

Program Progress Performance Report

Submitted to: USDOT – Research and Innovative Technology Administration

Federal Grant: #DTRT12-G-UTC06

Project Title: Southwest Region University Transportation Center

Program Director: Dock Burke, Director, d-burke@tamu.edu, (979) 845-5815

Submitting Official: Barbara Lorenz, Program Coordinator, b-lorenz@tamu.edu, (979) 845-8861

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Recipient Organization: Texas Transportation Institute, Texas A&M University System, 3135 TAMU, College Station, TX 77843-3135

Recipient Identifying Number: 600451

Grant Period: January 1, 2012 – December 30, 2013

Reporting Period End Date: December 30, 2012

Report Term: Semi-annual - July 1, 2012 – December 30, 2012



Dock Burke - Director

1. Accomplishments:

SWUTC Goals as stated in *SWUTC Prospectus* – to produce research, education and workforce development and technology transfer initiatives that serve the needs of Region 6 and support the five strategic goals of the USDOT.

SWUTC Goal #1: Research Program

For 1st year of grant funding:

Call for Problem Statements – 100% complete – Call was issued January 31, 2012.

Review Problem Statements and Select Projects for Funding - Early March 2012 – 100% complete.

- 100% of TTI projects selected on March 2, 2012. Total number of projects: 14
- 100% of UT-Austin projects selected on March 26, 2012. Total number of projects: 14
- 100% of TSU projects selected on March 26, 2012. Total number of projects: 5
- 100% of CETR projects selected on May 1, 2012. Total number of projects: 8

Proposals Finalized and Projects Activated – 100% complete:

- TAMU State of Texas-General Revenue projects activated April 1, 2012
- TAMU USDOT projects activated May 1, 2012
- UT-Austin State of Texas-General Revenue projects activated April 1, 2012
- UT-Austin USDOT projects activated May 1, 2012
- TSU State of Texas-General Revenue Projects activated April 1, 2012
- TSU Federal Funded Projects activated August 1, 2012.
- CETR Federal Funded Projects activated December 1, 2012.

Some research efforts deferred their initiation date to September 1, 2012 to better coincide with the standard university fiscal year. Additionally, some delays were encountered in processing subcontracts to consortium members.

Listing of FY12 projects, initiation dates and status:

Initiation Date	Study Title	Consortium Member	Current Status
1/1/12	Performance of Permeable Friction Course (PFC) Pavements Over Time (continuation)	TAMU	In Progress
1/1/12	Search for a Test for Fracture Potential of Asphalt Mixes	TAMU	In Progress
1/1/12	Evaluate Binder and Mixture Aging for Warm Mix Asphalts	TAMU	In Progress
1/1/12	Texas-Specific Drive Cycles and Idle Emissions Rates for Using with EPA's MOVES Model	TAMU	In Progress
4/1/12	Urban Mobility Report	TAMU	In Progress
4/1/12	A Comprehensive Characterization of Asphalt Mixtures in Compression	TAMU	In Progress
4/1/12	A Comprehensive VMT Fee Equity Impact Analysis	TAMU	In Progress

4/1/12	Decision Theory Models for Selecting Traffic Control Devices	TAMU	In Progress
4/1/12	Sustainability of Transportation Structures Using Composite Materials to Support Growth and Trade	TAMU	In Progress
4/1/12	Enhanced Adaptive Signal Control using Dedicated Short Range Communications	TAMU	In Progress
4/1/12	Evaluation of the Effectiveness of Voice-to-Text Programs at Reducing Incidences of Distracted Driving	TAMU	In Progress
4/1/12	Fatigue Modeling of Hot Mix Asphalt Using Field Samples to Ensure a State of Good Repair	TAMU	In Progress
4/1/12	Improvements to the Urban Mobility Report Methodology	TAMU	In Progress
4/1/12	Novel Transit Signal Priority under the Connected Vehicle Framework	TAMU	In Progress
4/1/12	U in the Driver Seat	TAMU	In Progress
4/1/12	Decision-Support Framework for Quantifying the Most Economical Incentive/Disincentive Dollar Amounts for Critical Highway Pavement Rehabilitation Projects	TAMU	In Progress
4/1/12	Travel Surveys: Moving from Tradition to Innovation	TAMU	In Progress
9/1/12	An Analysis of Freight Network Reliability in the Louisiana/Texas Gulf Coast Region	TAMU	In Progress
5/1/12	Workability of Asphalt Binders at Mixing Temperatures for Hot and Warm Mix Asphalt	UT-Austin	In Progress
5/1/12	The Transportation-Related Causes and Consequences of Land Use Change	UT-Austin	In Progress
5/1/12	Local Infrastructure to Support the Widespread Use of Hybrid/All Electric Vehicles: What Programs and Public Policies are Likely to Work to Promote Environmental Sustainability and Livable Communities	UT-Austin	In Progress
5/1/12	Game Theory and Traffic Assignment: Refinements, Stability, and Tractability	UT-Austin	In Progress
5/1/12	Multistate Megaregion Freight Planning Benefits: Evidence from Louisiana-Texas	UT-Austin	In Progress
5/1/12	Life-cycle Costs and Benefits of Different Land Use and Transportation Patterns	UT-Austin	In Progress
5/1/12	Real Time Optimization of Passenger Collection for Commuter Rail Systems	UT-Austin	In Progress
5/1/12	Development of an Interactive GIS Based Work Zone Traffic Control Design Tool	UT-Austin	In Progress
5/1/12	Developing a Research Agenda to Increase Cycling in the African American Community: A Case Study of Austin, TX	UT-Austin	In Progress
5/1/12	Quantification of Infrastructure Consumption under Different Axle Configurations and Wheel Loads	UT-Austin	In Progress

5/1/12	Private vs. Public Financing of Transportation Systems	UT-Austin	In Progress
5/1/12	Transportation Funding for a Changing Light-Duty Vehicle Fleet: Pricing Model and Evaluation of Impacts on Society	UT-Austin	In Progress
5/1/12	Future Mobility Demand in Megaregions: A National Study with a Focus on the Gulf Coast	UT-Austin	In Progress
5/1/12	Develop a System to Support Preparation of Life-Cycle Budget Needs for Highways (Continuation of SWUTC Project 161128)	UT-Austin	In Progress
7/1/12	Sustainable Transportation for Texas Southern University	TSU	In Progress
7/1/12	Evaluating Safety Performance and Developing Guidelines for the Use of Right Turn on Red (RTOR)	TSU	In Progress
8/1/12	The Impact of the Conversion of Incandescent Bulbs to LED Bulbs for Traffic Lights in Houston: A Step Toward Sustainable Control Devices	TSU	In Progress
8/1/12	Developing a Methodology for Projecting Intercity Commuting	TSU	In Progress
8/1/12	Left-Turn Lanes at Unsignalized Median Openings	TSU	In Progress
12/1/12	Mega-Region Traffic Modeling Project	CETR/LSU	In Progress
12/1/12	Calibration of the Louisiana Highway Safety Manual	CETR/LSU	In Progress
12/1/12	Effects of Changing Driving Conditions on Driver Behavior Towards Design of a Safe and Efficient Traffic System	CETR/LSU	In Progress
12/1/12	Use of Containers to Carry Bulk and Breakbulk Commodities and Its Impact on Gulf Region Ports and International Trade	CETR/UNO	In Progress
12/1/12	Cooperation and Competition - Regional Transportation Planning and Competitive Federal Awards	CETR/UNO	In Progress
12/1/12	States' Tools for Connecting Transportation and Affordable Housing	CETR/UNO	In Progress
12/1/12	The Confluence of Transportation and Economic Activity in a Mega Region Disaster	CETR/UNO	In Progress
12/1/12	Accessing the Mega-Region: Evaluating the Role of Livable Community Patterns in Gulf Coast Mega-Region Planning	CETR/UNO	In Progress

For 2nd year of grant funding:

Call for Problem Statements issued: August 13, 2012

Review Problem Statements and Select Projects for Funding:

100% of TTI projects selected on September 4, 2012. Total number of projects: 20
 100% of UT-Austin projects selected on October 30, 2012. Total number of projects: 14
 50% of TSU projects selected on October 30, 2012. Total number of projects: 3
 0% of CETR projects selected. Total number of projects: 0

Proposals Finalized and Projects Activated:

TAMU State of Texas-General Revenue projects activated November 1, 2012
 TAMU SPR projects activated September 1, 2012.
 TAMU USDOT projects not yet activated. Award agreement not yet received from RITA.
 UT-Austin State of Texas-General Revenue projects activated December 1, 2012.
 UT-Austin USDOT projects not yet activated. Award agreement not yet received from RITA.
 TSU State of Texas-General Revenue Projects activated December 1, 2012.
 TSU USDOT projects not yet activated. Award agreement not yet received from RITA.
 CETR USDOT projects not yet selected.

Listing of FY13 projects currently selected, initiation dates and status:

Initiation Date	Study Title	Consortium Member	Current Status
11/1/12	Urban Mobility Report (continuation)	TAMU	In Progress
11/1/12	Next Generation Safety Performance Monitoring at Signalized Intersections Using Connected Vehicle Technology	TAMU	In Progress
11/1/12	How do Travelers Perceive and Value Travel Time Reliability	TAMU	In Progress
11/1/12	Strategic Transportation Finance Clearinghouse	TAMU	In Progress
	Developing the Hydraulics, Sedimentation and Erosion Control Laboratory to Become a Hands-on Training and Education Center	TAMU	In Progress
11/1/12	Micro Crack Growth in Recycled Asphalt Mixtures	TAMU	In Progress
11/1/12	A Novel Approach to Modeling and Predicting Crash Frequency at Urban Intersections by Crash Type and Injury Severity Level	TAMU	In Progress
Pending	Game-theoretic Analysis of Dynamic Traffic Equilibria	UT-Austin	Awaiting Subcontract Approval
Pending	Impact of the Gulf Intracoastal Waterway (GIWW) on Freight Flows in the Texas-Louisiana Megaregion	UT-Austin	Awaiting Subcontract Approval
Pending	Anticipating Long-Term Energy and GHG Emissions Impacts of Autonomous Vehicles	UT-Austin	Awaiting Subcontract Approval

Pending	Real Time Optimization of Passenger Collection for Commuter Rail Systems (continuation of FY12 study)	UT-Austin	Awaiting Subcontract Approval
Pending	Improving the Reliability of Automated Freeway Incident Detection Using Multiple Real Time Data Sources	UT-Austin	Awaiting Subcontract Approval
Pending	Changing Perceptions of Cycling in the African American Community to Encourage Participation in a Sport that Promotes Health in Adults	UT-Austin	Awaiting Subcontract Approval
Pending	Effect of Aggregate Micro- and Macro-texture on Pavement Skid Resistance	UT-Austin	Awaiting Subcontract Approval
Pending	Financial Arrangements for Alternative Delivery Techniques for Transportation Programs and Projects	UT-Austin	Awaiting Subcontract Approval
Pending	Policy Implications of Emerging Vehicle and Infrastructure Technology	UT-Austin	Awaiting Subcontract Approval
Pending	Identifying the Local and Regional Travel Effects of Activity Centers in the Austin, Texas Area	UT-Austin	Awaiting Subcontract Approval
Pending	An Integrated Approach to Managing the Transportation System	UT-Austin	Awaiting Subcontract Approval
12/1/12	Hot Spot Analysis of Teen Drivers in Houston Texas	TSU	In Progress
12/1/12	Use of Directional Median Openings on Urban Roadways	TSU	In Progress
Pending	Examining the Market Potential for Natural-Gas-Powered Trucks: Barriers and Opportunities for Promoting Environmental Sustainability and Economic Prosperity	UT-Austin	Awaiting Subcontract Approval
9/1/12	Evaluate Binder and Mixture Aging for Warm Mix Asphalts	TAMU	In Progress
9/1/12	Use of Recycled Asphalt Shingles in HMA	TAMU	In Progress
9/1/12	Texas-Specific Drive Cycles and Idle Emissions Rates for Using with EPA's MOVES Model	TAMU	In Progress
9/1/12	Preparing for EPA Effluent Limitation Guidelines	TAMU	In Progress
9/1/12	Collection of Materials and Performance Data for Texas Flexible Pavement and Overlays	TAMU	In Progress
9/1/12	Intelligent Transportation System (ITS) Strategic Plan	TAMU	In Progress
9/1/12	Improving Fracture Resistance in Asphalt Binder with Verification on Asphalt Mixture Cracking Performance	TAMU	In Progress
9/1/12	Rapid Field Detection of Moisture for Base and Subgrade	TAMU	In Progress
9/1/12	Develop a Pavement Project Evaluation Index to Support the 4-Year Pavement Management Plan	TAMU	In Progress
9/1/12	Evaluation of the I-10 Katy Freeway Managed Lanes	TAMU	In Progress

9/1/12	Development of Pedestrian Crash Countermeasures & CRF	TAMU	In Progress
9/1/12	Surface Treatments to Alleviate Crashes on Horizontal Curves	TAMU	In Progress
9/1/12	Spread Prestressed Concrete Slab Beams	TAMU	In Progress
9/1/12	Methods to Maximize Toll Revenues	TAMU	In Progress
9/1/12	Performance Studies and Future Directions for Mixes Containing RAP and RAS	TAMU	In Progress
9/1/12	New HMA Shear Resistance & Rutting Test for Texas Mixes	TAMU	In Progress
9/1/12	Seal Coat Quality: Does Low Cost Mean Low Quality?	TAMU	In Progress
9/1/12	Maintaining Project Consistency with an Emphasis on Maintaining Air Quality Conformity	TAMU	In Progress
9/1/12	Maximizing Mitigation Benefits - Making a Difference with Strategic Inter-Resource Agency Planning	TAMU	In Progress
9/1/12	Wrong Way Driving Countermeasures	TAMU	In Progress
Pending	Controlling Electrical Conductivity of Asphalt Concrete for Multifunctional Applications	TAMU	Federal Award Being Processed
Pending	Zone/fleet Sizing for MAST (Mobility Allowance Shuttle Transit) Services	TAMU	Federal Award Being Processed
Pending	Forecasting the Impacts of Shale Gas Developments on Public Health and Transportation Systems on Both Sides of the Mexico-USA Border	TAMU	Federal Award Being Processed
Pending	Sustainability of Bridge Foundations Using Electrical Resistivity and Induced Polarization to Support Transportation Safety	TAMU	Federal Award Being Processed
Pending	Policy Implications of Automated Vehicles on Texas Highways	TAMU	Federal Award Being Processed

Research Results Disseminated: Nothing to report. All research efforts currently in progress or awaiting initiation.

Plans for Next Reporting Period to Accomplish Research Goal:

- Provide support, guidance and assistance to project Principal Investigators so individual research project objectives can be achieved in compliance with approved work plans.
- Complete identification of projects to be funded at Texas Southern University, Louisiana State University and the University of New Orleans.
- Activate federal projects once award notice is received.

SWUTC Goal #2: Education and Workforce Development Programs

SWUTC **graduate scholarship programs** continue uninterrupted from old grant to new grant. The SWUTC continues to support graduate programs. The ultimate goal of the SWUTC graduate program is to prepare a highly qualified cadre of new professionals into transportation science. These programs provide stipends to students to participate in classroom and sponsored research activities. In addition, the program provides increased communications skills as students make presentations, participate in debates, and write proposals and reports. Students also participate in technical tours and professional meetings throughout the year.

Current Status:

Transportation Scholars Program at Texas A&M University - Number of students currently in program: 8 (full tuition, fees and stipend support)

Advanced Institute at the University of Texas at Austin – Number of students currently in program: 15 (receiving full tuition, fees and stipend support) 9 (just tuition and fees)

Graduate Stipend Program at Texas Southern University – Number of students currently in program: 4 (receiving stipend support)

Summer Undergraduate Fellows Programs

The SWUTC Summer Undergraduate Fellows Programs at the University of Texas at Austin and Texas A&M University continue to be extremely successful recruiting endeavors to attract a diverse group of students into the graduate programs in transportation. Each year, the Summer Undergraduate Fellows Programs recruit juniors and seniors from other universities and from diverse academic backgrounds into a summer-long program in transportation research and education as a first step towards graduate study in transportation. The students at both UT-Austin and TAMU have the opportunity to work with graduate students, faculty members, and researchers and are also exposed to research through meetings with project sponsors and weekly research seminars. Students make field trips to various transportation agencies and attend professional meetings such as the summer meeting of TexITE. At the end of the summer term, the students make presentations on their research and produce a paper for publication. At Texas A&M, the papers are published annually as a *Compendium of Student Papers* and posted on the SWUTC website.

Current Status:

Undergraduate Transportation Scholars Program at Texas A&M University. Program completed August 3, 2012.

Refer to <http://swutc.tamu.edu/2012/08/02/tamu-2012-utsp/> for this year's program highlights. Number of students participating: 2.

Undergraduate Summer Internship in Transportation (USIT) at the University of Texas at Austin. Program completed August 10, 2012.

Refer to <http://swutc.tamu.edu/2012/08/15/ut-austin-2012-usit/> for this year's program highlights. Number of students participating: 10.

Ph.D. Candidate Assistantship Program at Texas A&M University:

This competitive program selects Ph.D. candidates for a maximum of 12 months of salary support while dissertation is being completed. No tuition or fees are paid. Candidates are chosen based on the quality and value of the proposed research. The goal of this program is to expedite the

progress of students to complete doctoral requirements and begin their careers as transportation leaders.

Current Status:

Phase I: Proposals from PhD candidates received – April 18, 2012. Proposals selected for further consideration completed May 31, 2012. Six proposals were selected.

Phase II: Those students with proposals selected in Phase I submitted fully developed PhD research proposals for review and approval. Phase II completed August 31, 2012.

Individual projects selected and initiation dates:

- New Methodologies for Analyzing Freeway Traffic Flow Characteristics – September 1, 2012.
- Analytic Models for Traffic Signal Control – September 1, 2012.
- Development of a Performance-Related Specifications Methodology for Pavement Preservation Treatments – September 1, 2012
- Examining Decision-Making Surrounding the Use of Managed Lanes by Katy Freeway Travelers: A Prospect Theory Approach - December 1, 2012
- Platoon-Based Arterial Signal Coordination with Uneven Double Cycling – January 1, 2013.
- Fatigue Resistance of Asphalt Mixtures Affected by Water Vapor Movement - January 1, 2013.

Development of new planning course at UT-Austin.

This \$10K project enabled the development of a new six hour course, a practicum, which will be offered in the Community and Regional Planning Program at the University of Texas at Austin during the spring of 2014. This course will focus on freight planning. It will educate students on the conflicts and barriers between freight and other land uses particularly on a megaregional scale. By exposing students to a series of readings, discussions, interviews, and a research/design project at the megaregional scale, students will gain a real world application of designing freight compatible communities.

During the preliminary stage of this effort, researchers reviewed transportation planning courses from across the country, and found that there is a lack of curricula that educates students on this topic. The SWUTC hopes to work with a couple of Class 1 Railroads in offering this course. Once the course has been offered a couple of times, we plan to share the content and success of the course with a broader audience.

Current Status:

Summary report providing an overview of the various potential stake holders in the freight planning course as well as a course skeleton is currently being prepared.

Rural Summer Transportation Institute at Kingsville

The Summer Transportation Institute (STI) at Texas A&M University-Kingsville (TAMUK) has been jointly hosted by the Texas Transportation Institute (TTI), SWUTC and TAMUK since 2004. A large number of students that have participated in past programs have continued their education and majored in engineering and science. This program is the only one of its type in south Texas. The activities selected for this one week program emphasize math, technology, and science and allowed students the opportunity to work individually and as part of teams. STI also incorporates a module regarding transportation career opportunities. New for this year, the program introduced an energy sustainability module to the students.

Current Status:

Program conducted July 23rd – July 27th. 16 students participated. 8 boys, 8 girls. Fifteen of these students were minority students and 14 of the students were from low income school districts.

Refer to <http://swutc.tamu.edu/2012/08/10/9th-annual-summer-transportation-institute-kingsville-held/> for complete overview of this year's program.

Transportation and Security Institute (TSI): Recruiting Next Generation Professionals at Texas Southern University

This program focuses on the mission and objectives of transportation security professionals and introduces a pre-selected group of high school students to the various career opportunities within the profession of transportation security. The objective of the TSI is to provide the framework that would expose high school students to the transportation security industry via hands-on technical activities, field trips to transportation facilities, lectures by transportation professionals, and on site seminars. Industry professionals will reinforce the importance of mathematics, science, and technology skills. Students will also observe how public/private partnerships work to strengthen the link between today's students and future transportation security needs.

Current Status:

This program was conducted June 18- 29, 2012. 19 minority high school students (10 male, 9 female) attended the two-week non-residential program on the campus of TSU. In addition to highlighting the challenges faced by transportation security personnel, the curriculum also addressed the four principal modes of transportation (air, land, rail, and water) with activities led by transportation and academic professionals whose fields of interests included the following: transit operations, entrepreneurship, commercial aviation, maritime security, geographic information systems, urban transportation history, and STEM-related careers. Student participated in field trips to Houston METRO light rail facilities, and the offices of the Houston Galveston Area Council (HGAC) and NASA. Also included were guest lecturers from Port of Houston, Texas Green Energy, HGAC, DHS, and TxDOT.

Refer to <http://swutc.tamu.edu/2012/12/01/swutc-conducts-transportation-security-institute/> for complete overview of this year's program.

The TSI program was selected for continued funding for a session to be conducted summer of 2013.

Travel Surveys: Moving from Tradition to Practical Innovation – Symposium for Practicing Professionals

The SWUTC Travel Survey Symposium was held in Dallas on November 8 and 9. This event was attended by more than 70 travel survey professionals from across the United States, from Florida to Alaska, with one attendee from the City of Calgary (Canada) as well, representing an almost equal mix of agency, consultant, and academic researchers. The symposium started with a poster session, featuring research from 22 related efforts. This was followed by an opening session that included a Texas welcome from Mr. Michael Morris, Executive Director of North Central Texas Council of Governments (NCTCOG) and a key note speech from Dr. Kermit Wies of the Chicago Metropolitan Agency for Planning. Attendees were encouraged to think outside the box and consider all users of travel survey data as their customers.

The symposium was divided into two parts. The discussion groups on Thursday focused on identifying lessons learned and opportunities to advance methods and sampling approaches, as well as considering all uses of the survey data. The day ended with attendees presenting their versions of the "travel survey of the future" – incorporating new technologies, known and on the

horizon. Friday, the focus of the symposium discussion turned to identifying what can be implemented now and establishing a research agenda to move us toward the newly identified survey designs. Overall, the symposium received very positive reviews from the attendees. See <http://swutc.tamu.edu/2012/12/04/household-travel-survey-symposium/> for symposium description, attendee testimonial and symposium photo.

Current Status:

Symposium complete. A compendium with details of the discussions and recommendations is in-process and anticipated to be released in mid-January 2013.

SWUTC initiates development of Hydraulics, Sedimentation and Erosion Control Laboratory - Hands-on Training and Education Center at Texas A&M University.

The Texas A&M Transportation Institute's Hydraulics, Sedimentation and Erosion Control Laboratory is a leading research, testing and educational facility in soil erosion and storm water topical areas. The lab is continuously updating its expertise and services, and has lately moved into the new knowledge areas in low impact development techniques and green infrastructure. Expanding from the lab's current realm of activities, this project will provide a master plan that enables the lab to develop hands-on training for transportation professionals and provide high-impact education for students. The hands-on part is unique and fills the gap in those continuing education seminars/webinars offered in the market. It is envisioned that professional training, continuing education and high-impact learning experiences will be available to current Texas A&M University students, regional municipalities, and other professionals in the design and construction industries.

Current Status:

In-progress - project work initiated November 1, 2012.

Education Results Disseminated:

- Summary report of Transportation and Security Institute (TSI) available online at: <http://d2dtl5nnlpfr0r.cloudfront.net/swutc.tamu.edu/publications/technicalreports/161240-1.pdf>

Plans for Next Reporting Period to Accomplish Education and Workforce Development Goal:

- Continue support of graduate scholarship programs at Texas A&M University, University of Texas at Austin and Texas Southern University, and the Ph.D. Candidate Assistantship Program at Texas A&M University.
- Distribute recruitment information, make selections, and conduct Summer 2013 Undergraduate Fellows Programs at Texas A&M University and the University of Texas at Austin.
- Support summer 2013 TSI program at Texas Southern University.
- Publish compendium of Travel Survey Symposium

SWUTC Goal #3: Technology Transfer

SWUTC Website

Redesign of SWUTC website is complete and site is live at <http://swutc.tamu.edu/>. The new website has an extensive “SWUTC News” section to highlight center activities and accomplishments replacing the previous hardcopy center newsletter.

SWUTC T2 Video effort to be initiated.

This initiative envisions the development of a total of five videos highlighting a significant SWUTC research or educational effort at consortium member universities for placement on the SWUTC website, *YouTube* and other social media sites. These videos would be similar in format to the video produced last year reviewing the findings from a SWUTC study on Texting and Driver Reaction Time – available at <http://swutc.tamu.edu/category/video-stories/>

Current Status:

Effort will be initiated after federal award is fully processed.

Plans for Next Reporting Period to Accomplish Technology Transfer Goal:

- Continue to update website with recent center activities and accomplishments.
- Publish final technical reports as individual research projects are completed in spring and summer of 2013.
- Support travel to TRB and other professional meetings to present SWUTC research findings.
- Once federal award is operational, activate effort to produce T2 social media videos highlighting SWUTC research and education efforts.

2. Products:

Publications/papers/presentations for this reporting period (for current grant only):

Publication: Gap-acceptance Characteristics of Right-turn-on-red Drivers: An Empirical Study on Dual Right-turn Lanes, Xiaoming Chen, Yi Qi and Guanqi Liu, Texas Southern University, published in ASCE Journal of Transportation Engineering, in press, 2012.

Presentation: The Effects of Reading and Writing Text-Based Messages While Driving, Christine Yager, Texas A&M University, presented at the 56th Annual Meeting of the Human Factors and Ergonomics Society, Boston, MA, October 22-26, 2012.

Presentation: Modeling Asphalt Concrete in Compression, Yuqing Zhang, R. Luo and R. L. Lytton, Texas A&M University, presented at the 49th Petersen Asphalt Research Conference, Laramie, Wyoming, July 9-11, 2012. Abstract available at: <http://www.petersenasphaltconference.org/download/PARC12Prog.pdf>

Presentation: The Best Fatigue Test Methods for Pavement Design Reliability: The High Cost of Uncertainty, Robert Lytton, Rong Luo, Yuqing Zhang and Xue Luo, Texas A&M University, presented at the 7th RILEM International Conference on Cracking in Pavements, Delft, Netherlands, June 20-22, 2012.

Websites and other social media:

<http://mobility.tamu.edu/ums/>
<http://mobility.tamu.edu/corridors/>
<http://www.u-driver.com/>
<https://www.facebook.com/UInTheDriverSeat>
Twitter: UntheDriverSeat
<http://tti.tamu.edu/conferences/tss12/>

Technologies or techniques: Nothing to report at this time.

Inventions/patent applications/licenses: Nothing to report at this time.

Other Products:

Products developed for SWUTC Project 600451-00015: U in the Driver Seat
Fact Sheet – a one-page sheet describing the problem and the program
Posters to distribute to the schools for display
Educational items for the schools to distribute and display

3. Participants & Other Collaborating Organizations

Organizations as SWUTC Partners:

The following organizations provide personnel to serve as project monitors for SWUTC research projects. The responsibilities of a Project Monitor are to 1) maintain contact with the P.I. throughout the life of the project, 2) evaluate the progress of the research activities, 3) provide guidance to the P.I. to ensure that the research will produce usable results, and 4) review the reports emanating from the project.

Project Monitors for FY12 Research Efforts:

California Legislative Analyst's Office – Contribution: In-kind support
Maryland State Highway Administration - Contribution: In-kind support
Heldenfels Enterprises, Inc. - Contribution: In-kind support
Rutgers University - Contribution: In-kind support
Precision Driving Research - Contribution: In-kind support
Michigan State University - Contribution: In-kind support
Minnesota DOT – Metro Division - Contribution: In-kind support
Dallas Area Rapid Transit - Contribution: In-kind support
Texas Department of Transportation-San Antonio District - Contribution: In-kind support
Texas Department of Transportation-Dallas District - Contribution: In-kind support
Texas Department of Transportation-Austin District - Contribution: In-kind support
George Washington University – School of Business - Contribution: In-kind support
Federal Highway Administration - Contribution: In-kind support
Washington State Department of Transportation - Contribution: In-kind support
Prairie View A&M University – Department of CE - Contribution: In-kind support
Port of Houston Authority - Contribution: In-kind support
Houston Metropolitan Transit Authority - Contribution: In-kind support
Traffic Engineers Inc. - Contribution: In-kind support
University of Nebraska-Lincoln – Dept. of CE - Contribution: In-kind support
RAND Corporation - Contribution: In-kind support
Energy Institute – UT-Austin - Contribution: In-kind support

Capital Area Metropolitan Planning Organization (Austin) - Contribution: In-kind support and exchange of personnel.
University of CA-Berkeley – Dept. of CE - Contribution: In-kind support
City of Austin-Public Works Department - Contribution: In-kind support
Applied Research Associates, Inc. - Contribution: In-kind support
Cintra US - Contribution: In-kind support and exchange of personnel.
NSF RCNetwork – Contribution: Exchange of personnel
BNSF Railway – Contribution: In-kind support

Additional New Project Monitors for FY13 Research Efforts:

Purdue University – NEXTRANS – Contribution: In-kind support
University of Texas at Austin–Department of Civil and Environmental Engineering. –
Contribution: In-kind support
University of Southern California – Dept. of Industrial and Systems Engineering –
Contribution: In-kind support
Transportation Research Board of the National Academies – Contribution: In-kind support
Texas A&M University – Department of Geology and Geophysics – Contribution: In-kind support
UMTRI – Contribution: In-kind support
Kyung Hee University, Republic of Korea, Department of Civil Engineering –
Contribution: In-kind support
West Virginia University, Department of Civil & Environmental Engineering –
Contribution: In-kind support
Port of Victoria – Contribution: In-kind support
Southwest Research Institute – Intelligent systems Department, and Automation & Data
Systems Division – Contribution: In-kind support
HNTB – Contribution: In-kind support
City of Austin-Public Works Department-Bicycle/Pedestrian Project Coordinator -
Contribution: In-kind support
Texas Department of Transportation-Austin District-Research & Technology
Implementation Office - Contribution: In-kind support
Capital Area Metropolitan Planning Organization (Austin)-GIS, Demographic Forecasting
and Travel Demand Modeling Office - Contribution: In-kind support

Partnerships for this reporting period:

University of South Florida – Center for Urban Transportation Research (CUTR) –
Contribution: In-kind support (assisting with refinements in the Urban Mobility
Report transit methodology) SWUTC Project #161202
University of Washington, Washington State Transportation Center (TRAC) –
Contribution: In-kind support (assisting Urban Mobility Report researchers by
facilitating data and information exchange with Washington DOT. The data are being
used to investigate the truck time-of-day assumptions made in the Urban Mobility
Report) SWUTC Project #161202
INRIX – supplying historical average speed dataset for use in project – SWUTC Project
#161202
Federal University of Santa Maria, Brazil – Contribution: In-kind support for SWUTC
Project #600451-00062
Arizona State University – Contribution: In-kind support for SWUTC Project #600451-
00067
Victoria Transport Policy Institute – Contribution: In-kind support for SWUTC Project
#600451-00067

Transportation Research Board – Contribution: In-kind support (in-kind sponsor of the SWUTC symposium *Travel Surveys: Moving from Tradition to Innovation* – SWUTC Project #600451-00017)

Serving as Advisory Board to the symposium *Travel Surveys: Moving from Tradition to Innovation* SWUTC Project #600451-00017 – Contribution: In-kind support

Karen Faussett - Michigan DOT

Rebecca Knudson - Oregon DOT

Arash Mizraei - North Central Texas Council of Governments

Kouros Mohommadian - University of Illinois at Chicago

The following businesses provided financial support for the symposium *Travel Surveys: Moving from Tradition to Innovation* SWUTC Project #600451-00017

Abt SRBI

ETC Institute

GEO Stats

NuStats

Westat

Louisiana Housing Alliance – providing information to identify research gaps in the region and the interaction of affordable housing and transportation – SWUTC Project #600451-00107

Greater New Orleans Community Data Center - – providing information to identify research gaps in the region and the interaction of affordable housing and transportation – SWUTC Project #600451-00107

Louisiana Department of Transportation and Development – providing information for the calibration of the Highway Safety Manual for roadway segments in Louisiana – SWUTC Project #600451-00102

The following organizations provided personnel and facilities for SWUTC K-12 educational programs held during this reporting period.

Texas A&M Kingsville - Contribution: In-kind support

Port of Corpus Christi – Contribution: In-kind support

4. Impact

Impact on the development of the principal disciplines of the program: Nothing to report.

Impact on other disciplines: Nothing to report.

Impact on the transportation workforce development:

Workforce Development Impact #1:

SWUTC Project #161214 – Support a Rural Summer Transportation Institute and Introduce Sustainable Energy Concepts

This educational initiative allowed TTI and the College of Engineering at Texas A&M University in Kingsville to conduct a Summer Transportation and Engineering program. The funds from this initiative provided personnel, student counselors, supplies, and funds for a field trip. The Frank H. Dotterweich College of Engineering, which partnered with TTI to sponsor the program, provided

personnel, classroom space, supplies, and money for lunches and snacks for participants. This allowed students to participate in the program at no cost. Eighteen students participated in the program. There were 10 boys and 8 girls. Sixteen students completed the program, 8 girls and 8 boys. Fifteen of the students were minority students and 14 of the students were from low income school districts.

This initiative also allowed the team to add new curricula to the Summer Engineers Program. Specifically the students were able to study solar power and build model solar vehicles that actually worked. Students also participated in activities exploring other types of energy including wind power and biodiesels.

The program also provided funds for a field trip to the Port of Corpus Christi and the USS Lexington. Prior to the trip students explored the history of both the port and the Lexington. Once on site students were given briefings about future port expansion and how that will impact the local and regional economy. Recent announcements upon industry development anticipate that as many as 7,000 jobs will be added to the area. Many of these jobs will be in the area of transportation and logistics.

Workforce Development Impact #2:

SWUTC Project #161240 – Transportation Security Institute: Recruiting Next Generation Professionals

At Texas Southern University, the Transportation Security Institute (TSI) was designed to introduce exemplary high school students to the importance of security measures in the transportation industry and the various career opportunities that will be available to them in the near future. Federal officials anticipate a massive shortage in skilled workforce due to the impending retirements of the “baby-boom” generation. In order to meet future workforce needs within the transportation industry, the Federal government has sponsored summer enrichment programs that emphasize the sciences, technologies, engineering, and math (STEM) related careers, especially those as can be applied to the transportation industries.

The 2012 TSI was a nonresidential, two week program with a curriculum that focused on transportation security in classroom lectures and exercises supported by field trips to transportation facilities throughout the Houston area. 19 minority high school students (10 male, 9 female) participated in the 2012 program.

TSI student participants were exposed to a variety of topics as part of the curriculum that emphasized the overall importation of transportation security since the terror attacks of 9/11. These topics included airport, maritime, and public transit security, bridge and highway design, and the challenges involved in emergency management. At the conclusion of the 2012 TSI, student participants completed an end-of-course evaluation and overwhelming indicated *Strongly Agree* to many indicators that the 2012 TSI met their goals and objectives of introducing transportation security, the applications of STEM-related skills, and the overall importance of transportation to our nation’s society and economy.

Workforce Development Impact #3:

SWUTC Project #600451-00017 – Travel Surveys: Moving from Tradition to Practical Innovation - Symposium for Practicing Professionals

The SWUTC Travel Survey Symposium was held in Dallas on November 8 and 9. This event was attended by more than 70 travel survey professionals from across the United States, from Florida to Alaska, with one attendee from the City of Calgary (Canada) as well, representing an almost equal mix of agency, consultant, and academic researchers. The symposium started with a poster session, featuring research from 22 related efforts. This was followed by an opening session that included a Texas welcome from Mr. Michael Morris, Executive Director of North Central Texas Council of Governments (NCTCOG) and a key note speech from Dr. Kermit Wies of the Chicago Metropolitan Agency for Planning. Attendees were encouraged to think outside the box and consider all users of travel survey data as their customers.

The symposium was divided into two parts. The discussion groups on Thursday focused on identifying lessons learned and opportunities to advance methods and sampling approaches, as well as considering all uses of the survey data. The day ended with attendees presenting their versions of the “travel survey of the future” – incorporating new technologies, known and on the horizon. Friday, the focus of the symposium discussion turned to identifying what can be implemented now and establishing a research agenda to move us toward the newly identified survey designs.

The success and impact of this symposium can be illustrated best by the following quote from an attendee:

The Travel Survey Symposium was extraordinary in several ways. First, it attracted a very high proportion of the true thought leaders in the field. Second, it was very timely in that our traditional methods of travel survey have over-relied on the telephone which is failing us. But at the same time technology such as smart phones and GPS are in wide-spread use and have great potential for travel data collection. Finally, the program committee designed an engaging sequence of activities which deviated from the typical conference presentations and encouraged peer exchange and active participation by all attendees. - Attendee Lisa Aultman-Hall

Workforce Development Impact #4:

SWUTC Projects #600451-00003, 600451-00060 and 600451-00040 – SWUTC Graduate Scholarship/Stipend Programs

During the 2012 calendar year, the SWUTC provided 40 scholarships and fellowships for graduate students to pursue their degrees in transportation science at Texas A&M University, University of Texas at Austin and Texas Southern University. 42% of these students were from underrepresented groups.

This is a highly visible and vitally useful application of UTC funding to develop the US professional workforce in transportation.

The ultimate goal of the SWUTC graduate scholarship program is to prepare a highly qualified cadre of new professionals for placement into the field of transportation science. While in the program, students participate in classroom and sponsored research activities. In addition, the program provides increased communication skills as students make presentations, participate in debates, and write proposals and reports. Students also participate in technical tours and professional meetings throughout the year.

Workforce Development Impact #5:

SWUTC Projects #600451-00003, 600451-00060 – SWUTC Undergraduate Fellows Program

During the 2012 calendar year, the SWUTC provided 12 summer fellowships to undergraduate students at Texas A&M University and the University of Texas at Austin. 67% of these students were from underrepresented groups.

The goal of this program is to recruit a diverse group of students (in terms of gender, ethnicity and academic backgrounds) into the graduate programs in transportation. It provides the students the opportunity to work with graduate students, faculty members, and researchers and participate in a research effort. At the end of the summer term, the students make presentations on their research and produce a paper for publication.

Historically, about half of the summer fellows apply to the graduate programs in transportation at the Texas A&M University and the University of Texas at Austin.

Workforce Development Impact #6:

SWUTC Project #161229 – Support for Community and Regional Planning Class Development

This effort is providing enhance transportation planning curricula in the Community and Regional Planning Department at the University of Texas at Austin. The new six hour course, a practicum, will be offered during the spring of 2014. During the development of the curricula, researchers met with stakeholders and gained insight into the challenges freight companies face when routes lie adjacent to land uses, including dense urban, quiet exurban, and rural communities, that are often noise, light, and vibration sensitive.

This course will focus on freight planning. It will educate students on the conflicts and barriers between freight and other land uses particularly on a megaregional scale. By exposing students to a series of readings, discussions, interviews, and a research/design project at the megaregional scale, students will gain a real world application of designing freight compatible communities.

This new course will expose future city planners to the importance of considering the movement of goods and freight planning when developing long term planning initiatives.

Impact on physical, institutional, and information resources at the university or other partner institutions: Nothing to report.

Impact of technology transfer: Nothing to report.

Impact on society beyond science and technology:

Impact on Society #1:

SWUTC Project #600451-00015 – U in the Driver Seat

This safety education effort uses the same successful peer-to-peer model developed in the Teens in the Driver Seat program to educate young college age drivers about the specific driving dangers associated with driving at night, speeding, drinking and driving, cell phones/texting, and failing to use seat belts.

Efforts on the Texas A&M San Antonio campus began on September 4th, where the researchers set up an information table and spoke to students about driving dangers. They also handed out educational items. A media event at the campus is also being organized.

Efforts for the Texas Southern University campus are currently being scheduled.

Discussions are underway to possibly add Prairie View A&M to the list of college campuses to receive the program in the spring of 2013.

During the summer months of 2012, researchers developed the website and social media pages associated with this program, and ordered educational items to hand out to the students to promote driver safety awareness.

Website and social media pages developed by this initiative:

<http://www.u-driver.com/>

<https://www.facebook.com/UInTheDriverSeat>

Twitter: UntheDriverSeat

5. Changes/Problems

Nothing to report