

2010



Surface Transportation Environment and Planning Cooperative Research Program (STEP)

Annual Report

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Surface Transportation Environment and Planning Cooperative Research Program (STEP)

Fiscal Year (FY) 2010 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

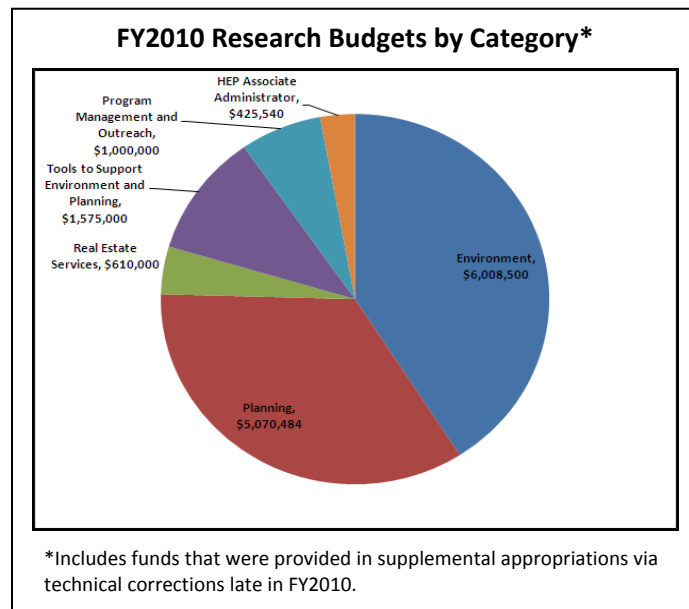
Section 5207 of the Safe, Accountable, Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) established the STEP. SAFETEA-LU and continuing resolutions authorized \$16.875 million annually to implement the STEP. After adjusting for obligation limitations, rescissions, and the over-designation of Title V Research in SAFETEA-LU, \$14.6 million was available for the FY2010 STEP.

FY2010 STEP Accomplishments

- ✦ FHWA improved the state of the practice in planning, environment, and realty through investment in 64 projects identified in the FY2010 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 over 200 pieces of feedback on research needs during the FY2010 comment period between September 4 and December 3, 2009.
- ✦ FHWA developed tools to improve the quality and efficiency of environmental decision-making.
- ✦ FHWA enhanced transportation safety through integration with operations and planning.
- ✦ FHWA improved noise and travel modeling capabilities through data collection.
- ✦ 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.



STEP is the primary source of SAFETEA-LU funding for FHWA research on planning and the environment.

Visit 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’s accomplishments during Fiscal Year (FY) 2010. 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.

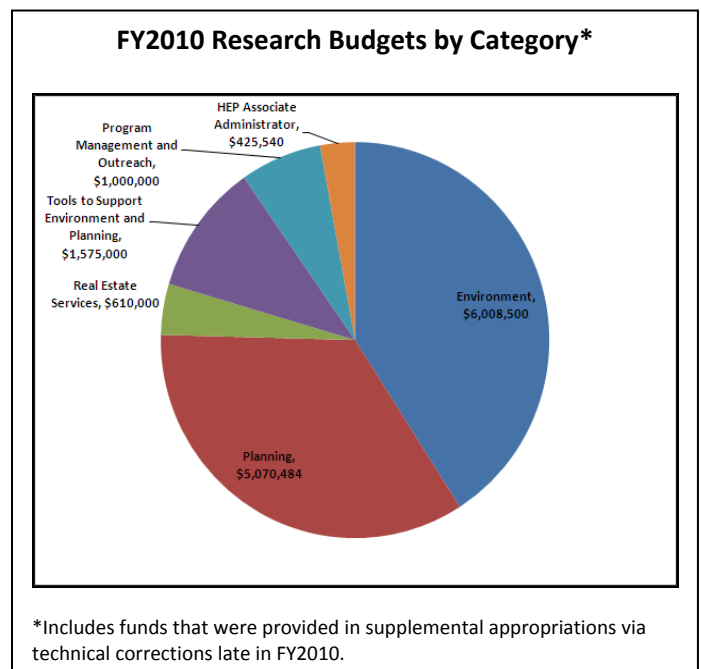
STEP’s Legislative History

Section 5207 of the Safe, Accountable, Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) established the 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.

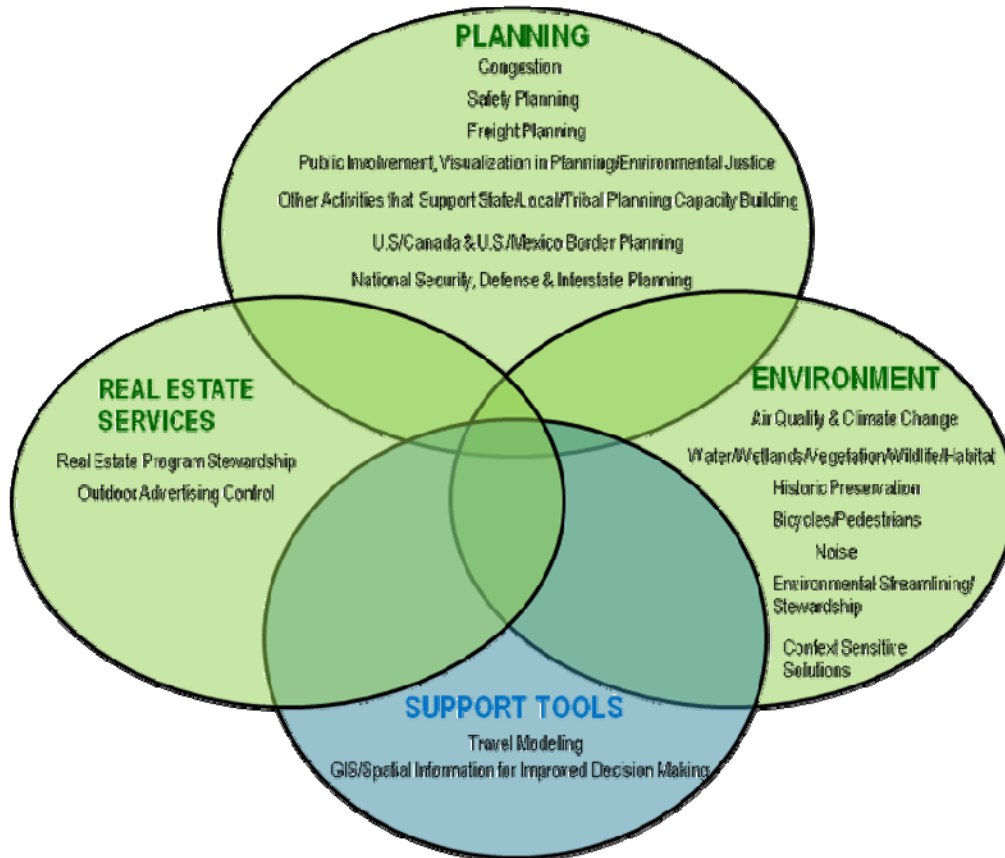
Efficient Management of a Successful Program

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, \$14.6 million was available for the FY2010 STEP.

Through STEP, FHWA invests in projects in 18 “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 FY2010 enhance the state-of-the-art and state-of-the-practice in planning, environment, and realty.



STEP EMPHASIS AREAS



Highlights of FY2010 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. FY2010 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

- Investigated the effects of electronic variable message signs on driver attention through **field measurements of driver behavior**.
- Identified opportunities for wildlife crossings in interstate areas of the Rocky Mountains in Idaho and Montana to improve **the safety of the travelling public** by reducing animal-vehicle collisions and produce a template for **data-driven identification of wildlife crossing opportunities** along highways.
- Documented the **integration of visualization techniques and technologies** in the right-of-way acquisition processes within State DOTs.
- Evaluated the effect of **temperature on tire and pavement noise**.
- Collected data on **near road mobile source air toxics** and monitored **air toxics** for several locations across the Nation.

Developing and Deploying Tools, Technologies, and Practices

- Created a decision-support tool to evaluate the potential for **large-scale carbon sequestration activities** in several States.
- Produced methods, tools, and techniques to improve the quality and efficiency of **environmental decision-making**
- Disseminated information on **transportation applications of geospatial technologies** through peer exchanges, case studies, and a quarterly webcast series.
- Identified noteworthy practices, findings, and recommendations from an international scan to identify and assess **effective approaches to improve pedestrian and bicyclist safety and mobility** through engineering, education, enforcement, encouragement, and evaluation.
- Improved **National Highway System** network data and maps.
- Conducted webinars and peer reviews to provide **travel modeling technical assistance** to transportation stakeholders.
- Implemented, evaluated, and developed tools to support the use of the **Motor Vehicle Emission Simulator**.

Connecting the Community and Transferring Knowledge

- Hosted two **Structured, Transparent, Accountable, Reproducible, and Sustainable workshops** to facilitate the exchange of ideas, data, and tools to integrate transportation planning and project development activities.
- Facilitated working groups to address **planning, travel modeling, and congestion along the U.S./Mexico and U.S./Canada borders** through research, peer exchanges, and publications.
- Promoted effective statewide, metropolitan, rural and tribal transportation planning practices through nationwide **Transportation Planning Capacity Building Program** events.
- Implemented a workshop series, delivered technical assistance, and developed several publications to share effective **professional practices** related to **Context Sensitive Solutions**, including applications and programs from around the country.
- Facilitated peer exchanges and prepared for summits to advance **innovations to shorten project delivery** during the environmental review process.
- Worked with governors and State executives to develop, promote, and implement **innovative State and regional initiatives** relating to transportation, the environment, and economic development.

Stakeholder Collaboration

Stakeholder outreach, feedback, and participation in research efforts are critical to successful implementation of the STEP. For the past five fiscal years, FHWA has collected stakeholder feedback through a Web-based system. Stakeholders can target their feedback towards one of the 18 emphasis areas or submit general comments. In addition, throughout FY2010, 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 STEP is an excellent mechanism for leveraging FHWA research resources to meet common goals.”

*-- Leland National Urban Air Toxics
Research Center Stakeholder*

Appendix A

Overview of STEP

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 (U.S.C.), 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.

FY2010 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) 2010. The report includes an overview of the 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 funding was authorized through continuing resolutions. Due to obligation limitations, rescissions and the over-designation of Title V Research in SAFETEA-LU, \$14.6 million of the \$16.875 million authorized was available in FY2010. 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 STEP will be the funding source for those projects. STEP will also address priorities identified in the U.S. Department of Transportation (USDOT) Research and Development Strategic Plan (Section 508 of Title 23 U.S.C.). FHWA will have to make difficult choices among the many competing needs for planning and environmental research, and will not be able to 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 Strategic Highway Research Program2 (SHRP2) (23 U.S.C. 510), which will be administered by the National Research Council of the National Academy of Sciences.

In FY2010, the STEP was implemented along the following timeline:

- December** Post current fiscal year plan on STEP Website.
- Winter** Begin to implement current FY plan, through appropriate procurement methods, agreements and partnerships. (This milestone may shift depending on appropriations).
- Summer/Fall** Refine STEP Implementation Strategy/Goals/Emphasis Areas; publish Federal Register Notice and update website information to solicit feedback on next FY STEP activities. Conduct outreach for next FY by emphasis area, review research needs, and identify gaps.
- Winter** Develop priorities for and fund critical, short-term research. Develop draft next FY STEP Plan for comment.
- Spring** Post current FY plan on STEP website. (This milestone may shift depending on appropriations).

EMPHASIS AREAS

Eighteen 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 18 emphasis areas organized within research/program themes as well as a list of FHWA emphasis area contacts.

1. Environment	
Air Quality and Climate Change	Cecilia.Ho@dot.gov Diane.Turchetta@dot.gov
Water/Wetlands/Vegetation/Wildlife/Habitat	Marlys.Osterhues@dot.gov
Historic Preservation	MaryAnn.Naber@dot.gov
Bicycles/Pedestrians	Gabe.Rousseau@dot.gov
Noise	Mark.Ferroni@dot.gov
Environmental Streamlining/Stewardship	Shari.Schaftlein@dot.gov
Context Sensitive Solutions	Shari.Schaftlein@dot.gov
2. Planning	
Congestion	Harlan.Miller@dot.gov
Safety Planning	Lorrie.Lau@dot.gov
Freight Planning	Spencer.Stevens@dot.gov
Public Involvement, Visualization in Planning/ Environmental Justice	Frederick.Bowers@dot.gov Brenda.Kragh@dot.gov Susan.Grosser@dot.gov
Other Activities that Support State/Local/Tribal Planning Capacity Building	Kenneth.Petty@dot.gov
U.S./Canada and U.S./Mexico Border Planning	Roger.Petzold@dot.gov
National Security, Defense, and Interstate Planning	Stefan.Natzke@dot.gov
3. Real Estate Services	
Real Estate Program Stewardship	Carolyn.James@dot.gov
Outdoor Advertising Control	MaryJane.Daluge@dot.gov
4. Tools To Support Planning and Environment	
Travel Modeling	Sarah.Sun@dot.gov
GIS/Spatial Information for Improved Decision Making	Mark.Sarmiento@dot.gov
5. Program Management and Outreach	Patricia.Cazenas@dot.gov

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, Agriculture, Energy, Interior, and Housing and Urban Development (HUD), the U.S. Environmental Protection Agency (EPA), and the Centers for Disease Control and Prevention. 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 on virtually all planning and environmental work, including research. FHWA also coordinates with the Federal Railroad, Aviation, Research and Innovative Technology, 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 Departments of Transportation and Metropolitan Planning Organizations 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, League of American Bicyclists, National Trust for Historic Preservation, the International Right of Way Association, and others too numerous to specify here.

Appendix B

Research Highlights

STEP emphasis area contacts and program staff identified research activities for FY2010 based on stakeholder feedback and other national priorities. A summary table is provided below. Complete descriptions of each research activity recommended in FY2010 can be found on the STEP website at <http://www.fhwa.dot.gov/hep/step/fy2010rp.htm>.

Emphasis Area	Number of Research Recommendations	FY2010 STEP Budget
ENVIRONMENT EMPHASIS AREAS		
Air Quality and Climate Change	4	\$1,585,000
Water/Wetlands/Vegetation/Wildlife/Habitat	6	\$1,070,000
Historic Preservation	2	\$225,000
Bicycles/Pedestrians	2	\$375,000
Noise	1	\$590,000
Environmental Streamlining/Stewardship	6	\$1,663,500
Context Sensitive Solutions	3	\$500,000
PLANNING EMPHASIS AREAS		
Congestion	1	\$500,000
Safety Planning	1	\$100,000
Freight Planning	1	\$200,000
Public Involvement, Visualization in Planning/Environmental Justice	1	\$200,000
Other Activities that Support State/Local/Tribal Planning Capacity Building	11	\$2,850,000
U.S./Canada and U.S./Mexico Border Planning	3	\$700,484
National Security, Defense and Interstate Planning	5	\$520,000
REAL ESTATE SERVICES EMPHASIS AREAS		
Real Estate Program Stewardship	4	\$460,000
Outdoor Advertising Control	1	\$150,000
TOOLS TO SUPPORT PLANNING AND ENVIRONMENT EMPHASIS AREAS		
GIS/Spatial Information for Improved Decision Making	5	\$1,170,000
Travel Modeling	6	\$405,000
PROGRAM MANAGEMENT AND OUTREACH	1	\$1,000,000
HEP ASSOCIATE ADMINISTRATOR	0	\$450,540
TOTAL	64	\$14,689,524

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 FY2010 research accomplishments by emphasis area, including those funded with FY2006, FY2007, FY2008, or FY2009 funds, 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 FY2010 but are not yet complete and some accomplishments occurred in FY2010 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 FY2010 Funding: \$1,585,000

- **Air Quality and Climate Change Research Outreach and Communication. (FY2010: \$235,000).** This research effort enhanced outreach and communication activities for the climate change and air quality focus area. As part of this research, FHWA published a monthly newsletter on air quality and transportation conformity, completed and released a brochure entitled *Transportation Conformity: Linking Transportation and Air Quality*, and revised the *Transportation Conformity: A Basic Guide for State and Local Officials*. FHWA added these documents to the FHWA air quality website available at http://www.fhwa.dot.gov/environment/air_quality.

FHWA also identified and shared conformity best practices and initiated a complete update of the *Transportation Conformity Reference Guide*. Additional activities included presentation and delivery of STEP research results at key venues and conferences.
- **Health Effects Institute (HEI). (FY2010: \$100,000; Prior Year Funding: \$100,000).** HEI released a number of reports, developed requests for proposals, and released the 2010-2015 Strategic Plan. FHWA attended HEI's annual meeting and coordinated an HEI briefing for headquarters staff and the Transportation Research Board's (TRB) air quality sub-committee.
- **National Near Road Mobile Source Air Toxics Study. (FY2010: \$125,000; Prior Year Funding: \$2,315,000).** FHWA completed the project's data collection and monitoring effort in Las Vegas, Nevada, and began monitoring in Detroit, Michigan. FHWA will soon release its final report for Las Vegas.
- **Air Quality Analysis Support. (FY2010: \$250,000).** FHWA developed an inter-agency agreement with the USDOT Volpe National Transportation Systems Center to provide technical support on various air quality and emissions analysis tasks, including implementation of the Motor Vehicle Emission Simulator (MOVES) model and air quality dispersion models such as the AERMOD model.

- **Smart State Transportation Initiative. (FY2010: \$750,000).** USDOT provided funding for the Smart State Transportation Initiative to work directly with governors and State executives to develop, promote, and implement innovative State and regional initiatives, including transportation, environment, and economic development. As part of this project, FHWA and the USDOT's Office of the Secretary of Transportation:
 - Developed a statement of work with the University of Wisconsin;
 - Advertised requests for an application;
 - Reviewed and awarded a contract;
 - Conducted a kick-off meeting;
 - Commented on the project plan; and
 - Convened the first community of practice.

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **Improving Vehicle Fleet, Activity, and Emissions Data for On-Road Mobile Sources Emissions Inventories. (Prior Year Funding: \$340,000).** As part of this research effort, FHWA:
 - Reviewed state-of-the-practice information and identified limits in estimating vehicle fleet data for on-road vehicles and operating heavy-duty truck vehicles;
 - Evaluated use of vehicle identification number decoders in conjunction with license plate surveys and vehicle registration databases to derive vehicle fleet data;
 - Evaluated the use of electronic control modules data to derive truck activity data;
 - Developed data fusion methods to combine truck activity data from multiple sources; and
 - Measured emissions from heavy-duty trucks with various loaded vehicle weights.
- **Modifying Link-Level Emissions Modeling Procedures for Applications within the MOVES Framework. (Prior Year Funding: \$142,008).** Through this research effort, FHWA developed methods for converting data for use with the MOVES model and provided general information regarding anticipated emission inventory changes related to the MOBILE6 model. FHWA also identified additional data collection and research needs to fully utilize the modeling capabilities of MOVES and documented lessons learned from transitioning from MOBILE6 to MOVES.
- **Advances in Project-Level Analysis. (Prior Year Funding: \$109,000).** Through this research project, FHWA developed usable tools that can assist transportation and air quality modelers in preparing project-level emissions analysis that take advantage of MOVES model capabilities. Using the tools developed through this project, users will be able to examine Vehicle Specific Power (VSP) profile files, obtain information on the methodology used to create them, and explore lessons learned. The final product will include a demonstrating methodology using micro-simulation modeling output to create VSP profiles as inputs to MOVES model under two scenarios: 1) a series of congested conditions for different facility types (e.g., volume/capacity ratios of 0.7 to 1.2); and 2) conditions typical of intermodal and port facilities.
- **Evaluating Traffic, Emission, and Dispersion Characteristics Related to Categorical Hot-Spot Findings. (Prior Year Funding: \$94,430).** As part of this project, FHWA assessed and performed emissions and dispersion analysis using MOVES, CAL3QHCR, and AERMOD models in both prototypical highway projects and specific case study settings. FHWA will also conduct an assessment of the expected range and sensitivity of emissions and concentrations that may be

expected with MOVES and AERMOD/CAL3QHCR. The modeling results may provide the basis for hot-spot categorical findings for fine particle matter (PM_{2.5}), particulate matter (PM₁₀), and carbon monoxide.

- **Association of Metropolitan Planning Organizations (AMPO) Air Quality Work Group. (Prior Year Funding: \$98,327.21).** FHWA supported AMPO's Air Quality Work Group, which was first created in 2002. The group met several times, both in person and via teleconference, to discuss several major air quality issues, including:
 - EPA's conformity rulemaking and guidance documents for PM and ozone areas;
 - New ozone and PM standards; and
 - MOVES implementation issues.

AMPO has also been instrumental in bringing air quality and transportation planners together to exchange information and share and document best practices in areas such as transportation conformity, air quality planning for State implementation plans, and implementation of EPA's final version of the MOVES emissions model.

- **Regional Climate Change Effects: Useful Information for Transportation Agencies. (Prior Year Funding: \$50,000).** This effort completed a report that serves as a resource for decision-makers to address climate change challenges. The report filled an important gap by providing the transportation community with information on climate change and the range of future changes in a usable format. It also presented the most up-to-date information available and is an ideal starting point for transportation professionals seeking to understand how climate change may affect transportation systems and infrastructure. The report is available at http://www.fhwa.dot.gov/hep/climate/climate_effects/.

Water/Wetlands/Vegetation/Wildlife/Habitat

Emphasis Area Contact: Marlys Osterhues

Level of FY2010 Funding: \$1,070,000

- **Study of Ecosystem Corridors in the U.S. Northern Rockies. (FY2010: \$250,000).** FHWA provided funding to USFWS for a multi-year interagency effort to identify and help secure landscape-scale highway crossing opportunity areas for multiple wildlife species in the interstate areas of the Rocky Mountains of Montana and Idaho. The goals of this research were to: 1) improve the safety of the traveling public by facilitating safe wildlife movement across highways and to reduce animal/vehicle collisions; 2) improve and assist FHWA and State DOT activities associated with planning, project development, construction, maintenance, and operation of Federal-aid transportation projects; and 3) produce a template and protocol for data-based identification of highway crossing opportunity areas that can be applied to highways in other areas.
- **Supporting Peer and Research Exchange at Conferences, Workshops, and Technical Panels. (FY2010: \$4,000; Prior Year Funding: \$101,000).** FHWA supported peer and research exchange by providing funding support to develop or host the following conferences and award programs:
 - 2010 Weeds Across Borders Conference;
 - 2010 Northeastern Transportation and Wildlife Conference;
 - 2010 National Wetlands Award Program;

- 2010 National Mitigation and Ecosystem Banking Conference;
- 2010 National Conference on Coastal and Estuarine Habitat Restoration;
- 2011 International Conference on Ecology and Transportation; and the
- 2011 Environmental Excellence Awards Program.

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **Research and Innovation Agreements with USFWS and the U.S. Army Corps of Engineers (USACE). (Prior Year Funding: \$595,000).** FHWA continued support for two research and innovation agreements. The agreements and resulting accomplishments are described in more detail below:
 1. An existing research and innovation agreement with USFWS was extended for an additional year. The purpose of the agreement is to conduct research and promote innovation in the highway program with respect to fish and wildlife laws. In FY2010, the results of this research effort included continued coordination with USFWS transportation contacts in regional and field offices to keep all levels of USFWS personnel updated on transportation issues, Every Day Counts (EDC) initiatives, pilot projects, webinars, workshops, conferences, and training opportunities. These efforts enhanced interagency coordination and supported development of training capabilities that promoted early coordination between FHWA, USFWS, and State DOTs.
 2. FHWA created a new research and innovation agreement with USACE and hired a new employee to fill a vacant liaison position. The goals of the liaison position and agreement were to:
 - Help develop programmatic guidance;
 - Facilitate implementation of process improvements;
 - Allow full engagement of the liaison in all coordination activities; and
 - Develop training capabilities that promote early coordination and partnering efforts between USACE districts, FHWA, and State DOTs.

The agreement focused on applicable statutory USACE responsibilities under the Clean Water Act and the Rivers and Harbors Act by building a robust, internal transportation "community of practice" (COP) to facilitate information exchange, technology transfer, and identification of research and guidance needs. USACE conducted quarterly teleconferences within the transportation COP (with 97 project managers, supervisors and district chiefs) to advance solutions and promote inter-district sharing of innovative thinking and best practices for improving the efficiency of application review, while ensuring environmental protection and promoting environmental stewardship. These calls provided opportunity for the identification of potential programmatic issues for interagency discussion. In addition, USACE attendance and participation at each EDC summit and at the Eco-Logical symposium, including USACE speakers, was coordinated to ensure interagency collaboration and transparency on all policy initiatives.

- **Specific Research to Address Threatened and Endangered Species Concerns on Regional and National Basis. (Prior Year Funding: \$10,000).** FHWA initiated development of a pile driving handbook. The objective of this effort was to provide FHWA and State DOT engineers, biologists, and consultants with state-of-the-practice information for avoiding and minimizing environmental hazards related to in-water pile driving projects. The handbook will be a web-based booklet that is easy to update and search.

- **Wildlife Usage of Wetland Mitigation Areas and Percentage of Invasive Species in Reference Sites as a Performance Standard for Wetland Mitigation. (Prior Year Funding: \$125,000).** This effort researched whether invasive species percentages that are stated in wetland permit conditions are realistic in comparison to natural reference wetlands. This research identified techniques used for invasive species control and costs associated with these techniques. This effort will produce a research paper and an executive summary in cooperation with USACE and EPA. This study also documented wildlife usage of wetland mitigation areas to determine if mitigation sites provide habitat value that is comparable to reference wetlands.
- **International Stormwater Best Management Practices (BMP) Database. (Prior Year Funding: \$50,000).** FHWA continued support of the International Stormwater BMP Database. As part of this activity, FHWA collaborated with a coalition of organizations, including EPA, the Water Environment Research Foundation, the American Public Works Association, and the American Society of Civil Engineers. This research effort and the database provided currently available information on BMPs for use in selecting, designing, and assessing the performance of stormwater management facilities. Operation and maintenance work continued on the database clearinghouse and webpage. The long-term goal of the database is to collect sufficient information to permit improvements in BMP designs to better match selection of BMPs to stormwater challenges within a watershed. Significant project accomplishments included the following:
 1. Added new information to the database, which now includes over 300 studies;
 2. Conducted new data analysis;
 3. Upgraded website to improve navigation based on user type and improved data retrieval tools; and
 4. Simplified data entry.

The project also continued to distribute findings from the database and remained a reliable source of information. This ongoing research is currently accessible through the BMP database at <http://www.bmpdatabase.org>.

- **Optimizing Management of Highway Right-of-Way (ROW) for Environmental Benefit. (Prior Year Funding: \$70,000).** FHWA published a report describing the status of biological carbon sequestration in the National Highway System (NHS). The report included the first data-driven estimates of ROW acres along the NHS, as well as estimates of currently sequestered carbon and the potential for additional sequestration using native vegetation. A decision-support tool was developed to help State DOTs determine how much carbon could be sequestered in States, along with associated revenues and expenses. The report is available at http://www.fhwa.dot.gov/hep/climate/carbon_sequestration/index.htm
- **Improvements to Fish and Wildlife Habitat Connectivity. (Prior Year Funding: \$85,000).** FHWA undertook four important activities related to improving fish and wildlife connectivity. These activities included the following accomplishments:
 1. Provided funding to support post-construction evaluation of wildlife features on U.S. Highway 93 (U.S. 93) on the Flathead Indian Reservation in northwestern Montana. The U.S. 93 project represents one of the most extensive wildlife-sensitive highway design efforts in North America. The reconstruction of the 56-mile road section includes the installation of 42 fish and wildlife crossing structures and approximately 16.6 miles of

- wildlife exclusion fencing. The magnitude of the U.S. 93 reconstruction project and associated mitigation measures provide an unprecedented opportunity to evaluate the extent to which mitigation measures help:
- Improve safety through a reduction in wildlife-vehicle collisions;
 - Maintain habitat connectivity for wildlife (especially deer and black bear); and
 - Assess monetary costs and benefits for mitigation measures.
2. Provided initial funding to support EPA's efforts to develop a Watershed Resource Registry (WRR) to assist in the implementation of Clean Water Act Sections 319, 401, 402, and 404. The WRR is a tool that evaluates watershed conditions and creates a database of watershed sites to protect high-quality resources, restoration of impaired resources, and the establishment of treatment systems and BMPs. FHWA is currently developing a methodology for further developing the WRR and integrating its use into existing policy and regulation. A pilot effort in southwestern Maryland will help to generate this broad-based methodology. In FY2010, the WRR team accomplished the following tasks:
 - Developed eight draft ecological opportunity models: 1) wetland preservation; 2) wetland restoration; 3) wetland enhancement; 4) riparian zone preservation; 5) riparian zone restoration; 6) upland preservation; 7) upland reforestation; and 8) stormwater management;
 - Developed methodology and conducted field assessment for several of the models;
 - Developed a draft interactive website with a mapping tool; and
 - Conducted numerous outreach activities via meetings and newsletter articles.
 3. Provided additional funds to enhance FHWA's existing online tool to streamline the process for preparing and submitting complete Biological Assessments (BAs) under Section 7 of the Federal Endangered Species Act. The enhancements initiated in FY2010 will ensure the usefulness and effectiveness of the site as a result of increased demands for trainings, sample BAs, Biological Opinions (BOs), and Letters of Concurrence (LCs), as well as site maintenance and updates. A collection of best practices and resources composed of examples of BAs, BOs and LCs gathered from State DOTs, FHWA and other agencies will be developed to better prepare website users for the Section 7 BA process. The tool is intended for use on projects where FHWA is the lead Federal agency. For more information, visit <http://esafhwa.org/>.
 4. Completed an online wildlife-vehicle collision reduction training course for the wildlife-vehicle collision reduction study. The study is the last product required under SAFETEA-LU. The training module is available at <http://www.environment.fhwa.dot.gov/WVCtraining/index.asp>.

Historic Preservation

Emphasis Area Contact: MaryAnn Naber
Level of FY2010 Funding: \$225,000

- **Research and Innovation Agreement with the Advisory Council on Historic Preservation (ACHP). (FY2010: \$16,400; Prior Year Funding: \$58,725).** FHWA continued its support for an existing research and innovation agreement with ACHP. This agreement specified regular quarterly meetings and has resulted in significant progress on new and updated statewide programmatic agreements. Six additional statewide programmatic agreements were concluded in 2010 for a total of 44 statewide agreements in place. Several existing agreements were also

updated over the past year. The research agreement with the ACHP has fostered closer coordination on complex undertakings. Research gathered throughout the year was used to enhance the ACHP website by providing specific case studies, best practices, and guidance information on FHWA program issues. It was also used to implement research and demonstration projects to resolve complex consultation issues.

Bicycles/Pedestrians

Emphasis Area Contact: Gabe Rousseau
Level of FY2010 Funding: \$375,000

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **Public Policies for Pedestrian and Bicyclist Safety and Mobility. (Prior Year Funding: \$30,000).** As a follow-up to an international scan on pedestrian and bicycle safety and mobility, this research effort developed a policy review report to identify noteworthy practices and communicate findings and recommendations from the scan. The report is available at http://international.fhwa.dot.gov/links/pub_details.cfm?id=662.
- **National Transportation Enhancements Clearinghouse's (NTEC) Summary of Nationwide Spending as of FY2009 Report. (Prior Year Funding: \$100,000).** FHWA developed a cooperative agreement for the Rails-to-Trails Conservancy to operate NTEC. NTEC increases the transparency of a complex program, promotes best practices, and provides citizens and policy-makers with an opportunity to learn how States have used transportation enhancement (TE) program funding. In FY2010, NTEC prepared the *Summary of Nationwide Spending as of FY2009* report, which is part of an annual series of national spending reports. The report provides insight into TE spending at the national and State levels and helps agency staff, policy makers, professionals, and citizens better understand and maximize the benefits that can be derived from TE activities. The report is available at http://www.enhancements.org/download/Spending_Report/TE_Spending_Report_FY09.pdf.

NTEC also published the *TE Corner* newsletter, provided technical assistance to the public, and organized the annual TE Professional Seminar for FHWA and State TE managers.

Noise

Emphasis Area Contact: Mark Ferroni
Level of FY2010 Funding: \$590,000

- **Highway Traffic Noise: Research, Training and Communication. (FY2010: \$590,000).** FHWA continued ongoing development of the traffic noise model (TNM) 3.0 and expects a beta version to be completed by September 2011. Development of a web-based course on the FHWA TNM is expected to begin in November 2011 after environmental development and delivery by the National Highway Institute (NHI) and after Indefinite Delivery/Indefinite Quantity contracts are awarded.

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **Tire/Pavement Noise Measurements: Temperature Effects Study. (Prior Year Funding: \$30,000).** A research effort on the effects of temperature on tire and pavement noise measurement was completed and a draft report is being developed. Once finalized, the report will receive an FHWA publication number and will be posted on the FHWA noise website. The FHWA highway traffic noise website is available at <http://www.fhwa.dot.gov/environment/noise>.

Outdoor Advertising Control

Emphasis Area Contact: Mary Jane Daluge

Level of FY2010 Funding: \$150,000

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **Neutral Assessment of the National Outdoor Advertising Control (OAC) Program National Policy Dialogue. (Prior Year Funding: \$150,000).** FHWA conducted two workshops with stakeholders in Washington, District of Columbia (D.C.), and Denver, Colorado, to develop a definition of customary maintenance. The National Association of Highway Beautification Agencies vetted the definition and FHWA considered comments that were received. A decision has not yet been made on the final definition or means of issuing it.
- **Possible Driver Attention Effects of Commercial Electronic Variable Message Signs (CEVMS). (Prior Year Funding: \$250,000).** FHWA conducted research on CEVMS and driver attention, including evaluating potential risks to safety through actual field measurement of driver behavior, such as eye movement and possible traffic conflict. The Phase 1 report was issued and Phase 2 (focusing on field data collection) was completed in Reading, Pennsylvania, and in Richmond, Virginia. A draft report is currently under review and a final report will be released to the public when completed.

Real Estate Program Stewardship

Emphasis Area Contact: Carolyn James

Level of FY2010 Funding: \$460,000

- **Support of Stakeholder and Partner Outreach and Informational Dissemination Programs. (FY2010: \$220,000).** FHWA supported two national ROW meetings attended by OAC and ROW professionals. FHWA continued to support and monitor a well-regarded and well-utilized online community of practice; it also updated and upgraded the real estate website at <http://www.fhwa.dot.gov/realestate/research.htm>.
- **Coordination with Railroads to Facilitate Acquisition of ROW. (FY2010: \$150,000).** FHWA received stakeholder survey results and marketed the Strategic Highway Research Program 2 (SHRP2) renewal project 16 railroad mitigation strategies at the 2010 Rail Corridor Safety Conference in Tacoma, Washington. FHWA, TRB, and the SHRP2 team met to finalize the SHRP2 implementation plan. The research project will use information from the meeting to formulate the scope of work for the project.

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **Identification and Development of Local Public Agency (LPA) Stewardship Tools and Techniques. (Prior Year Funding: \$150,000).** FHWA developed an NHI instructor-led course, which will be utilized to address ROW aspects of the LPA program. The course was successfully piloted with a stakeholder group in Phoenix, Arizona, and NHI will launch it in 2011.
- **Development of a ROW Competency Navigator and Capacity Building and Online Training Curriculum Clearinghouse. (Prior Year Funding: \$55,000).** The ROW Competency Navigator was posted online and is available at <http://www.realty.fhwa.dot.gov/navigator.aspx>. FHWA continued to work on improving the website based on feedback received from the ROW navigator steering committee and users of the tool.
- **ROW, Design-Build, and Acquisition Models. (Prior Year Funding: \$75,000).** FHWA hosted a ROW/Design-Build peer exchange in Austin, Texas, which was attended by participants from FHWA, State DOTs, and the International Right of Way Association. Results from the peer exchange are available at <http://www.fhwa.dot.gov/realestate/dbaltcont.htm>. FHWA also hosted several web conferences to disseminate information.
- **Business Relocation Retrospective Study. (Prior Year Funding: \$190,000).** FHWA secured approval to conduct the retrospective study as well as an information collection request number from the Office of Management and Budget. A contract was awarded. The stakeholder group convened and consulted to finalize the effort's work plan. Research is underway.
- **Integrating Visualization Technologies into ROW Processes. (Prior Year Funding: \$75,000).** Interviews were conducted with visualization adapters and users. FHWA completed a draft report and the program office reviewed and requested revisions. The contractor is currently reviewing and completing revisions.

Environmental Streamlining/Stewardship

Emphasis Area Contact: Shari Schaftlein
Level of FY2010 Funding: \$1,663,500

- **Guidance on Considering Adaptations to Climate Change in Project Development and Environmental Review. (FY2010: \$100,000).** FHWA initiated work to support development of a guidance document titled *Considering Adaptation to Climate Change in Project Development and Environmental Review*.

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **Improving Project Delivery through the EDC Initiative. (Prior Year Funding: \$350,000).** FHWA initiated EDC, a comprehensive initiative to shorten project delivery, accelerate the use of advanced technologies, and go greener. Through the shortening project delivery component, six EDC activities focused on advancing innovations associated with the environmental review process:

1. Researched use of in-lieu fee and mitigation banking;
2. Continued Planning and Environmental Linkages (PEL);
3. Enhanced technical assistance on environmental impact statements;
4. Expanded use of programmatic agreements;
5. Clarified the scope of preliminary design; and
6. Assessed flexibility in current ROW practices and procedures.

Additionally:

- FHWA facilitated peer exchanges on the EDC initiative through a headquarters/field office (Division Office) partnership meeting in Denver, Colorado, to discuss advancement of initiatives;
 - FHWA facilitated two peer exchanges in Washington, D.C., with Federal resource and regulatory agencies to discuss and inform participants on project delivery innovations; and
 - FHWA and the American Association of State Highway and Transportation Officials (AASHTO) prepared for the delivery of ten regional summits held in the fall of 2010.
- **Planning and Environment Linkages (PEL). (Prior Year Funding: \$165,000).** In FY2010, FHWA focused on two primary avenues to promote PEL:
 1. Technical assistance and training. In FY2010, FHWA advanced the adoption of PEL initiatives nationwide through the following focused workshops, trainings, and peer exchanges:
 - Structured, Transparent, Accountable, Reproducible, Sustainable (STARS) workshops. STARS workshops were designed to promote the exchange of ideas, data, tools, concepts, and methods for better collaboration and information exchange between transportation planners and environmental practitioners in support of earlier consideration of environmental data and information in the transportation planning process. In FY2010, FHWA conducted two STARS workshops in California and Mississippi.
 - The Integrated Planning Work Group. This work group developed outreach, training, and tools in three key areas: transportation planning, *Eco-Logical*, and tiering, corridor, and sub-area studies. The working group hosted a webinar entitled “The Role of Resource Agencies in Transportation Planning” in August 2010 and a peer exchange on “Using Corridor Planning to Inform the National Environmental Policy Act (NEPA)” in December 2009.
 - PEL 101 webcasts. During FY2010, FHWA hosted three webcasts.
 2. Outreach and communication. These activities increased the development and dissemination of resources for stakeholders to use in understanding and implementing PEL activities.

For more information on PEL initiatives, see the FY2010 Annual Report at http://environment.fhwa.dot.gov/integ/annualreport_2010.asp.

- **Research and Innovation Agreements with EPA. (Prior Year Funding: \$173,000).** FHWA continued an existing research and innovation agreement with the EPA Office of Water within EPA’s headquarters’ offices. The agreement established a research and innovation liaison position. In FY2010, this agreement accomplished the following:
 - Established a Transportation Team within the EPA Office of Water;

- Conducted regular EPA-wide transportation peer exchanges including webinars, conference calls, and information sharing;
 - Supported FHWA initiatives, such as EDC and PEL, with EPA staff;
 - Supported and participated in TRB and AASHTO's Standing Committee on the Environment research, such as SHRP2 capacity project 6, unpaved roads, and relevant committees and conferences;
 - Generated information and dialogue regarding ongoing Clean Water Act rule-makings such as those related to National Pollutant Discharge Elimination System permitting and waters of the U.S.; and
 - Directed EPA Office of Water funding for applied research on best management practices for de-icing agents, low impact development/green infrastructure for roadways, and related meetings and conferences.
- **Environmental Streamlining Outreach and Technology Transfer. (Prior Year Funding: \$97,000).** This research effort made substantial investments in developing methods, tools, and techniques to improve the quality and efficiency of environmental decision-making. Through this effort, FHWA supported several ongoing technology transfer and outreach initiatives. FHWA's accomplishments from these initiatives in FY2010 are listed below:
 1. Maintained and updated the online Environmental Review Toolkit, which has received 192,048 unique visits. The toolkit is available at <http://www.environment.fhwa.dot.gov/>.
 2. Published 12 issues of *Successes in Stewardship*, a newsletter that highlights current environmental streamlining practices from around the country. The newsletter is available at <http://www.environment.fhwa.dot.gov/strmlng/es4newsltrs.asp>.
 3. Supported the American Society of Civil Engineers' Green Streets and Highways Conference. The conference focused on sustainable transportation activities through sharing information on leading-edge environmental stewardship and sustainability principles and practices.
 4. Participated in SHRP2 capacity project 6A and 6B research workshops in Boulder, Colorado.
 - **Environmental Conflict Resolution. (Prior Year Funding: \$155,000).** FHWA supported three important activities to build transportation stakeholders' capacities in collaboration and environmental conflict resolution. Accomplishments from these activities are listed below:
 1. FHWA supported the National Policy Consensus Center's collaboration forum in Portland, Oregon, to vet and share lessons learned in efforts to coordinate transportation and land use decision-making. Representatives from metropolitan planning organizations (MPOs) in Denver, Colorado; San Diego, California; Seattle, Washington; and Portland, Oregon, attended the forum, along with university researchers and Federal and State officials. Participants discussed the implications of best practices for local, State, and national policy.
 2. FHWA provided additional support to the U.S. Institute for Environmental Conflict Resolution (USIECR) through an existing inter-agency agreement to access the full range of environmental conflict resolution services that USIECR offers. These services include consultation, onsite programmatic review and training, case analysis, conflict assessment, process design convening, and neutral selection. Additional services include facilitation, mediation, program development, roster maintenance, evaluation

assistance, consultation with senior mediators, and project management to assist in resolving environmental- and natural resource-related disputes.

3. FHWA provided a third-party neutral facilitator for a partnering session on the Cross Harbor Freight Movement Project, a complex transportation project in the New York City metropolitan area. This project involves the rehabilitation and improvement of rail freight networks that connect the entire new east corridor. The neutral third-party facilitated the partnering session and assisted lead agency representatives in an open and constructive discussion on a number of complex and controversial issues.
- **Advancing Innovations in FHWA's Environmental Review Process. (Prior Year Funding: \$507,000).** FHWA undertook a number of initiatives to advance innovations in the environmental review process. FHWA's accomplishments from these initiatives are listed below:
 1. Monitored and documented the impact of the SAFETEA-LU environmental review process;
 2. Compiled an internal report on the effectiveness of SAFETEA-LU Section 6002 environmental provisions;
 3. Continued the development of performance measurement systems, including the Environmental Document Tracking System, to gather data on timeliness and project management;
 4. Supported the development of a training course on the consideration of environmental factors in construction;
 5. Conducted a fifth onsite audit of Caltrans under a pilot program. This activity included audit planning, preparing the audit team, developing logistics for the onsite audit, and interviewing Caltrans staff. The audit also involved reviewing documents, compiling and finalizing the findings, and drafting and finalizing the audit report;
 6. Provided funding to support the development of a strategic conservation plan using a green infrastructure assessment approach that links conservation and transportation planning in the north tier region of Pennsylvania; and
 7. Provided continuing support for the Section 4(f) implementation study team to assist in developing a Phase II Report to Congress on the implementation of Section 4(f) statute changes.
 - **Linking *Eco-Logical* to Project Development. (Prior Year Funding: \$165,000).** In FY2010, FHWA completed the *Eco-Logical* grant program annual report, shared it with the signatory resource agencies, and posted it on the *Eco-Logical* website at http://environment.fhwa.dot.gov/ecological/eco_entry.asp.

This annual report, which documents the progress, successes, and challenges of each of the 15 *Eco-Logical* grant projects, presents lessons learned during the second year of the *Eco-Logical* grant program (January-December 2009). The report summarizes the progress of each pilot project and provides findings about the grant implementation processes, relationships between grant recipients and their partners, and execution of the *Eco-Logical* approach. Additional activities in FY2010 included the following:

- In cooperation with the signatory resource agencies, FHWA began the development of an informational brochure demonstrating *Eco-Logical* similarities between several collective programs and efforts;

- FHWA commenced a study of one of the first known *Eco-Logical* pilot projects, Montana's Integrated Transportation and Ecological Enhancements for Montana process;
- FHWA and *Eco-Logical* grantees made several presentations relating to *Eco-Logical* at conferences and meetings across the country;
- FHWA provided additional funding to one of the *Eco-Logical* grantees, the Illinois Tri-County Regional Planning Commission, to complete its regional transportation, ecosystem, and land use integration plan.

Context Sensitive Solutions

Emphasis Area Contact: Shari Schaftlein

Level of FY2010 Funding: \$500,000

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **Context Sensitive Solutions (CSS) Clearinghouse. (Prior Year Funding: \$350,000).** Since FHWA initiated the new CSS Clearinghouse concept, CSS has made substantial progress as a tool for efficient program delivery. The concept has also led to the development of quality projects in support of livable communities and sustainable transportation. The CSS Clearinghouse successfully raised the profile of FHWA's CSS initiative and reached out to other organizations to leverage resources and build new partnerships. The Clearinghouse Professional Seminar Series hosted three webinars on the following topics:
 - Review of the *Institute of Transportation Engineers(ITE) CSS Urban Thoroughfares Manual* (March 2010; 253 registrants);
 - Leveraging CSS investments to achieve livability (May 2010; 285 registrants); and
 - Review of the FHWA livability manual (June 2010; 298 registrants).

In addition to these webinars, FHWA distributed two newsletters that focused on the CSS National Dialog, the STEP, livability, and sustainability. FHWA also added new content and features to its CSS website, including 131 case studies, 59 calendar items, 60 news items, 20 publications, new discussion forums, a new section highlighting existing content already within the clearinghouse, and a new section to house videos. Over 180 practitioners registered to receive website updates, adding to the list of hundreds of users who have already registered to receive updates on the webinars and other activities. Additionally, all 50 State DOTs updated their CSS activities profiles. The CSS website is available at <http://www.fhwa.dot.gov/context/index.cfm>.

- **Disseminate CSS Outreach Project. (Prior Year Funding: \$150,000).** In 2009, FHWA provided funding support to ITE to develop a guidebook on CSS for walkable urban thoroughfares. The guidebook, which was adopted as a proposed recommended practice by ITE, is available at http://www.contextsensitivesolutions.org/content/reading/ite036_css/. FHWA also provided additional funding to ITE to support development of a coordinated plan, materials, workshops, stakeholder meetings, and webinars for outreach to build awareness of the guidebook and its documentation of good practices. Materials include, but are not limited to, case examples, fact sheets, and documentation of conference presentations.

- **CSS Targeted Technical Assistance. (Prior Year Funding: \$150,000).** FHWA offered customized CSS technical assistance to several States, including Oregon, Hawaii, Maine, Massachusetts, California, Florida, Illinois, New Hampshire, and New Mexico. For each State that received technical assistance, the consultant team prepared a packet of documentation that contained:
 - A summary of the challenges the State DOT faced in implementing CSS;
 - Information on how the offered technical assistance addressed these needs and contributed to the State's overall progress; and
 - Lessons learned from the process to serve as examples to other State DOTs that might want to adapt these approaches to their own needs.

A compilation of the technical assistance provided to each State is available at

http://www.contextsensitivesolutions.org/content/reading/specialized_technical_assistanc/.

- **CSS National Dialog. (Prior Year Funding: \$100,000).** A final report, the *CSS National Dialog*, was completed in summer 2010 and is available at <http://www.cssnationaldialog.org/>. The report describes five CSS workshops and the case studies highlighted through these workshops. A national webcast served as a capstone event for the project. These efforts built awareness and support for a growing, broad, and interdisciplinary community of practice. The approach used in this phase of the overall National Dialog initiative provides an outstanding point of departure to continue the CSS conversation.

Emphasis Areas Related to Planning

Congestion

Emphasis Area Contact: Harlan Miller

Level of FY2010 Funding: \$500,000

- **Innovative Methods of Applying Analysis Tools in Planning for Operations. (FY2010: \$100,000).** FHWA completed an *Applying Innovative Analysis Tools in Planning for Operations* report, case studies, and conducted outreach activities that showcase technical tools available to planners and operators to model operations programs during the planning process. The report is available at <http://www.plan4operations.dot.gov/casestudies/analysis.htm>.

FHWA also hosted a pilot outreach workshop in Washington, D.C., in September 2009 and conducted six of eleven workshops in the following locations:

- Dallas-Fort Worth, Texas, in January 2010;
 - Atlanta, Georgia, in April 2010;
 - Milwaukee, Wisconsin, in May 2010;
 - Vancouver, Washington, in July 2010;
 - Kansas City, Missouri, in August 2010; and
 - Ft. Lauderdale, Florida, in October 2010.
- **Benchmarking/Targeted Technical Assistance. (FY2010: \$72,968; Prior Year Funding: \$123,317).** FHWA hosted a kickoff meeting to initiate this research effort, which will:
 - Evaluate success achieved in areas that adopted planning for operations practices;
 - Implement methods to monitor progress in integrating operations into metropolitan and statewide plans, such as utilizing annual certification reviews;

- Conduct targeted technical assistance to select MPOs;
- Conduct hands-on workshops and support; and
- Assist selected MPOs to develop objectives-based regional plans for operations.

As part of this effort, FHWA initiated development of a roadmap to initiate and execute partnerships with four MPOs to create and fully use the objectives-driven, performance-based approach to planning for operations.

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **Statewide Opportunities for Integrating Operations, Safety, and Multimodal Planning: A Reference Manual. (Prior Year Funding: \$7,697).** FHWA finalized and published a reference manual on statewide opportunities for integrating operations, safety, and multimodal planning. The manual is designed to assist State DOT managers and staff to coordinate their functions and partner with other agencies, such as MPOs, transit agencies, and local jurisdictions, to more effectively integrate operations, safety, and planning. This manual was designed as a "how to" reference to provide practical information on implementing these opportunities; it includes case study examples with "toolkits" to help agencies get started. This document also expanded the focus of integration to include planning, operations, and safety in a multimodal context. An electronic copy of this document is available at <http://www.fhwa.dot.gov/planning/statewide/manual/>.
- **A Framework for Travel Demand Management (TDM) in the Transportation Planning Process. (Prior Year Funding: \$75,000).** FHWA hosted a kickoff meeting to initiate this research effort, which will:
 - Develop a TDM desk reference; and
 - Promote a more contemporary approach to TDM.

FHWA distributed a first draft of the TDM desk reference for comments within FHWA, the Federal Transit Administration (FTA), and a select stakeholder group. The final TDM desk reference will promote a more contemporary approach to TDM in the transportation planning process.

- **Advancing Metropolitan Planning for Operations: An Objective-Driven Performance-Based Approach – A Guidebook. (Prior Year Funding: \$100,000).** FHWA finalized and published a guidebook on advancing metropolitan planning for operations. The guidebook presented an approach for integrating management and operations strategies into the metropolitan planning process to maximize the performance of the existing and planned system. The guidebook is available at <http://www.ops.fhwa.dot.gov/publications/fhwahop10026/index.htm>.

FHWA also engaged in the following activities to promote planning for operations:

- NHI Courses. FHWA initiated development of a one-and-a-half day course titled "Advancing Planning for Operations in Metropolitan Areas."
- Professional Capacity Building. FHWA prepared fact sheets, case studies, slideshows, and other documents that compiled examples of the objectives-driven performance-based approach. FHWA also posted these materials on the Transportation Planning

Capacity Building (TPCB) website to enable the transportation community to access this information. The TPCB website is available at <http://www.planning.dot.gov/about.asp>.

- Executive Brochure. FHWA finalized an executive brochure that was intended to raise awareness about the objectives-driven, performance-based approach at partner agencies' executive management levels.
- **Advancing Metropolitan Planning for Operations: *The Building Blocks of a Model Transportation Plan Incorporating Operations – A Desk Reference*. (Prior Year Funding: \$250,000).** FHWA finalized and published the desk reference and hosted two webinars to promote the completion of this product.

The desk reference is a "toolbox" document that provides possible types of operations objectives to planners and operators along with associated performance measures, data needs, and strategies. Metropolitan areas can utilize the desk reference as a starting point to advance planning for operations in their area. The document also includes an illustrative plan to visually indicate "how the pieces fit together" to incorporate outcomes-driven operations into the metropolitan planning process. The desk reference is available at <http://www.ops.fhwa.dot.gov/publications/fhwahop10027/index.htm>.

The webinars addressed the contents of the document and included presentations by two different MPOs on their use of the objectives-driven, performance-based approach. An archived webinar recording is available at http://ntoctalks.com/web_casts_archive.php.

Safety Planning

Emphasis Area Contact: Lorrie Lau
Level of FY2010 Funding: \$100,000

- **Assessing the Impact of Traffic Safety Training Targeted Toward Local Agency Technical Staff and Elected/Appointed Officials. (FY2010: \$93,000).** FHWA completed a report entitled *Assessing the Impact of Traffic Safety Training Targeted toward Local Agency Technical Staff and Elected/Appointed Officials* and will post it on the FHWA Office of Planning (HEPP) website in the near future. FHWA presented a poster session on this research at the 2011 TRB Annual Meeting. This research will be reviewed by the TRB's Transportation Safety Planning (TSP) Working Group and the TRB Safety Coordinator to explore how to implement TSP training at the local level.

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **Taking Action: Using Targeted Training to Get Traffic Safety Analysis Integrated into the Local Transportation Planning Process. (Prior Year Funding: \$76,800).** This effort investigated how training for technical staff and the decision-makers can advance safety components in the project planning and transportation planning processes. The study evaluated the level of subject comprehension before and after training and measured different decision outcomes. This project and its final report were completed. FHWA HEPP is preparing the report to post on the FHWA website.

Freight Planning**Emphasis Area Contact:** Spencer Stevens**Level of FY2010 Funding:** \$200,000

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **Freight Analysis and Planning Model. (Prior Year Funding: \$152,705).** This research effort enhanced work previously conducted on the Argos freight model for the Southern California, U.S., region by estimating intra-metropolitan and regional freight flows. The research produced a functional model that can be integrated with an existing travel demand forecasting software package.
- **European FHWA/AASHTO Freight Scan. (Prior Year Funding: \$40,000).** In August 2010, a team of 13 transportation professionals from the U.S., Mexico, and Canada visited the European Commission and six countries in Europe to gain a better understanding of the institutional, organizational and administrative structure of the European Union's (EU) corridor program, the TransEuropean Transportation Network (TEN-T), including an understanding of its planning, programming, development, and implementation. The cities visited were chosen because they are key nodes on some of the current TEN-T priority axes and represent a mix of EU founding members and countries that joined in 2004. A final report is due in spring 2011.

Public Involvement, Visualization in Planning/Environmental Planning**Emphasis Area Contact:** Frederick Bowers, Brenda Kragh, and Susan Grosser**Level of FY2010 Funding:** \$200,000

- **Public Involvement, Environmental Justice, and Visualization in Planning. (FY2010: \$200,000).** FHWA developed the *Environmental Justice in Transportation: Emerging Trends and Best Practices* report, which promotes environmental justice in transportation and provides practical strategies and applications that focus on timely transportation issues. FHWA also authored four topic papers and case studies to help promote a deeper understanding of the responsibilities, opportunities, and benefits derived from addressing environmental justice in transportation planning and implementation. The topic papers focused on:
 - Transit and affordability;
 - Public involvement;
 - Livability; and
 - Road pricing.

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **Transportation and Environmental Justice Best Practices Guidebook. (Prior Year Funding: \$75,000).** FHWA developed the *Transportation and Environmental Justice Best Practices Guidebook* to provide practical strategies and applications that highlight commonplace techniques for promoting environmental justice in transportation. The guidebook contained case studies that detail analytical and procedural issues relevant to a diverse community, including FHWA, FTA, HUD, EPA, State DOTs, MPOs, transit providers, other partnering

government agencies, community organizations, advocacy groups, academic institutions, and the public.

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

Emphasis Area Contact: Kenneth Petty
Level of FY2010 Funding: \$2,850,000

- **Transportation Decision-Making: Information Tools for Tribal Governments – *Tribal Transportation Best Practices Guidebook*. (FY2010: \$72,895).** The *Tribal Transportation Best Practices Guidebook* launched a new educational series that highlights achievements in Tribal transportation through research and case studies. The purpose of the guidebook was to showcase successful program management practices in Tribal transportation and share this information with the larger transportation community. The guidebook is available at http://www.tribalplanning.fhwa.dot.gov/bestPractices_guidebk.aspx.
- **Tribal Planning Module Series. (FY2010: \$65,000).** The module series was designed to provide subject-specific information about various Tribal planning activities. Executive summaries and PowerPoint presentations were developed for each module. In addition, train-the-trainer materials and sessions were offered to the Tribal Technical Assistance Program to help support dissemination of the modules. Training sessions were also offered at the National Tribal Transportation Conference to help train local Tribal planners in their efforts to educate local staff, leadership, and the public about Tribal planning issues. For more information, see http://www.tribalplanning.fhwa.dot.gov/training_series.aspx.
- **Planning Capacity Building, System Performance and Oversight. (FY2010: \$986,000).** This project aided the implementation of FHWA's research program by creating a multi-disciplinary team to meet the challenges associated with transportation planning. The team's efforts were targeted to specific needs and areas of interest that support work in transportation planning capacity building as well as innovation in transportation planning processes, decision-making, transportation and land use, and transportation and community impacts.
- **FHWA Office of Planning, Environment, and Realty (HEP) Executive Geographic Information Systems (GIS) (HEPGIS). (FY2010: \$20,000).** This project provided additional funding for work already underway to update census and map data presented on HEPGIS mapping applications, add new maps to assist highway planners with new and ongoing projects, and further enhance the functionality of HEPGIS applications. The USDOT Volpe National Transportation Systems Center designed and developed an application to update the MPO address database.
- **Asset Management and Performance Measures. (FY2010: \$65,851).** This project facilitated an afternoon session at a peer exchange to share information pertaining to programs and practices in asset management.
- **AASHTO: Cost Estimation and Cost Management for Highway Projects During Planning, Programming and Preconstruction. (FY2010: \$40,731).** This project supported the Cost Estimating and Cost Management Capacity Building Workshop led by the Minnesota DOT. The workshop, held in August 2010 in Minnesota, built on two previous workshops on the topic and focused on the following:

- Risk management and contingency estimating;
 - Building expertise and capacity to implement the National Cooperative Highway Research Program (NCHRP) report 574 (*Guidance for Cost Estimation and Management for Highway Projects during Planning, Programming, and Preconstruction*) on cost estimating and cost management;
 - Learning how States are moving forward to implement the report;
 - Sharing advances and lessons learned from other States' initiatives; and
Developing action plans for initiatives in support of cost estimating and cost management implementation.
-
- **Interagency Working Group on Transportation, Land Use, and Climate Change. (FY2010: \$44,438.91).** This project supported the Interagency Working Group on Transportation, Land Use, and Climate Change, whose focus was on identifying how greenhouse gasses (GHGs) can be reduced through better land use planning, travel demand management practices, and other innovative energy and carbon reduction strategies.

 - **Ninth Annual New Partners for Smart Growth Conference. (FY2010: \$12,000).** This project built on the previous successes of the New Partners for Smart Growth Conference series. This conference, held February 2010 in Washington, concentrated on building safe, healthy, and livable communities. The conference also included keynote addresses from the Secretaries of USDOT, HUD, and EPA.

 - **TRB: Fourth National Conference on Performance Management. (FY2010: \$100,000).** This project identified best practices and developed an understanding of performance-based planning, –programming, and performance management by holding discussions on accountable, transparent, processes for the optimization of investments in transportation.

 - **TRB: National Forum on Transforming the State and MPO Transportation Planning and Programming. (FY2010: \$100,000).** This project planned, prepared background materials, and conducted a national forum to:
 - Examine the current state-of-the-practice of transportation planning and programming processes to understand how current processes and/or its components are incorporating performance and accountability;
 - Define effective approaches and evolving state-of-the-practice changes in statewide and metropolitan transportation planning, focusing on practices, methods, analyses, and data related to achieving a more performance-based, outcome-driven, transparent, and accountable planning and programming process;
 - Explore approaches to integrated modal planning and programming that transcend modal silos;
 - Examine how the planning process can address new and emerging issues, such as climate change, livability, and sustainability;
 - Examine how transportation planning and policies can be synchronized with plans and policies related to housing, the economy, energy, the environment, and climate change;
 - Examine innovative, productive, Federal, State, and local relationships and roles and responsibilities, including oversight and compliance issues that support performance-driven planning processes; and

- Identify strategies, and short-and long-term actions, including research, to expedite transformation of the planning and programming process.
- **Project Prioritization and Performance-Based Planning Efforts in Rural and Small Metropolitan Regions. (FY2010: \$100,000).** This project conducted research on project prioritization methods and performance-based planning in rural and small metropolitan regions. It also 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 regional planning processes and documents.
- **The Architecture of the Megaregion. (FY2010: \$274,476).** This project provided a work plan for the application of megaregional practice within U.S. planning and policy structures. The plan was designed to analyze the broad spectrum of possibilities for integrating the megaregion concept into Federal, State, regional, and local transportation investment decision-making processes.
- **National Symposium for Rural Transportation Planning Organizations (RTPOs) and MPOs: Assessing the Structure and Benefits of Collaboration. (FY2010: \$25,000).** This project promoted collaboration between RTPOs and MPOs, showcasing the benefits of collaborating, maximizing resources, and inclusive planning.
- **AASHTO: Advancement and/or Implementation of Approach for Performance-Based Planning and Programming/Planning for Data Needs in Capacity Building Activities. (FY2010: \$80,413).** The purpose of this workshop was to build upon the findings of an executive roundtable held in October 2009. This effort continued to apply findings to decision-making at the transportation planning and programming/project selection levels.
- **National Policy Consensus Center – Metropolitan Transportation Collaborative Governance Study. (FY2010: \$15,000).** This project hosted a research forum in September 2010 to share findings, discuss implications, identify lessons learned, and develop best practices. The forum provided a significant opportunity for FHWA to partner with State and local agencies and other groups to advance the implementation of several key FHWA initiatives such as: integrating land use and transportation decision-making, CSS, sustainability for transportation projects, and completing the environmental review process in a timely manner.
- **FHWA HEPP Website Design and Support. (FY2010: \$90,000).** This project provided onsite support to update, convert, and document HEPP web pages and other related updates.
- **Creating Livable Places: Understanding the “Development Game” to Increase Livability. (FY2010: \$125,000).** This project identified opportunities to incorporate livability principles into metropolitan planning and increase coordination among Federally required regional and local plans. Research in this area identified gaps in incorporating livability principles and metropolitan priorities into the development of local plans. It also identified data sets, tools, and strategies necessary to support the integration of livability principles into metropolitan planning processes, transportation plans, and programs. Finally, this project developed tools and strategies, including livability principles, which facilitate the implementation of regional plans and priorities, primarily at the local level where most regional plan implementation must occur.

- **Developing the Capacity of Local and Regional Stakeholders to Create, Integrate and Implement Federal Livability Goals. (FY2010: \$250,000).** This project advanced the state-of-the-art and advanced building livable communities by developing an analytical framework and guidebook for local governments, regional councils of governments, and MPOs to use in creating regional transportation plans that incorporate the objectives of the Federal Interagency Partnership for Sustainable Communities.
- ***Livability in Transportation and Transportation and Environmental Justice Best Practices Guidebook. (FY2010: \$210,000).*** This project developed a guidebook on livability in transportation best practices that contains case studies and provides strategies, processes, and applications to highlight projects that have been implemented to promote livability. The case studies detailed both analytical and procedural issues relevant to a diverse community including: FHWA, HUD, EPA, FTA, State DOTs, MPOs, transit providers, other partnering government agencies, community organizations, advocacy groups, academic institutions, and the public.
- **Incorporating Livability into Rural and Small Metropolitan Transportation Planning. (FY2010: \$100,000).** This project researched the methodologies and extent to which livable community concepts are incorporated into rural and small metropolitan transportation planning processes. The research identified mechanisms that rural and small metropolitan transportation planning organizations are implementing to incorporate tenets of livable communities while also working to meet transportation needs of residents in these communities. The research specifically assessed the roles that RTPOs are undertaking to incorporate the goals of USDOT, HUD, and EPA's Interagency Partnership for Sustainable Communities, such as promoting transportation choice, enhancing economic competitiveness, and coordinating policies on planning processes.
- **Portland State University: Livability Workshop. (FY2010: \$10,000).** The symposium sought to increase the awareness of the USDOT, HUD, and EPA's Interagency Partnership for Sustainable Communities by providing an opportunity for discussion among regional policy-makers (HUD, EPA, USDOT) and an exploration of best practices from around the nation through research presentations and a panel discussion with national experts. The session concluded with a focus on the future, with proposals for what new practices a region should adopt to realize a more livable region.
- **University of Washington: Livability Workshop. (FY2010: \$10,000).** This session was an outgrowth of the USDOT, HUD, and EPA's Interagency Partnership for Sustainable Communities effort. This event increased awareness and understanding of the partnership. It also provided an opportunity to receive input from State, regional, and local participants about opportunities and needs that can inform FHWA efforts. Finally, it catalyzed an enhanced level of participation throughout Washington.

U.S./Canada and U.S./Mexico Border Planning**Emphasis Area Contact:** Roger Petzold**Level of FY2010 Funding:** \$700,484

- **U.S./Mexico Transportation Joint Working Committee (JWC). (FY2010: \$220,242).** The JWC supported and promoted U.S./Mexico JWC meetings and translation in addition to high-priority JWC work plan activities. JWC accomplishments included the following:
 - Completed the *Lower Rio Grande Border Congestion Study*;
 - Completed the *U.S./Mexico Border Wait Time Study*;
 - Completed the *Nogales Intermodal Congestion Relief Study*; and
 - Held bi-annual meetings in Chihuahua, Mexico, and San Diego, California.

Additional work continued on the following studies and initiatives:

- *Border Travel Time Studies*;
- *Bottleneck Studies (Phase II)*;
- *Improve Travel Demand Model in the Border Region Study*;
- *Innovative Finance/Public-Private Partnership Study*;
- *Border Master Plan Studies* (in Laredo, Texas, and Baja, California);
- *Evaluation of Transportation Planning Process Study*;
- Peer exchanges; and
- Website enhancements/web tools.

Additionally, the JWC drafted a revised Memorandum of Understanding between the USDOT and the Mexican Secretariat of Communication and Transportation.

- **U.S./Canada Transportation Border Working Group (TBWG). (FY2010: \$175,000).** FHWA supported TBWG meetings, which were hosted by the U.S. FHWA also facilitated communication between TBWG members and provided overall management and review of research activities associated with the development of the TBWG work plan. Additionally, the TBWG:
 - Enhanced the compendium of infrastructure hosted on the TBWG website (http://www.thetbwg.org/subcommittees-compendium_e.htm) to allow access to all users;
 - Sponsored regional border workshops;
 - Conducted a U.S./Canada border wait time pilot program;
 - Conducted a data access study; and
 - Sponsored a peer exchange.
- **Border Research Common to U.S./Canada and U.S./Mexico Borders. (FY2010: \$305,242).** As part of these activities, FHWA:
 - Conducted an infrastructure needs analysis;
 - Created a green border initiative;
 - Analyzed the economic impact of land border ports of entry and congestion;
 - Created the USDOT Border Congestion Relief Program; and
 - Enhanced communication of border wait-time data.

National Security, Defense, and Interstate Planning

Emphasis Area Contact: Stefan Natzke

Level of FY2010 Funding: \$520,000

The following research activities had accomplishments in FY2010 but were funded through prior years of STEP funding.

- **NHS Designation and Product Development. (Prior Year Funding: \$160,000).** As part of NHS designation and product development, FHWA:
 - Updated NHS and Strategic Highway Network (STRAHNET) coding on the base GIS network; and
 - Updated NHS/STRAHNET portable document format (PDF) maps for reposting on the internet.
- **Economic Development in Highway Corridors. (Prior Year Funding: \$30,000).** Using combined funding from various FHWA sources, FHWA sponsored a two-day workshop and supported ongoing coordination to initiate the Cape Cod Interagency Transportation Land Use and Climate Change Pilot Project. This project developed a preferred scenario for climate change mitigation and adaptation, examined alternative economic development scenarios, and documented each scenario's climate impacts. This project is ongoing with coordination through the USDOT Volpe National Transportation Systems Center.

Emphasis Areas Related to Tools to Support Planning and Environment

Travel Modeling

Emphasis Area Contact: Sarah Sun

Level of FY2010 Funding: \$1,170,000

- **Advancement of Treatment of Non-Motorized Travel in Existing Models. (FY2010: \$300,000).** FHWA developed a prototype non-motorized travel model and obtained interim results on NCHRP project 08-78 ("Estimating Bicycling and Walking for Planning and Project Development") for implementation in FY2011.
- **Census Transportation Planning Package (CTPP) Technical Assistance. (FY2010: \$100,000).** As part of its technical assistance for developing the CTPP, FHWA:
 - Prepared a summary of data products;
 - Edited a CTPP newsletter; and
 - Provided staff support for the CTPP coordination group.

Additional information on CTPP accomplishments is available at <http://www.fhwa.dot.gov/ctpp/>.

- **Data Collection. (FY2010: \$120,000).** FHWA developed interim results from NCHRP 08-78 and Oak Ridge National Laboratory transferability research for implementation. It also scoped further contract research to evaluate non-motorized travel characteristics in existing household travel survey results.

- **Support Ongoing Travel Modeling Improvement Program (TMIP) Efforts. (FY2010: \$300,000).** FHWA conducted 14 TMIP webinars that reached an audience of over 1,800 individuals (an average of 133 participants per webinar). Participants included representatives from MPOs, Federal, State, and local government, the private sector, and academia. Approximately 90 percent of attendees agreed that the webinars were relevant to their jobs and that they would recommend the webinar series to others. The TMIP Clearinghouse shipped 152 hard-copy documents. Additionally, the website experienced over 12,000 unique visits to the homepage and over 31,000 unique visits to the resources section. The website also added the following publications to its list of resources:
 - *Peer Review Process Guide: How to Get the Most Out of Your TMIP Peer Review;*
 - *Online Travel Survey Manual;*
 - *Actual versus Forecasted Toll Usage: A Case Study Review; and*
 - *A Primer for Dynamic Traffic Assignment.*

TMIP also maintained five email lists and published technical syntheses on model uncertainty and model sensitivity testing based on discussions that occurred on TMIP-L, the TMIP email discussion list. Finally, FHWA published a revised manual on model calibration and validation. Additional information about TMIP accomplishments, including the technical syntheses and revised manual, is available at <http://tmip.fhwa.dot.gov>.

- **National Travel Forecasting Steering Committee. (FY2010: \$50,000).** This effort established TRB Special Committee for Travel Forecasting Resources (ADB45) and commenced work on the first version of the travel forecasting resource, a web-based repository of practical travel model information developed by practitioners for practitioners.
- **Peer Review Program and Peer Exchange. (FY2010: \$300,000).** FHWA conducted peer reviews for TRansportation ANalysis SIMulation System (TRANSIMS) case study deployments in Buffalo, New York; Sacramento, California; and Detroit, Michigan. This effort also commenced scoping for peer reviews in Florida, Nebraska, and Ohio.

Planning agencies use peer reviews to ensure that technical processes they are applying or developing meet the agency's needs, meet the standards of professional practice, and/or meet Federal, State or local planning requirements. Peer reviews of travel forecasting and data collection procedures are crucial to planning agencies' model development and improvement efforts.

For more information, see http://tmip.fhwa.dot.gov/resources/peer_review

GIS/Spatial Information for Improved Decision Making

Emphasis Area Contact: Mark Sarmiento
Level of FY2010 Funding: \$405,000

- **Case Studies. (FY2010: \$90,000).** FHWA posted a report on its GIS in Transportation website that examined at how State DOTs have used GIS-based mash-up maps, social media, and other web 2.0 technologies in their activities. The purpose of the report was to identify best practices, challenges, and lessons learned in the uses of these technologies and to describe agencies'

decision-making processes regarding technology implementation and management. The report is available at <http://www.gis.fhwa.dot.gov/>.

- **Peer Exchanges. (FY2010: \$15,000).** FHWA hosted a peer exchange in Charleston, West Virginia, focusing on how GIS has been applied to transportation asset management. Participants from California, Iowa, New Jersey, Ohio, Virginia, Washington, and West Virginia discussed their experiences and potential areas of research that would assist States in applying GIS to transportation asset management.
- **National Highway Planning Network (NHPN) Maintenance. (FY2010: \$100,000).** FHWA developed a methodology for incorporating different State DOT geospatial road networks into the NHPN and implemented an informal agreement to obtain State geospatial road networks from the FHWA Office of Highway Policy Information's annual highway performance monitoring system submittal process.
- **Enhancement of the GIS Screening Tool (GISST). (FY2010: \$100,000).** FHWA facilitated discussions to initiate an interagency agreement with EPA Region 6 to enhance their GISST.

Program Management and Outreach

Emphasis Area Contact: Patricia Cazenias

Level of FY2010 Funding: \$1,000,000

- **Program Management and Outreach. (FY2010: \$1,000,000).** Accomplishments included the following:
 - Hosted STEP/SHRP/NCHRP coordination meeting;
 - Presented at numerous national meetings;
 - Conducted three STEP webinars, which expanded focus from STEP as a program to specific topics that would relate to and engage external stakeholders;
 - Produced the *Program Overview Fact Sheet*;
 - Created STEP contact cards;
 - Participated in the TRB Environment and Energy Research Conference ; and
 - Submitted information on current STEP research to the TRB's Research in Progress database, available at <http://rip.trb.org>.

Additionally, coordination efforts were undertaken to assist in developing and implementing research initiatives within the *SHRP2 Capacity Research Plan* and the NCHRP. A Federal Register Notice was issued to solicit feedback for the FY2011 STEP. FHWA also improved its webinar promotion and filled the final two FY2010 webinars to capacity, requiring additional lines. By strategically developing and reaching out to a list of target audiences (e.g., TRB, AASHTO, AMPO) to help publicize the webinar, FHWA disseminated information about webinar registration and referenced STEP in publications such as the *AASHTO Journal* and the TRB newsletter, *Environmental Analysis in Transportation*.

FHWA also distributed new STEP outreach materials, including the program overview fact sheet and STEP contact cards, at several conferences throughout the year, including the:

- 2010 TRB Annual Meeting (January 2010) in Washington, D.C.;
- 2010 AASHTO Subcommittee Annual Meeting (April 2010) in San Diego, California;

- 2010 USIECR conference titled “Environmental Collaboration and Conflict Resolution – Evolving to Meet New Opportunities” (May 2010) in Tucson, Arizona; and the
- 2010 TRB Environmental and Energy Research Conference (June 2010) in Raleigh, North Carolina.

Distribution of these materials further familiarized STEP partners and stakeholders with the program and marketed related research initiatives and products.

- **Website Support for FHWA HEP Research and Programs. (FY2010: \$300,000).** The following STEP documents were posted on the STEP website:
 - Federal Register Notice;
 - FY2011 STEP implementation strategy;
 - STEP FY2011 Bulletin;
 - *STEP FY2009 Annual Report*;
 - STEP FY2009 accomplishments highlights fact sheet;
 - STEP webinar PowerPoint (PPT) presentation;
 - STEP webinar on livability PPT presentation;
 - STEP webinar on air quality and climate change PPT presentation;
 - FY2010 STEP research plan overview;
 - FY2010 STEP research plan;
 - FY2010 STEP emphasis area contact list; and
 - FY2010 STEP related proposal requests.

FHWA continued to utilize the STEP website by working with emphasis area contacts to better display new information about STEP events and products. For example, a STEP emphasis area highlights section was added to the “What’s New” section of the website at <http://www.fhwa.dot.gov/hep/step/index.htm>. This section provided links to emphasis area web pages and a calendar of events.

- **Financial Management Support for STEP and Planning and Environment Research and Program Initiatives. (FY2010: \$350,000).** Approximately 347 procurement requests and 19 allocation memos were processed 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'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.

In FY2010, 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.

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. For the past five fiscal years, FHWA has collected stakeholder feedback through a Web-based system. Stakeholders targeted their feedback towards one of the 18 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 200 pieces of feedback in FY2010 from the Web-based system.

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.

Notable Quotes from Stakeholders

"The STEP process continues to fund useful research for transportation planning practitioners that is critical for continuing to improve capacity building and the state-of-the-practice in planning."

-- National Association of Development Organizations Stakeholder

"STEP is a great program!"

-- University of Oregon Stakeholder

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 FY2010 comment period (September 4 through December 3, 2009).

Overall, the STEP 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).

A description of specific outreach efforts conducted by emphasis area contacts for the FY2010 STEP follows below.

Outreach efforts centered on attendance at events, conferences, workshops, roundtables, task groups, and in-person meetings. Information was delivered through publications, email, and electronic forums, including webinars, online newsletters, and online clearinghouses. Web-based outreach also included a series of virtual office sessions that communicated technical knowledge to a broader stakeholder community. Outreach activities reached all stakeholder tiers, including Federal agencies, State DOTs, MPOs, the academic community, and non-profit environmental organizations.

Meetings and conference participation included summer and annual TRB meetings and other events, such as the International Conference on Ecology and Transportation (ICOET), the TRB Environment and Energy Conference, the Preserving the Historic Road Conference, the National Mitigation Banking Association meeting, the Association of State Wetlands Managers meeting, the AASHTO Standing Committee on Design annual meeting, the AASHTO GIS for Transportation (GIS-T) 2010 Symposium, the 2010 Northern Transportation and Air Quality Summit, the TRB 2010 Tools of the Trade Conference, the 2010 AASHTO Air Quality Practitioners' Conference, the AASHTO/FHWA Joint Symposium on Climate Change, and a state engineering conferences in North Carolina and Ohio.

The purpose of these in-person meetings and conference presentations was to describe the STEP in general, discuss potential research activities, provide updates on ongoing initiatives, and encourage stakeholders to submit feedback through the online feedback mechanism.

Telephone outreach included conference calls as well as one-on-one calls. These efforts connected FHWA staff with representatives from staff at non-governmental and professional

organizations, advocacy groups, and Federal partner agencies. Email and website outreach also connected FHWA staff with representatives from State DOTs, MPOs, rural planning organizations, researchers, and other stakeholder groups. Email outreach included messages disseminated through stakeholder group listservs and email distribution lists.

STEP information was published in several publications, including FHWA's online monthly publication *Transportation Conformity Highlights*, which is widely distributed to all transportation and air quality agencies, and the monthly *Transportation and Climate Change* newsletter. Emphasis area contacts also provided STEP information through websites, such as the FHWA-sponsored Pedestrian and Bicycle Information Center, the CSS Clearinghouse, the TMIP website, and the AASHTO Center for Environmental Excellence's Transportation Environmental Research Ideas Database.

General STEP Outreach

Program managers and STEP program support staff undertook outreach via online publication of several STEP documents, including the FY2010 STEP Implementation Strategy, the STEP FY2010 Bulletin, the *FY2009 Annual Report* and the *FY2010 Research Plan*, and a bulletin on STEP research efforts relating to transportation and climate change. Additional outreach activities included two webinar presentations on STEP that provided an overview of the program and research activities.

FEEDBACK OVERVIEW

Over 200 comments were received between September and December 2009. In some cases, organizations or associations submitted feedback to several different emphasis areas that pertain to their work.

Some emphasis areas (e.g., Bicycles/Pedestrians) received a great deal of comments. All of the 18 emphasis areas received at least one comment.

The figures on the next page display the breakdown of comments received that pertain to the broad program areas and to the individual emphasis areas.

Figure 1: Distribution of Feedback by Program Area (FY2010)

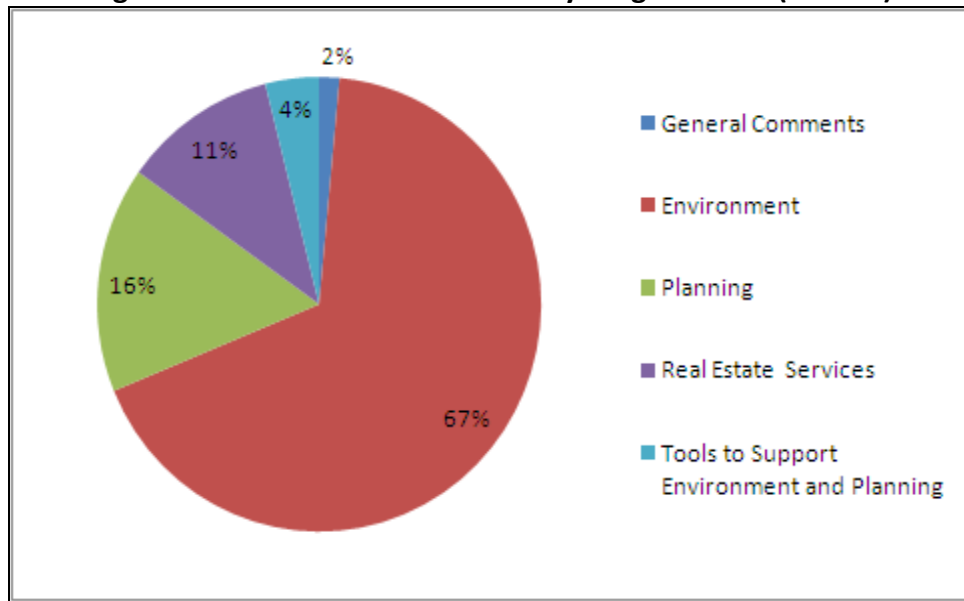
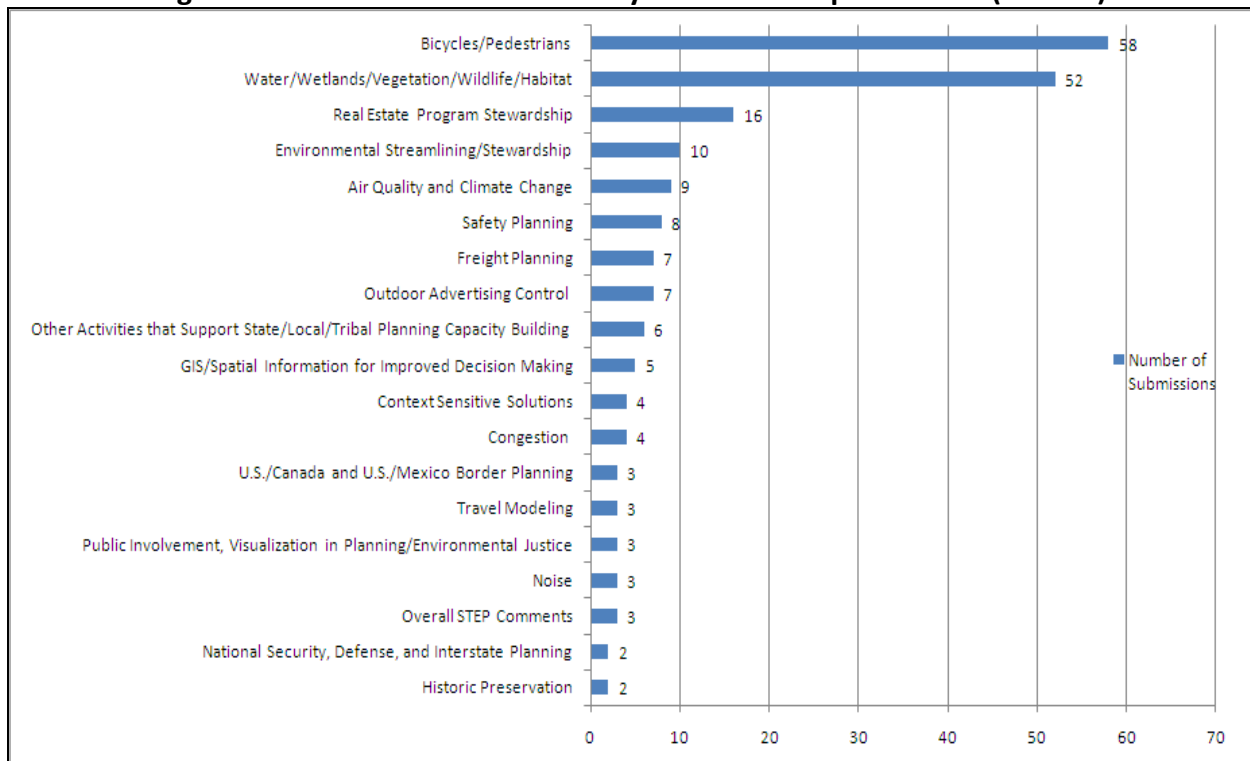


Figure 2: Distribution of Feedback by Individual Emphasis Area (FY2010)



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 FY2010 comments; see the tables that follow for a distribution of comments.

Table 1: Distribution of Feedback by Affiliation Type

	205	100%
Federal and Tribal Government	44	21%
State Government	62	30%
Local Government	19	9%
National Association	8	4%
Private Sector	13	6%
Research/Academic	23	11%
Individual Citizen	27	13%
Other	9	4%

Table 2: Distribution of Feedback by Tier

Comments Received to Date by Tier	205	100%
Tier 1 (Federal or Tribal Government)	44	21%
Tier 2 (State or Local Government)	81	40%
Tier 3 (National Association, Private Sector, Research/Academic, Individual Citizen, or “Other”)	80	39%

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.

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 December 2009 that pertains to each of the 18 emphasis areas as well as overall feedback on the 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](#)
- [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 Management](#)

Tools to Support Planning and Environment Emphasis Areas:

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

Program Management and Outreach

- [Overall Feedback](#)

Emphasis Areas Related to Environment

Air Quality and Climate Change

Nine comments were submitted to the Air Quality and Climate Change emphasis area. Approximately 22% of comments came from Tier I stakeholders and 22% of comments came from Tier II State government stakeholders. The remaining 56% of comments came from Tier III, with feedback from the private sector, research/academic institutions, and individual citizens. There were no comments from local governments, national associations, or stakeholders with other affiliations.

Several research suggestions in this area focused on evaluating the impacts of air quality and environmental health on human health, particularly among vulnerable groups (e.g., children) and in areas with high levels of air pollution. Other suggestions focused on the use of regional and local planning or GHG reduction campaigns to address transportation's contribution to climate change. One stakeholder suggested that these efforts should include identifying and promoting best practices in reducing GHG emissions. Others suggested focusing on the impacts of diesel engines on air quality, roving diesel retrofit crews, and anti-idling campaigns. Additional proposed lines of research were on the effects of climate change and maintaining ecosystem connectivity.

Current and planned research in this area includes a bi-national study of the impact of traffic-related air pollution on asthmatic children in Mexico and the U.S., various air quality monitoring and pollution inventory efforts, as well as identification and implementation of practices to support wildlife migration that occurs due to climate change. Several stakeholders reported that research in this area is broad and that specific, documented, and replicable means to calculate GHG emissions are needed.

Several potential funding sources were identified, including Federal sources such as the National Clean Diesel Campaign and USFWS' Landscape Conservation Cooperative. Potential State and regional funding sources include the Texas Commission on Environmental Quality and the Western Governors' Association. Private sources cited included the Liz Claiborne/Art Ortenberg Foundation, the Kendall Foundation, and the National Fish and Wildlife Foundation.

Water/Wetlands/Vegetation/Wildlife/Habitat

Fifty-two comments were submitted to the Water/Wetlands/Vegetation/Wildlife/Habitat emphasis area. Approximately 37% of comments came from Tier I stakeholders and 37% of comments came from Tier II stakeholders. The remaining 27% of comments came from Tier III, with feedback from the private sector and research/academic institutions. There were no comments from national associations, individual citizens, or stakeholders with other affiliations.

Many research suggestions in this area highlighted the need to minimize the impact of highways on surrounding wildlife. Proposed avenues for research included reducing wildlife-vehicle collisions, evaluating wildlife crossings and cost-effective means to promote wildlife connectivity, and studying the underwater sound effects of pile driving on endangered fish species. Many stakeholders also indicated a need for vegetation research, particularly as related to the prevention, management, and eradication of non-native species. Other highlighted areas of research included exploring and evaluating methods to reduce or eliminate mowing and researching stormwater management and runoff.

Several research efforts exist or are being planned by academic institutions, State DOTs, resource agencies, and local, State, and Tribal governments. These efforts will study environmentally sensitive transportation planning and the effectiveness and environmental impact of methods for controlling invasive species. Other planned and existing initiatives will track wildlife to determine the effectiveness of wildlife crossings,

including a collaborative effort between the Montana DOT, the Western Transportation Institute, and the Confederated Salish and Kootenai Tribes.

Potential funding opportunities include State DOTs, USFWS' State Wildlife Grant Program, the Tribal Wildlife Grant Program, the Landscape Conservation Cooperative Initiative, and grants from the U.S. Department of Agriculture Cooperative State Research, Education, and Extension Service and the Agriculture and Food Research Initiative. Other funding sources could include the California Deer Association, Trout Unlimited, the National Forest Foundation, the Nature Conservancy, and private corporations such as Dow Agro Sciences, Bayer, DuPont, and BASF.

Historic Preservation

Two comments were submitted to the Historic Preservation emphasis area. All comments came from Tier II State government stakeholders. There were no comments from Federal, Tribal, or local government stakeholders, national associations, the private sector, research/academic institutions, individual citizens, or other stakeholders.

Stakeholders suggested that more targeted research is needed in this emphasis area. One stakeholder suggested conducting research on historically accurate treatments for historic roadways listed in the National Register of Historic Places.

One stakeholder referred to the National Cooperative Highway Research Program (NCHRP) Report 554 (*Aesthetic Concrete Barrier Design*) as an example of current research in this emphasis area. Stakeholders did not identify any potential funding sources in this research area.

Bicycles/Pedestrians

Fifty-eight comments were submitted to the Bicycles/Pedestrians emphasis area. Approximately 3% of comments came from Federal Tier I stakeholders and 31% of comments came from Tier II stakeholders. The remaining 66% of comments came from Tier III stakeholders, with feedback from national associations, the private sector, research/academic institutions, individual citizens, and other stakeholders. There were no comments from Tribal government stakeholders.

Many stakeholders in this area suggested that research efforts concentrate on bicycle and pedestrian safety, including the effect of bicycle/pedestrian facilities and various roadway designs on safety. A significant number of comments also focused on the general health implications of active transportation as well as implications for specific populations such as senior citizens, children, and commuters. Several stakeholders also suggested research on ways to encourage bicycle commuting, including policies for bicycles in transit systems and bicycle parking availability. Another proposed research topic was the incorporation of bicycle and pedestrian facilities and accommodations such as crosswalks, bike lanes, signals, signs, and handrails into roadway designs. Other topics included the need for increased data collection efforts and bicycle sharing programs.

Several research efforts by State DOTs, academic institutions, transportation research organizations, and bicycle and pedestrian advocacy groups are currently planned or underway. These studies generally focus on the effectiveness of bicycle and pedestrian facilities, treatments, and signals, the effects of active transportation on physical health and academic achievement, and effective means for collecting accurate bicycle and pedestrian data.

Proposed funding sources include several Federal agencies, including EPA, the Centers for Disease Control and Prevention, and the U.S. Access Board. Transportation research programs like NCHRP, TRB, and University Transportation Centers (UTCs) were also identified as possible sources of funding. Additional suggested sources included bicycle and pedestrian advocacy groups like Bicycles Belong, the League of American Bicyclists, and the Alliance for Biking and Walking, non-profit organizations like the Robert Wood Johnson Foundation and the Henry J. Kaiser Family Foundation, as well as private corporations such as FedEx and various bicycle manufacturers.

Noise

Three comments were submitted to the Noise emphasis area. One comment was submitted by a Tier II State government stakeholder while the remaining two comments were submitted by Tier III stakeholders from the private sector. No comments were submitted by Federal, Tribal, or local government stakeholders, national associations, research/academic institutions, individual citizens, or other stakeholders.

Stakeholders in this emphasis area recommended that research efforts focus on completing updates to and the TNM and developing NHI courses on topics such as tire and pavement noise, construction noise, and noise-compatible planning.

One stakeholder indicated that modifications to the TNM are currently underway but will require additional funding for implementation. Another stakeholder referred to existing research by TRB's Committee on Transportation-Related Noise and Vibration.

Potential funding sources in this area included TRB, AASHTO, and the transportation pooled-fund program.

Environmental Streamlining/Stewardship

Ten comments were submitted to the Environmental Streamlining/Stewardship emphasis area. About one-third of comments came from Federal Tier I stakeholders and 50% of comments came from Tier II State government stakeholders. The remaining 20% of comments came from Tier III stakeholders, with feedback from research/academic institutions and other stakeholders. There were no comments from Tribal or local government stakeholders, national associations, the private sector, or individual citizens.

Several stakeholders in this emphasis area focused on assessing the effectiveness of wildlife crossings and efforts to maintain habitat connectivity. Others highlighted the need for research into mapping systems for environmental streamlining, including integrating natural, archaeological, and historic GIS mapping layers into environmental permitting and

mitigation activities. One stakeholder indicated a need for research on the environmental effects of diminishing green space on highway ROW. Another stakeholder suggested identifying existing tools used to track restrictions on contaminated property that limit land or resource use.

Stakeholders highlighted several existing or planned research efforts in this emphasis area, including the use of an *Eco-Logical* grant to develop a cost surface for natural resource values and a four-year effort to monitor newly built wildlife crossing structures. Other efforts are also underway to integrate resource management with transportation planning through regional GIS and to compile state environmental datasets for contaminated property restrictions.

Proposed sources of funding included EPA, FHWA, USFWS, State DOTs, and non-profit organizations such as the Liz Claiborne/Art Ortenberg Foundation, the Kendall Foundation, and the National Fish and Wildlife Foundation.

Context Sensitive Solutions

Four comments were submitted to the Context Sensitive Solutions emphasis area. All comments came from Tier II State and local government stakeholders. There were no comments from Federal or Tribal government stakeholders, national associations, the private sector, research/academic institutions, individual citizens, or other stakeholders.

Several stakeholders in this emphasis area indicated that research efforts should focus on the effectiveness of various context sensitive solutions in addressing issues such as wildlife connectivity and multi-modal safety. For instance, one stakeholder suggested exploring the correlation between bicycle and pedestrian-safe streets and overall safety. Another stakeholder proposed tracking the success or failure of landscape mitigation efforts for historic resources to develop recommendations and guidance for future mitigation efforts. Guidance on uses of context sensitive solutions in highway corridor master planning was also highlighted as a potential topic for research.

Current or proposed research includes an effort by ITE to assess the crash reduction factors of medians and improved crossings. Stakeholders also highlighted research efforts by State DOTs and other transportation research organizations.

Potential cited funding sources included ITE, TRB, FHWA, AASHTO, and State DOTs.

Emphasis Areas Related to Real Estate Services

Outdoor Advertising Control

Seven comments were submitted to the Outdoor Advertising Control emphasis area. No comments were submitted by Tier I stakeholders. Approximately 71% of comments were submitted by Tier II State government stakeholders while about 21% of comments were submitted by Tier III national association stakeholders. No comments were submitted by Federal, Tribal, or local government stakeholders, the private sector, research/academic institutions, individual citizens, or other stakeholders.

Primary suggested research topics in this emphasis area included establishing standard definitions for routine and customary maintenance on conforming and non-conforming signs. Stakeholders also identified a need to research and develop brightness standards for commercial electronic variable message signs and conventional billboards. Other proposals included developing policies and guidance for defining unzoned commercial areas and predominantly residential areas and improving communication and information dissemination for the Federal outdoor advertising control program.

Stakeholders identified conferences hosted by the National Alliance of Highway Beautification Agencies and AASHTO, international scans, and the development of national standards and definitions as examples of existing or planned research.

Stakeholders identified FHWA, STEP, and industry, including the Outdoor Advertising Association of America, Inc., as potential sources of funding for research.

Real Estate Program Stewardship

Sixteen comments were submitted to the Real Estate Program Stewardship emphasis area. About three-quarters of comments were submitted by Tier I Federal stakeholders. Approximately 19% of comments were submitted by Tier II State government stakeholders while the remaining approximately 6% of comments were submitted by Tier III stakeholders from national associations. No comments were submitted by Tribal or local government stakeholders, the private sector, research/academic institutions, individual citizens, or other stakeholders.

Recommended research efforts included revising guidance on real estate legislation and regulations and developing a nationwide standard for acceptable levels of driver distraction caused by non-highway uses of ROW. Several stakeholders requested the development of best practice case studies on topics such as using incentive payments for faster ROW acquisition and identifying and mitigating negative human impacts caused by transportation projects. Professional capacity building and education were other areas suggested for additional research. For example, stakeholders proposed developing real estate training and guidance for Tribal governments, rural municipalities, and local public agencies.

Stakeholders described several existing or planned research efforts, including a report on acquiring easements on Native American lands, an FHWA peer exchange on the use of acquisition incentive payments, and a study of rural communities' transportation needs. One stakeholder discussed an initiative that uses GIS to assess ROW suitability to generate wind and solar electricity and cultivate bio-fuel feedstock.

Potential funding sources in this emphasis area include FHWA, the Federal Lands Highway Indian Reservation Road Program, and sustainable communities initiatives by HUD, the U.S. Department of Energy, and EPA.

Emphasis Areas Related to Planning

Congestion

Four comments were submitted to the Congestion emphasis area. Approximately one-quarter of comments came from Tier II local government stakeholders and 75% of comments came from Tier III with feedback from the private sector and individual citizens. There were no comments from Federal, Tribal, or State government stakeholders, national associations, research/academic institutions, or other stakeholders.

Comments suggested research into the causes of and remedies for congestion. One stakeholder recommended studying the effect of speed on capacity in urban areas and another highlighted a need for more dynamic analysis tools to diagnose and address congestion. Others suggested that research efforts focus on signal programming, specifically the use of “green waves,” to allow extended travel in one direction. Additional efforts focused on timing signals to take into account the number of transit vehicles, transit passengers, and bicyclists present at an intersection.

Stakeholders provided little information about current or planned research in this emphasis area; however, one stakeholder highlighted the use of “green waves” in Copenhagen and Amsterdam to facilitate bicycle traffic.

One stakeholder proposed that livability grants from States and MPOs could be used to fund research in this emphasis area.

Safety Planning

Eight comments were submitted to the Safety Planning emphasis area. Twenty-five percent of comments were submitted by Tier I Federal stakeholders and 63% of comments were submitted by Tier II State and local government stakeholders. Approximately 13% of comments were submitted by Tier III stakeholders (individual citizens). No comments were submitted by Tribal government stakeholders, national associations, the private sector, research/academic institutions, or other stakeholders.

Stakeholders identified several topics for research, including the effectiveness of wildlife crossing structures, the relationship between roadway design and bicycle and pedestrian safety, and the development of technologies to prevent vehicle-train collisions. Another stakeholder proposed research to evaluate transit safety issues.

Stakeholders identified two existing safety planning research efforts. The Michigan DOT is currently researching the possibility of eliminating urban freeway slip ramps on two Interstates to improve non-motorized transportation safety. Another study is evaluating wildlife crossing structures on the Trans-Canada Highway and highways in the Rocky Mountains.

Freight Planning

Seven comments were submitted to the Freight Planning emphasis area. No comments came from Tier I stakeholders. Approximately 71% of comments came from Tier II local government stakeholders while the remaining 29% of comments came from Tier III stakeholders, with feedback from research/academic

institutions and other stakeholders. There were no comments from Federal, Tribal, or State government stakeholders, national associations, the private sector, or individual citizens.

Several comments submitted in this emphasis area highlighted the need for better freight planning data that account for the value of commodities moved. Some stakeholders also identified a need for studies to evaluate the impact of freight transfer facilities on transportation systems, including one suggestion to involve large manufacturing and industrial entities in this type of evaluation. Another stakeholder proposed creating a guidebook to aid local governments and MPOs in truck traffic planning.

Some research is currently underway or planned in this emphasis area, including a truck planning initiative by the Atlanta Regional Council and the use of intelligent transportation systems data in freight planning models.

Several potential funding sources were identified, including Surface Transportation Program/Metropolitan Mobility funds, NCHRP, State DOTs, and private corporations.

Public Involvement, Visualization in Planning/Environmental Justice

Three comments were submitted to the Public Involvement, Visualization in Planning/Environmental Justice emphasis area. No comments were submitted by Tier I stakeholders. Approximately 66% of comments were submitted by Tier II State government stakeholders while approximately 33% of comments were submitted by Tier III stakeholders (individual citizens). No comments were submitted by Federal, Tribal, or local government stakeholders, national associations, the private sector, research/academic institutions, or other stakeholders.

Stakeholders identified a need for several lines of research, including a pilot project to deploy innovative public involvement tools and techniques and development of objective measures to assess the pilots as well as more traditional public involvement efforts. Others identified environmental justice research needs, including an evaluation of the impacts of tolling strategies on minority groups and a study of the motivations and priorities of private organizations as they relate to socially and environmentally focused public-private partnerships.

Stakeholders mentioned general NCHRP, Transit Cooperative Research Program (TCRP), and other research in this emphasis area but did not identify specific efforts.

Potential sources of funding for research in this area could include foundations, local governments, the Federal Transit Administration, and TRB research groups.

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

Six comments were submitted to the Other Activities that Support State/Local/Tribal Planning Capacity Building emphasis area. One comment was submitted by a Tier I Federal government stakeholder and approximately two-thirds of comments were submitted by Tier II State government stakeholders. Another comment was submitted by a Tier III stakeholder from a national association. No comments were submitted by Tribal or local government stakeholders, the private sector, research/academic institutions, individual citizens, or other stakeholders.

Feedback in this emphasis area highlighted a need for additional information about implementing effective corridor master planning and the relationships between regional and State agencies in planning areas such as freight and safety. Stakeholders also identified a need for studies to assess the effectiveness of newly constructed fish and wildlife crossing structures for effectiveness and the impact of one-way streets on historic districts. One stakeholder also proposed creating a web-based application for Section 106 coordination that would allow Tribal partners and regional commissions to more easily access password-protected documents like State Historic Preservation Officer concurrence letters.

Existing or planned research efforts in this emphasis area include rural transportation planning and state, regional, and local safety planning studies.

Stakeholders identified USFWS Tribal Wildlife Grants, STEP, NCHRP, State DOTs, UTCs, and transportation enhancement funds as several potential sources of funding for research in this emphasis area.

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

Three comments were submitted to the U.S./Canada and U.S./Mexico Border Planning emphasis area. One comment was submitted by a Tier I Federal government stakeholder, while the remaining 66% of comments were submitted by Tier II State government stakeholders. No comments were submitted by Tribal or local government stakeholders, national associations, the private sector, research/academic institutions, individual citizens, or other stakeholders.

Stakeholders suggested research on offsite pre-inspection of commercial vehicles, truck harmonization between border states and provinces, and streamlining of legislation, regulation, and policy that currently hinder cross-border truck and rail freight mobility. One stakeholder also suggested a research focus on green initiatives for corridor and border transportation.

Stakeholders described an existing research effort to implement rail passenger preclearance procedures to reduce border crossing delays as well as creating a cross border planning team to coordinate infrastructure, safety, and security planning at the Port of Pembina in North Dakota and the Emerson Port of Entry in Manitoba.

Stakeholders identified state planning and research funds, as well as FHWA and Canadian government agencies as potential sources of funding. One stakeholder also suggested that Section 1105 of the Freight Improvement Program should be expanded to include all freight modes and provide funding for research and pilot projects.

National Security, Defense, and Interstate Planning

Two comments were submitted to the National Security, Defense, and Interstate Planning emphasis area. The comments were submitted by Tier III stakeholders who represented a national association and a research/academic institution. There were no comments from Federal, Tribal, State, or local government stakeholders, the private sector, individual citizens, or other stakeholders.

Stakeholders in this emphasis area identified interstate connectivity as a topic for additional research. For example, one stakeholder suggested research into the interconnectivity between mega-regions and surrounding rural communities, the role of existing facilities in transporting goods and people to or

within mega-regions, and the correlation between economic activity and transportation infrastructure in mega-regions. Another stakeholder proposed documenting the level of use of NHS intermodal facilities in a defined multi-state study area, which could evolve into a pilot project to identify the location of and measure the use of NHS intermodal terminals.

Existing research efforts in this area have identified mega-regions, evaluated the use of public long distance travel within the Northeast mega-region, and studied the extent to which aviation planning has been integrated into surface transportation planning.

Potential funding sources included the Economic Development Administration, Federal/State regional commissions, private foundations, NCHRP, the Airport Cooperative Research Program, and TCRP.

Emphasis Areas Related to Tools to Support Planning and Environment

Travel Modeling

Three comments were submitted to the Travel Modeling emphasis area. No comments were submitted by Tier I or Tier II stakeholders. All comments were submitted by Tier III private sector stakeholders and individual citizens. No comments were submitted by Federal, State, Tribal, or local government stakeholders, national associations, research/academic institutions, or other stakeholders.

One stakeholder suggested linking vehicle miles traveled (VMT) growth modeling to energy production in order to present realistic VMT growth trends in long-range transportation plans. Another stakeholder suggested that FHWA encourage MPOs and State DOTs to use 2008 National Household Transportation Survey data in collaborative projects to advance the state of applied travel demand models. Another proposed effort focused on improving the ability of travel demand models to predict travel patterns.

Stakeholders identified FHWA and the TMIP as potential funding sources.

GIS/Spatial Information for Improved Decision Making

Five comments were submitted to the GIS/Spatial Information for Improved Decision Making emphasis area. Forty percent of comments came from both Tier I stakeholders and 40% of comments came from Tier II local government stakeholders. The remaining 20% of comments came from Tier III stakeholders (representing research/academic institutions). There were no comments from Tribal or State government stakeholders, national associations, the private sector, individual citizens, or other stakeholders.

Several stakeholders suggested efforts to expand the use existing geospatial tools, such as EPA's GIS Screening Tool and the U.S. Geological Survey's (USGS) STREAMSTATS tool. Other stakeholders identified the need for more accurate and comprehensive geospatial land use modeling and transportation planning. Stakeholders also identified several geospatial tools that are relevant to transportation and should be expanded. For instance, USGS currently works with transportation agencies to develop flood-flow regression equations for use with its STREAMSTATS system.

Stakeholders suggested several funding sources, including EPA, USGS, and State, Tribal, and local water resource agencies.

Overall STEP Comments

Three comments were submitted to the Overall STEP Comments emphasis area. No comments were submitted by Tier I stakeholders. Approximately 33% of comments were submitted by Tier II State government stakeholders while approximately 66% of comments were submitted by Tier III stakeholders representing national associations and research/academic institutions. No comments were submitted by Federal, Tribal, or local government stakeholders, the private sector, individual citizens, or other stakeholders.

Stakeholders identified several potential areas of research, including efforts to evaluate the connection between urban design and transportation behavior, studies on multi-modal rail systems, and analyses of the costs, benefits, and risks of various planning practices, including green infrastructure planning. Other suggestions focused on integrating GHG reduction and adaptation measures into transportation planning, applying FHWA's *Eco-Logical* principles during project development, and integrating transportation planning and NEPA processes. An additional proposal was to conduct best practice case studies on using natural resource mapping for transportation planning.

Stakeholders in this emphasis area highlighted several existing research efforts, including work by the University of Oregon's Sustainable Cities Initiative and the USDOT's Corridors of the Future initiative.

Stakeholders identified several Federal and State funding sources for these potential research areas, including FHWA, the Federal Railroad Administration, the Departments of Energy, Defense, and Homeland Security, the Regional Transportation Commission of Southern Nevada, and various State DOTs.