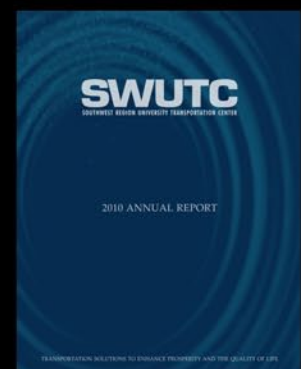
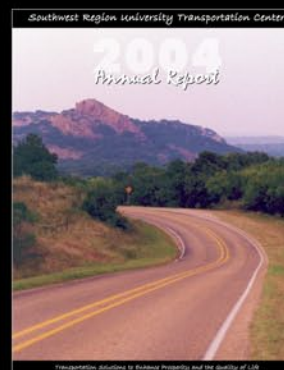
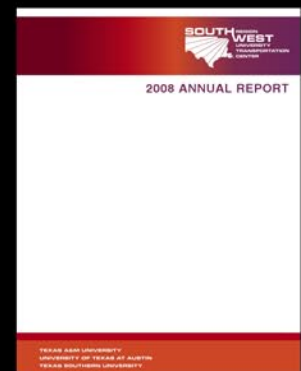
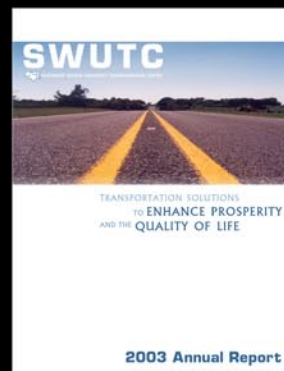


2011 Annual Report

SWUTC
1988 - 2011

**Twenty-Three Years of
Transportation Solutions
to Enhance Prosperity
and the Quality of Life**



Southwest Region University Transportation Center (SWUTC) is the Region 6 University Transportation Center (UTC) sponsored by the U.S. Department of Transportation's Research and Innovative Technology Administration

Consortium Partners

Texas A&M University System
University of Texas at Austin
Texas Southern University

This publication is a report of SWUTC's transportation research, education and technology transfer activities for September 1, 2010 – August 31, 2011.

SWUTC

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Region Six UTC

Director's Message

In this final annual report on the operation of SWUTC under the provisions of SAFTEA-LU, I would like to emphasize a few items of significance in our history, our faculty and students, and our challenge for leading a future UTC program reauthorized to provide excellence in transportation education, research, and technology transfer.

Our History

First and foremost, we began in 1988 with a consortium of three universities and **were able to maintain and strengthen that structure during each competitive renewal of our UTC charter.** These universities that comprise the SWUTC have grown both as members of our consortium and as individual universities each with a robust transportation program. Because of the value-added by the synergy, we are better now than before and will be better in the future as we re-invest the successes of our SWUTC consortium at:

Texas A&M University System - Includes TAMU, a land-grant university established in 1876 with a student enrollment now over 50,000. Transportation programs: Civil Engineering, Urban Planning, and the Bush School. **The Texas Transportation Institute** has grown to an internationally prominent, multi-disciplinary, multi-modal transportation research agency since it began in 1950.

Texas Southern University - An HBCU in Houston with a curriculum in Transportation Planning, Airway Science, Urban Planning, and Maritime Administration. **The Center for Transportation Training and Research** specializes in urban transportation and incubates highly successful outreach programs.

University of Texas at Austin - Among the country's highly-ranked public research universities, its student enrollment is also over 50,000. Transportation programs: Civil Engineering, Community and Regional Planning, and the LBJ School. **The Center for Transportation Research** is one of the prominent university-based transportation research centers in the U.S.

Our Students and Faculty

The faculty is the heartbeat of the SWUTC enterprise ... vital, steady, and strong. Teaching and research efforts at all three universities have been the key to our successes. Inside this report, please find the numerous mentions of award-winning activities and innovative research at each of the three universities and their affiliated research centers. Dynamic new professors and professional researchers, along with a few of us "greybeards", populate our SWUTC teaching and research faculty.

Successful students are primary "products" of our research and education programs. Highlighted within this report are our 2011 student award winners: Dr. Ipek N. Sener, winner of the *Robert Herman Outstanding Student Award*; Mr. Bryan Tyson, winner of the *Naomi Ledé Outstanding Master Student Award*; and Dr. Jeffrey LaMondia winner of the *William J. Harris Outstanding Doctoral Student Award*.

Our Future

We in SWUTC intend our research, educational, and technology transfer programs to be sustainable at a high level of excellence. Throughout the U.S., but especially in Region 6, our challenge to ourselves remains as I have stated previously. We want to be:

- the "place to go" when prospective students contemplate a high-quality education.
- the "place to be" when transportation researchers and faculty members look for an improvement in their career opportunities,
- the "place to call" when transportation entities need objective information, innovative solutions, and top-notch graduates; and
- the "place to seek" for leadership and collegial partnership for all the UTC programs in Region 6.



Dock Burke

SWUTC Theme

Transportation Solutions to Enhance Prosperity and the Quality of Life

Our theme challenges SWUTC participants to expand their capacities to the fullest to produce education, research, and service solutions to transportation issues facing the people of the Southwest and the U.S. Our theme encompasses four strategic thrusts - support of economic growth and trade; enhancement of mobility, accessibility and efficiency; promotion of safety and safe environments; and development of the transportation workforce.

Vision

To achieve maximum value from the SWUTC in implementing our grant, SWUTC continues to pursue its vision to become

*an internationally recognized center for excellence
providing knowledge, diverse leaders,
and innovative solutions for the
transportation challenges of the 21st Century.*

This ambitious vision calls upon us, over the expected lifetime of this UTC grant, to deliver premier research programs in transportation systems, transportation education and workforce development, and transportation technology transfer and service. We will pursue this vision by building on the significant resource base already in place within the transportation programs of the consortium universities, adding new partnerships and alliances with other universities and transportation entities in the region, and keeping the three program elements (research, education, and technology transfer) focused upon our theme.



Lead University - Texas A&M University System

The *Texas Transportation Institute* is headquarters for SWUTC and is a premier transportation research center in the U.S. The research program at TTI is extensive and includes transportation systems and operations, policy and planning, economics and environment, materials, structures, safety, and human factors.

Texas A&M University's transportation-related faculty -- composed of experts in transportation engineering, materials, and planning -- prescribes the curriculum and requirements for undergraduate and graduate degrees with specializations in numerous aspects of transportation. Completion of these degrees creates engineers and scientists for professional careers and leadership positions throughout the transportation industry.



University of Texas at Austin

The transportation programs at the University of Texas at Austin and its Center for Transportation Research feature well-equipped facilities, top-notch research and teaching faculties, and high-quality students. A wide range of expertise in engineering, science, and policy gives the SWUTC a rich skill mix needed for developing viable solutions to complex issues involving transportation systems behavior, international goods movements, and harmonized modal transportation networks for improved performance, including a higher quality of life for the affected citizens and communities.

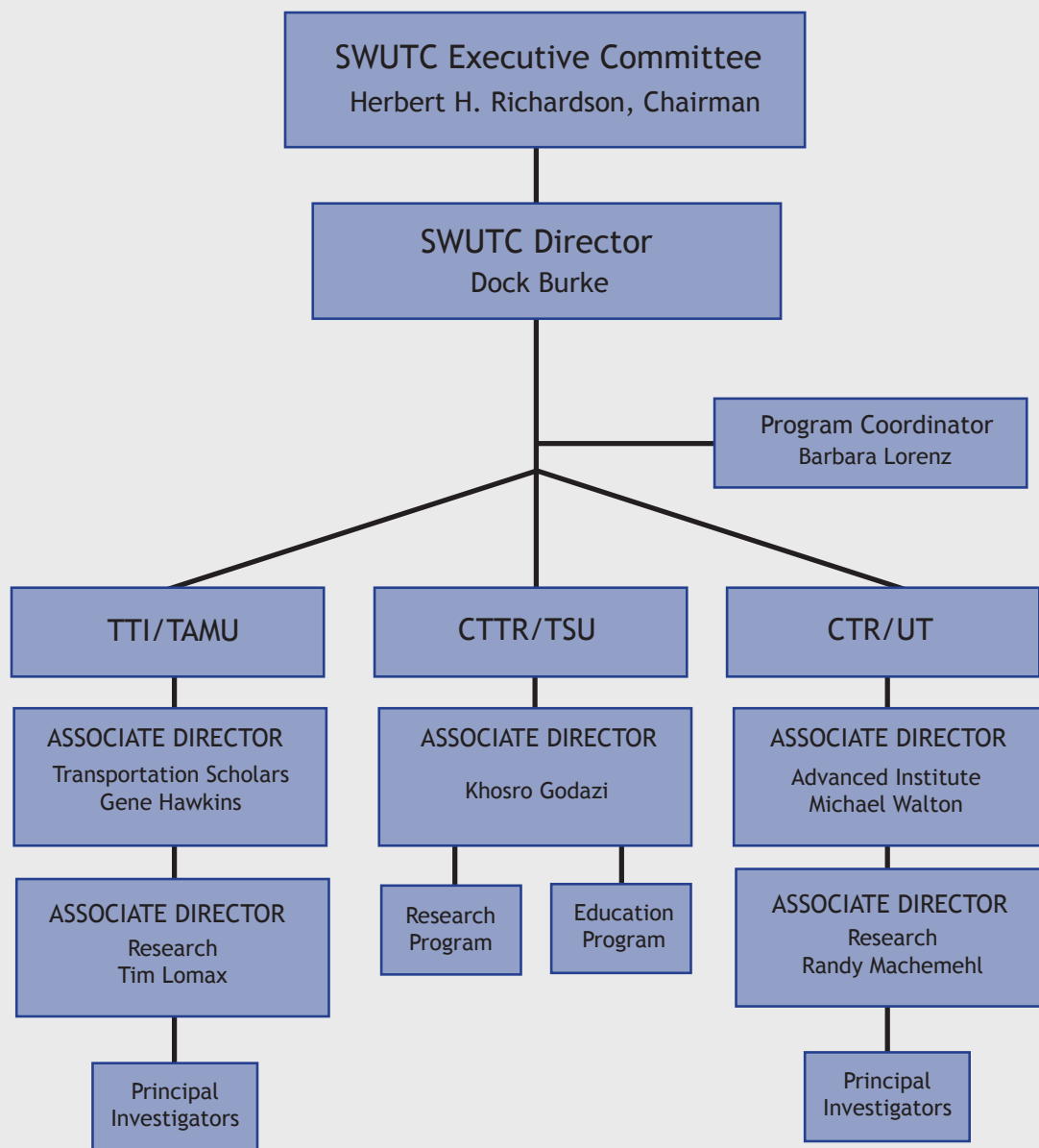


Texas Southern University

Located in Houston, Texas Southern University and its *Center for Transportation Training and Research* present a varied transportation program in planning, research, and implementation that has focused upon some unique opportunities in providing transportation excellence to African-American populations of students and transportation users. A blend of TSU's airway science expertise, its strength in urban transportation planning and operations, and maritime studies create new avenues for bringing multi-modal solutions into the classroom, laboratory, and implementation phases of existing and new transportation challenges for the 21st Century.

The SWUTC Executive Committee oversees the SWUTC activities by establishing budget priorities; determining program content by selecting research projects; choosing the educational programs to be undertaken; and reviewing the administrative affairs of the Center.

The SWUTC Director plans, executes, and reports the approved activities of the Center. The Director is assisted by a Program Coordinator and five Associate Directors - two at TAMU/TTI, two at UT-Austin/CTR, and one at TSU/CTTR. These Associate Directors are each responsible for administering that portion of SWUTC's activities in their charge.



SWUTC Executive Committee



Dr. Herbert H. Richardson, chairman

Dr. Richardson is Chancellor Emeritus of the Texas A&M University System, Director Emeritus of the Texas Transportation Institute, and Distinguished Professor of Engineering Emeritus, Texas A&M University.

Brief Bio: <http://swutc.tamu.edu/Bios/Richardson.htm>



Dr. Dennis Christiansen, member

Dr. Christiansen is Director of the Texas Transportation Institute and a TAMUS Regents Fellow.

Brief Bio: <http://swutc.tamu.edu/Bios/Christiansen.htm>



Mr. Rick Collins, member

Mr. Collins is currently Director of the Research and Technology Implementation Office of the Texas Department of Transportation (TxDOT).

Brief Bio: <http://swutc.tamu.edu/Bios/Collins.htm>



Mr. Robert Harrison, member

Mr. Harrison is a Senior Research Scientist and the Deputy Director of the Center for Transportation Research at the University of Texas at Austin.

Brief Bio: <http://swutc.tamu.edu/Bios/Harrison.htm>



Dr. H. Gene Hawkins, member

Dr. Hawkins is an Associate Professor in the Zachry Department of Civil Engineering at Texas A&M University.

Brief Bio: <http://swutc.tamu.edu/Bios/Hawkins.htm>



Dr. Carol Lewis, member

Dr. Lewis is an Associate Professor in Transportation Studies and Director of the Center for Transportation Training and Research at Texas Southern University.

Brief Bio: <http://swutc.tamu.edu/Bios/Lewis.htm>



Dr. Dallas Little, member

Dr. Little is Regents Professor of Civil Engineering and holder of the E.B. Snead Endowed Chair in Transportation Engineering in the Zachry Department of Civil Engineering at Texas A&M University.

Brief Bio: <http://swuttc.tamu.edu/Bios/Christiansen.htm>



Dr. Talia McCray, member

Dr. McCray is an Assistant Professor in the School of Architecture at the University of Texas at Austin.

Brief Bio: <http://swuttc.tamu.edu/Bios/McCray.htm>



Dr. Melissa Tooley, member

Dr. Tooley is Director of the University Transportation Center for Mobility (UTCM) at the Texas Transportation Institute.

Brief Bio: <http://swuttc.tamu.edu/Bios/Tooley.htm>



Dr. C. Michael Walton, member

Dr. Walton is Professor of Civil Engineering and Ernest H. Cockrell Centennial Chair in Engineering at the University of Texas at Austin.

Brief Bio: <http://swuttc.tamu.edu/Bios/Walton.htm>



Dr. Lei Yu, member

Dr. Yu is Professor of Transportation and Dean of College of Science and Technology at Texas Southern University.

Brief Bio: <http://swuttc.tamu.edu/Bios/Yu.htm>



Dr. Zhanmin Zhang, member

Dr. Zhang is an Associate Professor in transportation engineering at the University of Texas at Austin.

Brief Bio: <http://swuttc.tamu.edu/Bios/Zhang.htm>

Office of the Director

Dock Burke, Director



Dock Burke is the Director of the Southwest University Region Transportation Center at the Texas Transportation Institute. Currently a Regents Fellow at the Institute, he has served as the Principal Investigator or Co-P.I. of 52 research projects, authored or co-authored 100 research reports and papers, and has made 75 presentations on a wide variety of transportation related issues since joining TTI in 1969. He is the 1998 recipient of the *TTI Career Achievement in Research* award and a 2003 recipient of the *Regents Fellow Service Award* presented by the Board of Regents of the Texas A&M University System.

Barbara Lorenz, Program Coordinator



Barbara Lorenz serves as Program Coordinator in SWUTC, a position she has held since 1992. Ms. Lorenz oversees the daily operational activities of the Center. Ms. Lorenz, a graduate of Texas A&M University, has been employed with TTI for 31 years. She is the 2003 recipient of the *C.J. Keese Career Achievement in Administrative/Technical Support* award, which is TTI's highest award for excellence in administration.

Judy Shafer, Administrative Assistant



Ms. Judy Shafer has served as Administrative Assistant for the SWUTC Research Program at UT Austin since 1994. She is responsible for the initial call for research ideas, preparation of award notices, and processing proposal submissions. Ms. Shafer assists principal investigators with travel, funds transfers, equipment requests, technical report preparation, and payments to research project participants and consultants. She also prepares and submits annual report and directory data to regional office, and assists with the processing of SWUTC program contracts.



***Dr. Gene Hawkins, Associate Director -
Transportation Scholars, Texas A&M University***

Dr. Hawkins is an Associate Professor in the Zachry Department of Civil Engineering at Texas A&M University.

Brief Bio: <http://swuttc.tamu.edu/Bios/Hawkins.htm>



***Dr. Tim Lomax, Associate Director for
Transportation Research at Texas A&M University***

Dr. Lomax is a Research Engineer at the Texas Transportation Institute, a member of the Mobility Analysis Program and a TAMUS Regents Fellow.

Brief Bio: <http://swuttc.tamu.edu/Bios/Lomax.htm>



***Mr. Khosro Godazi, Associate Director for Transportation
Research and Education at Texas Southern University***

Mr. Godazi is Adjunct Professor in the Department of Transportation Studies and Associate Director of Technical Transfer, Center for Transportation Training and Research at Texas Southern University.

Brief Bio: <http://swuttc.tamu.edu/Bios/Godazi.htm>



***Dr. Randy Machemehl, Associate Director for
Transportation Research at the University of Texas at Austin***

Dr. Machemehl is the Director of the Center of Transportation Research and the Nasser I. Al-Rashid Centennial Professor in Transportation Engineering at the University of Texas at Austin.

Brief Bio: <http://swuttc.tamu.edu/Bios/Machemehl.htm>



***Dr. C. Michael Walton, Associate Director -
Advanced Institute at the University of Texas at Austin***

Dr. Walton is Professor of Civil Engineering and Ernest H. Cockrell Centennial Chair in Engineering at the University of Texas at Austin.

Brief Bio: <http://swuttc.tamu.edu/Bios/Walton.htm>

Transportation Workforce Development

Transportation education is an essential element in the overall process of developing a workforce with the skills and leadership qualities to guide the transportation industry of the future. SWUTC has invested heavily in the development of human capital creating a “pipeline” process which takes in students at secondary school levels, adds high school and baccalaureate programs and culminates in graduate specialities in transportation science and engineering.

SWUTC supports the Transportation Scholars and the Advanced Institute Programs that are integrated into established degree-granting university departments at Texas A&M University and the University of Texas at Austin. Additionally, SWUTC supports the academic enrichment of a well-developed graduate transportation studies program at Texas Southern University. SWUTC seeks to enhance these programs by strengthening the multidisciplinary qualities of a body of transportation science that will prepare today’s students for leadership in the emerging information-rich economy.

Pre-College Programs for 2011

Summer Transportation Institute - Kingsville

Contact: Debbie Jasek, TAMU, 979-845-5239, d-jasek@tamu.edu

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.

This year’s one week program was held from June 10th through June 16th. The week’s program featured hands on activities such as: building bridges and kites; conducting a spot speed study of Armstrong Avenue and analyzing the data; learning about designing highways; taking a field trip to the Port of Corpus Christi to learn about port operations and future plans for a new causeway bridge; and the highlight of the week - building and racing cardboard canoes. The activities selected for the week emphasized math, technology, and science and allowed students the opportunity to work individually and as part of teams.

This year, eighteen 7th, 8th and 9th grade students attended the Kingsville STI program. The group consisted of 9 girls and 9 boys.



STI-Kingsville student getting help building his bridge

Encore Partnership with AVID

Contact: Debbie Jasek, TAMU and Melissa Finley, 979-845-5239, d-jasek@tamu.edu

Last year, SWUTC researchers developed a transportation, engineering and career awareness program in partnership with an existing program called Advancement Via Individual Determination (AVID) that targets 5th-12th grade students with interest in Science, Technology, Engineering and Mathematics (STEM). AVID is an in-school academic support program that prepares students for college eligibility and success. The one-day workshop developed last year was so successful that the College Station ISD contacted the SWUTC P.I.'s and asked if the program could be conducted again this year.

A repeat program was held May 6th in which 75 6th grade students attended. The students were offered an opportunity to gain hands on experience and insight into what transportation, engineering, and technology careers have to offer. This event utilized a two pronged approach. First, engineers and transportation professionals went into the class room to introduce transportation concepts during the AVID class. The second part included a field trip for AVID students to the Texas Transportation Institute at Texas A&M University. The event provided experiences to encourage interests in engineering, science, and math. It also offered exposure and mentoring from role models that currently work in the transportation fields. This provided a venue that enabled students to recognize their interests in math and provide an early successful experience, two of the crucial factors to encourage careers in technology and engineering. This event was also designed in a format so that it could be used as a prototype by any college or university or professional organization.

The students and teachers enjoy the program so much, that it is becoming an annual event. A date has already been set for another program on the first Friday of next May.



AVID students tour TTI's Translink® Lab and learn about traffic signal controllers

Extreme Makeover: Updating Existing SWUTC Transportation Modules

Contact: Debbie Jasek, TAMU, 979-845-5239, d-jasek@tamu.edu

In the past, SWUTC has funded projects for transportation outreach for K-12. Over the past 11 years these modules and presentations have been viewed by over 15,000 students. Some modules are still currently being used by outreach personnel. However, many of the modules were outdated and in desperate need of a makeover in order to make them relevant for today's student audiences. A student audience who has experienced a tremendous change in their technological IQ over the past 11 years. Today's students surf the web, communicate through Facebook and MySpace, and they also communicate through Twitter and websites such as Squidoo. Many students read blogs on a daily basis, the way older generations read newspapers. Interfacing with students through media that they use on a constant basis will cast a wider net to reach a diverse population of students. This effort conducted by SWUTC researcher **Ms. Debbie Jasek** from Texas A&M University formed a basis for future outreach projects, by updating previously developed materials, creating a new portal website that can be used for outreach and blogging, as well as the creation of Facebook transportation outreach groups for students.

2011 SWUTC Higher Education Highlights

SWUTC Hosts Consortium-Wide Student Symposium

Contact: Khosro Godazi, TSU, 713-313-7925, godazi_kx@tsu.edu

Building on last year's very successful and positively reviewed student conference, the consortium-wide student symposium was held in Winedale, TX on April 15th of this year. The goal of this gathering was to bring together students from the three member universities in the SWUTC consortium in a casual, relaxed setting and provide them the opportunity to work together, with professors, on a structured activity and develop their professional network. The one day symposium was open to graduate transportation students and faculty members from Texas A&M University, Texas Southern University and the University of Texas at Austin.



Dock Burke addresses student participants during opening session

Attendance increased this year over last with 59 graduate students participating and 13 faculty and staff members. The day began with welcoming comments from key SWUTC personnel and an icebreaker activity designed to get the students interacting with each other. Next, the students were divided into work teams based on their previously identified area of transportation interest. The student groups for this conference consisted of Congestion/Oversaturated Intersection Management, Safety Management, Sustainability, Transportation Finance, and ITS. Each team spent the remainder of the day defining the issues and the actions that would be needed to meet the transportation challenges for their area in the year 2030. Each team prepared a 10 minute presentation at the end of the day summarizing their findings and plans of action. Great effort was made to ensure that each group had equal representation from each university. Faculty members were free to roam and interact with the various groups to mentor and help facilitate their discussions.



Symposium teams at work

Post symposium student evaluations were very positive. "I attended last year also, and I want to say this year is much better. Thank you all!" writes one student evaluator. "It was an excellent approach to get to know people from other universities and institutes. A very enjoyable experience," commented another.



End of day student presentations

The coordinators for this event were led by **Mr. Khosro Godazi** from Texas Southern University and included **Dr. Zhanmin Zhang** from the University of Texas at Austin and **Dr. Luca Quadrifoglio** from Texas A&M University. Other faculty/staff attending: from TSU - **Dr. Carol Lewis**; from TAMUS - **Dr. Herb Richardson**, **Mr. Dock Burke**, **Dr. Dominique Lord**, **Dr. Gene Hawkins**, **Dr. Bruce Wang**, **Dr. Yunlong Zhang**, **Ms. Barbara Lorenz**; and from UT-Austin - **Dr. Michael Walton**.

SWUTC 2011 Summer Undergraduate Fellows Program

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 Program recruits 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. For the 2011 summer session, the TAMU program had 7 participants, with 9 participating in the UT-Austin program.

Importantly, about half of the summer interns apply back for graduate studies to the UT and TAMU programs, a clear indication of the success of the Undergraduate Fellows Program in increasing awareness and interest in the transportation field.



Felicia Desorcie, UGTSP student at Texas A&M University presents her study findings at the conclusion of the summer program

SWUTC 2011 Advanced Institute and Transportation Scholars Programs

The SWUTC continues to support graduate programs at each of the three consortium member universities. The ultimate goal of the SWUTC graduate programs is to prepare a highly qualified cadre of new professionals into transportation science. **The Transportation Scholars Program at Texas A&M University, the Advanced Institute at the University of Texas at Austin, and the graduate program at Texas Southern University 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, write proposals and reports. Students also participate in technical tours and professional meetings throughout the year.

For the 2011 program, 20 graduate students participated in the TAMU program, 28 in the UT-Austin program and 8 at TSU.

As an annual event, SWUTC also sends graduate students involved in the SWUTC education programs to the *Transportation Research Board* meeting in January. This year, in addition to those students, the SWUTC provided travel assistance to 29 additional Texas A&M University Civil Engineering students to attend the annual meeting. While attending the meeting, many of these student gained

valuable experience while presenting papers based on their research work and attending poster and conference sessions. Prompting the following testimonial from a University of Texas Advanced Institute participant.

"The Advanced Institute Program has provided me opportunities to better understand the transportation field through potential interaction with peers and persons in academia, government, and industry. One specific example is my attending the 2011 Transportation Research Board conference held this past January in Washington, D.C. I never realized that transportation affected such a large group of professionals and stakeholders; my overall experience at TRB was eye-opening from this regard. Further, I was able to speak with peers from other schools who I may engage with in professional work later in life. This interaction is invaluable and would likely not be available to me except through participating in a graduate program. The Program provided funds that covered my travel expenses to the TRB conference, allowing me to attend and enjoy a great, worthwhile experience."

SWUTC Education Program Graduate Placement for 2011



Afhan Aman - Attorney for New Jersey Law Firm
Kadija Hall - Advanced Degree Program at TSU Law School
Sara Karrie - Trainer for Chesapeake Energy
Abhilash Kumar - Schedule Analyst for Southwest Airlines
Victor Mungai - Technical Officer for Verizon Company



Robert Grover Allen - Doctoral Program at TAMU in Civil Engineering
Kristopher Ball - Engineer for Kimberley Horn
Jonathan Howson - Research Assistant for Texas Transportation Institute
Christopher Jones - Technical Staff for Sandia National Laboratories
Lisa Larson - Doctoral Program at TAMU in Civil Engineering
James Robertson - Doctoral Program at TAMU in Civil Engineering



Renee Alsup - Technical Engineer for Parson Brinckerhoff
Lily Aung - Researcher for IMS Reserach
Carey Blackmar - Engineering Consultant for AECOM
John Brady - Project Engineer for CINTRA Development LLC
Alison Mills - Consultant - Bike Project Coordinator for T.Y. Lynn/Chicago
Brent Selby - Analyst for Cambridge Systematics
David Suescun - Doctoral Program at UT-Austin in Civil Engineering
Patricia Trujillo - Engineer for Texas Department of Transportation

SWUTC 2011 Student Award Winners

Each year, in addition to selecting the overall SWUTC Outstanding Student to represent the SWUTC at the CUTC banquet and UTC awards program, the SWUTC honors other students for their academic, professionalism and leadership achievements. Each of the three major awards presented yearly at the SWUTC - the *Naomi Ledé Outstanding Masters Student Award*, the *William J. Harris Outstanding PhD Student Award* and the *Robert Herman Outstanding Student Award* - comes with a \$1,000 cash award.

Robert Herman Outstanding Student Award

Dr. Ipek Nese Sener received a B.S. degree in Civil Engineering and M.S. degrees in Civil Engineering (Transportation) and Architecture (Building Science) from the Middle East Technical University (METU), Ankara, Turkey, and then joined the Ph.D. program in Transportation Engineering at the University of Texas at Austin in August 2005.



The main focus of Dr. Sener's work has been the development of advanced and improved discrete choice econometric modeling frameworks aimed at understanding the factors influencing individuals' activity-travel behavior, and predicting how individuals would react to different transportation and land use policies. Dr. Sener's dissertation, partially funded by SWUTC support, focused on accommodating spatial and social dependency structures in the context of discrete choice models. In addition to her dissertation work, she has contributed extensively to the choice modeling literature in the areas of activity-based modeling, public health, and non-motorized travel. Her research has been published in prestigious journals in the transportation area and disseminated at the most important conferences in the field.

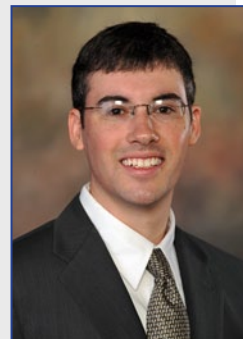
While pursuing her graduate degrees, Dr. Sener worked as a researcher and student team leader in several research projects, served as a teaching assistant and occasional lecturer for transportation and statistics courses, and mentored graduate and undergraduate students. She was selected as a Fellow of the Division of Statistics and Scientific Computation at UT Austin in 2008. Through this program, she worked as a statistical consultant to professors and graduate students from different departments. She was also selected as an Executive Leadership Fellow by the International Road Federation in 2008, and was the recipient of the 2009 *Helene M. Overly Memorial Scholarship*, Heart of Texas Chapter, WTS.

From a broader perspective, Dr. Sener's career goal is to make important contributions to the transportation science field while inspiring and mentoring new generations of transportation professionals. In December, Dr. Sener accepted an Associate Transportation Researcher position at the Texas Transportation Institute in the Travel Forecasting Program - Austin office.

Dr. Sener's major professor while at the University of Texas was Dr. Chandra R. Bhat.

William J. Harris Outstanding PhD Student Award

Dr. Jeffrey J. LaMondia began his graduate career at the University of Texas at Austin in the fall of 2005, where he pursued both a master's degree and PhD in transportation engineering. Prior to coming to the University of Texas at Austin, Dr. LaMondia completed his undergraduate bachelor's degree in civil and environmental engineering at the University of Connecticut.



During his time at the University of Texas at Austin, Dr. LaMondia developed his expertise in travel demand modeling, activity/time use analysis, and geographic information systems. He was able to apply these skills in a number of research projects that studied critical transportation planning issues. Most recently, he contributed to a Texas Department of Transportation study to develop an adaptable trip-based paratransit microsimulation tool that allows operators to evaluate access to their service based on patron preferences. Additionally, his dissertation research, partially funded by SWUTC support, focused on understanding leisure activities and travel patterns by developing and comprehensively examining a behavioral framework of household-level demand models for long-distance leisure activities. His work has led to several presentations and scholarly publications. Dr. LaMondia received numerous awards for his accomplishments, including the *Eno Leadership Development Conference Fellowship*, the *Dwight D. Eisenhower Transportation Fellowship*, the *Statistics and Scientific Computation Graduate Fellowship*, and the *THRUST Engineering Graduate Fellowship*.

After receiving his PhD in August 2010, Dr. LaMondia accepted a position at Auburn University as an assistant professor of transportation engineering. There, he is continuing his study of travel behavior in rural and leisure settings as well as teaching upper division and graduate level courses in transportation planning analysis.

Dr. LaMondia's major professor while at the University of Texas at Austin was Dr. Chandra R. Bhat.

Naomi Ledé Outstanding Masters Student Award



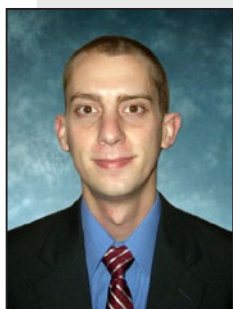
Mr. Bryan Tyson is a PhD candidate in civil engineering at Texas A&M University in College Station, Texas. He currently works as a Graduate Research Assistant examining methods to create smart transportation structures through the use of embedded carbon nanotubes and carbon nanofibers integrated into concrete. Carbon nanotubes (CNTs) are known to be the strongest fibers ever. If the research activities in this SWUTC project are successful, the results will have a significant pay-off to the US transportation and construction industries and in making the US a leader in applying nanotechnology to construction materials.

Mr. Tyson's research interests also include multi-scale computational modeling of nanocomposites, damage mechanics, and finite element modeling. He has also co-authored five technical papers with two more being completed now. During the summer of 2010, he assisted in mentoring an undergraduate civil engineering student from Texas A&M University at Kingsville (TAMUK) in the Southwest Region University Transportation Center's Undergraduate Summer Transportation Scholars program.

Bryan Tyson earned both his Bachelor's and Master's degrees in Civil Engineering at Texas A&M University in 2008 and 2010. He was selected to receive SWUTC's *Dr. Naomi Ledé Award for the Outstanding Masters Student* based on his innovative research contributions, academic performance, and leadership ability.

Mr. Tyson's major professor at Texas A&M University is Dr. Rashid K. Abu Al-Rub. Mr. Tyson also represented the SWUTC at the annual UTC Outstanding Student of the Year awards ceremony during TRB's Annual Meeting in January, 2011.

Other Student Achievements



University of Texas at Austin graduate **Dr. Jason Lemp** was selected as the 2009 recipient of the *Eric Pas Dissertation Prize* awarded by the International Association for Travel Behaviour Research (IATBR) during the annual meeting of the Transportation Research Board in January 2011. This prize is awarded annually to the individual who is judged as submitting the dissertation that makes the greatest impact among all dissertations nominated for the prize in any given year. The prize signals the arrival of exceptional new talent in the field. Dr. Lemp's dissertation is titled "Capturing Random Utility Maximization Behavior in Continuous Choice Data: Application to Work Tour Scheduling." While at the University of Texas at Austin, Dr. Lemp studied under the guidance of Dr. Kara Kockelman. He was an active graduate researcher on several SWUTC research efforts and also supported through the SWUTC Advanced Institute program. Dr. Lemp graduated in December 2009 and is currently employed at Cambridge Systematics.



Katie Larsen, current SWUTC Ph.D. student researcher and Advanced Institute fellow at the University of Texas at Austin was selected to receive a \$2,000 *Helene M. Overly Memorial Scholarship* from the WTS Foundation.

This competitive scholarship is awarded to women pursuing graduate studies in transportation or a related field. And is based on the applicant's specific transportation involvement and goals, job skills and academic record.



Daniel James Fagnant, current SWUTC Ph.D. Advanced Institute student at the University of Texas at Austin, received a \$1,000 *ITS Texas Scholarships for Graduate Study in Intelligent Transportation Systems* at the November 12, 2010 Annual Meeting of ITS Texas in San Antonio. These scholarship awards recognize outstanding graduate students enrolled in an ITS-related field at a college or university in the State of Texas.

The following SWUTC graduate students received *Outstanding Student Awards* from the Texas Institute of Transportation Engineers. These awards recognize an outstanding student in each of the TexITE Student Chapters.



Devin Moore - SWUTC Transportation Scholars and student researcher from Texas A&M University.

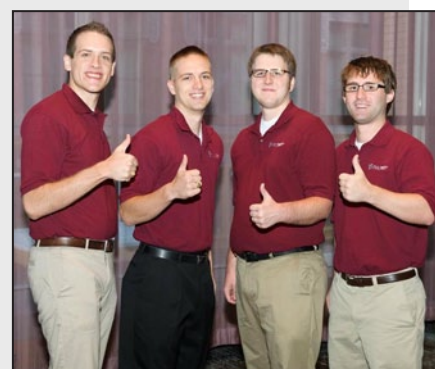
Daniel Fagnant - SWUTC Advanced Institute student from the University of Texas at Austin.



Abhilash Kumar - SWUTC Scholarship recipient from Texas Southern University.

TAMUite Wins 2nd District Traffic Bowl

Congratulations to the team representing the TexITE student chapter from Texas A&M University for winning the 2011 TexITE Collegiate Traffic Bowl at the spring meeting in Fort Worth. Three of the four team members are TAMU Transportation Scholars (TSP) graduate students - **Mark Kranz**, **Carl Schwarzer** and **Brian Shollar**. The team then went on to represent the Texas District in the International Collegiate Traffic Bowl in St. Louis in August. Regrettably, the team from BYU won the tournament. Must have been that ringer they had on their team, **Brad Brimley**, who is now a Ph.D. student in the SWUTC TSP program at TAMU.



(L-R) Mark Kranz, Adam Kaliszewski, Carl Schwarzer and Brian Shollar

SWUTC pursues a balanced program of transportation research (transit, highway, and multimodal) by selecting those projects that reflect our vision, theme and strategic thrusts. Some of the specific research program sub-themes are: improved linkages between the U.S. and Mexican transportation systems, developing transportation solutions to improve the livability of our neighborhoods and communities and the quality-of-life for their inhabitants, development of transportation-based solutions to various infrastructure, environmental, and safety problems, and development of a superior transportation workforce for the 21st Century. For a listing and description of new, on-going and completed research projects please visit our website at <http://swutc.tamu.edu/research.htm>.

Selected 2011 Research Highlights

Improving Air Quality & Fuel Efficiency

Study Evaluates Cost/Benefit of Hybrid Distribution Trucks

Contact: Robert Harrison, UT-Austin, 512-232-3113, harrison@mail.utexas.edu

The respective populations of the United States and Texas are expected to significantly increase over to the next several decades, primarily in urban and metropolitan areas. The additional population will create an increased demand for freight to bring in goods that people require and transportation services to dispose of the extra refuse. Economists have also predicted that oil prices will rise in real terms during the same period. Air quality is getting worse in a number of metropolitan areas, triggering non-attainment penalties and spurring an interest in cleaner transportation. Incentives and new policies must be adopted to increase the efficiency of the transportation system and thus move freight with a reduced impact on society and the environment. Hybrid distribution trucks can potentially help solve this issue through their increased fuel economy and reduced emissions. But, can they pay for themselves?

This project, conducted by **Mr. Robert Harrison** of the University of Texas at Austin, evaluated a package delivery truck, beverage delivery truck, and a refuse truck. The research determined that the additional cost (with current prices) of the hybrid refuse truck was justified, but not for the other two trucks. The social cost of emissions was also estimated to help justify hybrids' implementation. With this information, the rate of hybrid truck adoption was estimated for various policy scenarios. The results of Mr. Harrison's research indicated that a correctly designed incentive program can greatly increase the rate of hybrid adoption and could be justified by the additional social benefits of emissions reduction.



Photo credit: volvotrucks.com

Driver Safety

New SWUTC Study Says Texting Doubles a Driver's Reaction Time

Contact: Christine Yager, TAMU, 979-845-6528, c-yager@ttimail.tamu.edu

SWUTC researchers have determined that a driver's reaction time is doubled when distracted by reading or sending a text message. The study reveals how the texting impairment is even greater than many experts believed, and demonstrates how texting drivers are less able to react to sudden roadway hazards.

The study, managed by **Ms. Christine Yager**, from TAMU, is the first published work in the U.S. to examine texting while driving in an actual driving environment and consisted of three major steps. First, participants typed a story of their choice (usually a simple fairy tale) and also read and answered questions related to another story, both on their smart phone in a laboratory setting. Each participant then navigated a test-track course involving both an open section and a section lined by construction barrels. Drivers first drove the course without texting, then repeated both lab tasks separately while driving through the course again. Throughout the test-track exercise, each participant's reaction time to a periodic flashing light was recorded. The research effort involved 42 drivers between the ages of 16 and 54.

Reaction times with no texting activity were typically between one and two seconds. Reaction times while texting, however, were at least three to four seconds. Worse yet, drivers were more than 11 times more likely to miss the flashing light altogether when they were texting. The researchers say that the study findings extend to other driving distractions that involve reading or writing, such as checking e-mail or Facebook.

In addition to the reaction-time element, researchers also measured each driver's ability to maintain proper lane position and a constant speed. Major findings further documented the impairment of texting when compared to the controlled driving conditions. Drivers were less able to: a) safely maintain their position in the driving lane when they were texting and their swerving was worse in the open sections of the course than in barreled sections, b) maintain a constant speed while texting, tending to slow down in an effort to reduce the demand of the multiple tasks. By slowing down, a driver gains more time to correct for driving errors (such as the tendency to swerve while texting). Speed variance was also greater for texting drivers than for non-texting drivers.

The fact that the study was conducted in an actual driving environment is important, the researchers say. While simulators are useful, the dynamics of an actual vehicle are different, and some driver cues can't be replicated in a simulator. By using a closed course, researchers can create an environment similar to real-world driving conditions while providing a high degree of safety for the participants.

"Most research on texting and driving has been limited to driving simulators. This study involved participants driving an actual vehicle," Yager says. "So one of the more important things we know now that we didn't know before is that response times are even slower than we previously thought." The total distance covered by each driver in the study was slightly less than 11 miles. In the interest of safety for both participants and the research staff, researchers minimized the complexity of the driving task, using a straight-line course that contained no hills, traffic or potential conflicts other



Photo credit: TTI Archives

than the construction zone barrels. Consequently, the driving demands that participants encountered were considerably lower than those they would encounter under real-world conditions. “It is frightening,” the researchers wrote, “to think of how much more poorly our participants may have performed if the driving conditions were more consistent with routine driving.”

Federal statistics suggest that distracted driving contributes to as much as 20 percent of all fatal crashes, and that cell phones constitute the primary source of driver distraction. Researchers point to two numbers to illustrate the magnitude of the texting while driving problem: an estimated 5 billion text messages are sent each day in the United States, and at least 20 percent of all drivers have admitted to texting while driving.

Refining Rail Transit Planning

Study Examines the Relationship between Density and Rail Transit

Contact: Carol Lewis, TSU, 713-313-7924, lewis_ca@tsu.edu

A city’s decision to construct rail transit is generally based on an array of variables, one of which may be related to density. Houston is known as one of the modern southwest cities characterized by sprawled development. The city’s decade’s long discussion about rail often included whether the city’s spatial distribution of housing, employment and other trip generators is conducive to supporting rail transit. Other variables considered important are number of new riders, operating costs and construction costs. Although the question of density is not a direct variable in the list of criteria, numerous studies show a positive correlation with ridership, confirming density as an explanation for the number of riders a system will attract. For that reason, opponents of new rail systems often raise lack of density as reason not to pursue rail. In addition to the foundation provided by previous research, this thinking is supported by US north and east coast very dense cities that have had rail for decades. Therefore, the belief is that density is “required” for success.



Photo credit: HoustonPress

Houston, Texas being one of the most studied cities relative to rail transit in America exemplifies the type of city typical of this density discussion. As of the early 2000s, Houston area transit planners had proposed rail a minimum of five times in the preceding 25 years. Twice the public defeated rail recommendations in referenda, including 1974 and 1983. In 1991, a challenger to the then, 4-term mayor, campaigned on discontinuing the proposed rail system and reallocating the funds to acquisition of more police. The challenger won and followed through on the campaign promise. Over the life of rail discussions in Houston, the transit authority proposed various routes for rail and recommended heavy rail in 1969 and 1981, monorail in 1991 and light rail in 1988 and 2000. Construction began on a 7.5-mile light rail line in 2001, but still spurred two opposing ballot initiatives in the fall of 2001, even as track was being laid. Houston finally opened its first 7.5 mile light rail line in January 2004; within the 1st year, the rail exceeded 2020 projections of 40,000 weekday passenger boardings. With light rail recently opened in Charlotte, North Carolina and other southern and mid-sized cities considering new lines or extensions, a review of how these systems perform in comparison to the traditional ideas about rail transit is in order.

This assessment, conducted by **Dr. Carol Lewis** of TSU examined a standard transit performance measures, operating cost per passenger mile, in the context of density for several rail cities. The

study findings are extremely positive for cities like Houston, known for their sprawl and overall low density development. The key for successful rail transit is to appropriately and carefully locate the rail facilities and focus on those characteristics that compensate for elements contributed by density in more traditional rail cities.

Mobility for Disadvantaged Populations

Study Analyzes Travel Patterns of Disadvantaged Populations

Contact: Talia McCray, UT-Austin, 512-471-2708, tmccray@austin.utexas.edu

Travel time to destinations in the Austin area continues to rise during both peak and off-peak hours. With increased congestion and higher gas prices, some individuals are traveling more selectively and viewing public transit as a cost-saving alternative to the automobile. However, a substantial number of Austinites remain solely dependent on their automobiles for transportation. This study, conducted by **Dr. Talia McCray** from the University of Texas at Austin analyzed the travel patterns of students attending Huston-Tillotson University (HT), an Historical Black College and University (HBCU) in Austin, TX. This population does not utilize public transit, and is mostly car dependent. This research effort sought to gain a better understanding of the reasons behind the reluctance of HT students to use public transit.



Photo credit: Capital Metropolitan Transportation Authority

This research utilized two studies to collect the data for the analysis, first during the Spring of 2009, focus groups were held on HT's campus, and surveys were distributed to the broader student body. Then, from September 2009 - May 2010, an environmental analysis of the built environment surrounding 38 bus stops was performed using an established survey tool. The researchers used GIS, a cluster analysis of bus stop environments, and cumulative distribution functions to explore bus travel time to reported destinations.

Student surveys indicated that public transit did not meet their needs due to infrequent service, overcrowded buses, unbearable travel time, and, importantly, negative perceptions of safety at bus stops. However, the results of the environmental analysis of bus routes and stops in reported areas of interest showed that the

students' perceptions were not always consistent with the environmental analysis. In general, clock travel times and schedules of the transit system seemed to be reasonable.

To address the student's perceived safety concerns at bus stops, the study produced multiple recommendations for improving ridership. These included, improving visibility at bus stops by providing adequate illumination, and trimming bushes and trees that might obstruct sight distance. Increasing security services at bus stops. For example, foot or bicycle patrolling police, surveillance cameras, or installing police call boxes. Additionally, planners should locate bus stops away from empty spaces and vacant lots. Based on direct observation, sometimes relocating the bus stops to a safer place can mean just moving the bus stop a few feet up or down the street. Finally, the researchers suggest that a transit training program for HT students would be beneficial in improving ridership. These training programs would provide students information on how to use the transit system to access their personal destinations and provide a forum for addressing their concerns.

Enhancing Pedestrian Safety

Study Examines Conflicts between Left Turning Vehicles and Pedestrians

Contact: Yi Qi, TSU, 713-313-6809, qiy@tsu.edu

Pedestrian safety under permissive left-turn signal control is a big problem, because left-turn drivers misjudge the gap and fail to yield to pedestrians under certain conditions. This research, conducted by Dr. Yi Qi of Texas Southern University investigated the factors that contribute to conflicts between left-turn vehicles and pedestrians, and then recommended pedestrian safety based warrants for using permissive left-turn control, including both permissive-only and permissive/protected left-turn (PPLT) signal phasing.

Dr. Qi's study utilized driving-simulation based experiments that were conducted to test drivers' driving performance during permissive left-turns at different types of intersections with different levels of pedestrians. For this purpose, twelve different experimental intersections with permissive left-turn signal control were designed in the driving simulation environment. The design of these intersections considered a wide range of contributing factors including speed limit, number of lanes, intersection type, sight distance, opposing thorough traffic volume and pedestrian volume. To evaluate the risk of collisions between permissive left-turn vehicles and pedestrians, three types of Measure of Effectiveness (MOEs), i.e. maximum deceleration rate, time to collision to pedestrian, and minimum stop distance, were developed based on the data collected from the driving-simulation based experiments. In addition, a post survey was conducted on drivers who completed the driving simulation test in order to obtain subjective evaluation results. The results of this research show that the permissive left-turn phase (either permissive only or PPLT) can be used only if the pedestrian volume is lower than a certain value and the percentage of big size vehicles (such as trucks) in the left-turn traffic is relative low. These results can help traffic engineers better understand pedestrian safety issues related to the left-turn movements of drivers and choose the best left-turn signal time control mode for intersections.



Photo credit: TTI Archives

Improving Roadside Condition Assessments

Effectiveness of Micro Unmanned Aerial Vehicles for Roadside Condition Assessment

Contact: Nasir Gharaibeh, TAMU, 979-845-0278, n-gharaibeh@ttimail.tamu.edu

This study, conducted by Dr. Nasir Gharaibeh of Texas A&M University provides an assessment of the effectiveness of micro unmanned aerial vehicles (MUAVs) as a tool for collecting condition data for roadside infrastructure assets. The motivation for this study was to improve the safety, accuracy, and time efficiency of roadway condition assessment surveys, and to identify technologies that can provide visual digital records of these condition surveys.

The current manual method for conducting roadside condition and inventory surveys involve certain safety issues, ranging from traffic crashes to natural hazards such as washouts, sharp changes in elevation, or hidden objects. Additionally, these manual inspection methods lack an accurate record

of the roadside's true condition. Inadequate data records make it virtually impossible to re-evaluate previously inspected roadside sections without having to travel back to the same site. MUAV systems can potentially fill this gap in automated roadside condition assessment. MUAVs outfitted with digital imaging systems and GPS technology can capture digital videos and still-frame images of roadside assets. These digital images can later be analyzed in a safe, non-stressful work environment and stored for later visualization.

The study conducted three field experiments. The field experiments entailed performing a level of service (LOS) condition assessment on ten roadside sample units on IH-20 near Tyler, Texas (rural area with medium traffic volume); two roadside sample units on IH-35 near Dallas, Texas (urban area with heavy traffic volume); and five roadside sample units located within the Riverside Campus of Texas A&M University (urban area with low traffic volume). The conditions of these sample units were assessed twice: on-site (i.e., ground truth) and by observing digital images (still and video) collected via the MUAV. In the IH-20 and Riverside experiments, the MUAV was easy to control and produced high-quality images. For both experiments, the condition ratings assigned by the MUAV video rater matched those assigned by the field raters an average of 84 percent of the time. In the IH-35 experiment, the MUAV was difficult to operate and produced poor-quality images for estimating roadside condition due to high wind speed and heavy traffic volume.

While the MUAV was not flown in rainy weather, wind was found to be the most restricting weather condition encountered. The MUAV was easy to control and produced the highest-quality images in 0-5 mile per hour winds. The MUAV was not operational (could not be controlled) in 15 mile per hour (or higher) winds. In favorable site conditions (low traffic volume and low wind speed), the MUAV survey was faster and safer than manual surveys. MUAV-based inspection, in most cases, produced higher condition ratings for roadway surveys than on-site inspections.



Student researcher with MUAV prior to test run

The techniques developed by this study results suggest that the use of MUAVs as a screening survey tool prior to conducting full on-site condition surveys should be investigated. In this manner, MUAV images can help delineate roadway segments that require detailed on-site inspection from those that are in good condition and do not require on-site inspection.

SWUTC Research Produces Spin-off Opportunities

The following are examples of SWUTC research pioneering new transportation initiatives and moving results to transportation stakeholders.



This year, students in Dr. Ming Zhang's research program studied emerging commuting trends in the Texas Triangle Mega-region. They developed a framework for integrated urban form and travel behavior analysis. Through a case study of the Austin area they derived a set of urban form metrics and then applied them to calibrate travel demand parameters. The research results were presented in two national/international conferences and are currently being considered by CAMPO (Capital Area Metropolitan Planning Organization) in updating its 2040 long-range transportation plan.

Dr. Zhang's research also played an instrumental role in obtaining a new grant recently awarded by the U.S. Department of Housing and Urban Development (HUD). This \$3.6 million **Regional Sustainable Communities Planning grant** awarded to the Central Texas region in partnership with the UT-Austin School of Architecture's Center for Sustainable Development intends to promote sustainable communities and economic competitiveness by connecting housing with good jobs, quality schools, and transportation. Central Texas was one of 45 regional areas to receive funding through this new initiative.

Mega-Region Freight Movements: A Case Study of the Texas Triangle

SWUTC Study #476660-00075 Contact: Robert Harrison, UT-Austin, harrison@mail.utexas.edu



The project monitor for this research effort, **Dr. Carol Lewis** from Texas Southern University, is a member of a joint multi-university research team that was recently awarded a TxDOT Project on megaregional freight planning, largely based on the work completed on this SWUTC study. The research team led by **Mr. Robert Harrison** from the University of Texas at Austin and Dr. Lewis met monthly to discuss issues emanating from this research work and to help frame the research findings.

It is also anticipated that the findings from this research effort will benefit the growing number of community and regional planners now studying megaregions in the U.S. It has become apparent to the research team that only the SWUTC and TxDOT are actually studying freight flows at the moment. This will change quickly as the benefits of its inclusion become apparent.



Evaluating the Impacts of the Panama Canal Expansion on the Texas and U.S. Economies

SWUTC Study #476660-00062 Contact: Robert Harrison, UT-Austin, harrison@mail.utexas.edu

Results from this research conducted by **Mr. Robert Harrison** formed the basis of the award of a major two year study, beginning September 2011, on various aspects and impacts of the new Panama Canal locks. The study, a TxDOT Project entitled "Selected 2012-2014 Trade Flows and Texas Gulf Ports: Panama Canal and South American Markets" is being led by the UT-Austin CTR team with contributions from the Port and Waterways group at the Texas Transportation Institute.

Using GPS and ITS Data to Calibrate the Micro Simulation Model VISSIM

SWUTC Study #167963 Contact: Fengxiang Qiao, TSU, qiao_fg@tsu.edu



Findings from this SWUTC research effort and from several other previous SWUTC efforts, were incorporated into a comprehensive proposal to the National Science Foundation (NSF). The research team, led by **Dr. Fengxiang Qiao** of Texas Southern University received the award with the total budget of \$4.88 million for five years starting September 2011. The second subproject of this NSF project, Urban Transportation Environmental Network (UTEN), uses ITS data to achieve better air quality and improve simulation of transportation environmental networks.

Evolution of the Nations' Vehicle Fleet and GHG Emissions Reduction Under Climate Policies

SWUTC Study #161123 Contact: Kara Kockelman, UT-Austin, kkockelm@mail.utexas.edu



Pivoting off of her SWUTC research, **Dr. Kara Kockelman** from the University of Texas at Austin received an additional \$40K in funding to support Plug-in Electric Vehicles research through the UT-Austin and Texas A&M NSF-sponsored Plug-in Electric Vehicle Industry-University Research Center (IURC).

In addition, from experience gained through this and her prior SWUTC work, Dr. Kockelman has been invited to join a new NSF SRNetwork on Sustainable Cities as a key member of the transportation side of the network.

SWUTC Colleagues Recognized for Research Contributions



SWUTC key researcher **Dr. Rashid Abu Al-Rub** at Texas A&M University who investigates the unexplored potential use of carbon nanotubes (CNTs) as reinforcements in improving the tensile/flexural strength and fracture toughness of Portland cement has received the following outstanding recognitions this year.

- Ferdinand P. Beer and E. Russell Johnson Jr. *Outstanding New Mechanics Educator Award* from the American Society of Engineering Education
- The TAMUS Fall 2010 *Teaching Excellence Award*
- The TAMU Tenneco *Meritorious Teaching Award*, College of Engineering
- Truman R. Jones 2010 *Excellence in Graduate Teaching Award*, Zachry Department of Civil Engineering, TAMU



Dr. Talia McCray, SWUTC Executive Committee Member and key researcher and faculty member at the University of Texas at Austin who explores how perceptions of personal security shape where people go, when they go, and what mode they use was the recipient of the *Rosa Parks Diversity Leadership Award* presented by the Heart of Texas Chapter of WTS in April, 2011. This award was in recognition of her work examining factors that influence the transportation decisions of disadvantaged populations.

This year she was also recipient of the 2010 *Best Conference Paper Award* presented by the Urban Affairs Association at their annual meeting in New Orleans, LA on March 17, 2011 for her paper "Analyzing the Activity Spaces of Low-Income Teenagers: How do They Perceive the Spaces where Activities are Carried Out?" that analyzed the relationship between adolescents' perceived safety of places where they engage in their daily activities, socioeconomic characteristics, and actual crime rates of corresponding activity places.



Dr. Zachary Grasley, SWUTC key researcher and faculty member in the field of cementitious materials at Texas A&M University was selected as a *TEES Select Young Faculty Fellow* in April 2011 and also received the 2011 *Zachry Award for Teaching Excellence* in Civil Engineering in March 2011.



Key SWUTC Researcher and civil engineering Assistant Professor **Dr. Amit Bhasin** from the University of Texas at Austin was the recipient of the *2011 National Science Foundation Faculty Early Career Development (CAREER) Program Award*. He will receive \$400,000 over the next five years to support his research on “Investigating Molecular, Physical and Mechanical Properties that Influence Macroscopic Self-Healing in Asphalt Materials”. CAREER awards are given to young researchers in science and engineering who have also translated their work into significant educational activities.

The Faculty Early Career Development (CAREER) Program is a Foundation-wide activity that offers the NSF’s most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and integration of education and research within the context of the mission of their organizations. Such activities should build a firm foundation for a lifetime of leadership in integrating education and research.



SWUTC researcher and Associate Research Scientist with the Texas Transportation Institute, at Texas A&M University, **Dr. Jeff Borowiec** became the first “non-aviation” board member of the Texas Airports Council when he was elected to the panel this spring.

He was nominated to the Texas Airports Council by incoming president John Happ, the director of aviation for Easterwood Airport. “One of Happ’s main goals is to strengthen aviation education in Texas,” explains Borowiec. “I have also been appointed to the newly formed education committee.”

The Texas Airports Council is the only statewide airport group dedicated to a wide range of aviation activities including airport promotion, legislative efforts and aviation education programs.



Dr. Ivan Damnjanovic, Assistant Professor of construction engineering and management in the Zachry Department of Civil Engineering at Texas A&M University and key SWUTC researcher in the fields of project development and finance and public-private partnerships was awarded the *2011 Dick and Joyce Birdwell Award for Teaching Excellence*. This award is in recognition of outstanding undergraduate teaching.



SWUTC Key researcher and faculty member, **Dr. Dominique Lord** at Texas A&M University was the fall 2010 recipient of the Civil Engineering *Excellence in Research Award* in recognition of his work in accident analysis methodology, statistical modeling of crash data and evaluation techniques.



Dr. C. Michael Walton, SWUTC Executive Committee Member, key researcher and faculty member at the University of Texas at Austin is the recipient of the 2011 *Theodore M. Matson Memorial Award* which was presented during the Annual Institute of Transportation Engineers (ITE) Meeting and Exhibit on April 5, 2011 in Lake Buena Vista, Florida. This award is presented annually to recognize an individual who has made an outstanding contribution to the practice of traffic engineering, for example, a practical application of traffic engineering techniques or principles, a valuable contribution through research, the successful adaptation of research findings to a practical traffic situation, or the advancement of the profession through training or administration.

In addition, this year Dr. Walton was invited to lend his expertise to the President's Council on Jobs and Competitiveness. The first panel discussion took place at Southern Methodist University in Dallas on September 1, 2011 and focused on the importance of infrastructure investment to creating jobs across sectors of the U.S. economy.



SWUTC researcher and Associate Research Engineer at the Texas Transportation Institute, Texas A&M University System, **Ms. Melisa Finley**, was recently elected to the TexITE Board of Directors. Melisa will serve a one year term as secretary-treasurer of the Texas District starting on January 1, 2011.

"I am very excited about this opportunity! Being elected to an officer position within TexITE was one of my career goals," Melisa said.

Melisa was a critical contributor to the development of the Brazos Valley Chapter (now a Section). She believed the region needed a chapter to allow TTI staff to meet and interact with staff from other agencies, and to learn more about transportation issues at the local level. In spring of 2000, she was able to recruit others to help her plan an organizational meeting. As a result of her efforts, a Brazos Valley Chapter of TexITE was formed. Melisa was the first president for the Brazos Valley section in 2000-2001 and served as Section representative in 2004-2005.



Dr. Dallas Little, SWUTC Executive Committee Member and key researcher in the fields of materials science has been selected as a Distinguished Member of the American Society of Civil Engineers (ASCE).

Second only to ASCE president, Distinguished Membership is ASCE's highest recognition. Little will be formally inducted during the 141st Annual Civil Engineering Conference in Memphis, Tenn., in October. Since 1852, only 615 individuals have been elected to Distinguished Membership.

Little is a Regent's Professor and holder of the E.B. Snead Chair of Transportation and Civil Engineering in the Zachry Department of Civil Engineering. During his career, Little has been the recipient of numerous awards and recognitions and has served on many boards and review panels.



The American Road and Transportation Builders Association (ARTBA) honored SWUTC Executive Committee Member and University Transportation Center for Mobility Director, **Dr. Melissa Tooley** with its *2010 S.S. Steinberg Award* at their annual meeting held during the 90th Annual Meeting of the Transportation Research Board January 24, 2011.

“Some people ask what happened, some people watch what happens, and some people make things happen. Melissa Tooley makes things happen.” The sentence appears on an ARTBA news release announcing the award. The quote is from an industry peer describing Tooley.

The *Steinberg Award* is named after the founding president of the ARTBA Research and Education Division (RED) and recognizes an individual who has made remarkable contributions to transportation education.

“It is a huge thrill to receive the *Steinberg Award*, and all that it represents,” Tooley said of the honor. “There is no greater tribute than to be recognized by my peers, especially in an organization like ARTBA.”



Dr. Emad Kassem, key SWUTC researcher in the field of materials engineering and pavement design was the recipient of the 2011 *Trinity New Research Award* in recognition of his significant contributions to the materials research program at the Texas Transportation Institute.

In the fall of 2010, he also received recognition from the International Journal of Pavement Engineering (IJPE) for the 2009-2010 Top 5 Cited Papers for his article entitled “Measurements of the Moisture Diffusion Coefficient of Asphalt Mixtures and its Relationship to Mixture Composition.”



SWUTC Executive Committee Member and TTI Director, **Dr. Dennis Christiansen** was elected to a three-year term on the Intelligent Transportation Society of America (ITS America) board and joined the board at the organization’s June board meeting. He will also serve on the ITS America Policy and Business Council, which focuses on transportation policy, business leadership, and government and international affairs.

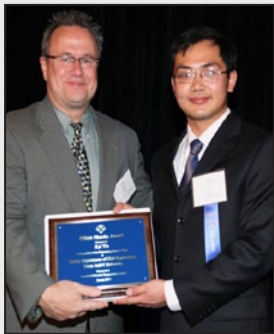
ITS America was established in 1991 as a not-for-profit organization to foster the use of advanced technologies in surface transportation systems. The organization’s members include private corporations, public agencies and academic institutions involved in the research, development and design of ITS technologies to enhance safety, increase mobility and sustain the environment.

SWUTC Student Researcher Achievements



Mr. Sashank Musti, former SWUTC graduate researcher at the University of Texas at Austin, was honored as the 2010 recipient of the *Charley V. Wootan Memorial Award* for the best MS thesis in North America in the field of Transportation Planning and Policy. Mr. Musti's thesis is titled "Evolution of the Household Vehicle Fleet: Anticipating Fleet Compositions, Plug-In Hybrid Electric Vehicle (PHEV) Adoption and Greenhouse Gas (GHG) Emissions in Austin, Texas." While in graduate school, Mr. Musti conducted research in association with Dr. Kara Kockelman's SWUTC study "Evolution of the Nation's Vehicle Fleet and the Market for PHEVs." Mr. Musti received his Masters of Science in Civil Engineering in December 2009 and is now employed by Cambridge Systematics, Inc.

This award was presented at the CUTC Annual Awards Banquet in January 2011 and carried a cash stipend of \$1,500.



Mr. Kai Yin, current SWUTC graduate researcher at Texas A&M University, was honored as the 2010 recipient of the *Pikarsky Award* for the outstanding MS thesis in North America in the field of Science & Technology. Mr. Yin's thesis is titled "Modeling Information Propagation Along Traffic on Two Parallel Roads." While pursuing his masters, Mr. Yin conducted research in association with Dr. Bruce Wang's SWUTC study "Characterizing Information Propagation Through Inter-Vehicle Communication on a Simple Network of Two Parallel Roads." Mr. Yin graduated in December 2010 and is currently pursuing his doctoral degree at Texas A&M University while also serving as principal researcher on a SWUTC effort conducting taxiway aircraft traffic analysis at Houston airports.

This award was presented at the CUTC Annual Awards Banquet in January 2011 and carried a cash stipend of \$1,500.

In May, 2011 Mr. Yin was also awarded the 2011 *Outstanding Student Paper Award* by the Texas District ITE Chapter for his paper titled "Control Delay for Signalized Intersections with Left-Turn Bay Blockage." This award carried a cash stipend of \$1,000.



Former SWUTC PhD student, **Dr. Satish Ukkusuri**, from the University of Texas at Austin was the 2010 recipient of the CUTC-ARTBA *New Faculty Award* presented at the Annual CUTC Awards Reception and Banquet in January 2011. This award recognizes outstanding transportation faculty members for their accomplishments in the field of transportation research and education. While at the University of Texas at Austin, Dr. Ukkusuri studied under the guidance of Dr. Travis Waller and was coauthor on numerous papers and presentations produced by Dr. Waller's SWUTC research efforts. Dr. Ukkusuri is currently an Associate Professor in Civil Engineering at Purdue University.

Congratulations to the following current SWUTC student researchers who were named as *Eno Transportation Foundation Fellows* by the Eno Transportation Foundation. Each year, the Eno Leadership Development Conference gives 20 of the nation's top graduate students in transportation a first-hand look at how national transportation policies are developed. The Foundation focuses on all modes of transportation with the mission of cultivating creative and visionary leadership for the sector.

Students apply to the program early in the year, and those selected as "Eno Fellows" go to Washington, DC, for a week of meetings with federal officials and leaders of business and non-profit organizations in the spring. This year's conference was held during the week of June 6-10, 2011.



Mr. Shain Eversley - SWUTC MS student researcher at Texas Southern University. Shain is a planned December 2011 graduate in Transportation Planning and Management whose research focuses are optimization of on-street parking and promotion of alternate forms of transportation for Washington, DC and developing a methodology to determine commercial vehicle loading zones in the District of Columbia.

Mr. Nicolas Norboge - SWUTC MS student researcher at Texas A&M University. While Nicholas pursues his degree in Public Administration, he is assisting SWUTC researchers on analyzing the incorporation of performance measurements into transportation planning and operations.



Congratulations to the following current SWUTC student researchers who received \$1,000 *ITS Texas Scholarships for Graduate Study in Intelligent Transportation Systems* at the November 12, 2010 Annual Meeting of ITS Texas in San Antonio. These scholarship awards recognize outstanding graduate students enrolled in an ITS-related field at a college or university in the State of Texas.



Xiaosi (David) Zeng - SWUTC Ph.D. graduate researcher at Texas A&M University. While pursuing his degree in Civil Engineering, David is assisting SWUTC researchers in applying inter-vehicle communications technology to improve the transportation system.

Huimin Xing - SWUTC MS graduate researcher at Texas Southern University. While pursuing her degree in Transportation Planning and Management, Huimin is assisting SWUTC researchers on analyzing real time data for traffic operation and management on freeway systems.



2011 Funded Projects

Safety

An Investigation of the Effects of Texting while Driving

P.I. Joel Cooper, TAMU

Assessment of Driver's Workload for Freeway Sign Design

P.I. Fengxiang Qiao, TSU

Automating the Process for Locating No-Passing Zones Using Georeferencing

P.I. Gene Hawkins, TAMU

Potential IntelliDriveSM Applications to Enhance Mobility, Safe and Environmental Security

P.I. Kevin Balke, TAMU

Development of Warrants for Installation of Dual Right-Turn Lanes at Signalized Intersections

P.I. Yi Qi, TSU

Development of a New Method for Optimizing the Skid Resistance and Compactability of Asphalt

P.I. Emad Kassem, TAMU

Taxiway Aircraft Traffic Analysis at the Houston Airports

P.I. Kai Yin, TAMU

A Comparison of Crashes and Fatalities in Texas by Age Group

P.I. Gwen Goodwin, TSU

Performance of Permeable Friction Course (PFC) Pavements Over Time

P.I. Amy Epps-Martin, TAMU

State of Good Repair

Fracture Properties and Fatigue Cracking Resistance of Asphalt Binders

P.I. Amit Bhasin, UT-Austin

Nanotechnology-Based Multi-Functional Self-Heating and Self-Healing Smart Pavements

P.I. Rashid Abu Al-Rub, TAMU

Quantification of the Effect of Maintenance Activities on Texas Road Network

P.I. Jorge Prozzi, UT-Austin

Predicting Damage in Concrete Due to Expansive Aggregates: Modeling to Enable Sustainable Material Design

P.I. Zachary Grasley, TAMU

Performance Evaluation & Mix Design for High RAP Mixture

P.I. Fujie Zhou, TAMU

Search for a Test for Fracture Potential of Asphalt Mixes

P.I. Tom Scullion, TAMU

Evaluate Binder and Mixture Aging for Warm Mix Asphalts

P.I. Charles Glover, TAMU

Economic Competitiveness

Managing Program-level Risks in Delivery of Transportation Infrastructure

P.I. Ivan Damnjanovic, TAMU

Evaluation of Equity Miles Traveled Fee Scenarios in Texas

P.I. Mark Burris, TAMU

International Transportation Best Practices

P.I. Leigh Boske, UT-Austin

Efficient Graph-based Algorithms for Dynamic Traffic Assignment

P.I. Travis Waller, UT-Austin

Understanding Emerging Commuting Trends in a Weekly Travel Decision Frame--Implications for Mega Region Transportation Planning

P.I. Ming Zhang, UT-Austin

Develop a System to Support Preparation of Life-Cycle Budget Needs for Highways

P.I. Zhanmin Zhang - UT-Austin

Megaregions Workshop

P.I. Carol Lewis, TSU

Spatial and Legal Feasibility of New Passenger Rail Corridors in Texas

P.I. Michael Walton, UT-Austin

Pricing Options for Long Combination Vehicles (LCVs) in Texas

P.I. Michael Walton, UT-Austin

Identification of Priority Rail Projects

P.I. Curtis Morgan, TAMU

TTI Aviation Initiative Development

P.I. Jeff Borowiec, TAMU

Livable Communities

Transit Agency Strategies that Encourage Mixed Uses around Stations

P.I. Carol Lewis, TSU

Using the CMAP Travel Tracker to Capture the Activity Patterns of a Youthful Disadvantaged Population

P.I. Talia McCray, UT-Austin

Linking Traffic Safety to Emerging Livability Initiatives

P.I. Eric Dumbaugh, TAMU

Exploring Relationships between Public Transportation Providers and Car Sharing Services

P.I. Randy Machemehl, UT-Austin

Evaluating the Effect of Street Network Connectivity on First/Last Mile Transit Performance

P.I. Luca Quadrifoglio, TAMU

Using Real Time Traveler Demand Data to Optimize Commuter Rail Feeder Systems

P.I. Randy Machemehl, UT-Austin

Environmental Sustainability

Hybrid Distribution Trucks: Costs and Benefits

P.I. Rob Harrison, UT-Austin

Feasibility of Solar Powered Traffic Signs in Houston - A Step Toward Sustainable Control Devices

P.I. Khosro Godazi, TSU

The Design and Estimation of a Household Vehicle Evolution and Composition Model for Assessing the Impact of Transportation Policies on Global Climate Change and Air Quality

P.I. Chandra Bhat, UT-Austin

Evolution of the Nations' Vehicle Fleet and GHG Emissions Reduction Under Climate Policies

P.I. Kara Kockelman, UT-Austin

An Evaluation of Mobile Source Greenhouse Gas Modeling Approaches for Traffic Management Assessment

P.I. Lei Yu, TSU

Development and Validation of a Testing Protocol for Carbon Sequestration Using a Controlled Environment

P.I. Beverly Storey, TAMU

Texas-Specific Drive Cycles and Idle Emissions Rates for Using with EPA's MOVES Model

P.I. Mohamadreza Farzaneh, TAMU

2011 Technology Transfer

Current information, timely delivered to the right people is the desired outcome for the SWUTC's technology transfer program. Both educational and research program activities pursue vital aspects of technology transfer. Educationally, the student/professor relationships are the principal loci of technology transfer activities -- knowledge exchanged between professor and students in classroom and research endeavors. In the research program, technology transfer outcomes are typically associated with the delivery of research products (papers, lectures, presentations, reports, video/media) -- from individual research projects --- to potential and interested users and colleagues. During 2011, the SWUTC researchers made 48 presentations at professional meetings and published 23 journal articles based on SWUTC research. The SWUTC maintains a website at <http://swutc.tamu.edu> that presents overviews all SWUTC research and educational activities. Technical reports generated by SWUTC research projects may be downloaded at <http://swutc.tamu.edu/publications.htm>.

Technology Transfer Highlights

SWUTC Conducts Megaregion Workshop

On November 1st, Texas Southern University's *Center for Transportation Training and Research* invited 20 transportation professionals and academics to consider establishing an agenda for discussing the concept of the megaregion in Texas. Widespread interests in megaregions exists across the world, as historical urban area boundaries fade and proximate major urban centers begin to function as a unit and in tandem. For Texas, the regions including and surrounding Houston, Dallas/Fort Worth, Austin and San Antonio form the core of the Texas megaregion, often termed the Texas Triangle. University of Texas' *Center for Transportation* hosted the event at their facilities in Austin, TX; SWUTC Director **Dock Burke** provided opening comments and set the stage for the day's discussion. Attendees included Carol Lewis, Robert Harrison and Ming Zhang from SWUTC. Findings of on-going megaregions research were reported as follows:

The foundational question for the breakout sessions was whether megaregions should be included as a continuing component in long range plan updates by the metropolitan planning organizations and state. If yes, subsequent questions were what planning activities should be covered, what entity should conduct megaregions' planning, and how priorities should be set concerning the many issues in planning for the megaregion.

Consensus from the breakout sessions concluded that planning should occur for Texas' megaregions. From the transportation vantage point, TxDOT is best suited to conduct the planning, but MPOs are important contributors. Federal guidance for MPOs limits



Workshop breakout session discussion



Workshop participants hear presentation on megaregions from an international perspective

their authority to consider matters outside their boundaries, so how cross-regional connectivity occurs at their boundaries will be important. Attendees advised that future megaregion discussions should include private sector stakeholders working in all the urban areas.

Dialog should occur about adding other Texas regions to the megaregion and perhaps changing the nomenclature from the Texas Triangle to a Texas Diamond, if Rio Grande Valley regions are connected. Attendees are also interested in how the rural areas of the state and West Texas communities are linked to the megaregion. Clearly, the workshop formed the first level discussion and much deliberation and many decisions are still to come.

Region 6 UTCs Meet in New Orleans

Where can we collaborate? That was a primary focus of a meeting of the Region 6 UTCs convened April 27th on the campus of the University of New Orleans. Specifically, attendees discussed research activities underway at each UTC involving transportation responses to emergency-related events. Several common areas of interest and expertise were discovered to suggest future research collaborations among the individual UTCs.

Joining in the discussion and reviewing the activities at their respective universities were - from the Gulf Coast Research Center for Evacuation and Transportation Resiliency (CETR) - **Brian Wolshon, Vinayak Dixit, Thomas Montz, John Renne, Billy Fields, James Amdal, Carol Short and Stan Swigart.** From the Southwest Region University Transportation Center (SWUTC) - **Dock Burke, Herb Richardson, Carol Lewis, Rob Harrison and Barb Lorenz.** From the University Transportation Center for Mobility (UTCM) - **Melissa Tooley.** From the Mack Blackwell Rural Transportation Center (MBTC) - **Tish Pohl.** From the Oklahoma Transportation Center (OKTC) - **Arni Hagen, Michelle McFarland,** and via Skype, **Tony Dark and John Havlicek.** And representing USDOT/RITA - **Amy Stearns.**



Region 6 UTCs Personnel Gather to Discuss Collaborative Opportunities

After a brief overview of the unique research opportunities afforded by UTC funding, personnel from CETR highlighted specific research activities at their UTC. Including work on green asphalt and self-healing asphalt technologies, research efforts currently underway that are leading to new partnerships and evaluating maritime components and their effectiveness to respond to disasters. The CETR's acquisition of a new driving simulator has led to a large increase in external matching work with the LADOTD and with LSU's medical school that is conducting sleep deprivation and drug impairment research. Also highlighted was the upcoming *National Evacuation Conference* to be held in 2012 in New Orleans.

John Havlicek from OkTC reviewed their research efforts that are developing an intelligent winter weather vehicle monitoring system (for snow plows, etc.) which integrates automatic vehicle location (AVL) information with information regarding where and which chemicals have been recently applied on the roadways. Along with weather sensor data from ODOT pavement and bridge sensors as well as other weather information includes data from the Oklahoma Mesonet. This information gathered in a central location will allow for improved monitoring of roadway conditions across the state and will result in increased traveler safety.

Carol Lewis from the SWUTC highlighted the Department of Homeland Security (DHS) National Transportation Security Center for Excellence - Petrochemicals at Texas Southern University. This center's focus is to investigate and advance methods and strategies that will increase the resilience of the nation's multimodal infrastructure to terrorist attack on the movement of petrochemicals, complements and supports SWUTC research efforts.



John Renne of UNO describes his current research efforts

Tish Pohl from the MBTC reviewed the DHS National Transportation Security Center of Excellence at the University of Arkansas which focuses on the security of the intermodal transportation systems of the United States at the local, state, and national levels. A current research effort at MBTC is conducting a computer-based vulnerability assessment and emergency response models for inland waterway transportation systems.

The meeting concluded with a brief overview, by Melissa Tooley from the UTCM, of the current status of legislative and administrative initiatives involving the UTC program.

CTR Hosts Annual Symposium

Dr. Randy Machemehl and Mr. Robert Harrison led the Center for Transportation Research's annual symposium in April which presented research results to 163 attendees. The symposium had six noteworthy speakers that covered a wide range of topics from bridges to freight system operations. The keynote speaker was Mr. Rodolfo R. Sabonge, the Vice President of Market Research and Analysis of the Panama Canal Authority. A poster session during intermission allowed participants to meet with more than a dozen UT Austin graduate student researchers and transportation faculty who will demonstrate progress and preliminary findings in active projects on diverse topics, including reducing vehicle emission through network design, multimodal freight issues, the use of reclaimed asphalt pavement in roadways, the use of modeling in the analysis of large vehicle collisions, traffic management strategies to enhance roadway safety, the evolution of fleet vehicles and how this relates to greenhouse gas emissions, and a toolkit for intermodal rail cost estimation.



SWUTC Research Project Produces Significant Technology Transfer

During the past year, Mr. Binny Paul a graduate student in Dr. Kockelman's SWUTC research program at the University of Texas at Austin, conducted a microsimulation of the US population under different gas prices, plug-in hybrid electric vehicle (PHEV) pricing, feebate policy, and demographic scenarios in order to obtain significant impacts in terms of market share of PHEVs & hybrid electric vehicles (HEVs) and emissions reduction. The results of this study demonstrate the impact of adoption of advanced vehicle technologies like HEVs and PEVs in the U.S. household fleet. The findings also compare various policy measures to motivate increased adoption of these vehicles and associated GHG emissions reductions. **These results can be used to promote upcoming vehicle technologies and generate support for policies aimed at GHG emissions reduction.** Another graduate student of Dr. Kockelman's, Mr. Mobashwir Khan, focused his research on day-to-day vehicle-use patterns in Seattle households over a year's worth of driving data obtained with GPS units. The Seattle multi-day data analysis shows that a substantial part of the U.S. fleet can be replaced by PEVs, based on the individuals' travel behaviors during a year. **The findings of this study can be used to analytically address the problem of "range anxiety" that acts as a psychological barrier to PEV adoption.**

Technology transfer products from Dr. Kockelman's SWUTC research includes the following papers and presentations:

- Paul, B.M., K.M. Kockelman, and S. Musti. 2011. The Light Duty Vehicle Fleet's Evolution: Anticipating PHEV Adoption and Greenhouse Gas Emissions across the US Fleet. Presented at the 90th Annual Meeting of the Transportation Research Board, in Washington D.C., and accepted for publication in *Transportation Research Record*.
- Musti, Sashank, and Kara Kockelman. "Evolution of the Household Vehicle Fleet: Anticipating Fleet Composition, PHEV Adoption and GHG Emissions in Austin, Texas." *Transportation Research Part A*, 45 (8), pp. 707-720, 2011
- Khan, Mobashwir and Kara Kockelman. "Predicting the Market Potential of Plug-In Electric Vehicles Using Multiday GPS Data." Submitted for publication to *Transportation Research Record*, August 2011.
- Tirumalachetty, S., K.M. Kockelman, B.M. Paul. The Welfare Implications of Carbon Taxes Versus Carbon Caps: A Look at US Households. Presented at the INFORMS Annual Meeting in Austin, Texas 2010.

RITA Administrator Visits SWUTC, UTCM and TTI

During Peter Appel's Feb. 18 visit to the SWUTC, UTCM, and TTI it was easy to see what motivates the administrator of the Research and Innovative Technology Administration (RITA), an agency of the U.S. Department of Transportation (US DOT).

"One of my passions is to get people in different aspects of transportation talking to each other and realizing shared areas of interest," Appel said at a luncheon with nearly two dozen graduate students pursuing transportation-related careers. The students represented some of the "best and brightest" in the SWUTC and UTCM programs, from both The Texas A&M University System and Texas Southern University. The previous day, Administrator Appel was in Austin visiting students and faculty/staff at UT-Austin/CTR.

Appel, who was appointed RITA administrator in 2009, coordinates the US DOT's research, education and technology transfer programs, including the University Transportation Centers (UTC) Program. TTI is home to SWUTC and UTCM – two of the nation's 60 UTCs – and Appel came here to see these facilities firsthand.

Appel's tour included overviews of TTI, SWUTC and UTCM, the viewing of a crash test at TTI's Riverside Campus, and a ride in the Institute's instrumented vehicle designed for human factors research. According to Appel, he especially enjoyed the chance to visit directly with students over lunch. "It's an exciting time to be in transportation – to address the issues of safety, global communities and mobility and deal with environmental issues. I want to personally thank you for being in the transportation field."



Administrator Appel speaks to transportation graduate students during his visit

"Students are the ultimate payoff," SWUTC Director Dock Burke told Appel about RITA's impact on funding. "But we also develop critical spinoff activities like new centers, new technologies and collaborations that would not be possible without the funding we get from RITA."

Melissa Tooley, director of UTCM, agrees. "From enhancements to the research that goes into TTI's *Urban Mobility Report* to UTCM's leading role in the discussion on mileage-based user fees, funding from RITA has helped establish ongoing initiatives that are making a difference in solving transportation problems," she told Appel.

With the help of research, education and technology transfer initiatives at UTCM and SWUTC, TTI maintains a close association with many academic units of the A&M – including the colleges of engineering, architecture and agriculture and life sciences, the Health Science Center and the Bush School of Government and Public Service – as well as with other universities such as Texas Southern University, The University of Texas at Austin and Prairie View A&M University.

As he was leaving TTI, Appel said he was impressed with what he saw and heard. "TTI is a national leader in transportation with a tremendous variety of cutting-edge research. I really like the interdisciplinary aspects of its research." Noting the linkages among the engineering, policy and finance issues of transportation, Appel said, "It's great to have each of these groups talking to each other."



Administrator Appel with SWUTC and UTCM graduate students from TAMU, UT-Austin and TSU

Other Significant Journal Publications Generated by SWUTC Research

Mechanical Properties of Nanocomposite Cement Incorporating Surface-Treated and Untreated Carbon Nanotubes and Carbon Nanofibers, B.M. Tyson, R.K. Abu Al-Rub, A Yazdanbakhsh and Z. Grasley, TAMU, published in the *ASCE Journal of Nanomechanics and Micromechanics* (in press).

A Continuum Damage Mechanics Framework for Modeling Micro-Damage Healing, M.K. Darabi, R.K. Abu Al-Rub, TAMU, published in the *International Journal of Solids and Structures*. (in press).

Linking Perceptions of Safety to the Activity Patterns of Low-Income Youth, Talia McCray and Sabina Mora, UT-Austin, published in the *Journal of Urban Affairs*, 2011.

2-Vehicle Zone Optimal Design for Feeder Transit Services, Xiugang Li and Luca Quadrioglio, TAMU, published in the *Public Transport*, 2011.

A Quantitative Method for Analyzing the Dispersion and Agglomeration of Nano-Particles in Composite Materials, B.M. Tyson, R.K. Abu Al-Rub, A. Yazdanbakhsh and Z. Grasley, TAMU, published in *Composites: Part B*, 2011.

Carbon Nanotubes and Carbon Nanofibers for Enhancing the Mechanical Properties of Nanocomposite Cementitious Materials, B.M. Tyson, R.K. Abu Al-Rub, A. Yazdanbakhsh, Z. Grasley, TAMU, published in the *ASCE Journal of Materials in Civil Engineering*, 2011.

Designing for the Safety of Pedestrians, Cyclists, and Motorists in Urban Environments, Eric Dumbaugh and W. Li, TAMU, published in the *Journal of the American Planning Association*, 2011

Dispersion Quantification of Inclusions in Composites, A. Yazdanbakhsh, Z. Grasley, B.M. Tyson and R.K. Abu Al-Rub, TAMU, published in *Composites: Part A*, 2011.

Meso-scale Computational Modeling of the Plastic-Damage Response of Cementitious Composites, S.-M Kim, R.K. Abu Al-Rub, TAMU, published in *Cement and Concrete Research*, 2011.

Distribution Uniformity of Inclusions in Composites; Concept and Characterization, A. Yazdanbakhsh, Z. Grasley, B.M. Tyson and R.K. Abu Al-Rub, TAMU, published in *Part A: Applied Science and Manufacturing*, 2011.

Computational Applications of a Coupled Plasticity-Damage Constitutive Model for Simulating Plain Concrete Fracture, R.K. Abu Al-Rub, S.-M Kim, TAMU, published in *Engineering Fracture Mechanics*, 2010.

Quantitative Measurements of the Dispersion of Nanoparticles and Nanofilaments in Composites, B.M. Tyson, R.K. Abu Al-Rub, A. Yazdanbakhsh and Z. Grasley, TAMU, published in *Composites Part B: Engineering*, 2010.

Published in the *Transportation Research Record*:

Design of Comprehensive Microsimulator of Household Vehicle Fleet Composition, Utilization and Evolution, R. Paleti, N. Eluru, C.R. Bhat, R.M. Pendyala, T.J. Adler, and K.G. Goulias, UT-Austin, 2011.

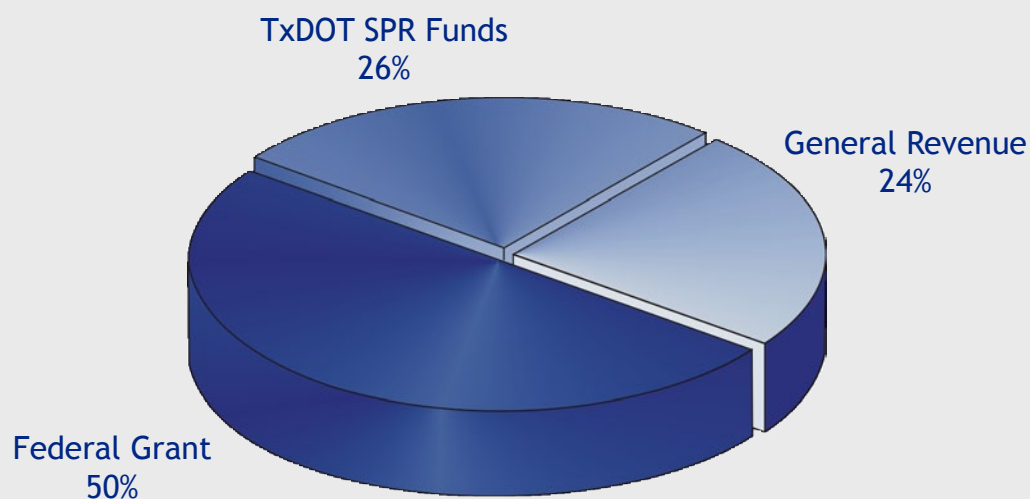
Pedestrian Safety under Permissive Left-Turn Signal Control, Yi Qi and A. Guo, TSU, 2011.

Optional Hedging of Commodity Price Risks in Highway Contracts, X. Zhou and I. Damjanovic, TAMU, 2011.

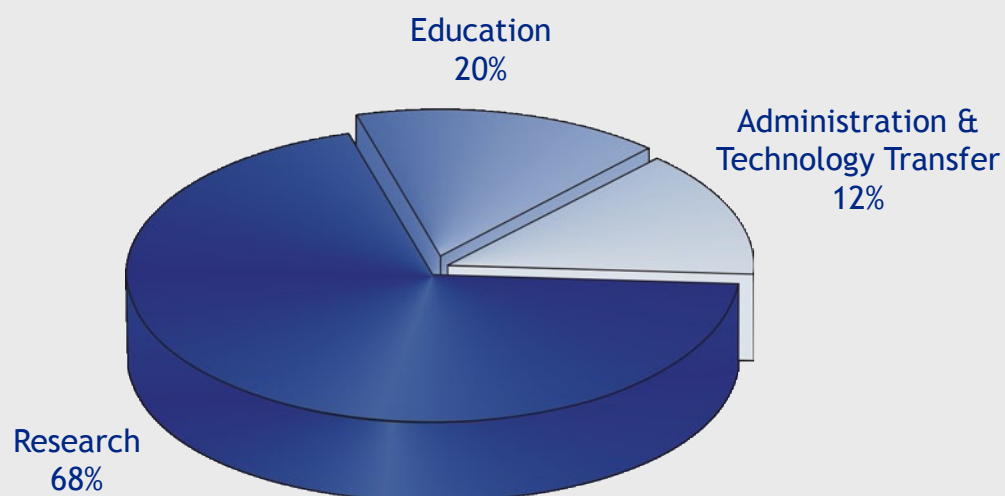
Evaluation of Effectiveness of Coordinated Signal Control on Reducing Vehicle Emissions during Peak Hour vs. Non-peak Hours, F. Tao, Q. Shi and Lei Yu, TSU, 2011.

Distribution of Carbon Nanofibers and Nanotubes in Cementitious Composites, A. Yazdanbakhsh, Z. Grasley, B.M. Tyson and R.K. Abu Al-Rub, TAMU, 2010.

Funding Sources



Expenditures of Funds





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