Enhancing Sustainability of Freight with INVEST

Talking Freight Webinar

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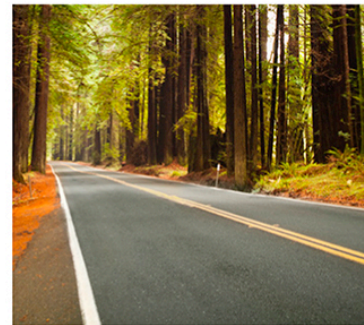July 20, 2016

U.S. Department of Transportation
Federal Highway Administration

What is Sustainability?

The Sustainability Triple Bottom Line

INVEST – FHWA's Sustainability Tool

- Infrastructure Voluntary Evaluation Sustainability Tool (INVEST)
- Web-based self-assessment tool
- Specific to transportation
- Helps stakeholders go above and beyond
- Practical - connects sustainability principles with action
- Nationally vetted – pilot tested across the country, 3000+ comments
- Voluntary
- Free, easy to use
- Flexible

Supporting the Entire Life Cycle

System Planning

Project Development

Project Planning
Project Design
Project Construction

Operations & Maintenance

Criteria

System Planning (SP)
1. Integrated Planning: Economic Development and Land Use
2. Integrated Planning: Natural Environment
3. Integrated Planning: Social
4. Integrated Planning: Bonus
5. Access and Affordability
6. Safety Planning
7. Multimodal Transportation and Public Health
8. Freight Access & Mobility
9. Travel Demand Management
10. Air Quality & Emissions
11. Energy and Fuels
12. Financial Sustainability
13. Analysis Methods
14. Transportation Systems Management and Operations
15. Linking Asset Management and Planning
16. Infrastructure Resiliency
17. Linking Planning and NEPA

Project Development (PD)
1. Economic Analyses
2. Lifecycle Cost Analyses
3. Context Sensitive Project Devt.
4. Highway and Traffic Safety
5. Educational Outreach
6. Tracking Enviro. Commitments
7. Habitat Restoration
8. Stormwater Quality and Flow
9. Ecological Connectivity
10. Pedestrian Facilities
11. Bicycle Facilities
12. Transit and HOV Facilities
13. Freight Mobility
14. ITS for System Operations
15. Historic, Arch., Cultural Pres.
16. Scenic, Natural, Rec. Qualities
17. Energy Efficiency
18. Site Vegetation, Maint., Irrigation
19. Reduce, Reuse, & Repurpose Materials
20. Recycle Materials
21. Earthwork Balance
22. Long-Life Pavement
23. Reduced Energy & Emissions Pavement
24. Permeable Pavement
25. Construction Environmental Training
26. Construction Equipment Emissions
27. Construction Noise Mitigation
28. Construction Quality Control Plan
29. Construction Waste Management
30. Low Impact Development
31. Infrastructure Resiliency Planning and Design
32. Light Pollution
33. Noise Abatement

Operations & Maintenance (OM)
1. Internal Sustainability Plan
2. Electrical Energy Efficiency
3. Vehicle Fuel Efficiency
4. Reduce, Reuse, Recycle
5. Safety Management
6. Environmental Commitments Tracking System
7. Pavement Mgt System
8. Bridge Mgt System
9. Maintenance Mgt System
10. Infrastructure Preservation
11. Traffic Control Maintenance
12. Road Weather Management
13. Transportation Mgt & Ops.
14. Work Zone Traffic Control

Scoring in INVEST

System Planning for States Criteria by Sustainability Principle

Criterion Number and Title
SPS-01: Integrated Planning: Economic Development and Land Use
SPS-02: Integrated Planning: Natural Environment
SPS-03: Integrated Planning: Social
SPS-04: Integrated Planning: Bonus
SPS-05: Access and Affordability
SPS-06: Safety Planning
SPS-07: Multimodal Transportation and Public Health
SPS-08: Freight and Goods Access & Mobility
SPS-09: Travel Demand Management
SPS-10: Air Quality & Emissions
SPS-11: Energy and Fuels
SPS-12: Financial Sustainability
SPS-13: Analysis Methods
SPS-14: Transportation Systems Management and Operations
SPS-15: Linking Asset Management and Planning
SPS-16: Infrastructure Resiliency
SPS-17: Linking Planning and NEPA

How INVEST Measures Sustainability

Evaluate – Score – Improve

- Evaluate – Using the collaborative process can provide the most important outcome
- Score – Provides recognition for implementing sustainability best practices and identifying gaps
- Improve – Using the process to improve in practice and identify cost effective measures
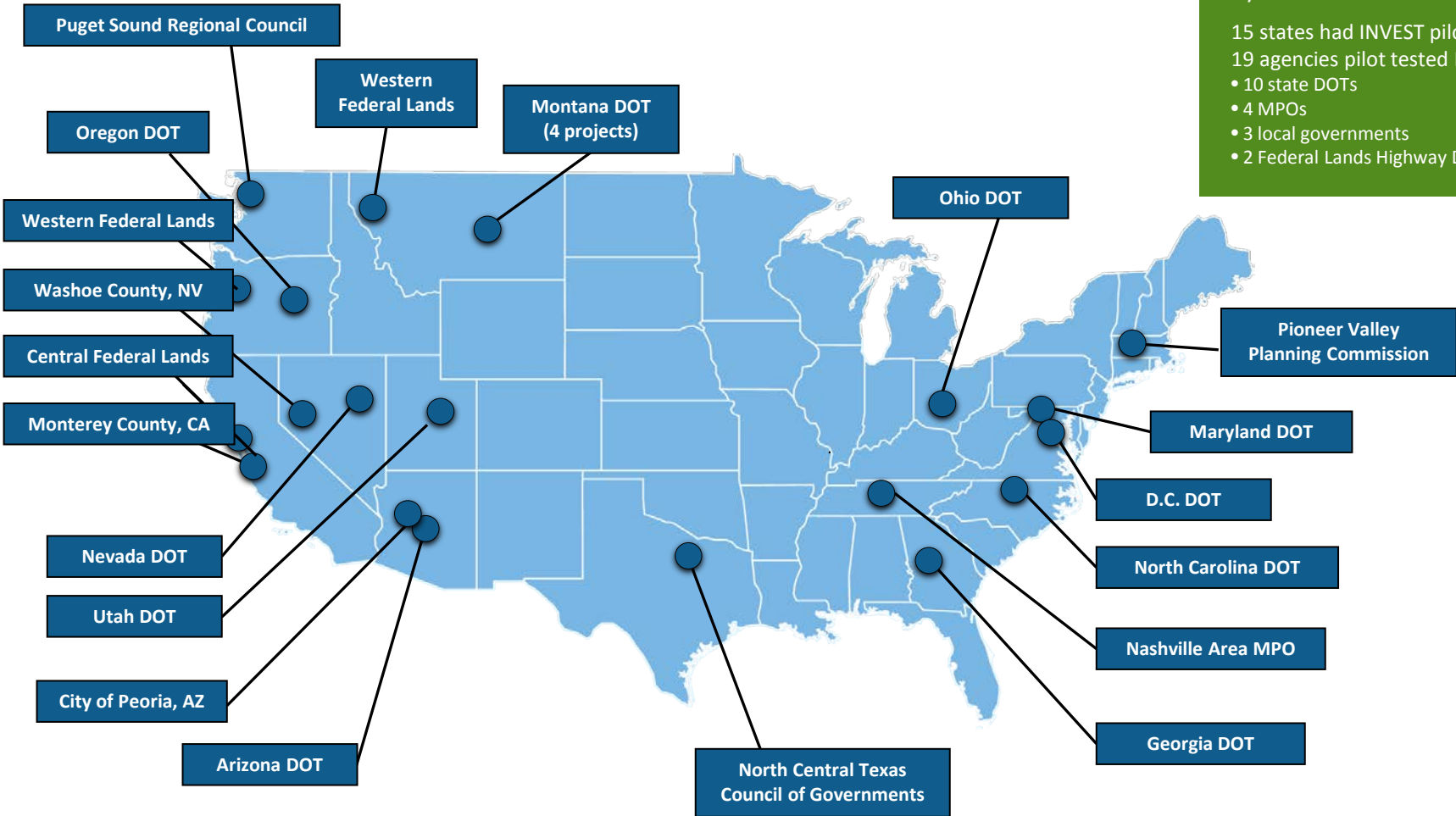
INVEST Pilot Sites

By the Numbers

15 states had INVEST pilot projects
19 agencies pilot tested INVEST:
- 10 state DOTs
- 4 MPOs
- 3 local governments
- 2 Federal Lands Highway Divisions

Puget Sound Regional Council

Western Federal Lands

Montana DOT (4 projects)

Oregon DOT

Ohio DOT

Western Federal Lands

Washoe County, NV

Pioneer Valley Planning Commission

Central Federal Lands

Monterey County, CA

Maryland DOT

Nevada DOT

D.C. DOT

Utah DOT

North Carolina DOT

City of Peoria, AZ

Nashville Area MPO

Arizona DOT

North Central Texas Council of Governments

Georgia DOT

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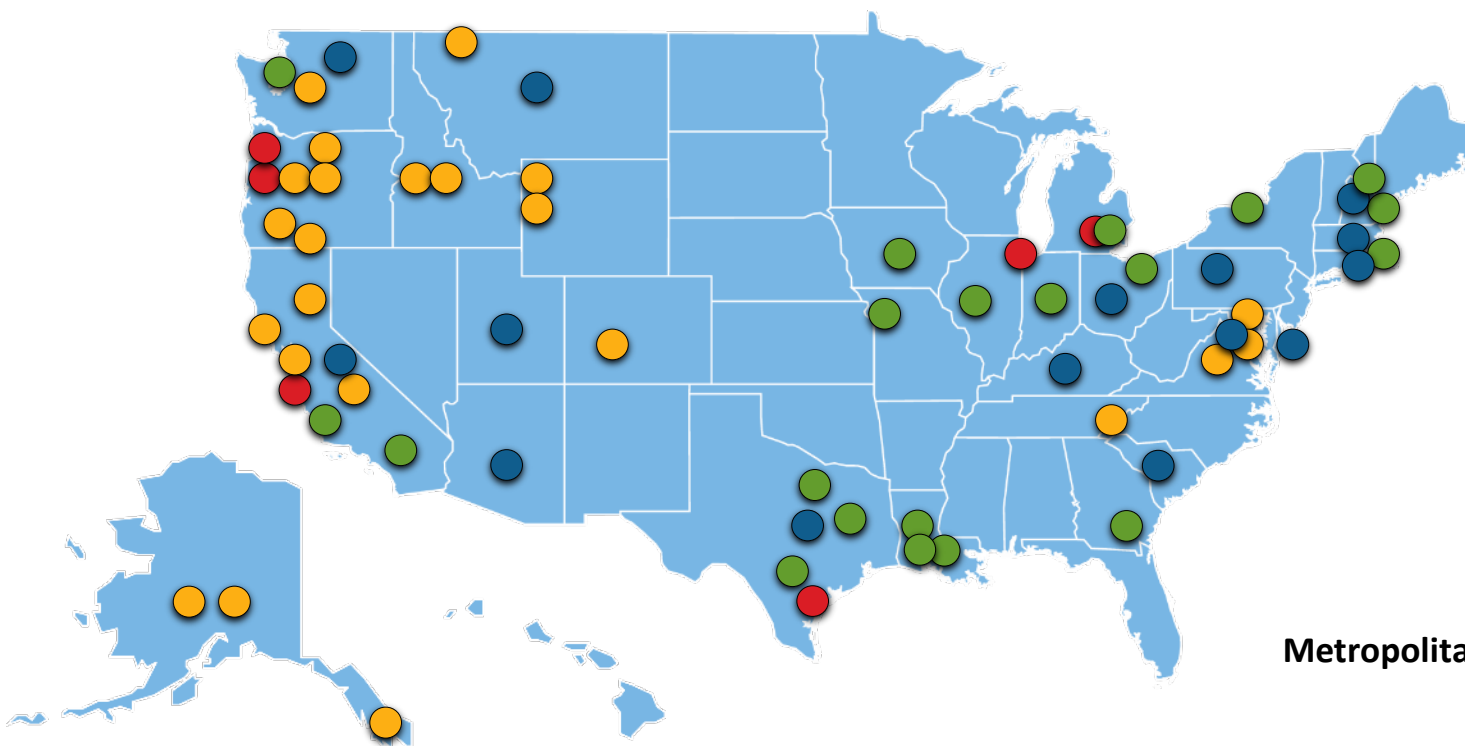Federal Highway Administration

INVEST Usage

INVEST Usage
By the Numbers

Entities that have informed FHWA they are using INVEST:
- 15 State DOTs
- 20 MPOs
- 23 Federal Lands Units
- 6 other transport agencies in US (local, transit, tollway)
- 1 foreign government

State DOT ●
Metropolitan Planning Org. (MPO) ●
Federal Lands Unit ●
Other ●

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A sampling of possibilities …

If you are . . .	You might . . .
State department of transportation	• Maximize sustainability of operations and maintenance practices • Incorporate into contracting to provide incentives to contractors for sustainability
Metropolitan Planning Organization	Score your current long range transportation plan (LRTP), use that info to improve your next LRTP
Local government	Update your guidelines for local roads projects to incorporate sustainability considerations
Federal Land Management Agency	Use the Scenic and Recreational Roads Scorecard to identify sustainability improvements for a road project in an ecologically sensitive area
Contractor	Suggest INVEST to your client and use in projects & proposals
Academic	Use INVEST as a teaching tool
Tollway Authority	Identify practices that save money

Example: Southern California Assoc. of Govts (SCAG) System Planning (SP) Module

- Scored 2012 long range transportation plan (LRTP)
- Used results to guide development of 2016 LRTP
- Scored 176 points out of 250 - Platinum
- INVEST helped SCAG identify and highlight strengths
- Freight (SP-8): 2012 plan includes: rail safety and grade separations; mainline rail improvements and expansion; bottleneck relief strategy; environmental strategy (i.e. zero- and near-zero emission freight system); East-West Freight Corridor; On-, Near-, and Off dock rail improvements.

SP-8 Freight and Goods Movement 15/15
Develop Goals and Objectives (2pts)
- Plan includes provisions for multimodal freight mobility, reliability and connectivity in ways that enhance sustainability?

Engage Stakeholders (3pts)
- Agency regularly engages freight service providers, stakeholders, workers, and representatives in developing transportation planning documents? Uses institutional mechanisms?

Develop Performance Measures and Monitor Progress (4pts)
- (e.g. truck delay, travel time reliability)

Demonstrate Sustainable Outcomes (6pts)
- Agency improves intermodal freight connectors, linkages to freight generators, freight mobility?
- Agency monitors progress toward goals for at least one year and shows measurable advancement toward goals?

Example: Arizona DOT Project Development (PD) Module

- Scope:
  - › Evaluated 20 planned or under-construction roundabout projects
  - › Held training INVEST workshops with local governments
- Key Outcomes:
  - › Integration into ADOT decision-making of a comprehensive platform for assessing programs and practices using a holistic sustainability lens.
  - › Plans to improve management of waste streams from pavement preservation projects.
  - › Improved freight mobility.
  - › Integration of key ADOT partners into the transportation sustainability conversation.

Freight Considerations - State Route 89 and Perkinsville Road, Chino Valley, AZ
PD-13: Freight Mobility Score – 7/7
- 2 Points – Safety improvements specific to freight
- 2 Points – Design and construction adjustments specific to freight
- 3 Points – Construct dedicated truck delivery ingress and egress

Overall, the project scored 41 points in INVEST, giving it a Silver rating.

Example: Utah DOT
Operations and Maintenance (OM) Module

- Scored OM program with INVEST

- Developed prioritized set of recommendations

- Implemented recommendations and tracked progress

- **OM-13 Transportation Management and Operations.** Signal timing improvements (traffic adaptive signal system, dynamic dilemma zone detection) reduced congestion and crashes. $3M cost, $5M savings.

- **OM-7 Pavement Management System.** Automated data collection and incorporated LIDAR data. $39 million annual savings, cost benefit ratio 3.5.

Example: Illinois Tollway
All 3 Modules

- Mainstreamed INVEST into standard procedures. Developed agency-specific INVEST Manual with responsible parties, actions, timelines. Tollway scores, improves, and tracks progress at 30%, 60%, and 95% design; pre-construction; substantially complete.

- Scored 35 projects with PD to provide baseline. Then scored and improved in-progress projects that are part of $12 billion capital program.

- Used SP & OM modules to score 4 most recent funding programs. Found upward trend. Identified SP-11, SP-17, OM-1, OM-6, & OM-8 for improvement.
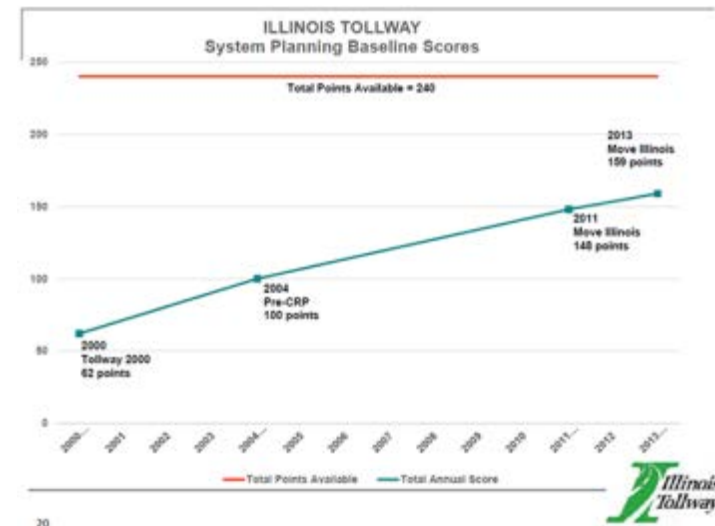
Tips for Usage

1. Do not expect a high score
2. Emphasize sustainability improvements, not the score
3. Select a lead staff member
4. "Play" with the tool – browse criteria, create a test project, read case studies
5. Assemble a cross-discipline scoring team
6. Conduct workshop - score each criterion; develop recommendations for improvement
7. Analyze, prioritize, and implement recommendations from scoring workshop
8. Track progress, document and share successes

Time Required

- Easy to use, not time intensive, can do in-house, or hire contractor
- Time required varies, but plan on …
  - › Point person browses tool – 8 hours
  - › Point person identifies and contacts staff subject matter experts (SMEs) for each criterion – 16 hours
  - › SMEs review criteria, gather documentation, develop initial scoring recommendation – 2-3 hours per SME. With 10 SMEs that would be 20-30 hours.
  - › Hold scoring workshop – 15 staff in full day workshop: 15 x 8 = 120 hours
  - › Point person writes up the recommendations – 8 hours
  - › Staff analyze pros and cons of recommendations; management decides to implement or not (varies)
  - › Implement recommendations (varies)
  - › Re-score (8 hours)
  - › Document and share successes (8 hours)
  - › Total: 190 staff hours, + time to analyze and implement recommendations

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Resources Available

- **Case Studies**
- **INVEST Toolkit**
  - › Fact sheet
  - › Presentation Slides
  - › User Guide
  - › Examples
  - › Map
- **Consultations**
- **Training**
- **Contacts with peers**

Try INVEST at:
www.sustainablehighways.org

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