We live in an era of rapid change

Years until Technology was used by one-quarter of Americans

- **ELECTRICITY**: 46 years
- **TELEPHONE**: 35 years
- **TELEVISION**: 26 years
- **PC**: 16 years
- **MOBILE PHONE**: 13 years
- **WORLD WIDE WEB**: 7 years

WHAT’S NEXT? faster adoption
Scenario Planning Uses

• Considers and analyzes alternative possibilities or futures
• Considers a range of options to identify a path forward
• Example areas:
  – Statewide and MPO LRTPs
  – Corridor plans
  – Freight plans
  – Public transit plans
  – Land use plans
Why Apply Scenario Planning?

- Improve **decision-making** to account for futures that may be different than past trends
- Assesses interactions **between multiple factors**
- Improve ability to address **changing community values and preferences**
- Improve ability to understand changing role of **technology in transportation**
- Improve ability to address **infrastructure resiliency** in response to climate change
Why Apply Scenario Planning?

• Improves **stakeholder engagement** due to collaboration and consensus building

• Considers **tradeoffs** and the ability to understand and address competing values and visions

• Helps demonstrate how **development influences** travel behavior and travel demand

• Supports **performance-based planning**
How do we prepare for uncertainty?

**Scenario Planning Process**

1. Develop framework
2. Develop menu of strategic scenarios
3. Test different scenarios
4. Portray alternatives and explain outcomes
5. Understand consequences and trade-offs
6. Link to the programming process
Case Studies

Arkansas State Highway and Transportation Department
Four Distinct Scenarios

1. **PRESERVE TO SERVE**
   - "Keep it Smooth - Preserve the Investment" focuses on the existing transportation assets to maintain the safe and efficient movement of people & goods.

2. **LOCAL/GLOBAL FREIGHT**
   - "Hire Locally - Trade Gateway" focuses on investments that support local industry retention and attraction.

3. **MAKING CONNECTIONS**
   - "Connecting Communities - Forging Opportunities" increases roadway capacity to improve efficiency, connectivity, and economic competitiveness.

4. **ON THE MOVE**
   - "Bigger Cities - More Mobility" focuses on the allocation of funds for multimodal investments to alleviate urban congestion.
Keep it Smooth – Preserve the Investment

• Focus
  – Maintain and preserve the existing highway and bridge system
  – Higher priority on highway and bridges on the National Highway System (NHS)
Think Locally – Trade Globally

• Focus
  – Enhance infrastructure investments that support industry retention and attraction
  – Allocate funds to increase capacity and improve system conditions on key corridors to improve freight efficiency and connectivity
Connecting Communities – Forging Opportunities

- Focus
  - Increase capacity to improve economic competitiveness.
  - Allocate funds to complete the Four-Lane Grid System.
Bigger Cities – More Mobility

• Focus
  – Allocate funds to alleviate urban congestion
  – Emphasis on:
    • Congested corridors
    • Increasing transit operations
    • Preserving the existing urban system
    • Addressing gaps in the bicycle and pedestrian network
Resource Allocation

- Bigger Cities – More Mobility
- Connecting Communities – Forging Opportunities
- Think Locally – Trade Globally
- Keep it Smooth – Preserve the Investment

Legend:
- Bike/Ped
- Public Transportation
- Safety
- Maintenance
- ITS
- Bridge
- Capacity
- Pavement
Understand consequences and trade-offs

- Percent Safety Needs Met: 51.7%
- Percent Good Interstate Miles: 98%
- Percent Good NonInterstate NHS Miles: 77.2%
- Percent Good NHS Miles: 78%
- Percent Poor Interstate Deck Area: 9%
- Percent Poor NonInterstate NHS Bridge Deck Area: 9.7%
Scenario Planning Outcomes

- Links resource allocation to system performance
- Informs leadership on critical decision points
- Helps establish realistic priorities under current funding
- Provides guidance on setting reasonable targets
- Illustrates that AHTD needs more funding to
  - Maintain infrastructure conditions
  - Improve economic competitiveness
  - Connect communities
  - Invest in non-highway improvements
- **Clarifies AHTD’s difficulty in meeting statewide expectations of stakeholders and general public**
Case Studies

Arizona Department of Transportation
All the Moving Parts

**WMYA Goal Areas**
- Mobility, Reliability & Accessibility
- Safety
- Preservation

**Investment Areas**
- System Expansion
- Technology Deployment
- Accessibility
- Preservation
- Safety
- M&O

**Performance Metrics**
- Auto/Truck Delay
- User Costs
- % ITS Needs Met
- % Interchange Needs Met
- % Bridges Good
- % Pavement Good
- % Safety Needs Met
- % M&O Needs Met

**Major Investment Categories**
- Expansion
- Modernization
- Preservation
- Maintenance & Operations
Investment Area Weighting

Safety and Security: 24.78%
Preservation: 24.37%
- % of Bridge Deck Area on the Interstate: 6.51%
- % of Bridge Deck Area on the Non-Interstate: 3.85%
- % of Bridge Deck Area non-NHS in Poor Condition: 2.74%
- % of Pavement by lane miles on the Interstate: 5.46%
- % of Pavement by lane miles on the Non-Interstate: 3.2%
- % of Pavement by lane miles on the Non-NHS: 2.6%
System Expansion: 8.09%
- Total Daily Truck Vehicle Hours Traveled: 1.8%
- Truck VMT/Truck VHT: 2.43%
- Travel Time Index (TTI): 3.86%
Technology Deployment: 14.14%
Accessibility: 8.35%
Maintenance and Operations: 20.27%
Current vs. Baseline Proposed Allocations

**Estimated Current**
- Modernization: 8%
- M&O: 13%
- Preservation: 26%
- Expansion: 53%

**Baseline Proposed**
- Modernization: 21%
- M&O: 20%
- Preservation: 20%
- Expansion: 39%
Alternative Investment Choices

- M&O
- Accessibility
- Technology
- Expansion
- Pavement
- Bridge
- Safety

- Expansion AIC
- Preservation AIC
- Stakeholder AIC

$0 $100 $200 $300 $400 $500 $600
Benefits

• Helps stakeholders understand potential future impacts to transportation system
• Links resource allocation to system performance
• Informs leadership on trade-offs, consequences, and risks
• Helps establish realistic performance targets under funding constraints
Challenges

• Access to tools and calculating performance
  – Travel demand model – travel characteristics
  – HERS-ST – highway conditions
  – NBIAS – bridge conditions

• Access to tools and measuring performance
  – Professional staff
  – Software
Questions?

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