FHWA Sustainability and Resilience

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RESILIENCE AND ADAPTATION
Goal: Integrate consideration of resilience in transportation decision making

- In support of 23 U.S.C. § 503(b)(3)(B)(viii), which directs the U.S. Department of Transportation “to carry out research and development activities … to study vulnerabilities of the transportation system to … extreme events and methods to reduce those vulnerabilities.”
Resilience Related Regulations

• Risk-based asset management plans must address risks associated with current and future environmental conditions (23 CFR 515)

• Assets requiring repeated repair require analysis of alternatives (23 CFR 667)

• State and metro transportation planning should now include resilience as a planning factor (23 USC 134, 23 CFR 450)

• Metropolitan transportation plans shall include an assessment of capital investment and other strategies to… reduce the vulnerability of the existing transportation infrastructure to natural disasters (23 CFR 450.324(f)(7))
FHWA Resilience Resources

Research

- Gulf Coast 2 Study
- Resilience Pilots with State DOTS & MPOs
- Hurricane Sandy Project
- Engineering Assessments Study

Resources

- Vulnerability & Adaptation Framework
- Engineering Guidance (HEC-25 & 17)
- Project Development
- Operations & Maintenance

Guidebooks under development on integrating resilience in:
- Asset Management
- Transportation Planning
- Nature-based solutions
Ongoing Resilience Projects

- Nature-based Resilience for Coastal Highways Guidebook (early 2019)
- Incorporating Resilience into the Transportation Planning Process Case Studies and Guidebook (late 2018)
- International Research
- Resilience Deployment Pilot Projects (2018-2020/2024)
2018 TRANSPORTATION RESILIENCE INNOVATIONS SUMMIT AND EXCHANGE

SAVE THE DATE

OCTOBER 8-10, 2018 | DENVER • COLORADO

SHERATON DENVER DOWNTOWN HOTEL
EMISSIONS AND MITIGATION
Incorporating Sustainability into Environmental Review

Using INVEST during NEPA process

- Using INVEST as part of alternatives screening for I-11 EIS
- Also planning to use INVEST for Sonora Corridor EA
ALTERNATIVE FUEL CORRIDORS

- Currently Designations on 84 Interstate Corridors
- 44 States
- Covers over 100,000 miles of the NHS
- Preparing for Round 3 nomination process. Announcement likely this fall, and nominations due in early 2019
- Working with States / stakeholders in priority areas to prepare for corridor nominations through 5 Regional convenings
• Oregon’s transportation system uses ~ 50M kwh per yr, costing > $4M.
• ODOT has >19,000 lane miles of ROW. Solar arrays on < 1% of that could supply all 50M kwh ODOT uses annually.

Demo Project, I-5 & I-205

• ODOT partnered with utility and private firm to build first large scale solar ROW project in US in 2008.
• Traffic safety clear zones carefully considered in the project setbacks. Traffic control for construction access was reviewed by ODOT and FHWA.
• Followed 23 CFR 645 Accommodation of Utilities
• 594 solar panels (104kw) provide about 1/3 of energy needed to light interchange
Analyzing Transportation GHG Emissions

- Transportation is now the **largest source of U.S. CO2 emissions**.
- Analyzing GHG emissions analysis is challenging from a technical perspective
- **Tools Developed and Ongoing Projects**
  - **EERPAT** (The Energy and Emissions Reduction Policy Analysis Tool) was designed by FHWA to provide an integrated framework for evaluating GHG emissions and mitigation strategies.
  - **NCHRP 25-56** will provide guidance on currently available, practical, and innovative methods for SDOTs to assess / advance mitigation strategies (Expected 2020 or 2021)
  - **ICE** (the Infrastructure Carbon Estimator) is a FHWA spreadsheet model to estimate energy / GHGs from transportation facilities. MNDOT is leading a pooled fund effort to improve the model (Expected late 2019 or early 2020).
Energy Impact of Connected/ Automated, Shared and Electric Vehicles

Factors that could *increase* energy consumption and associated emissions
- Reduced travel costs
- Increased VMT
- Zero-occupancy vehicles
- Access for new user groups
- Faster driving speeds
- Increased freight movement
- Increased vehicle features

Factors that could *decrease* energy consumption and associated emissions
- Platooning, drafting and eco-driving
- Congestion management
- Emerging mobility service models
- Improved crash avoidance
- Zero-emission vehicles and power train efficiencies
- Less hunting for parking
- Vehicle right-sizing

Source: U.S. Department of Energy, Smart Mobility Program
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For more information:

www.fhwa.dot.gov/environment/sustainability/resilience/