perform as intended

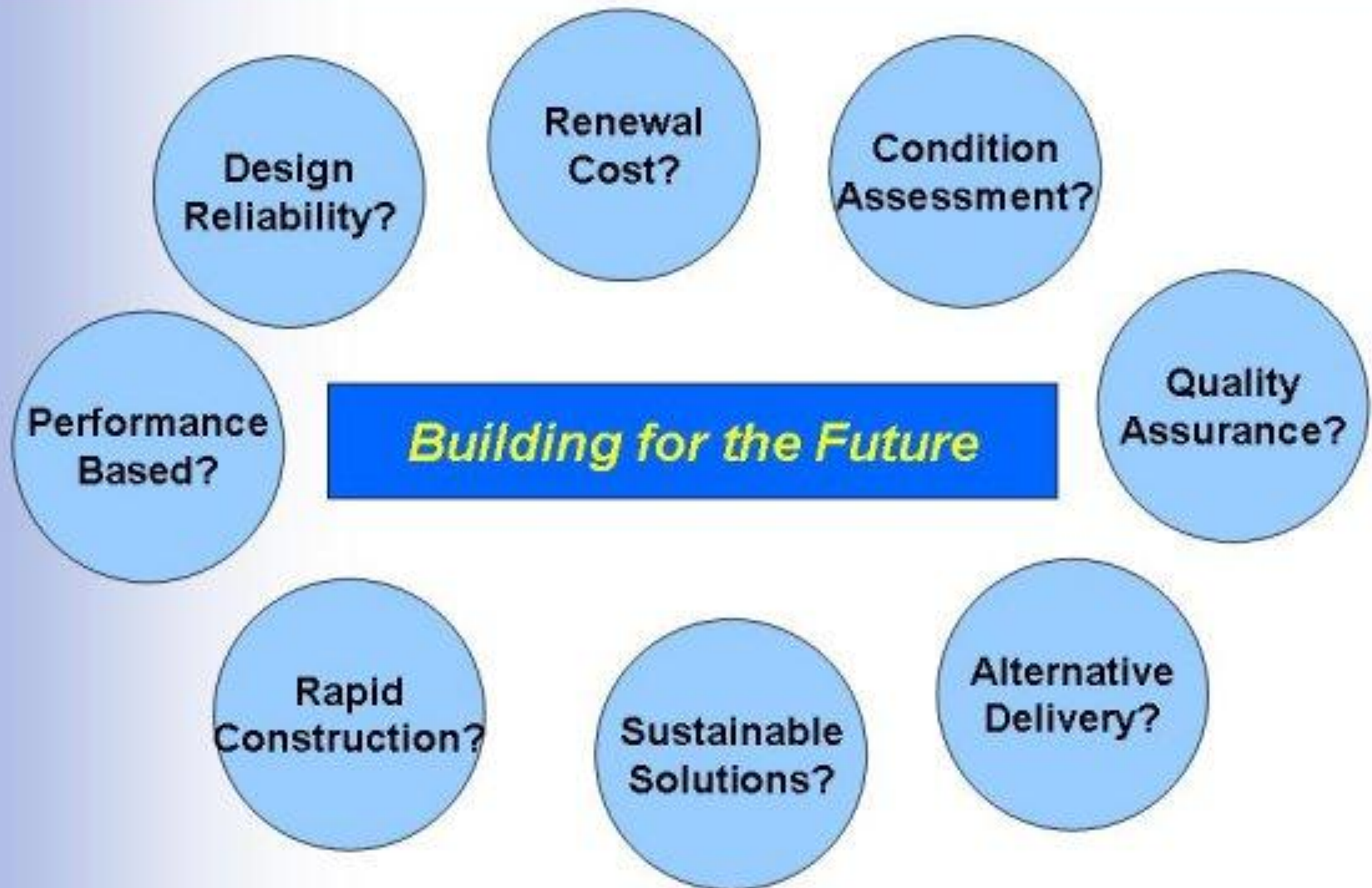
P&M Mission and Overarching Goals



Where Are We Today



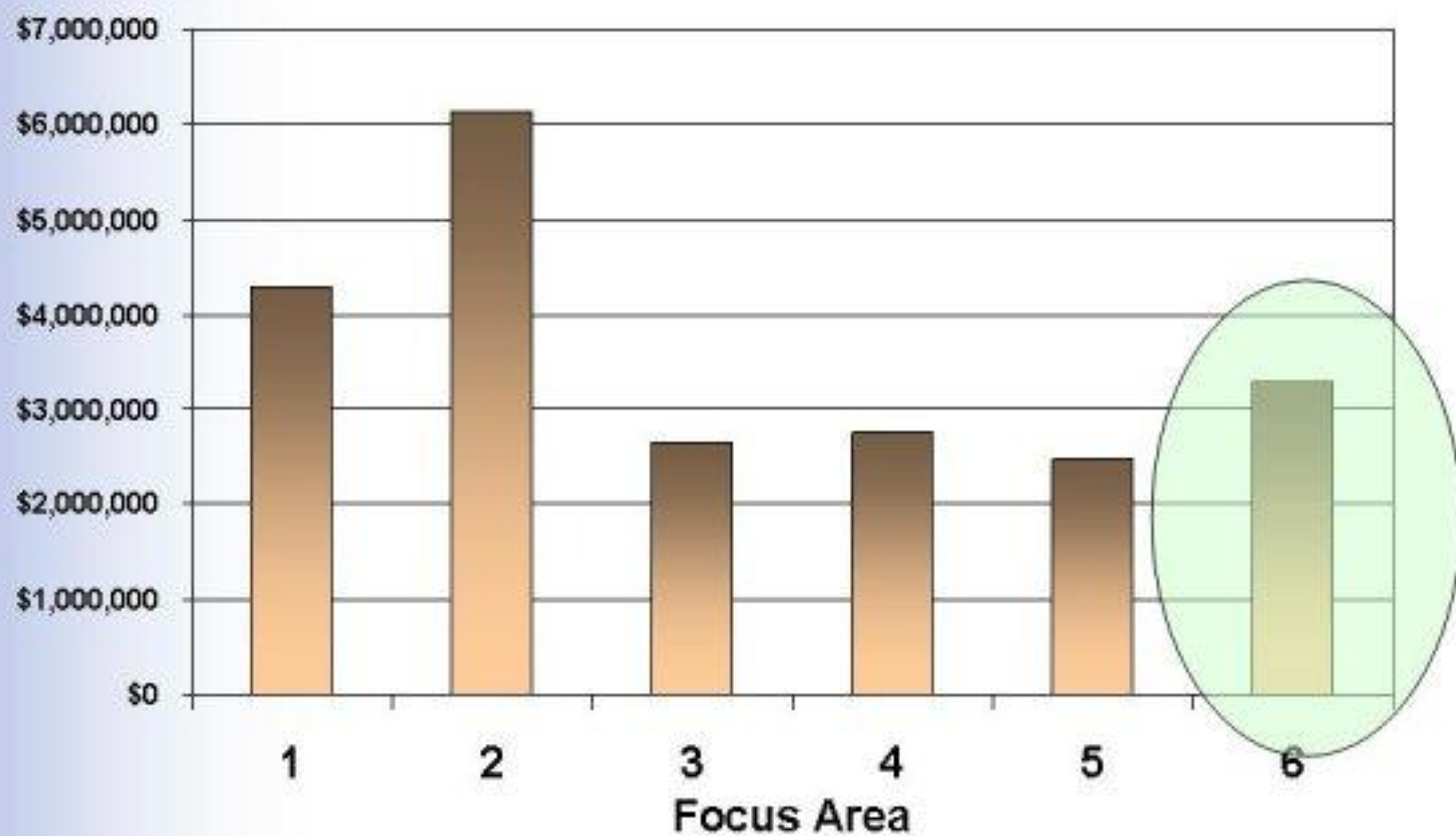
Where Are We Today



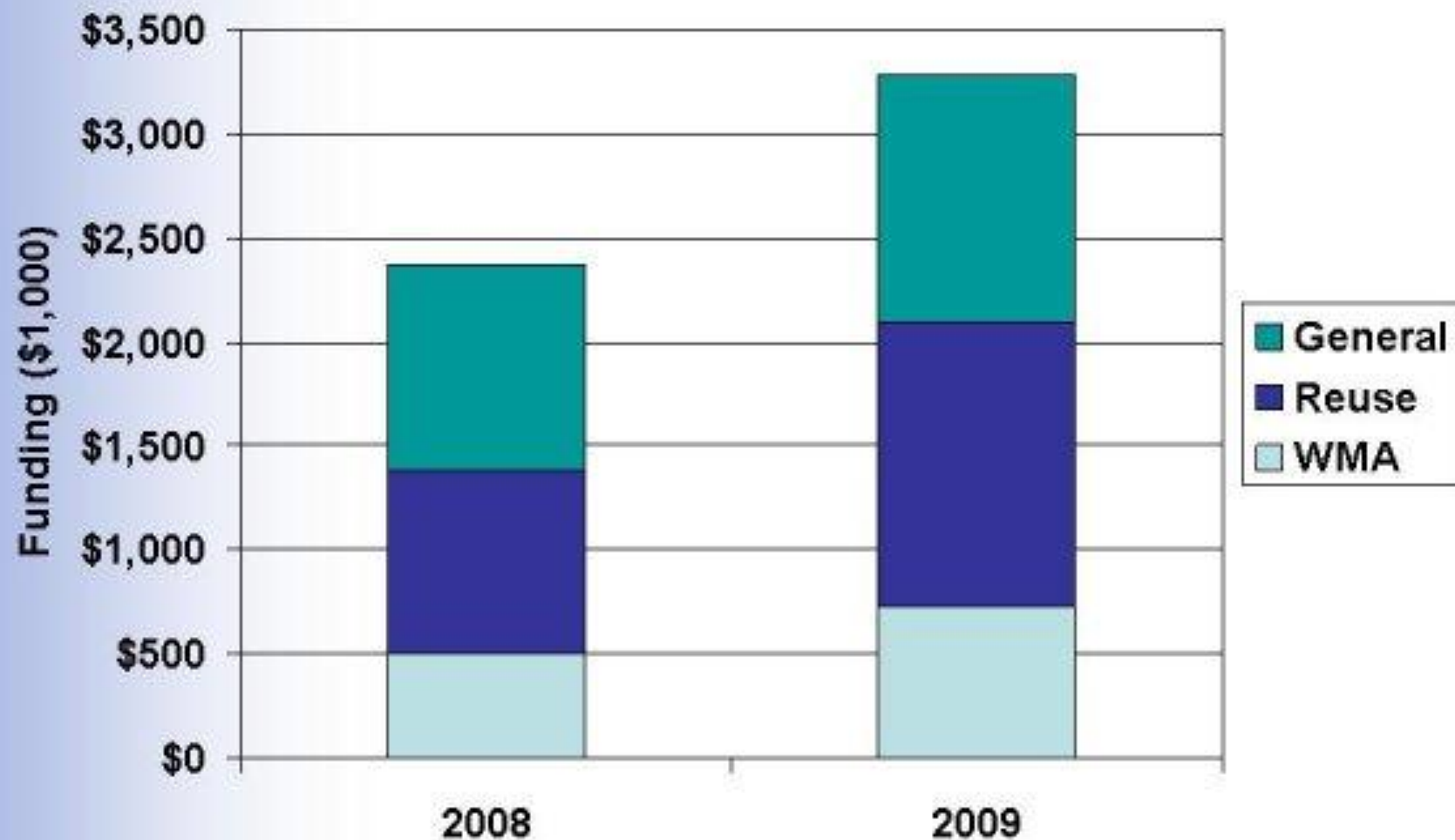
Six Focus Areas

1. Pavement Design and Analysis
2. Materials and Construction Technology
3. Pavement Management and Preservation
4. Surface Characteristics
5. Materials and Construction Quality Assurance
6. Environmental Stewardship

FY09 Funding by Focus Area



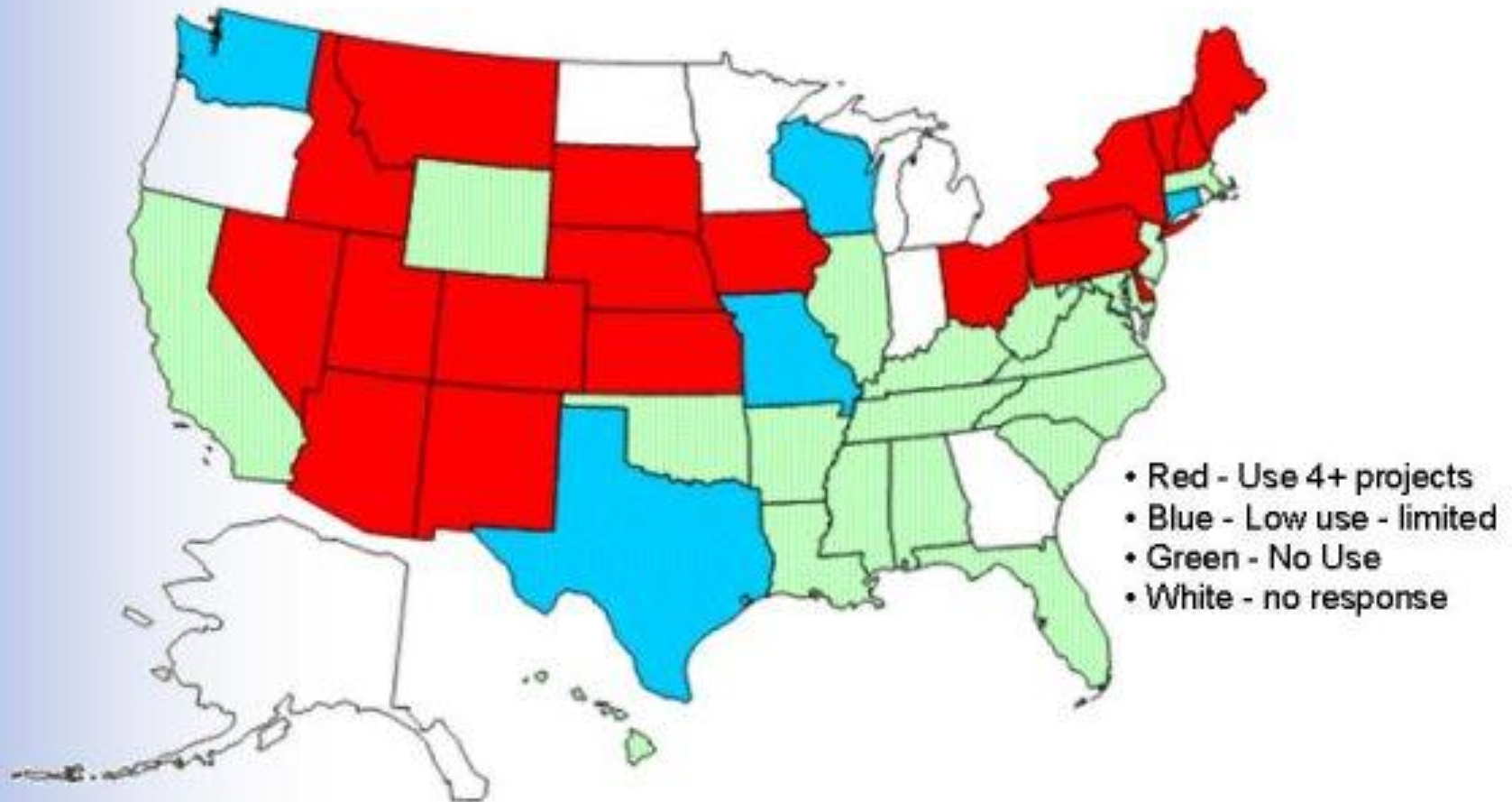
Program Environmental Efforts



Key Initiatives

- Environmental Stewardship
 - Recycled Materials
 - RAP
 - RCCA
 - Shingles
 - In-Place Recycling
 - Warm mix asphalt
 - Extending modifiers
 - Using marginal materials

Cold-In Place Recycling Use



Cold-In Place Recycling

- Review of three states (NY, NV & KS)
- **New York**
 - Used for 30 yrs – 300 projects since 1991
 - 4" CIR with 1.5" overlay (10-15 yrs life)
- **Nevada**
 - Used for 20 yrs – 770 miles since 1997
 - 3" CIR with overlay on higher volumes
 - Estimated \$600 million in savings
- **Kansas**
 - Used for 30 yrs
 - 4" CIR with 1.5" overlay (7 yr life)
 - 45% cheaper than 4" conventional overlay



CIR – Barriers/Issues

- No nationally recognized mix design
- Acceptance testing protocols needed
- Requires specialized skills
- Perceived reluctance to use technology
- Curing times when emulsions are used
- Need to document long term performance
- Use of mineral fillers on performance
- More education and support

In-Place Recycling Initiatives

- Update NHI “Asphalt Pavement In-Place Recycling Technologies” Course
- Update Basic Asphalt Recycling Manual (BARM)
- Full Depth Reclamation Design Guide and Manual
- Recycled Materials Resource Center
 - Use of coal combustion products and high carbon fly ashes to stabilize reclaimed pavement material
- Support of Regional In-Place Technology Workshops
- Providing more information over the internet

Other Key Initiatives

- MEPDG Implementation Support
 - Technical briefs
 - Implementation survey results
 - Regional user groups
 - Support of new AASHTOWare software
- Pavement Type Selection
 - Memo to Divisions to clarify policy
 - Update to existing policy and guidance
 - RealCost version 2.5 available now
 - NCHRP 10-75 – AASHTO Guide on PTS

Other Key Initiatives

- Accelerated Construction
 - Highways for Life Program
 - Precast concrete solutions
 - Plant production process control
 - Focused top 5 opportunities
- National Highway System Infrastructure Health
 - HPMS performance reporting
 - Improvement of HERS
 - Federal-Aid program performance

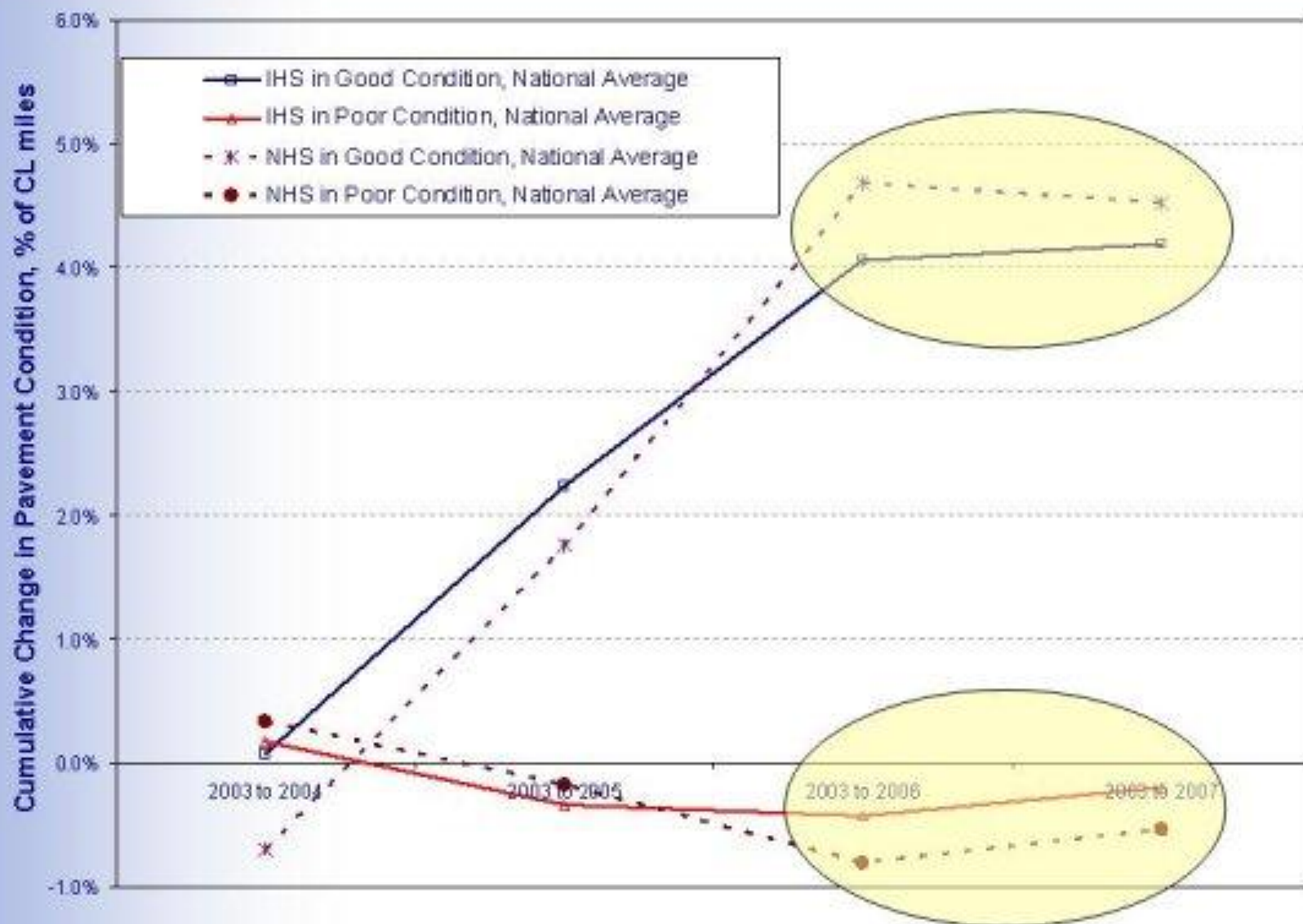
Other Key Initiatives

- Friction Management
 - New AASHTO Guide
 - Revised Technical Advisory on Skid/Accident Reduction
 - Demonstration projects and loan equipment
- Materials Quality Assurance
 - Top Priorities
 - Data Verification
 - Documented Dispute Resolution
 - Independent Assurance
 - New SpecRisk Software

Looking to the Future

- Pavement and Materials Technology
 - FY2010 Planning underway
 - Stakeholder input (increased visibility)
- “Green” Design and Construction
- Performance Based Program
 - Use of Federal Funds
 - Process
 - Reporting
 - Accountability

Cumulative Change – SAFETEA-LU



Performance Facts

- 41% of all NHS travel is contained in 7 states where the percentage of NHS travel on good riding pavements ranges from a high of 93% and a low of 26%.
- Of these 7 states, only 2 are currently achieving the national goal of 56% NHS travel on good riding roadways.
- In all, 31 or 60% of states are currently falling below the national target of 56%.
- 6 states reported that less than 35% of NHS travel occurred on good riding pavements. 48% of all NHS travel is contained within these 6 states.
- 4 states reported that at least 85% of NHS travel occurred on good riding pavements. 30% of all NHS travel is contained within these 4 states.

Thank You



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