Panelists

Rachael Barolsky – Community Planner, USDOT/Volpe Center on behalf of FHWA’s Office of Planning, Environment, and Realty

John Zamurs – Air Quality/Asbestos/Energy Section, Office of Environment, New York State Department of Transportation

Ann McGahan – Chief Planner, Central Transportation Planning Staff, Boston Region MPO
Transportation and Climate Change: Integrating and Planning for the Future

October 15, 2009

U.S. Department of Transportation
Federal Highway Administration
Climate Change 101

The Earth’s Greenhouse Effect

About 30% of incoming solar energy is reflected by the surface and the atmosphere.

Only a small amount of the heat energy emitted from the surface passes through the atmosphere directly to space. Most is absorbed by greenhouse gas molecules and contributes to the energy radiated back down to warm the surface and lower atmosphere. Increasing the concentrations of greenhouse gases increases the warming of the surface and slows loss of energy to space.

The surface cools by radiating heat energy upward. The warmer the surface, the greater the amount of heat energy that is radiated upward.

About half the solar energy absorbed at the surface evaporates water, adding the most important greenhouse gas to the atmosphere. When this water condenses in the atmosphere, it releases the energy that powers storms and produces rain and snow.
Greenhouse gas emissions (GHG) related to human activities are producing major global climatic shifts.

Source: July 2008 USGCSP report
Climate Change Impacts on Transportation

- **Impacts could include:**
  - Sea level rise and increased storm surge
  - Increase in temperatures
  - Change in precipitation patterns

- **Potential transportation impacts:**
  - Damage of infrastructure
  - Interruption of operations
  - Alterations of system performance

- Adapt long-term infrastructure investments to handle new conditions

- Each region has unique transportation assets and vulnerabilities

*Flooded roadways in Houston*
Sea Level Rise in NY – DOT Study

The Potential Impacts of Global Sea Level Rise on Transportation Infrastructure, U.S. DOT Center for Climate Change and Environmental Forecasting, ICF International, 2008
Four-Pronged Mitigation Strategies

- Reduce VMT through mode shift, land use, and reduced trip length
- Create cleaner fuels that have fewer emissions
- Enhance vehicle technology to burn less fuel
- Make transportation systems more efficient

Reducing VMT through mode shift to transit can result in significant cost savings.
Possible Adaptation Responses

*Adaptation will be necessary based on levels of GHG in the atmosphere today*

- **Accommodate**: Maintain and manage
  - Absorb increased maintenance / repair costs
  - Improve real-time response to severe events

- **Strengthen structures / protect facilities**
  - Design changes when rebuilding / new investment
  - Promote buffers

- **Enhance redundancy**
  - Identify system alternatives

- **Relocate / avoid**
  - Move or abandon existing facilities
  - Site new facilities in less vulnerable locations
Enacted by the General Assembly February 2005
Goal: Reduce GHG emissions to 1990 levels by 2010
  • Goal to reduce emissions by an additional 10% by 2020
Noteworthy for its quantifications of emissions reductions
Transportation and Land Use Recommendations
  • Adopt California LEV II Standards; include GHG Standards
  • Establish a Feebate Program
  • Provide vehicle incentives and support state vehicle initiatives
  • Adopt a hydrogen research program
  • Use transit and land use to reduce VMT by 3%
  • Embark upon a multistate intermodal freight initiative
  • Establish clean diesel program
Understanding Climate Change Integration

• **Driving Factors**
  - Local context – state legislation
  - Agency resources – large vs. small MPOs
  - Agency leadership and local awareness
  - Timing – MTP update cycles

• **Barriers to Integration**
  - Waiting on higher level decisions
  - Threat of legislation/regulation
  - Resource constraints

• **Outstanding issues: more information needed**
  - GHG quantification methods
  - Most effective GHG mitigation strategies
  - Adaptation methods and processes
  - Outputs from higher level planning efforts
Relationship of Federal Planning Statutes and Regulations

Linkage Opportunities:

1. Requirements to address energy and environmental concerns
   - (23 CFR 450 Subparts 200, 206, 214, 306)

2. Requirements to ensure an integrated transportation system, preserve the projected and existing system, and ensure the safety and security of the system for users is preserved
   - (23 CFR 450 Subparts 206, 214, 306; 49 CFR 613 Subparts 100, 200)

3. Transportation demand management and transportation system management strategies
   - (23 CFR 450 Subparts 200, 320)

4. Consultation requirements
   - (23 CFR Subpart 208, 214)
• **June 26, 2009**: U.S. House of Representatives passed the American Clean Energy and Security Act of 2009 (ACES Act)
  - Legislation would establish an economy-wide, GHG cap-and-trade system and critical measures to help address climate change and build a clean energy economy.

• **September 30, 2009**: U.S. Senate released the Clean Energy Jobs and American Power Act
There are a variety of proposals to extend current SAFETEA-LU 12 to 18 months or pass a new 5-year Authorization.

House T&I Committee proposal (the ‘Oberstar Bill’) would:

- Improve Livability and Environmental Sustainability of Communities; establish FHWA Office of Livability
- Encourage integrated planning, linking land use & transportation
- Link transportation planning with GHG reduction strategies
  - EPA would establish national GHG reduction goals
  - DOT would require States & MPOs to develop surface-transport GHG reduction targets and strategies in transportation plans
  - DOT will establish performance measures to track progress toward meeting GHG reduction goals
What Are We in FHWA doing? (Mitigation)

• Working with stakeholders to develop effective policy approaches for reducing the growth in VMT

• Assessing and analyzing the most cost-effective mitigation strategies and the reductions associated with “bundling” those strategies

• Playing key roles in the Secretary’s Livability Initiative and the HUD-DOT-EPA Sustainable Communities Partnership

• Offering technical assistance to State DOTs and MPOs in an effort to update existing models and provide training on MOVES

• Carbon sequestration pilot program
What Are We in FHWA doing? (Adaptation)

- Developing strategy to address adaptation to climate change effects
- Interim framework on conducting assessments of transportation infrastructure vulnerable to global climate change effects
  - Implementation Pilots for Framework
- Guidelines for consideration of global climate change impacts and adaptation in project development and environmental review
- Coordination activities with NOAA/NWS
- Peer exchanges
Contact Information

Rob Ritter
FHWA Sustainable Transport and Climate Change Team Leader
Robert.Ritter@dot.gov
(202) 493-2139

• Federal Highway Administration:
  http://www.fhwa.dot.gov/

• US DOT Transportation and Climate Change Clearinghouse:
  http://climate.dot.gov/index.html