

2012



# Surface Transportation Environment and Planning Cooperative Research Program (STEP)

## Annual Report

*FHWA Publication Number FHWA-HEP-13-040*

*STEP: A Federal Research Program –  
Conducting Research that Links to Practice*

# Surface Transportation Environment and Planning Cooperative Research Program (STEP)

## Fiscal Year (FY) 2012 Annual Report Executive Summary

Since 2006, the Federal Highway Administration (FHWA) has administered the Surface Transportation Environment and Planning Cooperative Research Program (STEP) to encourage new, strategic, and applied research on the relationship between surface transportation planning and the environment. Federal, State, and other stakeholders are involved throughout the STEP process to shape, refine, and implement research agendas.

### Funding

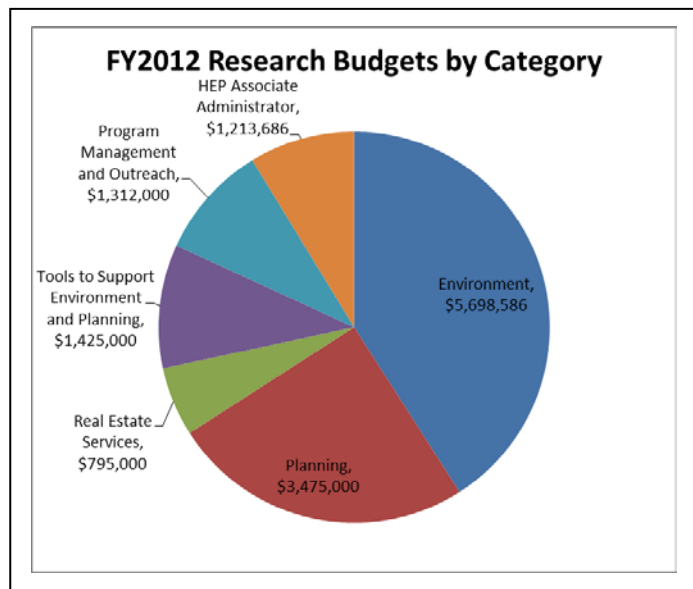
Section 5207 of the Safe, Accountable, Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) established the STEP. SAFETEA-LU and continuing resolutions authorized \$16.875 million annually to implement the STEP. After adjusting for obligation limitations, rescissions, and the over-designation of Title V Research in SAFETEA-LU, \$13.9 million was available for the FY2012 STEP.

### FY2012 STEP Accomplishments

- ✦ FHWA improved the state of the practice in planning, environment, and realty through investment in projects identified in the FY2012 STEP Research Plan that fall into four broad research categories: environment, planning, real estate services, and tools to support environment and planning.
- ✦ STEP continued to be a model for stakeholder collaboration, outreach, and feedback. Using a Web-based system, stakeholders provided 154 pieces of feedback on research needs during the FY2012 comment period between August 12, 2011, and November 10, 2011.
- ✦ FHWA developed tools to improve the quality and efficiency of environmental decision-making.
- ✦ FHWA promoted transportation agency capacity building through facilitating peer exchanges, conferences, and creating tools to support agency staff in transportation planning activities.
- ✦ FHWA improved travel modeling capabilities through data collection and technical assistance.
- ✦ FHWA promoted interstate and international coordination through facilitating border planning working groups.

### Impacts

- ✦ The STEP process allowed FHWA to foster interagency collaboration, provide a variety of forums for information sharing, and develop new training courses to improve the effectiveness of the transportation planning and environmental review processes.
- ✦ Through the STEP, stakeholders directly participated in prioritizing research needs through meetings and study reviews. Stakeholders also developed and implemented innovative outreach practices; contributed to research through pilot studies, reports, and conference participation; and addressed complex issues in transportation planning through partnerships and workshops.



*For more information about STEP, visit*  
[www.FHWA.DOT.gov/HEP/STEP](http://www.FHWA.DOT.gov/HEP/STEP)

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# Surface Transportation Environment and Planning Cooperative Research Program (STEP)

## *Conducting Research that Links to Practice*

Since 2006, the Federal Highway Administration (FHWA) has administered the Surface Transportation Environment and Planning Cooperative Research Program (STEP) to encourage new, strategic and applied research on the relationship between surface transportation planning and the environment. Federal, State, and other stakeholders are involved throughout the STEP process to shape, refine, and implement research agendas.

This publication provides an overview of the STEP program's accomplishments during Fiscal Year (FY) 2012. Detailed information about outreach activities and specific research projects can be found in the appendices.

### Linking Research to Practice

STEP funding allows researchers to carry out timely investigations and analyses, translate and synthesize research from other initiatives into practice, and fund quick turn-around efforts that advance key strategies to address national priorities.

STEP funds support projects with three different, but interrelated functions:

- **Conducting Research Studies** – Several projects collect and analyze scientific or technical data about species and habitat, construction materials, travel patterns, and other topics. Researchers in academia, at State Departments of Transportation, or in other State agencies carry out this work to create a foundation for applied projects that implement findings and new practices.
- **Developing and Deploying Tools, Technologies and Practices** – Many projects build on the technical and scientific foundation established by STEP-funded projects. These activities translate research findings into action through the establishment of demonstration and pilot programs, the documentation of best practices, and other activities.
- **Connecting the Community and Transferring Knowledge** – Other projects facilitate dialogue and links among transportation professionals. National associations and Federal, State, and local agencies host peer exchanges, summits, conferences, and similar events. They also develop training materials, build websites, and partner with stakeholders to share critical information.

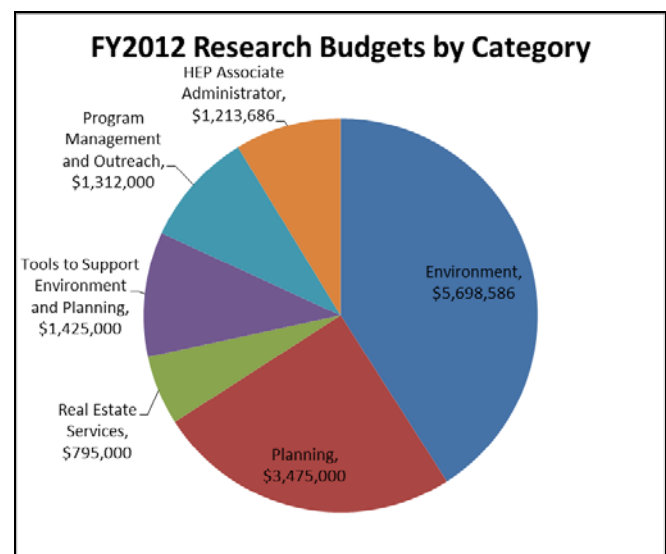
### STEP's Legislative History

Section 5207 of the Safe, Accountable, Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) established STEP. Congress mandated a 50 percent non-Federal match to encourage collaboration with partners and increase the scope of research that can be undertaken. In cases where projects are funded through a competitive bid process, the requirement may be waived.

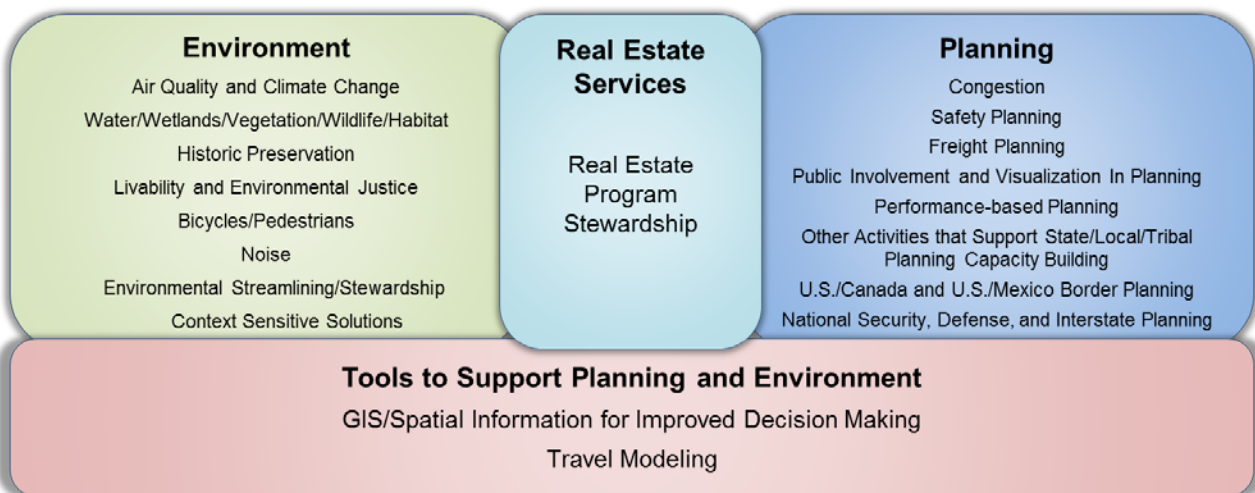
### Efficient Management of a Successful Program

SAFETEA-LU and continuing resolutions authorized \$16.875 million annually to implement the STEP. After adjusting for obligation limitations, rescissions, and the over-designation of Title V Research in SAFETEA-LU, \$13.9 million was available for the FY2012 STEP.

Through STEP, FHWA invests in projects in 19 "emphasis areas" that fall into four broad research categories: environment, planning, real estate services, and tools to support environment and planning. The projects funded in FY2012 enhance the state-of-the-art and -practice in planning, environment, and realty.



### STEP EMPHASIS AREAS



### Highlights of FY2012 STEP Research

STEP projects include short-term initiatives and ongoing multi-year programs; they may be carried out by FHWA staff or by a collection of professionals in many different agencies. The FHWA uses STEP funds and the STEP process to build partnerships that encourage collaboration, leverage diverse funding sources, and offer a fresh perspective on emerging research topics. FY2012 STEP projects reflect stakeholder feedback and collaboration.

Notable projects from each emphasis area are highlighted below with respect to their core function:

#### Conducting Research Studies

- Developed case studies illustrating **best practices in performing environmental justice analyses** during the environmental review process.
- Published a study on and initiated a pilot project to support stakeholders in the planning, development, and execution of projects that **use highway right-of-way to accommodate renewable energy technologies**.
- Identified and updated best practices for integrating planning and environmental review in order to **more efficiently deliver transportation projects that affect historic resources**.
- Showcased successful practices in tribal consultation with Federally recognized tribes and provided guidance on **building and maintaining successful tribal consultation programs**.

#### Developing and Deploying Tools, Technologies, and Practices

- **Designed, tested, and implemented open source tools** and a web-based software framework for bicycle and pedestrian travel analysis.
- **Collected and disseminated new Global Positioning System (GPS) travel survey studies** for research on hybrid electric vehicle design, fuel utilization, and air quality studies, in addition to more traditional transportation planning applications.

- **Developed and tested version 3.0 of the Traffic Noise Model.**
- Developed and piloted a tool that allows FHWA and its State partners to **efficiently submit and collect comments on National Environmental Policy Act (NEPA) documents**, schedule tasks and timelines, and interface for NEPA-related compliance.

#### Connecting the Community and Transferring Knowledge

- Launched *Fostering Livable Communities* newsletter to **provide transportation professionals with real-world examples to help them improve the relationship between transportation and communities** through safe access to jobs, affordable housing, and quality schools.
- Developed a community of practice for Transportation Liaisons to **enrich the streamlining and coordination services that they provide to natural resource agencies and State Departments of Transportation (DOTs)** through the sharing of best practices, knowledge, and resources.
- Held two workshops for State DOT, FHWA Headquarters and Division, and Federal resource and regulatory agency personnel to discuss and outline the **next steps in advancing programmatic solutions for environmental regulation.**

#### Stakeholder Collaboration

Stakeholder outreach, feedback, and participation in research efforts are critical to successful implementation of the STEP. Since the inception of the STEP program, FHWA has collected stakeholder feedback through a Web-based system. Stakeholders can target their feedback towards one of the 19 emphasis areas or submit general comments. In addition, throughout FY2012, FHWA collaborated with Federal, Tribal, and State partners, representatives of national associations, members of the academic community, private sector professionals, and individual citizens. Together they assessed research needs, identified potential funding sources, and designed appropriate research plans and activities. Hundreds of individuals were reached through meetings, teleconferences, and other events.

*“The FHWA STEP program continues to be a valuable tool that promotes interagency collaboration and the development of valuable tools and datasets that are intended to benefit multiple agencies and the resources that they manage.”*

*-- United States Fish and Wildlife Service stakeholder*

## Appendix A

### Overview of STEP Program

#### DEFINITION OF STEP

Section 5207, Surface Transportation Environment and Planning Cooperative Research Program (STEP), of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) established a new cooperative research program for environment and planning research in Section 507 of Title 23, United States Code, Highways (23 U.S.C. 507). The general objective of the STEP is to improve understanding of the complex relationship between surface transportation planning and the environment.

#### FY2012 REPORT

The purpose of this report is to provide an overview of the Federal Highway Administration (FHWA) STEP accomplishments, stakeholder outreach and feedback, and STEP research activities for Fiscal Year (FY) 2012. The report includes an overview of STEP and lessons learned in STEP implementation.

#### STEP FUNDING

SAFETEA-LU authorized \$16.875 million per year for FY2006-FY2009 to implement this new program. FY2010 and FY2011 funding was authorized through continuing resolutions. Due to obligation limitations, rescissions and the over-designation of Title V Research in SAFETEA-LU, \$13.9 million of the \$16.875 million authorized was available in FY2012. STEP is the primary source of funds to conduct all FHWA research on planning and environmental issues. In addition, Congress mandated several special studies and designated STEP as the funding source for those projects. STEP also addresses priorities identified in the U.S. Department of Transportation (USDOT) Research and Development Strategic Plan (Section 508 of Title 23 U.S.C.). FHWA must make difficult choices among the many competing needs for planning and environmental research, and cannot fund all worthy research.

Congress mandated that the Federal share be 50 percent for research funded under Title V of SAFETEA-LU, including STEP. While this will not apply to contract funding, it will apply to STEP research funded through cooperative agreements and grants.

Section 507 of Title 23 U.S.C. identifies certain characteristics of STEP regarding program content and administration. Regarding the program content, STEP may include research to:

- Develop more accurate models for evaluating transportation control measures and system designs for use by State and local governments to meet environmental requirements.
- Improve understanding of transportation demand factors.
- Develop indicators of economic, social, and environmental performance of transportation systems to facilitate alternatives analysis.
- Meet additional priorities determined through the transportation research and development strategic planning process identified in 23 U.S.C. 508.
- Refine the scope and research emphases through outreach and in consultation with stakeholders.

In administering the program, USDOT and FHWA must ensure, to the maximum extent practicable, that:

- The best projects and researchers are selected based on merit, open solicitations, and selection by a panel of appropriate experts.
- Qualified, permanent core staff with ability to manage a large multi-year budget is used;
- Stakeholders are involved in governance of program.
- There is no duplication with the Second Strategic Highway Research Program (SHRP2) (23 U.S.C. 510), which will be administered by the National Research Council of the National Academy of Sciences.

In FY2012, Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) repealed the STEP program beginning October 1, 2012, but established policy, principles, and planning practices for a flexible national research and technology program. Unobligated balances that remain available for the program will continue to be administered under the applicable SAFETEA-LU requirements.

## **EMPHASIS AREAS**

Nineteen emphasis areas were identified under the four broad research categories of environment, planning, real estate services, and tools to support environment and planning, as well as the additional program category of program management and outreach. Emphasis area contacts carried out individual outreach activities, while the STEP Program Manager and support team compiled and managed incoming stakeholder feedback, provided guidance on communication with stakeholders, and oversaw the development of the research plan.

The table on the next page displays the 19 emphasis areas organized within research/program themes as well as a list of FHWA emphasis area contacts.

|                                                                             |                                                                                                                                                |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. Environment</b>                                                       |                                                                                                                                                |
| Air Quality and Climate Change                                              | <a href="mailto:Cecilia.Ho@dot.gov">Cecilia.Ho@dot.gov</a>                                                                                     |
| Water/Wetlands/Vegetation/Wildlife/Habitat                                  | <a href="mailto:Marlys.Osterhues@dot.gov">Marlys.Osterhues@dot.gov</a>                                                                         |
| Historic Preservation                                                       | <a href="mailto:MaryAnn.Naber@dot.gov">MaryAnn.Naber@dot.gov</a>                                                                               |
| Livability and Environmental Justice                                        | <a href="mailto:Sharlene.Reed@dot.gov">Sharlene.Reed@dot.gov</a><br><a href="mailto:Shana.Baker@dot.gov">Shana.Baker@dot.gov</a>               |
| Bicycles/Pedestrians                                                        | <a href="mailto:Shana.Baker@dot.gov">Shana.Baker@dot.gov</a><br><a href="mailto:Christopher.Douwes@dot.gov">Christopher.Douwes@dot.gov</a>     |
| Noise                                                                       | <a href="mailto:Mark.Ferroni@dot.gov">Mark.Ferroni@dot.gov</a>                                                                                 |
| Environmental Streamlining/Stewardship                                      | <a href="mailto:Michael.Lamprecht@dot.gov">Michael.Lamprecht@dot.gov</a>                                                                       |
| Context Sensitive Solutions                                                 | <a href="mailto:Shana.Baker@dot.gov">Shana.Baker@dot.gov</a>                                                                                   |
| <b>2. Planning</b>                                                          |                                                                                                                                                |
| Congestion                                                                  | <a href="mailto:Harlan.Miller@dot.gov">Harlan.Miller@dot.gov</a>                                                                               |
| Safety Planning                                                             | <a href="mailto:Sarah.Sun@dot.gov">Sarah.Sun@dot.gov</a>                                                                                       |
| Freight Planning                                                            | <a href="mailto:Spencer.Stevens@dot.gov">Spencer.Stevens@dot.gov</a>                                                                           |
| Public Involvement and Visualization in Planning                            | <a href="mailto:Frederick.Bowers@dot.gov">Frederick.Bowers@dot.gov</a>                                                                         |
| Performance-based Planning                                                  | <a href="mailto:Harlan.Miller@dot.gov">Harlan.Miller@dot.gov</a><br><a href="mailto:Egan.Smith@dot.gov">Egan.Smith@dot.gov</a>                 |
| Other Activities that Support State/Local/Tribal Planning Capacity Building | <a href="mailto:Kenneth.Petty@dot.gov">Kenneth.Petty@dot.gov</a>                                                                               |
| U.S./Canada and U.S./Mexico Border Planning                                 | <a href="mailto:Roger.Petzold@dot.gov">Roger.Petzold@dot.gov</a>                                                                               |
| National Security, Defense, and Interstate Planning                         | <a href="mailto:Stefan.Natzke@dot.gov">Stefan.Natzke@dot.gov</a>                                                                               |
| <b>3. Real Estate Services</b>                                              |                                                                                                                                                |
| Real Estate Program Stewardship                                             | <a href="mailto:Arnold.Feldman@dot.gov">Arnold.Feldman@dot.gov</a>                                                                             |
| <b>4. Tools To Support Planning and Environment</b>                         |                                                                                                                                                |
| Travel Modeling                                                             | <a href="mailto:Sarah.Sun@dot.gov">Sarah.Sun@dot.gov</a>                                                                                       |
| GIS/Spatial Information for Improved Decision Making                        | <a href="mailto:Mark.Sarmiento@dot.gov">Mark.Sarmiento@dot.gov</a>                                                                             |
| <b>5. Program Management and Outreach</b>                                   | <a href="mailto:DeborahR.Johnson@dot.gov">DeborahR.Johnson@dot.gov</a><br><a href="mailto:Patricia.Czenas@dot.gov">Patricia.Czenas@dot.gov</a> |

## TIERS OF STAKEHOLDERS

As described in the STEP Implementation Strategy, the number of stakeholders with an interest in environment and planning research is enormous and diverse. Stakeholders have been categorized according to the following three tiers:

**Tier I - Federal Agencies and Tribes:** Tier I stakeholders may include agencies like the Departments of Commerce, Defense, Homeland Security (DHS), Agriculture, Energy, Interior, and Housing and Urban Development (HUD), the U.S. Environmental Protection Agency (EPA), and the Centers for Disease Control and Prevention (CDC). Within each of these agencies, there are many discrete organizations and programs with an interest in STEP, e.g., the National Park Service, U.S. Fish and Wildlife Service (USFWS), and Bureau of Land Management within the Department of the Interior. Within the USDOT, FHWA partners with the Federal Transit Administration (FTA) on virtually all planning and environmental work, including research. FHWA also coordinates with the Federal Railroad Administration (FRA), Federal Aviation Administration (FAA), Research and Innovative Technology (RITA), and Maritime Administrations, and with the Office of the Secretary of Transportation on Global Climate Change as well as other issues. There are over 500 Federally recognized Native American Tribes, which have a major interest in research affecting their planning and environmental needs.

**Tier II - State and Local Government:** State DOTs and Metropolitan Planning Organizations (MPOs) have a major interest in environment and planning research, as the research affects national policy and can also provide important tools, information, and training to meet day-to-day needs of these agencies. In addition, local government units (including transit operators as well as county public works departments and city transportation departments) depend on national environmental and planning research. State/local environmental and natural resource agencies and State Historic Preservation Offices have a strong interest in planning and environmental research. There is also a growing interest by State/local health agencies in transportation planning and environmental research as it relates to health impacts of the surface transportation system.

**Tier III - Nongovernmental Transportation and Environmental Stakeholders:** Within the transportation and environment sectors, there are hundreds and perhaps thousands of nongovernmental stakeholders, such as the American Automobile Association, American Road and Transportation Builders Association, American Highway Users Alliance, Surface Transportation Policy Project, Defenders of Wildlife, American Association of Retired Persons, Sierra Club, Conservation Law Foundation, American Council of Engineering Companies, American Planning Association (APA), League of American Bicyclists, National Trust for Historic Preservation, International Right of Way Association (IRWA), National Alliance of Highway Beautification Agencies (NAHBA) and others too numerous to specify here.

## Appendix B

### Research Highlights

STEP emphasis area contacts and program staff identified research activities for FY2012 based on stakeholder feedback and other national priorities. A summary table is provided below. Complete descriptions of each research activity recommended in FY2012 can be found on the STEP website at [www.fhwa.dot.gov/hep/step/resources/research\\_plans/fy12rp](http://www.fhwa.dot.gov/hep/step/resources/research_plans/fy12rp).

| Emphasis Area | Number of Research Recommendations | FY2012 STEP Budgets |
|---------------|------------------------------------|---------------------|
|---------------|------------------------------------|---------------------|

#### ENVIRONMENT EMPHASIS AREAS

|                                            |   |             |
|--------------------------------------------|---|-------------|
| Air Quality and Climate Change             | 3 | \$1,640,000 |
| Water/Wetlands/Vegetation/Wildlife/Habitat | 5 | \$1,014,090 |
| Historic Preservation                      | 1 | \$200,000   |
| Livability and Environmental Justice       | 1 | \$400,000   |
| Bicycles/Pedestrians                       | 1 | \$150,000   |
| Noise                                      | 1 | \$310,000   |
| Environmental Streamlining/Stewardship     | 4 | \$1,604,496 |
| Context Sensitive Solutions                | 2 | \$380,000   |

#### PLANNING EMPHASIS AREAS

|                                                                             |   |             |
|-----------------------------------------------------------------------------|---|-------------|
| Congestion                                                                  | 1 | \$100,000   |
| Safety Planning                                                             | 1 | \$200,000   |
| Freight Planning                                                            | 2 | \$200,000   |
| Performance-Based Planning                                                  | 1 | \$200,000   |
| Public Involvement and Visualization in Planning                            | 1 | \$200,000   |
| Other Activities that Support State/Local/Tribal Planning Capacity Building | 6 | \$1,375,000 |
| U.S./Canada and U.S./Mexico Border Planning                                 | 9 | \$1,120,000 |
| National Security, Defense and Interstate Planning                          | 4 | \$80,000    |

#### REAL ESTATE SERVICES EMPHASIS AREAS

|                                 |   |           |
|---------------------------------|---|-----------|
| Real Estate Program Stewardship | 5 | \$795,000 |
|---------------------------------|---|-----------|

#### TOOLS TO SUPPORT PLANNING AND ENVIRONMENT EMPHASIS AREAS

|                                                      |   |             |
|------------------------------------------------------|---|-------------|
| Travel Modeling                                      | 4 | \$1,325,000 |
| GIS/Spatial Information for Improved Decision Making | 1 | \$100,000   |

|                                        |    |             |
|----------------------------------------|----|-------------|
| <b>PROGRAM MANAGEMENT AND OUTREACH</b> | 2* | \$1,312,000 |
|----------------------------------------|----|-------------|

|                                    |  |             |
|------------------------------------|--|-------------|
| <b>HEP ASSOCIATE ADMINISTRATOR</b> |  | \$1,213,686 |
|------------------------------------|--|-------------|

|              |           |                     |
|--------------|-----------|---------------------|
| <b>TOTAL</b> | <b>55</b> | <b>\$13,919,272</b> |
|--------------|-----------|---------------------|

\* Total includes one Financial Management and Program Assistance research recommendation

STEP funds contributed to substantial advancements in research and tools to support transportation planning and the environment. In addition, STEP research projects have leveraged funds from other sources to complete this work. Several emphasis areas were involved in successful cost-sharing partnerships.

Descriptions of FY2012 research accomplishments by emphasis area, including those funded with prior year funding, are listed below. These descriptions include accomplishments from both short-term and ongoing projects. The total budget for an emphasis area may not equal the sum of individual projects described in this report, as some projects started in FY2012 but are not yet complete and some accomplishments occurred in FY2012 but were funded in prior years.

## Emphasis Areas Related to Environment

### Air Quality and Climate Change

**Emphasis Area Contacts:** Cecilia Ho and Diane Turchetta

**Level of FY2012 Funding:** \$1,640,000

- **Transportation Air Quality Research, Analysis, Tools Development, and Training (FY2012: \$640,000).** FHWA supported three major areas of air quality research in FY2012:
  1. **Motor Vehicle Emissions Simulator (MOVES) Model Sensitivity Studies** – FHWA evaluated the sensitivity of selected MOVES2010b emissions model input variables for both regional and project level air quality analyses. The Regional Level Sensitivity Analysis, completed in November of 2012, produced a final report intended to convey to air quality and transportation practitioners how the inclusion of locally generated data can enhance the accuracy of their emissions estimates. The Project Level Sensitivity Analysis, currently underway, will produce a final report to supplement established guidance and also provide specific insight into the Model's operation regarding vehicle specific particulate matter (PM) and carbon monoxide (CO) emissions calculations.
  2. **Project level Air Quality Analyses** – FHWA completed modeling and technical documentation to support the agency's CO categorical hot-spot finding. FHWA also outlined projects and inputs that may be needed to pursue to a PM categorical hot-spot finding in the future.
  3. **On-Road Mobile Source Emissions Research** – FHWA provided research support for Health Effects Institute's (HEI's) research related to on-road mobile source emissions. HEI published five reports this past year relating to on-road motor vehicle emissions in the United States on: (1) the health effects of new diesel exhaust technology; (2) sources of nanoparticles; (3) the health effects of ambient ultrafine pollution; (4) air quality improvements under the Clean Air Act; and (5) potential air toxics hot spots. HEI also announced the newly formed HEI Diesel Epidemiology Project Panel, which will evaluate the strengths and limitations of current epidemiologic evidence to estimate the cancer risks associated with exposures to diesel exhaust.
- **Climate Change and Transportation (FY2012: \$500,000).** FHWA completed and began testing the Energy and Emissions Reduction Policy Analysis Tool (EERPAT), a tool designed to help State DOTs to estimate transportation-related statewide energy use and greenhouse gas emissions (GHGs). EERPAT is available at [www.planning.dot.gov/FHWA\\_tool](http://www.planning.dot.gov/FHWA_tool). FHWA also completed the *Reference Sourcebook for Reducing GHGs from Transportation Sources*, available at [www.planning.dot.gov/FHWA\\_tool/reference\\_sourcebook.pdf](http://www.planning.dot.gov/FHWA_tool/reference_sourcebook.pdf). The reference provides needed

information to transportation practitioners on potential GHGs that may be achieved by implementing a variety of policies and projects.

- **Sustainable Transportation (FY2012: \$250,000).** Based on robust pilot testing, FHWA modified, refined, and launched version 1.0 of the Infrastructure Voluntary Evaluation Sustainability Tool (INVEST). FHWA highlighted several enhancements to INVEST during a virtual launch event in October 2012. With the completion of INVEST version 1.0, FHWA also began funding twelve pilot projects with State DOTs, MPOs, and local governments to implement the tool. These pilot implementations are intended to lead to sustainability improvements in an agency's practices, projects and procedures. Information about INVEST is available at [www.sustainablehighways.org](http://www.sustainablehighways.org).

The following research activities had accomplishments in FY2012 but were funded through prior years of STEP funding.

- **Climate Change and Transportation (Prior Year Funding: \$500,000).** FHWA conducted five pilot projects with State DOTs and MPOs (New Jersey, California, Washington, Hawaii, and Virginia) to test its *Conceptual Framework for Climate Change and Extreme Weather Vulnerability Assessment*. FHWA documented the results of these pilots and will use them to improve and add to the *Framework*. FHWA also hosted six peer exchanges in cooperation with the Association of Metropolitan Planning Organizations (AMPO) and the American Association of State Highway and Transportation Officials (AASHTO) focused on climate change mitigation and adaptation. The *Framework* is available at [www.fhwa.dot.gov/environment/climate\\_change/adaptation/resources\\_and\\_publications/vulnerability\\_assessment\\_framework](http://www.fhwa.dot.gov/environment/climate_change/adaptation/resources_and_publications/vulnerability_assessment_framework).

#### Water/Wetlands/Vegetation/Wildlife/Habitat

Emphasis Area Contact: Marlys Osterhues

Level of FY2012 Funding: \$1,014,090

The following research activities had accomplishments in FY2012 but were funded through prior years of STEP funding.

- **Land and Water Conservation Fund: Section 6(f)(3) – Temporary Non-Conforming Use and Transportation Projects (Prior Year Funding: \$89,234.16).** On September 17, 2012, FHWA awarded a Task Order to identify strategies for resolving project issues related to perceived delays and increased costs associated with transportation projects involving Land and Water Conservation Fund Act Section 6(f) – specifically (3) *Temporary Non-Conforming Use*. FHWA hosted a kick-off meeting on October 25, 2012 at which the consultant and FHWA teams reviewed a draft work plan and approved a schedule for the project. The period of performance for this Task Order is one year.

#### Historic Preservation

Emphasis Area Contact: MaryAnn Naber

Level of FY2012 Funding: \$200,000

- **Research and Innovation Agreement with the Advisory Council on Historic Preservation (ACHP) (FY2012: \$50,000).** FHWA investigated best practices for innovative compliance with Section 106 of the National Historic Preservation Act to ensure efficient project delivery. FHWA developed tools to help agencies develop effective programmatic agreements, promote early coordination, and improve the outcome of the process for all parties participating. Notable accomplishments for FY12 include coordination and development of a nation-wide program comment for post-1945 concrete and steel bridges. The program comment acts, in effect, as an exemption from project-by-project review for all bridges that meet the program criteria.
- **Planning and Environmental Linkages for Historic Preservation (FY2012: \$69,973).** FHWA identified and updated best practices for integrating planning and environmental review in order to more efficiently deliver transportation projects affecting historic resources. The project produced a report *Planning and Environmental Linkages for Historic Preservation*, which describes best practices in 13 states through brief case studies. The report is available on the FHWA Environmental Toolkit website at [www.environment.fhwa.dot.gov/histpres/HistPres\\_PEL\\_report](http://www.environment.fhwa.dot.gov/histpres/HistPres_PEL_report). FHWA also developed and delivered a pilot state workshop in North Carolina in October of 2012 that explored the various approaches for process improvements and developing a State action plan.
- **Successful Practices for Effective Tribal Consultation (FY2012: \$25,000).** During FY2012, FHWA supported a research project in cooperation with the National Cooperative Highway Research Program (NCHRP) focused on showcasing successful practices in tribal consultation with Federally recognized tribes and providing guidance on how to build and maintain successful tribal consultation programs. The sources of these successful practices and guidance will include, but will not be limited to programs implemented by FHWA division offices, State DOTs, local transportation planning organizations and agencies, and Federally recognized tribes. In FY2012, the project team reviewed available literature and resources on tribal consultation and compiled a technical memorandum of the results.

### Livability and Environmental Justice

**Emphasis Area Contact:** Sharlene Reed and Shana Baker  
**Level of FY2012 Funding:** \$400,000

- **Promoting Best Practices on Transportation and Livability Linkages (FY2012: \$400,000).** FHWA has conducted the following livability and environmental justice efforts, in coordination with the USDOT Volpe Center:
  - In April 2012, the FHWA Office of Human Environment launched the *Fostering Livable Communities* newsletter. The quarterly online newsletter provides transportation professionals with real-world examples to help them improve the relationship between transportation and communities through safe access to jobs, affordable housing, and quality schools. The newsletters share effective practices and resources that may be of use to both practitioners and the public. Archived issues of the newsletter are available at [www.fhwa.dot.gov/livability/newsletter](http://www.fhwa.dot.gov/livability/newsletter).
  - The FHWA Office of Human Environment hosted two webinars: *Advancing Livability with Geographic Information Systems (GIS)* in July 2012 and *Effective Practices in Planning for Livable Communities at Metropolitan Planning Organizations (MPOs)* in November 2012. The *Advancing Livability with GIS* webinar provided planning and development practitioners with a better understanding of the potential applications of geospatial

- technologies for advancing livability principles. The *Effective Practices in Planning for Livable Communities at MPOs* webinar explored several innovative MPO programs to promote livability that were highlighted at the 2010 peer exchange in Atlanta, Georgia sponsored by the 2010 FHWA/FTA Transportation Planning Capacity Building Program.
- o FHWA developed and delivered a training event on environmental justice in July 2012. The final outcome of the environmental justice training event was described in the [Environmental Justice Training Summary](#), which was posted on the [FHWA Environmental Justice Website](#) in December 2012.

### Bicycles/Pedestrians

**Emphasis Area Contact:** Shana Baker; Christopher Douwes  
**Level of FY2012 Funding:** \$550,000

The following research activities had accomplishments in FY2012 but were funded through prior years of STEP funding.

- **Bicycle and Pedestrian STUFF (Prior Year Funding: \$398,950).** FHWA continued a cooperative agreement with the University of North Carolina's Highway Safety Research Center for the Pedestrian and Bicycle Information Center (PBIC). PBIC provided a suite of websites on pedestrian and bicycle planning, design, operation, and examples; technical assistance to professionals (including support for State Bicycle and Pedestrian Coordinators); publications related to bicycling and walking; webinars on design guides, health, and safety; and a new report on bike sharing programs. Information about PBIC is available at [www.pedbikeinfo.org](http://www.pedbikeinfo.org).

FHWA also continued a cooperative agreement with the Rails-to-Trails Conservancy for the National Transportation Enhancements Clearinghouse (NTEC). NTEC maintains a Transportation Enhancements website ([www.ta-clearinghouse.info/index](http://www.ta-clearinghouse.info/index)) that provides program information, project examples, publications, an annual report on Transportation Enhancements spending, and support for State Transportation Enhancement Program Managers.

### Noise

**Emphasis Area Contact:** Mark Ferroni  
**Level of FY2012 Funding:** \$310,000

- **Highway Traffic Noise: Research, Training and Communication (FY2012: \$310,000).** In FY2012, FHWA pursued two highway traffic noise research efforts:
  - o **Traffic Noise Model (TMN) Version 3.0:** FHWA developed a beta version of TNM 3.0 with fully developed acoustical code. FHWA also performed sensitivity testing and developed a consistency test suite for end users that includes a key of acceptable margins. FHWA expects to complete TNM 3.0 by the end of FY2013.
  - o **Land Use Evaluation Methodologies:** FHWA commenced research on including land use evaluation methodologies under Title 23 of the Code of Federal Regulations (CFR), Part 772: Procedures for Abatement of Highway Traffic Noise and Construction Noise. This effort began to explore how to analyze noise barrier criteria and identify opportunities for streamlining through programmatic agreements within the noise study process. FHWA plans to complete this effort during FY2013.

## Environmental Streamlining/Stewardship

Emphasis Area Contact: Bruce Bender

Level of FY2012 Funding: \$1,604,496

- Advancing Innovations in FHWA's Environmental Review Process** (*This is a group of projects that includes: Improved Analytical Methods for Addressing Stormwater Impacts to Water Quality; Further Deployment of Environmental Corridor Optimization – Planning Alignment (ECO PAL) Technology in Association with the Mississippi DOT; Green Highways Partnership Digest Development; and Visual Impact/Visualization Guidance Updates*) (FY2012: \$533,864). FHWA awarded a contract for the Visual Impact Assessment Guidance Update on September 19, 2012 and held a kick-off meeting on October 16, 2012. FHWA also hosted a kickoff meeting for the *Green Highways Partnership Digest* on July 31, 2012 and established an intra-agency workgroup to lead the *Digest*. The group has met monthly to discuss ways to increase subscribership and make sure information gets to stakeholders.
- Section 4(f) National Highway Institute Training Course (FY2012: \$160,000)**. FHWA plans to develop a course to assist FHWA staff, project sponsors, and stakeholders in understanding and applying the concepts of Section 4(f) of the Department of Transportation Act of 1966 in the context of transportation project development. FHWA released a request for proposals for development of the course curricula and awarded a contract in the fourth quarter of 2012. Course development will commence before the end of calendar year 2012.
- Environmental Justice and NEPA – Case Studies (FY2012: \$218,000)**. FHWA developed ten case studies that illustrate best practices in performing environmental justice analyses during the environmental review process. The case studies are complete and will be posted to the FHWA Environmental Justice website in FY2013; a final report and slide presentation will also be finalized in FY2013.

The following research activities had accomplishments in FY2012 but were funded through prior years of STEP funding.

- Advancing Tools Used for Decision Support and Impact Analyses for Transportation (Prior Year Funding: \$130,042)**. On September 19, 2012 FHWA awarded a Task Order to identify State DOT Visual Impact Assessment procedures, methods, and practices; document the current use of FHWA's Visual Impact Assessment Guidance; and to update FHWA's *Visual Impact Assessment for Highway Projects* guidance document. HEPE held a kickoff meeting on October 16, 2012 at which the consultant and FHWA teams were introduced, a draft Work plan was reviewed, and a schedule for moving forward was approved. The period of performance for this Task Order is one year.
- Electronic National Environmental Policy Act (e-NEPA) (Prior Year Funding: \$492,949)**. During FY2012, HEPE project team met on a weekly basis to keep the development of e-NEPA on track. The project team, FHWA Division Offices, and five pilot states (Arizona, North Dakota, Utah, Washington, Wisconsin) completed four iterative tests of the application. Development of e-NEPA reached approximately 90 percent completion and FHWA anticipates that the final application will be released during FY2013.
- National Transportation Liaison Community of Practice (Prior Year Funding: \$130,000)**. FHWA developed the Transportation Liaison Community of Practice to enrich the streamlining and

coordination services that liaisons provide to resource agencies and DOTs by enabling the sharing of best practices and exchanging of knowledge and resources. The website includes a resource library, a subject matter expert list, quarterly profiles on liaisons, a calendar of events, and a news bulletin. The newest addition, added in October 2012, is a discussion board where liaisons can ask questions and share information on project-specific questions and best practices. The Community of Practice website is open to liaisons, liaison managers, State DOTs, MPOs, and FHWA division staff. The website is located at:

[www.environment.fhwa.dot.gov/liaisonCOP](http://www.environment.fhwa.dot.gov/liaisonCOP).

- **Practitioner Level Programmatic Agreement Workshops (Prior Year Funding: \$106,347).** In September 2012, FHWA held two of three planned workshops to advance programmatic solutions for environmental regulation. These workshops, which were held after an initial teleconference and subsequent webinar, brought together State DOT, FHWA headquarters and Division employees, and Federal resource and regulatory personnel to discuss and outline the next steps in developing programmatic agreements in their region of the country. A post-workshop webinar is to take place for both workshop groups in December 2012. This webinar will update the group on the advances made after the workshop was completed.

FHWA will host the third workshop of the series in May 2013. FHWA also plans to host seven additional workshops in 2013 for the remaining portions of the country.

### Context Sensitive Solutions (CSS)

**Emphasis Area Contact:** Bruce Bender  
**Level of FY2012 Funding:** \$380,000

The following research activities had accomplishments in FY2012 but were funded through prior years of STEP funding.

- **CSS Clearinghouse (Prior Year Funding: \$307,269).** FHWA continued to support the CSS Clearinghouse (CSS.org) and also promoted CSS principles through a project on designing walkable urban thoroughfares, a CSS webinar series, and CSS National Dialog workshops:
  - **Designing Walkable Urban Thoroughfares:** A Context Sensitive Approach focuses on a need to advance the practice of context sensitive design for major urban streets, drawing on principles and techniques used by practitioners from the new urbanist and smart growth movements. The intent of this joint project was to encourage street and network design that creates and strengthens places that are truly multi-modal, feature walkability, and support compact, mixed use environments.
  - **Webinars:** FHWA hosted three CSS webinars: CSS and Tools for Visualization on June 11, 2012, [Implementing Trails in the Urban, Suburban, and Rural Context](#) on April 17, 2012, and [Americans with Disabilities Act and Context Sensitive Solutions](#) on January 5, 2012.
  - **CSS National Dialog Workshops:** FHWA hosted a CSS National Dialog workshop in Springfield, Illinois on September 27, 2012. The workshop provided an overview of CSS principles and examples of project successes. Additional information on the webinars can be found at the CSS website at [www.fhwa.dot.gov/planning/css/webinars/](http://www.fhwa.dot.gov/planning/css/webinars/).

## Emphasis Areas Related to Planning

### Congestion

**Emphasis Area Contact:** Egan Smith

**Level of FY2012 Funding:** \$100,000

- **Guidebook for Equity Analysis (Congestion Pricing) (FY2012: \$50,000; Office of Operations: \$50,000).** FHWA began development of a *Guidebook for Equity Analysis* that will enable transportation agencies to better assess and mitigate equity impacts of road pricing projects on local communities, commuters, and system users. Development of the *Guidebook for Equity Analysis* (congestion pricing) began in Fiscal Year 2011 with a literature review, research, and interviews with experts. In FY2012, FHWA held a workshop on the Guidebook in October 2011 and as of April 20, 2012 a draft document was under review.

### Safety Planning

**Emphasis Area Contact:** Sarah Sun

**Level of FY2012 Funding:** \$200,000

- **Developing Advanced Spatial Analytical Tools in Transportation Safety Planning: Examining Planning zones and Trip Data for Accurate and Efficient Transportation Safety Planning (FY2012: \$200,000).** The purpose of this research is to establish the suitability of the current traffic-related zoning approach in the new generation planning method: Transportation Safety Planning (TSP). Through this project, FHWA is exploring effective and efficient uses in TSP of existing key determinants in traditional transportation planning such as trip generation/distribution data and developing a prototype for a scientific yet practical analysis toolbox to advance TSP practice at various levels. University of Central Florida submitted a draft final report for this study in Fall 2012. FHWA is currently reviewing and finalizing this study.

### Freight Planning

**Emphasis Area Contact:** Spencer Stevens

**Level of FY2012 Funding:** \$200,000

There were no FY2012 accomplishments in this area.

### Performance-Based Planning

**Emphasis Area Contact:** Harlan Miller

**Level of FY2012 Funding:** \$200,000

- **Performance-Based Planning (FY2012: \$200,000).** FHWA hosted three one-day workshops with external stakeholders focused on performance-based planning and programming with State DOTs, MPOs, and transit agencies in southeastern states on March 29, 2012, New England states on June 19, 2012, and intermountain west states on September 18, 2012. FHWA also commenced development of a guidebook focused on performance-based planning and programming.

### Public Involvement and Visualization in Planning

**Emphasis Area Contact:** Frederick Bowers

**Level of FY2012 Funding:** \$200,000

- **Public Involvement and Visualization in Planning (FY2012: \$200,000).** FHWA provided two Scenario Planning workshops and two Scenario Planning webinars to assist transportation agencies in applying and better utilizing scenario planning techniques. Also, FHWA completed a report entitled *Linking Regional Safety*, offered a training module called *LEL Safety and Planning Linkages*, and organized four Megaregion national planning conference calls. Additionally, working with the USDOT Volpe Center, FHWA finished *MPO Planning for Healthy Communities*, a white paper that identifies an integrated and flexible approach to how MPOs and their partners can consider aspects of health during the transportation planning process. Two webinars were also administered to showcase the highlights of this white paper. Finally, FHWA, again working with the USDOT Volpe Center, began work on a State DOT Planning for Healthy Communities report and an Economic MPO Best Practice report.

### Other Activities that Support State/Local/Tribal Planning Capacity Building

**Emphasis Area Contact:** Kenneth Petty

**Level of FY2012 Funding:** \$1,375,000

- **Tribal Transportation Planning Module Series (FY2012: \$138,268).** FHWA developed five new modules for the Five Tribal Transportation Planning Module Training Series, adding to the existing six modules. The Series is designed to assist transportation professionals responsible for planning for the capital, operating, and maintenance needs on Tribal lands. All 11 modules are available at [http://www.tribalplanning.fhwa.dot.gov/training\\_series.aspx](http://www.tribalplanning.fhwa.dot.gov/training_series.aspx).
- **Project Prioritization and Performance-based Planning Efforts in Rural and Small Metropolitan Regions (FY 2012: \$100,000).** This project supported research on project prioritization methods and performance-based planning in rural and small metropolitan regions. The research identified the methods and extent to which organizations such as rural transportation planning organizations (often called RPOs or RTPOs) and smaller metropolitan planning organizations (MPOs) rank regional transportation priorities and whether performance measures played a role in the regional planning efforts that occur under contract to state departments of transportation (DOTs). This project provided a resource for regional transportation planning professionals to identify and overcome barriers to project prioritization and performance-based planning, as well as methods to employ such initiatives within their regional planning processes and documents.
- **The Architecture of the Megaregion (Prior Year Funding: \$274,476).** This project provide a basis of knowledge of the current state of thinking on regional and statewide transportation planning structures and opportunities for megaregion planning, and to acquire a full understanding of opportunities and challenges from the viewpoint of the practitioner, academic and policy maker. Expanded literature review of the current and historical structure and

function of local, regional, statewide, and trans-boundary transportation planning and financing to megaregion planning in the U.S. The review included a targeted exploration of megaregion initiatives in other infrastructure sectors, for example, the regional greenhouse gas initiative among the Northeastern and Mid-Atlantic states, for valuable lessons learned. And identification of multi-scalar projects of national significance that served as test cases (e.g. high-speed rail). In FY2012, FHWA completed a draft of the report.

- **Symposium for Rural Transportation Planning Organizations (RTPOs) and Metropolitan Planning Organizations (MPOs): Assessing the Structure and Benefits of Collaboration (FY 2012: \$25,000).** This project assessed RPO and MPO collaboration. A symposium was held that concentrated on various institutional arrangements that promote RPO / MPO collaborations, provide best practice case study examples, and provide attendees (and others as the symposium proceedings will be recorded and shared with a broad audience of interested stakeholders) with relevant information and examples for RPOs and MPOs to replicate.
- **Incorporating Livability into Rural and Small Metropolitan Transportation Planning (FY 2012: \$100,000).** This project used symposium findings and recommendations to study livability as applicable in rural and small metropolitan areas.
- **Transportation Planner's Accessibility Toolkit (FY 2012: \$249,750).** The project developed and deployed simple but powerful analytical tools to support improved transportation planning. These tools took the form of a web-based tool that calculated the accessibility changes associated with improvements and demographic changes. Available to a broader set of planners than those who perform travel demand modeling.
- **Linking Transportation Planning with Public Health: An Ecological-Based Paradigm for Institutional Collaboration (FY 2012: \$121,713).** This project developed an ecological-based planning paradigm to promote greater collaboration among transportation planning agencies and public health agencies. The proposed paradigm included a set of policy suggestions, practical procedures, and technical instruments for facilitating communications between the two communities in order to develop shared visions for urban growth and the development of transportation infrastructure.
- **Open-Source Dynamic Traffic Assignment Tool (FY 2012: \$357,651).** This project created a tool designed for use by planners to evaluate different safety enhancement strategies to reduce frequency and effects of crash events that cause travel times to fluctuate in an unpredictable manner from day to day. It also provided practitioners with a tool that quantifies safety prediction and reliability performance measures.
- **Global Climate Change Workshops for MPOs and State DOTs (FY 2012: \$100,396).** The project supported introductory workshops for State DOTs and MPOs designed to accelerate global climate change awareness and initiatives among State DOTs, MPOs and other associated State agencies.
- **Developing the Capacity of Local and Regional Stakeholders to Create, Integrate and Implement Federal Livability Goals (FY 2012: \$250,000).** This project conducted research to structure and identify current livability activities and challenges; constructive research to develop solutions, tools, strategies and mechanisms; and empirical research to test the feasibility of the tools developed.

- **Technical Assistance Resource Guide for State and Local Transportation GHG Planning (FY 2012: \$94,743).** This project prepared a Resource Guide to aid state DOTs, MPOs and local governments to determine what technical assistance and tools are available, or anticipated to be available in the short term, and how and when to use them in planning, implementation and measurement of GHG reduction efforts.
- **Creating Livable Places Understanding the “Development Game” to Increase Livability (FY 2012: \$125,000).** This project identified opportunities to incorporate Livability Principles into metropolitan planning (especially the long range transportation plan) and to increase coordination among federally required regional and local plans.

### U.S./Canada and U.S./Mexico Border Planning

**Emphasis Area Contact:** Roger Petzold

**Level of FY2012 Funding:** \$1,120,000

- **Host U.S./Canada Transportation Border Working Group (TBWG) Bi-Annual Meeting (FY2012: \$25,000).** TBWG works to facilitate the safe, secure, efficient, and environmentally responsible movement of people and goods across the Canada-U.S. border. The TBWG brings together multiple transportation and border agencies, and other organizations, to coordinate transportation planning, policy implementation, and the deployment of technology to enhance border infrastructure and operations. As such, this forum fosters on-going communication, information sharing, and the exchange of best practices to improve the transportation and the safety and security systems that connect our two countries. FHWA conducted the following activities in FY2012 as part of TBWG:
  - **Bi-Annual Meeting:** FHWA hosted the TBWG’s 2013 meeting in Seattle, Washington. The major theme of the meeting was the *Beyond the Border Initiative* that both the U.S. and Canada governments have been working to coordinate. Additionally, a bus tour of the Port of Seattle was held to allow meeting participants the opportunity to see how goods are transported from ships and loaded to other modes of transportation.
  - **Webinars:** FHWA’s Border and Interstate Team conducted webinars of both TBWG Meetings in which FHWA participated. The first Webinar was a broadcast of the Bi-Annual meeting that was held in Seattle, Washington that included “gavel to gavel” coverage of all presentations given during the meeting. The Third Webinar was a broadcast of the Ottawa TBWG Meeting and was also a “gavel to gavel” broadcast of all presentations.
- **Host U.S. Mexico Joint Working Committee (JWC) Bi-Annual Meeting (FY2012: \$25,000).** FHWA hosted one of the JWC’s two meetings in Albuquerque, New Mexico on September 20 and 21, 2012 for approximately 65 people from both countries. The JWC discussed their most current work plan and other issues of interest to both countries. This support also included simultaneous interpretation.
- **U.S./Canada TBWG Support (FY2012: \$200,000).** In Support of the TBWG Mission, the Border and Interstate Planning Team participated in extensive outreach activities to maintain professional associations with many of the border agencies and/or organizations that exist along the border with Canada. As an active partner in these endeavors, the Border and Interstate Planning Team maintains an up-to-date perspective of current border issues by actively participating in the following activities:

- *Invitational Travel:* In this current fiscal climate of limited travel funds, FHWA provides invitational travel opportunities for some state and MPO border partners to travel to meetings and conferences to share their border expertise and transfer technologies by giving presentations. FHWA has offered invitational travel for attendance of TBWG meetings within the United States and Transportation Research Board meetings in Washington, DC.
  - *Eastern Border Transportation Coalition (EBTC):* The EBTC is one of FHWA's most active border partners, encompassing the U.S border states from Michigan to Maine, excluding New Hampshire, and the Canadian Border Provinces from Ontario east to Nova Scotia. The EBTC has an annual meeting that alternates annually between the U.S. and Canada. The last meeting was in Halifax, Nova Scotia where FHWA provided a presentation on agency efforts on the Border Wait Time Pilot that the U.S. and Canada are jointly employing.
  - *Origin-Destination Database of Border Traffic Flow Workshops:* FHWA has entered into a contract with the Province of Ontario to access micro origin-destination data to effectively plan for infrastructure needs at ports of entry along the U.S./Canada border. This endeavor will provide support to the Ontario of Transportation for Ontario (MTO) to host a series of workshops in the U.S. to share MTO's border data and transfer the data to American States to replicate best practices.
  - *Research Gathering:* The Border and Interstate Team attends various border and freight related meetings around the country to gather research related topics to enhance FHWA's border program and provide state-of-the-art technology perspectives to FHWA's border partners and the border community as a whole. Examples of such meetings are Transportation Research Board Meetings, Upper Midwest Freight Coalition Meetings, Canada – America Border Trade Alliance Meetings, and Logistical Conferences where freight movement across the U.S./Canada Border is an emphasis area of consideration.
- **U.S./Mexico JWC Support (FY2012: \$150,000).** The FHWA Office of Planning continued to support the JWC website including adding new sections (Regional Border Master Plans & Border Wait-time) and posting the new reports and studies completed by the JWC. The JWC website can be found at: [www.borderplanning.fhwa.dot.gov/mexico](http://www.borderplanning.fhwa.dot.gov/mexico).
- **Greening Transportation at the Border - Livability and Sustainability (FY2012: \$200,000).** The FHWA Office of Planning conducted a study that developed an analysis template for emissions associated with the land ports of entry along the U.S./Mexico border, and demonstrated its use through two case studies. Results from the case studies identify candidate best practices and performance measures for use as an input during the initial phases of development for projects that alter the border infrastructure or the operational characteristics of the ports of entry.
- **Peer Exchange - Northern Border (FY2012: \$10,000).** FHWA hosted a one day peer exchange in Oakdale, Minnesota on June 14, 2012 that provided an overview of the international border bridge project development process. This exchange was conceived in part based on a request from the Minnesota Department of Transportation (MnDOT) to the Federal Highway Administration (FHWA) to receive technical assistance for a planned international border bridge project. The Maine Department of Transportation (Maine DOT) was judged to be a match for the issues Minnesota wished to learn more about by virtue of their recent development of a major bridge project between Calais, Maine and St. Stephen, New Brunswick. The FHWA Border Team worked with the FHWA Minnesota Division and MnDOT to organize the exchange. The FHWA Border Team also worked with Maine DOT to coordinate a workshop format and list of topics for the exchange. Other states involved in current or future international border bridge projects were also invited to the event. Representatives from the Michigan Department of

Transportation, the New York State Department of Transportation, and the Vermont Agency of Transportation were active participants. Staff members from the General Services Administration were also on hand to offer their experiences and expertise in border project management issues. Based on attendee feedback, which is captured in the Peer Exchange Final Report, the event was a success.

### **National Security, Defense, and Interstate Planning**

**Emphasis Area Contact:** Stefan Natzke

**Level of FY2012 Funding:** \$80,000

There were no FY2012 accomplishments in this area.

## **Emphasis Areas Related to Real Estate Services**

### **Real Estate Program Stewardship**

**Emphasis Area Contact:** Arnold Feldman

**Level of FY2012 Funding:** \$795,000

- **Support of Stakeholder and Partner Outreach and Informational Dissemination Programs (FY2012: \$195,000).** FHWA Office of Real Estate (HEPR) services supported a number of diverse activities to promote stakeholder engagement, information dissemination and resource development. HEPR relies on three primary information conduits for stakeholder and partner outreach: its website ([www.fhwa.dot.gov/realestate](http://www.fhwa.dot.gov/realestate)), newsletters, and a community of practice. STEP funding supported the updating, editing, and development of the Office of Real Estate Services website, dissemination of two newsletters, and support for the Real Estate Exchange community of practice. Additionally HEPR sponsored and supported two national right-of-way meetings.
- **Development of Case Studies in Practices that State DOTs Use to Provide Stewardship and Oversight of the Local Public Agency (LPA) Program (FY2012: \$200,000).** HEPR led a number of LPA workshops using workshop material previously developed under the STEP program. HEPR will develop a statement of work to address needs identified during these workshops. HEPR plans to launch a contract for this effort in Spring 2013.
- **Alternative Uses of Energy in the Highway Right of Way (ROW) (FY2012: \$200,000).** FHWA published and posted the report *Alternative Uses of Highway Right-of-Way-Accommodating Renewable Energy Technologies and Alternative Fuel Facilities* on the HEPR website in January 2012. The final report is available at [Alternate Use of Highway Right-of-Way](http://Alternate Use of Highway Right-of-Way). HEPR also hosted a webinar for stakeholders on August 21, 2012.

FHWA published a project paper in the 2012 Environment issue of Transportation Research Board (TRB) *Transportation Research Record*; the paper can be found at [pubsindex.trb.org/view.aspx?id=1129039](http://pubsindex.trb.org/view.aspx?id=1129039). The research paper received the 2012 RITA Award for Best Paper/Presentation in November 2012.

The overall research effort lead to HEPR's initiation of a pilot project to support stakeholders, nationally, in their efforts to plan, develop, and execute projects that use highway ROW to accommodate renewable energy technologies.

- **A Study of Reverse Mortgages in Relocation Assistance (FY2012: \$200,000).** FHWA formed a working group and held its first conference call on November 16, 2012. The purpose of the study is to identify the unique issues and challenges associated with acquiring and relocating individuals with reverse, or Home Equity Conversion (HECM), mortgages that are displaced as a result of Federally-funded projects. FHWA intends to distribute a report by June 2013 and a functioning Mortgage Interest Differential Payment (MIDP) calculator by August 2013. Group members include representatives of AASHTO Relocation Technical Council, International Right-of-Way Association Relocation Committee, FTA, HUD, FAA, State DOTs, FHWA, and O.R. Colan Associates.

The following research activities had accomplishments in FY2012 but were funded through prior years of STEP funding.

- **Voluntary Acquisitions under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 – Identification of Implementation Challenges (Prior Year Funding: \$100,000).** HEPR completed a final report and submitted it to the FHWA Office of Public Affairs for review; the report will be published once it has been approved by the Offices of Public Affairs and Chief Counsel. Based on the findings of the report, FHWA is considering a revision to current implementation guidance FHWA plans to hold a webinar discussing the findings in early 2013.
- **Realty Acquisition and Relocation Incentive Payments – Putting a Flexibility into Practice: A “How-To” Guide (Prior Year Funding: \$150,000).** HEPR completed the report *Realty Acquisition and Relocation Assistance Incentive Payments: The Flexibility Put to Practice* in Fall 2012. The report will be published on HEPR's website pending approval by the Offices of Public Affairs and Chief Counsel. HEPR plans to conduct an extensive marketing effort, including a webinar to discuss findings, in early 2013.
- **The Property Management Tools and Techniques: Models for the Effective Management of Real Property Assets at State Departments of Transportation (Prior Year Funding: \$150,000).** HEPR published the report *Property Management Tools and Techniques: Models for the Effective Management of Real Property Assets at State Departments of Transportation* in September 2012. The report outlines property management best practices and is available at [www.fhwa.dot.gov/real\\_estate/publications/property\\_management\\_tools](http://www.fhwa.dot.gov/real_estate/publications/property_management_tools). HEPR plans to sponsor a webinar for stakeholders to highlight the report findings in March 2013.
- **Coordination with Railroads to Facilitate Acquisition of ROW (Prior Year Funding: \$80,000).** HEPR completed the report *Coordination with Railroads to Facilitate Acquisition of ROW* in June 2012. The research identifies means of streamlining and accelerating right-of-way acquisition from Amtrak along the Northeast Corridor. The final report is available at [www.fhwa.dot.gov/real\\_estate/publications/row\\_railroad\\_coordination](http://www.fhwa.dot.gov/real_estate/publications/row_railroad_coordination) and HEPR presented the results to northern FHWA Division Offices and State DOTs in December 2012.

## Emphasis Areas Related to Tools to Support Planning and Environment

### Travel Modeling

**Emphasis Area Contact:** Sarah Sun

**Level of FY2012 Funding:** \$1,325,000

- **General Travel Model Improvement Program (TMIP) Promotion, Outreach and Capacity Building (FY2012: \$500,000).** TMIP works with agencies and other members of the transportation planning and modeling community to improve information sharing and support the best available tools and methods. TMIP seeks to innovate, educate, and advocate for best practices by sponsoring its Web Knowledge and Information Exchange, Peer Review Program, on-going research activities, and the use of web-based technologies to connect and collaborate with our user community. FHWA conducted the following activities in FY2012 as part of TMIP:
  - **Webinars:** TMIP's Web Knowledge and Information Exchange webinar series delivered fourteen webinars on the following topics: Activity-Based Modeling (twelve sessions) every three weeks from February through September 2012; Smart Phones and Travel Behavior in April 2012; and Forecasting Land Use Activities – Creating and Visualizing Land Use Forecasting Scenarios on December 15, 2011. Recordings of the webinar sessions are available at: [www.tmiponline.org/Clearinghouse/Item-Types/Recorded-Webinar](http://www.tmiponline.org/Clearinghouse/Item-Types/Recorded-Webinar).
  - **Peer Reviews:** The peer review program provides an opportunity for planning agencies to invite an expert peer review panel to review their data, models and methods to ensure that the technical processes they are applying meet standards of professional practice and meet Federal, State, or local planning requirements. TMIP supports peer reviews by assisting agencies in panel assembly, logistics, and funding for travel. In FY2012, TMIP conducted five peer reviews in Arizona, Michigan, Washington, California, and Georgia. Final reports from these peer reviews are available upon request.
  - **At-A-Glance Series:** TMIP introduced a new At-A-Glance brochure series that will be released quarterly among the TMIP user community. The At-A-Glance brochures are one to two page documents designed to highlight program initiatives, research and topics of interest to the TMIP community. In FY2012, TMIP released its first At-A-Glance brochure highlighting activity-based modeling resources. The *Activity-Based Modeling Resources At-A-Glance* can be found at: [content.govdelivery.com/attachments/USDOTFHWAHEP/2012/10/15/file\\_attachments/167762/Activity-Based-Modeling\\_Resources\\_At-A-Glance.pdf](http://content.govdelivery.com/attachments/USDOTFHWAHEP/2012/10/15/file_attachments/167762/Activity-Based-Modeling_Resources_At-A-Glance.pdf)
  - **TMIP FHWA Website:** In FY2012, TMIP updated and improved its web-presence within the broader FHWA website. The improvements include new TMIP branding, better organized content as well as new features designed to engage and serve the TMIP users community. The new and improved TMIP website can be found at: [www.fhwa.dot.gov/planning/tmip](http://www.fhwa.dot.gov/planning/tmip)
- **Nonmotorized Analysis Tools (FY2012: \$275,000).** FHWA designed, tested, and implemented open source tools and a web-based extensible software framework for bicycle and pedestrian travel analysis.

- **Travel Data (FY2012:\$150,000).** FHWA collected and archived new Global Positioning System (GPS) travel survey studies and made these datasets available for research on hybrid electric vehicle design, fuel utilization, and air quality studies, in addition to more traditional transportation planning applications. A national infrastructure dataset has been added to the center so that relationships to the GPS-based travel can be more easily studied. FHWA conducted outreach through a presentation at the Household Travel Survey Symposium and the development of a video to be included on the project website.
- **TMIP Performance-Based Planning Toolbox (FY2012: \$30,000).** FHWA commenced work on developing the TMIP Performance-Based Transportation Planning Toolbox in August 2012. FHWA reviewed related tools, literature, and relevant recent and current efforts by FHWA. FHWA also hosted an in-person kick-off meeting in Washington, D.C. and developed a draft conceptual design and scope of work. These preliminary efforts ensure a firm foundation for this original project to create a reference resource for the selection and application of analytical tools and methods to support data-driven, performance-based transportation planning that incorporates risk management principles.

### GIS/Spatial Information for Improved Decision Making

**Emphasis Area Contact:** Mark Sarmiento

**Level of FY2012 Funding:** \$100,000

- **GIS Applications in Transportation Case Studies, Best Practices, Peer Exchanges, and National Highway Planning Network Enhancements (FY2012: \$100,000).** FHWA completed two case study reports. One summarized the use among transportation agencies of GIS and highway noise analysis, while the other focused on the deployment of internet-based mapping portals based in GIS. FHWA also hosted a GIS-Noise Analysis Peer Exchange to support the first case study report. Information about these activities is available at [www.gis.fhwa.dot.gov](http://www.gis.fhwa.dot.gov). Finally, FHWA awarded a contract in September 2012 for a project to enhance the National Highway Planning Network.

The following research activities had accomplishments in FY2012 but were funded through prior years of STEP funding.

- **GIS in Transportation Webcasts and Newsletters (Prior Year Funding: \$10,000).** FHWA hosted four webcasts and four newsletters in FY2012 focused on innovative and noteworthy applications of GIS among transportation agencies. Four webcasts and four newsletters were produced in FY 2012. Each highlighted a specific GIS application occurring at a transportation agency. Archived newsletter issues and summaries of each webcast are available on FHWA's GIS in Transportation website at [www.gis.fhwa.dot.gov](http://www.gis.fhwa.dot.gov).

### Program Management and Outreach

**Emphasis Area Contact:** Patricia Cazenias

**Level of FY2012 Funding:** \$1,000,000

- **Program Management and Outreach (FY 2012: \$1,000,000).** Accomplishments included the following:

- o Presented at numerous national meetings;
- o Conducted two webinars on Federal Requirements for the Enhanced National Highway System and one webinar on the relationship between transportation planning and health, which included emphasis area information along with discussions on the STEP program;
- o Produced STEP program highlights fact sheets;
- o Participated in the TRB Annual Meeting in Washington, D.C.;
- o Submitted information to the U.S. DOT Research Hub, a searchable database of the latest agency-sponsored research, development, and technology projects. The database acts as a central location for information on projects funded by U.S. DOT operating administrations and provides links to research reports and other products;
- o Posted a Federal Register notice to solicit feedback for the STEP Research Plans;
- o Provided website support for FHWA's Office of Planning, Environment and Realty's research and programs. STEP documents posted on the website ([www.fhwa.dot.gov/hep/step](http://www.fhwa.dot.gov/hep/step)) include: STEP Federal Register notice, STEP Implementation Strategies, and STEP webinar summaries. The website is used by emphasis area contacts to better share new information about STEP events and products;
- o Coordinated development and implementation of research initiatives with SHRP2 and the National Cooperative Research Highway Program (NCHRP); and
- o Processed approximately 338 procurement requests and 15 allocation memos to initiate STEP research initiatives. Timely reports were provided regarding the status of research initiatives, including the National Science Foundation/FEDWeb report and the annual Minority Institutions of Higher Education report.

## Appendix C

### Feedback from STEP Stakeholders

The STEP program's legislative background mandates that the program's budget and research recommendations be based on feedback, suggestions, and priorities outlined by STEP stakeholders. The legislation does not prescribe a particular method for collecting feedback. The STEP Implementation Strategy, initially published in July 2006, describes various stakeholder groups and outlines ways that STEP program managers might collect information.

#### **Notable Stakeholder Quote**

*"The FHWA STEP program continues to be a valuable tool that promotes interagency collaboration and the development of valuable tools and datasets that are intended to benefit multiple agencies and the resources that they manage."*

*– United States Fish and Wildlife Service stakeholder*

In FY2012, the Web-based STEP stakeholder feedback mechanism continued to be a primary method to collect stakeholder feedback and report feedback to emphasis area contacts. This mechanism captures basic personal information about the stakeholder (including his or her name, title, agency, and affiliation type). Additionally, the mechanism asks stakeholders to answer a series of questions about the STEP in order to gather information such as:

- Suggestions on the lines of research that should be pursued in a particular emphasis area;
- Other current or planned research projects in this emphasis area;
- Potential funding sources for research suggestions or recommendations; and
- General comments about the STEP program.

The Web-based feedback mechanism was the preferred vehicle for submitting comments. However, in some cases, individuals or entities submitted suggestions by fax, email, or phone. In these cases, the information was added to the STEP feedback database through the Web-based mechanism.

This Appendix provides an overview of stakeholder collaboration and outreach activities conducted, feedback received, including descriptive statistics about the nature of comments and submitters, and a summary of feedback received in each emphasis area. This stakeholder feedback provides the foundation for the research highlights discussed in Appendix B.

### STAKEHOLDER COLLABORATION

Hundreds of individuals were reached through meetings, teleconferences, and other events. Since STEP's inception, FHWA has collected stakeholder feedback through a Web-based system. Stakeholders targeted their feedback towards one of the 19 emphasis areas or submit general comments. FHWA staff representatives for each emphasis area consult the stakeholder feedback to coordinate and develop the annual STEP research plan, which lists research priorities for the coming year and corresponding funding amounts. FHWA received over 150 pieces of feedback in FY2012 from the Web-based system.

The feedback system captures information about:

- Suggestions on the lines of research that should be pursued;
- Other current or planned research projects;
- Potential funding sources for research suggestions; and
- General comments about the STEP program.

Stakeholders are also directly involved in prioritizing research needs during stakeholder outreach meeting, committee meetings, or by commenting on the progress of research studies. Thus, FHWA ensures that feedback informs technical research, findings are applied and implemented, and the transportation community is connected, informed, and successful.

### **Outreach to STEP Stakeholders**

Stakeholder outreach, feedback, and participation in research efforts are critical to successful implementation of the STEP. In order to disseminate current information about the STEP, emphasis area contacts, program managers, and research coordinators attended meetings, teleconferences, and events to share STEP information.

STEP emphasis area contacts also communicated by phone and email to encourage stakeholders to use the Web-based feedback system. The purpose of this type of outreach was to underscore the importance of submitting feedback and research suggestions through the online feedback mechanism during the FY2012 comment period (August 12, 2011, and November 10, 2011).

Overall, the STEP program was represented at many events, teleconferences, in email lists, on websites, and in various publications. Information reached hundreds of stakeholders. This section includes a summary of outreach activities undertaken by FHWA staff on behalf of the STEP. Outreach generally took place in the following formats:

- Participation in events, conferences, symposia, webinars, or meetings (including working groups).
- Telephone calls (including conference calls and individual conversations);
- Email (including group or listserv emails and stakeholder messages);
- Publications (including newsletters and websites); and
- Other types of outreach (such as peer exchanges).

FHWA staff made presentations on projects and initiatives at the annual meetings of AASHTO, AMPO, APA, TRB, the American Public Works Association, and the American Society of Civil Engineers. FHWA conducted workshops on CSS projects, plans and programs as well as a CSS National Dialog workshop. Staff also conducted outreach through webinars focused on a variety of topics, including CSS, travel modeling, and livability, and developed communities of practice as new venues of information sharing and dissemination. Several FHWA programs also updated and enhanced their websites during FY2012, which serve as hubs of information about planning and environment research. FHWA published several newsletters, including *Air Quality and Transportation Conformity Highlights*, the *GIS in Transportation Quarterly Newsletter*, *Successes in Stewardship*, *Fostering Livable Communities*, and the *Realty Newsletter*. These newsletters complemented other FHWA outreach efforts. Finally, FHWA staff conducted outreach through phone, email distribution lists, and other formats, including the AASHTO GIS for Transportation Symposium State Survey and email list.

### **General STEP Outreach**

Program managers and STEP program support staff undertook outreach via online publication of several STEP documents, including the FY2012 STEP Implementation Strategy, the FY2011 Annual Report and the FY2012 Research Plan, and STEP program highlights fact sheets. Additional outreach activities included presentations on STEP at numerous national meetings and several webinars that included discussions on STEP and how to engage and solicit input from external stakeholders.

## FEEDBACK OVERVIEW

154 comments were received between August and November 2011. In some cases, organizations or associations submitted feedback to several different emphasis areas that pertain to their work.

Bicycles and Pedestrians received the most (46) comments. All emphasis areas received at least one comment.

The figures below display the breakdown of comments received that pertain to STEP's broad program areas and to its individual emphasis areas.

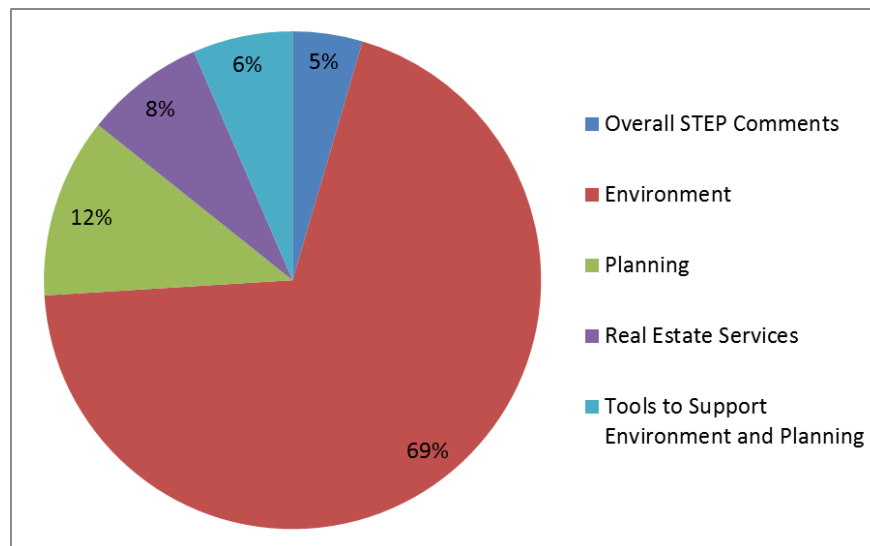


Figure 1: Distribution of Feedback by Program Area (FY2012)

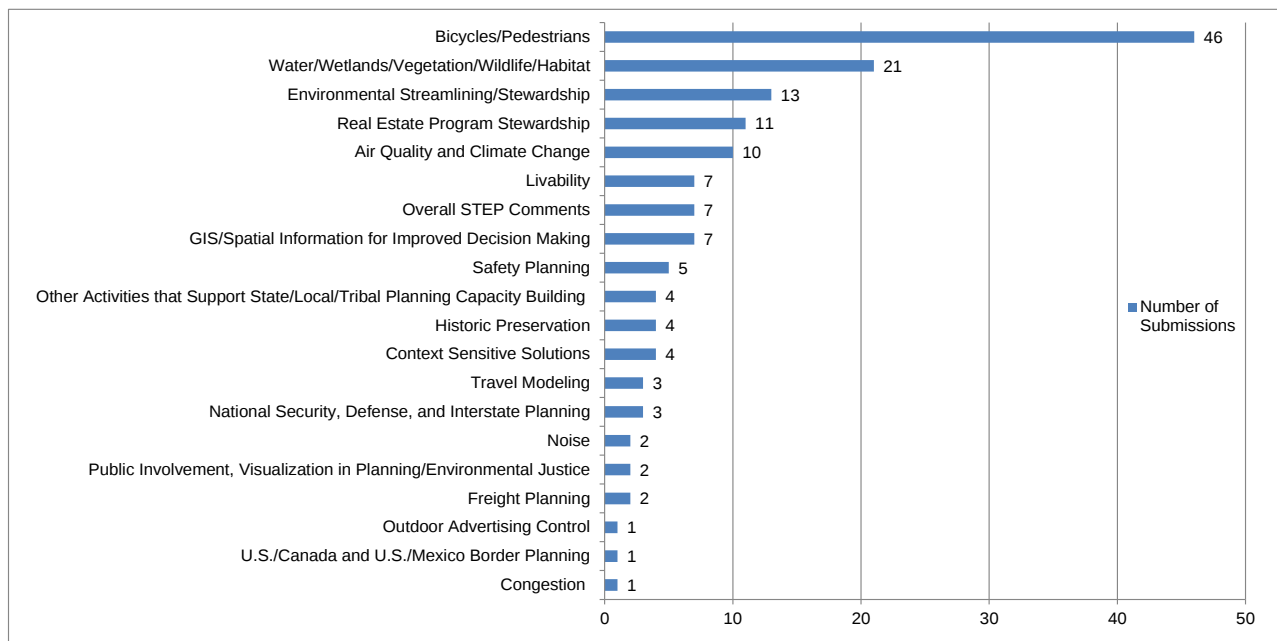


Figure 2: Distribution of Feedback by Individual Emphasis Area (FY2012)

As described in Appendix A, STEP stakeholders are organized into three tiers: Federal and Tribal partners (Tier I), State and local governments (Tier II), and non-governmental transportation and environmental stakeholders (Tier III).

The Web-based feedback mechanism required stakeholders to describe their affiliation by selecting a response from a pre-defined list. This list included the entities described above (e.g., Federal, Tribal, State, local, research/academic, national association, private sector, individual citizen, or “other” affiliation). In some cases, stakeholders inadvertently listed their affiliation as Federal when their organization name indicated a different affiliation type. In these cases, data were corrected prior to analysis. All tiers and affiliations were represented in FY2012 comments; see the tables that follow for a distribution of comments.

**Table 1: Distribution of Feedback by Affiliation Type**

|                           | <b>154</b> | <b>100%</b> |
|---------------------------|------------|-------------|
| Federal/Tribal Government | 42         | 27%         |
| State Government          | 17         | 11%         |
| Local Government          | 16         | 10%         |
| National Association      | 18         | 12%         |
| Private Sector            | 10         | 6%          |
| Research /Academic        | 20         | 13%         |
| Individual Citizen        | 19         | 12%         |
| Other                     | 12         | 8%          |

**Table 2: Distribution of Feedback by Tier**

| <b>Comments Received to Date by Tier</b>                                                          | <b>154</b> | <b>100%</b> |
|---------------------------------------------------------------------------------------------------|------------|-------------|
| Tier 1 (Federal or Tribal Government)                                                             | 42         | 27%         |
| Tier 2 (State or Local Government)                                                                | 33         | 21%         |
| Tier 3 (National Association, Private Sector, Research /Academic, Individual Citizen, or “Other”) | 79         | 51%         |

Since communication and collaboration with stakeholders are critical to the implementation of the STEP, the Web-based stakeholder feedback mechanism captured email addresses for those individuals who wish to remain informed about the STEP. STEP program managers and emphasis area contacts may wish to contact stakeholders to gather more information, share updates about STEP, or to simply stay in touch with stakeholder groups.

Stakeholders supplied helpful suggestions on the lines of research that should be pursued under various STEP emphasis areas. Many stakeholders completed the entire feedback form, and offered information about other current or planned research projects in particular emphasis areas, suggestions for funding sources or other resources, and general comments about the STEP program.

Note that with regard to potential funding sources or other resources, these suggestions were provided by stakeholders who may have a wide range of experience with or information about these potential sources. STEP program managers and emphasis area contacts have not made funding agreements or arrangements with any of these potential partners. STEP program managers and research coordinators assess the possibility of funding or resource partnerships as various research projects take shape.

## STAKEHOLDER FEEDBACK SUMMARIES BY EMPHASIS AREA

This section summarizes feedback submitted through November 2011 that pertains to each of the 19 emphasis areas<sup>1</sup> as well as overall feedback on STEP.

Click on the links below to be directed to a particular emphasis area feedback summary.

### Environment Emphasis Areas:

- [Air Quality and Climate Change](#)
- [Water/Wetlands/Vegetation/Wildlife/Habitat](#)
- [Historic Preservation](#)
- [Livability](#)
- [Bicycles/Pedestrians](#)
- [Noise](#)
- [Environmental Streamlining/Stewardship](#)
- [Context Sensitive Solutions](#)

### Planning Emphasis Areas:

- [Congestion](#)
- [Safety Planning](#)
- [Freight Planning](#)
- [Public Involvement, Visualization in Planning/ Environmental Justice](#)
- [Other Activities that Support State/Local/Tribal Planning Capacity Building](#)
- [U.S./Canada and U.S./Mexico Border Planning](#)
- [National Security, Defense, and Interstate Planning](#)

### Real Estate Services Emphasis Areas

- [Outdoor Advertising Control](#)
- [Real Estate Program Stewardship](#)

### Tools to Support Planning and Environment Emphasis Areas:

- [Travel Modeling](#)
- [GIS/Spatial Information for Improved Decision Making](#)

### Program Management and Outreach

- [Overall Feedback](#)

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<sup>1</sup> Based, in part, on comments received during the FY2012 stakeholder feedback period, the STEP emphasis areas were adjusted during the development of the FY2012 Research Plan. Therefore, the emphasis areas represented during the FY2012 stakeholder feedback period are not identical to those included in the FY2012 STEP Research Plan and the research highlights described in Appendix B.

## Emphasis Areas Related to Environment

### Air Quality and Climate Change

Ten comments were submitted to the Air Quality and Climate Change emphasis area. Approximately 20 percent of comments came from Tier I stakeholders and 30 percent of comments came from Tier II stakeholders. The remaining 50 percent of comments came from Tier III stakeholders, with feedback from the private sector, research/academic institutions, national associations, and stakeholders with other affiliations. There were no comments submitted by Tribal government stakeholders or individual citizens.

Several research suggestions in this emphasis area focused on a need for improvements to the Motor Vehicle Emission Simulator (MOVES) Air Quality model; specifically stakeholders indicated a need for MOVES training, peer exchanges, adjustments to the calibration criteria of the model. Additional suggestions included developing strategies for adaptation and mitigation to sea level rise and climate change, and addressing strategies for effective air quality improvements.

Stakeholders highlighted several current or planned research endeavors in this emphasis area. One stakeholder identified ongoing research on determining calibration criteria for the MOVES model at the University of California at Riverside, while another cited the National Near Roadway Mobile Source Air Toxics Study as relevant to this emphasis area.

Stakeholders identified several potential funding sources including the EPA, NCHRP, FHWA, and the University of California Transportation Center (UCTC).

### Water/Wetlands/Vegetation/Wildlife/Habitat

Twenty one comments were submitted to the Water/Wetlands/Vegetation/Wildlife/Habitat emphasis area. Approximately 67 percent of comments came from Tier I stakeholders and 19 percent of comments came from Tier II stakeholders. The remaining 14 percent of comments came from Tier III stakeholders, with feedback from research/academic institutions. There were no comments submitted by Tribal government stakeholders, national associations, the private sector, individual citizens, or stakeholders with other affiliations.

Several stakeholders suggested that research should promote new designs and the maintenance of newly constructed wildlife crossing structures, and also analyze the effects of wildlife crossings over large geographic scales. Numerous stakeholders also indicated a need for developing analytical methods to measure water quality and storm water impacts, as well as developing and maintaining datasets for highway runoff and metal concentration in streams. One stakeholder recommended conducting research on roadside vegetation in arid regions, and another suggested researching the benefits of invasive vegetation removal from transportation corridors.

Stakeholders indicated several existing or planned research endeavors in this area. One stakeholder noted that USFWS and other wildlife agencies conduct long-term research projects each year in these areas. Another stakeholder indicated that the TRB and AASHTO have committees that propose research topics related to hydrology, hydraulics, and water quality that should be reflected in some funded projects. Research also exists on watershed based planning, procedures to follow culvert replacements, and on defining a comprehensive approach to stream crossing design and maintenance.

Stakeholders indicated several funding sources including the United States Forest Service (USFS), State DOTs and USDOT, universities and graduate student work, EPA, Army Corps of Engineers (USACE) – Baltimore District, Maryland State Highway Administration, FWS, FWS Tribal Wildlife Grant, and the National Oceanic and Atmospheric Administration (NOAA).

**Historic Preservation**

Four comments were submitted to the Historic Preservation emphasis area. All four of the comments came from private sector stakeholders. No comments were submitted by Federal, Tribal, State, or local government stakeholders, national associations, research/academic institutions, individual citizens, or other stakeholders.

Several stakeholders suggested that research should focus on developing a model for enabling decision-makers to define and evaluate the significance of historic roads. Stakeholders indicated that a model would establish a systematic approach to help decision-makers incorporate historic factors early in project stages. One stakeholder suggested developing a historic roads context that identifies national trends, rather than solely on a state basis. Another stakeholder highlighted that the TRB ADC50 Committee on Archeology and Historic Preservation has already approved the development of a historic roads context for identification and evaluation as a future research topic. Potential funding sources include FHWA and NCHRP, along with other Federal and State sources.

**Livability**

Seven comments were submitted to the Livability emphasis area. Two comments were submitted by State government stakeholders, and five comments were submitted by Tier III stakeholders with responses from national associations and research/academic institutions. There were no comments submitted by Federal, Tribal, or local government stakeholders, the private sector, individual citizens, or other stakeholders.

Stakeholders indicated several potential lines of research for this emphasis area. A few stakeholders identified a need to define livability, especially to develop indicators for rural livability, and to develop metrics to quantify and evaluate livability and its costs and benefits. Furthermore, one stakeholder recommended analyzing the short- and long-term benefits of promoting livability. Another stakeholder suggested focusing research on the interaction between transportation, housing and the environment and the effect of neighborhood characteristics on the prominent modes of transportation. Other stakeholders recommended researching demand factors and strategies to increase use of recreational trails and how to accommodate equestrian use in suburban and urban areas.

Stakeholders highlighted a variety of existing or planned research in this area. One stakeholder identified an effort to develop guidance documents on livability that outline approaches to measuring the extent of livability in rural areas, as well as an FTA-sponsored project focused on transit in rural areas. Another stakeholder cited research in Vermont analyzing livability and the health benefits of recreational trails.

Potential funding sources include the National Highway Traffic Safety Administration (NHTSA), American Public Health Association; APA; Robert Wood Johnson Foundation; NCHRP; Recreational Trails Program Funds; the Vermont Center for Rural Studies; State DOT funds; and local, regional and university research funds. Stakeholders also identified several Federal funding sources including the United States Department of Agriculture (USDA), EPA, and CDC. Livability is being developed into a TRB Research Needs Statement, so in several years TRB could be considered for funding.

**Bicycles/Pedestrians**

Forty-six comments were submitted to the Bicycles/Pedestrians emphasis area. Approximately two percent of the comments came from Tier I stakeholders and 30 percent of comments came from Tier II stakeholders. The remaining 68 percent of comments were submitted by Tier III stakeholders, with feedback from national associations, private sector, research/academic institutions, individual citizens, and stakeholders with other affiliations. There were no comments submitted by Tribal government stakeholders.

Many stakeholders indicated that research efforts should concentrate on bicycle and pedestrian safety, particularly on improving signage at intersections and on bike paths, analyzing motorists' reactions to cyclists' clothing and bike lights, and making bike use safer for children. Several stakeholders proposed projects to identify ideal biking infrastructure by evaluating the impact of various bike and pedestrian lane types, road markings, and surface materials on safety. Several stakeholders expressed a need for research on recreational trail planning, calculating the use of trails, and connecting trails over long distances in order to influence mode shift. Another proposed research topic focused on bicycle safety education, including reducing the public's fear about the dangers of biking and educating youth on safety. One stakeholder suggested research on the effects of low priced parking on bike use.

Although many stakeholders indicated a general lack of current research in this area, several identified planned research endeavors. Existing research studies include a report on the effects of "zig-zag" markings before crosswalks, Crash Modification Factors for intersections, and an Oregon DOT study to develop safety performance functions for bicyclists at signalized intersections. One stakeholder shared that a trail association worked with USFS to improve signage and trail design and education in Arizona. Another stakeholder highlighted efforts to identify impacts of narrow travel lanes, and one stakeholder cited three estimates of the benefit-to-risk ratio of bicycle riding.

Stakeholders indicated a number of possible funding sources for bicycle and pedestrian research. Federal sources include the USFS, FHWA, EPA, and the CDC. In addition, State DOTs, NHTSA, NCHRP, TRB, and AASHTO could be considered for funding. Several private funding sources were also identified, including health foundations, public health agencies, the Oregon Transportation Research Consortium, Advocacy Advance Program, the Highway Safety Improvement Program, CMAQ, Safe Routes to School, and the League of American Bicyclists.

### **Noise**

Two comments were submitted to the Noise emphasis area. One comment was submitted by a Federal government stakeholder and one comment came from the private sector. There were no comments submitted by Tribal, State or local government stakeholders, national associations, research/academic institutions, individual citizens, or stakeholders with other affiliations.

Both stakeholders suggested addressing issues with the current FHWA Traffic Noise Model (TNM) and continuing research related to updating and developing version 3.0 of the model. They suggested the development of a workshop to train stakeholders on the new version and highlighted a need to address frequent errors in the current version. Current research efforts are focused on completing the final stages of version 3.0 of the FHWA TNM. The stakeholders identified State pooled fund studies, FHWA, and NCHRP as potential funding sources.

### **Environmental Streamlining/Stewardship**

Thirteen comments were submitted to the Environmental Streamlining/Stewardship emphasis area. Approximately 77 percent of comments were submitted by Tier I, Federal government stakeholders, and the remaining 23 percent of comments were submitted by Tier III stakeholders affiliated with research/academic institutions. There were no comments submitted by Tribal, State or local government stakeholders, national associations, the private sector, individual citizens, or stakeholders with other affiliations.

Stakeholders highlighted several potential areas of research. Stakeholders indicated a need for developing tools that could help streamline the environmental review process, including tools such as the Watershed Resource Registry framework, pilot programs for culvert replacement, and various geospatial technologies. Other suggested lines of research included providing training and data sharing on watershed approaches to compensatory mitigation, and assessing current Endangered Species Act

(ESA) mitigation practices to identify opportunities to reduce permitting and project delivery times. One stakeholder recommended conducting research and developing tools to help transportation agencies fulfill the watershed approach to restore and maintain key wetland processes, while another suggested determining best practices for assessing stream-road crossings.

Stakeholders noted that existing studies have examined stream-road crossings over limited geographic scales, and that several partnerships exist with goals focusing on the restoration of aquatic habitats and improvements in habitat connectivity. One stakeholder identified that tools have been developed to help transportation agencies focus on what can be done with existing resources address habitat connectivity. Another stakeholder indicated that the Environmental Law Institute has worked closely with FWS's Endangered Species Program and the National Marine Fisheries Service's Endangered Species Division to outline a proposed approach to address ways to reduce permitting and delivery times for ESA mitigation practices.

Stakeholders listed several potential Federal funding sources including USDOT, FWS, NOAA, USFS, USACE, and EPA. Other funding potential funding sources are TRB and NCHRP,

### **Context Sensitive Solutions**

Four comments were submitted to the CSS emphasis area. One of these comments was submitted by a Tier II local government stakeholder. The other three comments were submitted by Tier III stakeholders, with feedback from research and academic institutions and individual citizens. There were no comments submitted by Federal, Tribal, or State government stakeholders, national associations, the private sector, or stakeholders with other affiliations.

Several stakeholders suggested developing best practices for designing busy, vehicle-centric businesses and for determining the cost-effectiveness of different approaches to CSS. One stakeholder recommended developing course materials to train future engineering and transportation students in CSS principles. Another stakeholder proposed developing a case study and implementation guide for CSS within a form-based code context to help local governments implement CSS principles.

Stakeholders highlighted research focused on CSS and street design in new urbanist communities and, although guidelines are becoming more readily available, they still suggested a lack of tools and case studies for the implementation of CSS principles. Potential funding sources include State Planning and Research funds, USDOT, and FHWA, as well as universities with sustainability programs.

## **Emphasis Areas Related to Real Estate Services**

### **Outdoor Advertising Control**

One comment was submitted to the Outdoor Advertising Control emphasis area. The comment was submitted by a national association. There were no comments submitted by Federal, Tribal, State or local government stakeholders, the private sector, research/academic institutions, individual citizens, or other stakeholders.

NAHBA wants to streamline the Federal outdoor advertising control program through improved communication and provision of information to its members. The NAHBA annual conference includes presentations on outdoor advertising control innovations, developments and issues surrounding the Highway Beautification Act program. The stakeholder identified FHWA as a potential funding source for the annual conference.

### **Real Estate Program Stewardship**

Eleven comments were submitted to the Real Estate Program Stewardship emphasis area. Five comments were submitted by Federal government stakeholders, one comment was submitted by a State government stakeholder, and the remaining five comments were submitted by Tier III stakeholders from national associations, the private sector, research/academic institutions, and other stakeholders. No comments were submitted by Tribal or local government stakeholders or individual citizens.

Several stakeholders indicated a need to develop guidance and clarify language for the appraisal requirements of the Uniform Relocation Act for LPAs; one stakeholder proposed distributing the materials in multiple languages. Stakeholders also suggested a potential for pilot studies, peer exchanges, and development of quality measurement for training programs on the effectiveness of using visualization techniques to enhance the right of way acquisition process. One stakeholder suggested focusing research on improved, sustainable alternate construction methods for utility distribution cables.

Stakeholders indicated several areas of current or planned research in this emphasis area. Research has been conducted on “buried duct networks”, which would allow for a safer placement of new utility cables and minimize difficulties in the future. There is currently a STEP research project on the uses of visualization for right of way acquisition and a project to design and implement an improvement process for Right of Way training using the Six Sigma approach.

Potential funding sources include individual State DOTs, USDOT, FHWA, TRB, Department of Justice, the National Science Foundation, the Department of Commerce, Department of Labor, and the Department of Education.

## **Emphasis Areas Related to Planning**

### **Congestion**

One comment was submitted to the Congestion emphasis area. The comment was submitted by an individual citizen. No comments were submitted by stakeholders with Federal, Tribal, State or local government affiliation, national associations, the private sector, research/academic institutions, or other stakeholders.

The stakeholder suggested that research should focus on public policy decisions that affect land use decisions and resource allocation, and that policy makers should question whether planning should focus on an automobile-centric society anymore. There is no current or planned research in this emphasis area, and the stakeholder did not name any potential funding sources.

### **Safety Planning**

Five comments were submitted to the Safety Planning emphasis area. Three comments were submitted by Tier II stakeholders, and two by Tier III stakeholders with feedback from a national organization and an individual citizen. No comments were submitted by stakeholders with Federal or Tribal affiliations, the private sector, research/academic institutions, or other stakeholders.

Stakeholders suggested a variety of research topics for this emphasis area, including conflict patterns created by land use decisions, the effects of motorist attitudes towards bikers and pedestrians on safe system sharing, and the overlap of transportation planning and operations and traffic incident management. Stakeholders also suggested focusing research on the roles that regional planning organizations (in both rural and urban areas) play in advancing safety.

Stakeholders identified several current research plans in this emphasis area, including NCHRP project 08-76, which is currently developing framework for incorporating safety into planning. Several years ago, Florida DOT conducted a survey called “Sharing the Roadway with Bicyclists and Pedestrians – Florida Drivers’ Attitude Survey.” Research is currently underway for access management, but it does not focus on conflict management.

Several potential funding sources were identified, including AASHTO, NCHRP, and Federal funding sources within USDOT.

### **Freight Planning**

Two comments were submitted to the Freight Planning emphasis area. One comment was submitted by a national association and one came from a research/academic institution. No comments were submitted by Federal, Tribal, State or local government stakeholders, the private sector, individual citizens, or other stakeholders.

One stakeholder suggested that further research should focus on developing guidance for using freight stakeholder feedback and connecting freight stakeholders to transportation and land use planning efforts. Furthermore, research should address the freight village concept and its applicability in rural areas. Another stakeholder suggested that future research should explore the effects of combining regional infrastructure decision-making and economic development potential using multimodal analysis and modeling systems.

Stakeholders identified current lines of research in this emphasis area. FHWA has conducted research on the engagement between freight and the private sector and between freight and land use. One stakeholder noted ongoing research on capacity impacts from disruptions to critical rail infrastructure. Potential funding sources includes the National Cooperative Freight Research Program, the Southeast Region Research Initiative, DHS Science and Technology, and Mississippi DOT.

### **Public Involvement, Visualization in Planning/Environmental Justice**

Two comments were submitted to the Public Involvement, Visualization in Planning/Environmental Justice emphasis area. Both comments were submitted by national associations. No comments were submitted by Federal, Tribal, State or local government stakeholders, the private sector, research/academic institutions, individual citizens, or other stakeholders.

One stakeholder suggested focusing research on a guide for MPOs to improve public involvement, and one stakeholder indicated a need for research into the applicability of scenario planning – a process that helps stakeholders visualize alternative futures – in rural areas.

There has been some research effort at the University of South Florida Center for Urban Transportation Research to measure public involvement performance. Stakeholders suggested NCHRP a potential source of funding.

### **Other Activities that Support State/Local/Tribal Planning Capacity Building**

Four comments were submitted to the Other Activities that Support State/Local/Tribal Planning Capacity Building emphasis area. One comment was submitted by a stakeholder with State government affiliation, and the remaining three comments were submitted by national associations. No comments were submitted by Federal, Tribal or local government stakeholders, the private sector, research/academic institutions, individual citizens, or other stakeholders.

Several stakeholders indicated that future research should focus on MPOs. Specifically, research should target MPO coordination with innovative financing authorities, trainings for MPO board members, and

peer exchanges to promote best practices. Other stakeholders recommended advancing planning in rural regions, connecting planning activities among regional, metropolitan, and statewide agencies, and developing innovative matching funds for projects.

Stakeholders did not highlight any current or planned research for this emphasis area. Potential funding sources include pooled funding from AMPO, TRB, USDOT, and EPA.

#### **U.S./Canada and U.S./Mexico Border Planning**

One comment was submitted to the U.S./Canada and U.S./Mexico Border Planning emphasis area. The comment was submitted by a research/academic institution. No comments were submitted by Federal, Tribal, State or local government stakeholders, national associations, the private sector, individual citizens, or other stakeholders.

The stakeholder suggested delivering a series of roundtable peer exchanges, education opportunities, and case study examples for transportation planners and environmental specialists to discuss and improve cross-border coordination. Research currently underway for this topic includes the California Department of Transportation's Border Technology Exchange Program in San Diego County and a University of New Jersey study analyzing cross-border networks. Possible funding sources include University Transportation Center or State research program funds in border states, and non-profit organizations.

#### **National Security, Defense, and Interstate Planning**

Three comments were submitted to the National Security, Defense, and Interstate Planning emphasis area. Two comments were submitted by stakeholders affiliated with the Federal government, and one comment was submitted by a stakeholder with local government affiliation. No comments were submitted by Tribal or State government stakeholders, national associations, the private sector, research/academic institutions, individual citizens, or other stakeholders.

One stakeholder indicated the need for a guidebook and evaluation of programs and best practices on a regional level for DHS. One stakeholder indicated DHS as a potential funding source.

### **Emphasis Areas Related to Tools to Support Planning and Environment**

#### **Travel Modeling**

Three comments were submitted to the Travel Modeling emphasis area. All comments were submitted by Tier III stakeholders, with one comment from a national association, one from the private sector, and one comment from a stakeholder with an "other" affiliation. No comments were submitted by stakeholders affiliated with Federal, Tribal, State or local governments, research/academic institutions, or individual citizens.

One stakeholder indicated a need for research to forecast the demand for new and emerging travel options (including bike sharing, car sharing, and dynamic ridesharing systems) and to use smartphone data to analyze how their use affects traffic patterns. Another stakeholder suggested improving MPO travel modeling efforts and to provide peer exchange forums on them. One stakeholder recommended researching a new trip generation model for traffic engineers that incorporates mixed use and multiple modes. Stakeholders did not identify any current or planned research in this emphasis area but suggested USDOT and TRB as potential funding sources.

#### **GIS/Spatial Information for Improved Decision Making**

Seven comments were submitted to the GIS/Spatial Information for Improved Decision Making emphasis area. Six comments were submitted by stakeholders affiliated with the Federal government,

and one comment was submitted by a stakeholder with a local government affiliation. No comments were submitted by stakeholders affiliated with Tribal or State governments, national associations, the private sector, research/academic institutions, individual citizens, or other stakeholders.

Stakeholders suggested a variety of topics for future research, including the use of cell phone data to better understand traffic patterns, identifying available tools to quantitatively assess the impacts of stream road crossings on connectivity, and enhancing the U.S. Geological Survey (USGS) STREAMSTATS application. Stakeholders also recommended updating the Regulatory In-lieu fee and Bank Information Tracking System database and using GIS-based tools to streamline the environmental review permitting process.

Stakeholders highlighted USGS's continued development of the STREAMSTATs application and exploration of tools for analyzing the impacts of stream road crossings over limited geographic scales as examples of existing research in this area.

Potential Federal funding sources include NOAA, FWS, USFS, USACE, FHWA, USGS and EPA. Stakeholders also identified MPOs, State DOTs, and water resource agencies at the State, local, and Tribal levels as potential funding sources.

### **Overall STEP Comments**

Seven comments were submitted to the Overall STEP Comments emphasis area. One comment was submitted by a Federal government stakeholder, two comments by a local government stakeholder, three comments were submitted by research/academic institutions, and one comment was submitted by an individual citizen. No comments were submitted by Tribal or State government stakeholders, national associations, the private sector, or other stakeholders.

Stakeholders indicated several lines of research that STEP should address, including increasing support for educational initiatives for transportation, developing a format for trail system planning, and improving available data for total trail mileage and off-highway recreation.

HUD, TRB, National Research Council, the Robert Wood Johnson Foundation, the Department of the Interior, and University Transportation Centers were listed as potential funding sources.