



The Innovative Engineer

“Innovative Engineering Against Hazards”

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From the Director

by Dr. Kevin C. Womack

At this time of the year we all are enjoying the holidays and looking forward to the beginning of a new year; they do seem to pass quickly. It is at this time of year that I also begin to look forward to the Annual Transportation Research Board (TRB) meeting that is held each January in Washington, D.C. I truly enjoy traveling to D.C., but even more so to attend this meeting, even if it is in January!

I enjoy the variety of activities at TRB, beginning with the Council of University Transportation Centers (CUTC) annual banquet and the recognition of each university's Student of the Year; this is truly a major, and wonderful, event recognizing those who have made significant contributions to transportation and those who will make equally great contributions in the future.

Then we have the opportunity to meet together and with our wonderful Research and Innovative Technology Administration (RITA) overseers. Their efforts on our behalf are always greatly appreciated.

Monday begins a terrific week of knowledge sharing and gaining insights to the work of thousands of our transportation colleagues. This is a marvelous opportunity to look into what are, and what will be, best practices in our industry. It is with pride that I look at the myriad activities which my colleagues and graduate students from the Utah Transportation Center are involved in at TRB.

The Utah Transportation Center has five faculty and seven graduate students participating in the presentation of 12 papers at TRB, for a small university transportation center I believe that this is an outstanding ef-

(See **DIRECTOR**, page 2)

ITS America's AET Webinar Presented by UTC Colleague, Dr. Kevin Heaslip

On November 16, 2010, ITS America hosted a webinar focused on Automated Electric Transportation (AET). Dr. Kevin Heaslip, UTC faculty colleague, and AET researcher, was the featured presenter.

The webinar involved approximately 60 participants drawn from academia, transportation professionals and policy makers. This forum was an opportunity for participants to learn more about what AET is, and what has been done so far in this cutting-edge field.

Focus of the presentation included sharing how the research is evaluating the cost of moving toward AET, what kind of framework has been developed to facilitate the evaluation, and the different transition scenarios that have been developed so far. Participants were given the opportunity to ask questions and learn more about how AET could radically change transportation as we know it today. Just as the intelligent transportation of the 1960s consisted of state-of-the-art highways as the primary means of transportation, the AET future will move closer to a reality as what we consider “state-of-the-art” advances as well.

The presentation was well received by those who took part. Even more transportation professionals will have the chance to learn more about AET research when Dr. Heaslip and graduate researchers from USU make presentations at the upcoming 2011 TRB Conference, and at the 2011 ITS World Congress.

DIRECTOR (continued from page 1)

fort. The TRB conference is extremely important to us, and we strive hard to get as many of our students to attend, and this year we will have about a dozen graduate students attending.

As we begin a new year, I look forward to seeing all of you at various meetings and conferences. May we continue to use these venues to make known all of the good work that is done at university transportation centers across the country in order to ensure that our work is recognized as a valuable national asset.

Automated Electric Roadway Workshop Held in Park City

On November 10th and 11th the Partnership for Roadway Electrification and Automation (PREA) held a workshop to develop a roadmap for research and implementation of a National roadway system that would include automated vehicles and real time, inductive transfer of electrical energy to vehicles.

The Partnership for Roadway Electrification and Automation is a working group of representatives from the Oak Ridge National Laboratory, the National Renewable Energy Laboratory, Utah State University, the University of California at Berkeley, foreign universities and transportation consultants. The group has the long-range goal of implementing an automated, electric roadway system in the United States and other countries around the world.

The workshop was hosted by the Energy Dynamics Laboratory (EDL) of Utah State University, with EDL Director Jeff Muhs along with Dr. Paul Israelsen, Dr. Hunter Wu, and Karen Wolfe representing the EDL. The Utah Transportation Center (UTC) was represented by Center Director Dr. Kevin Womack, Dr. Kevin Heaslip, and Dr. Chuck Louisell. Other attendees at the workshop included Will Charles from the University of Auckland, Florian Risch of the University of Erlangen (Germany), Dr. Steve Shladover from UC Berkeley, Aaron Brooker of the National Renewable Energy Laboratory, Matt Scudiere of Oak Ridge National Laboratory, consultant Craig Stephan, and Dr. In-Soo Suh joined in from Korea via the web.

The first morning of the workshop consisted of presentations by the participants on research that is currently being conducted within the various organizations. After a working lunch, the group discussed the status of the PREA roadmap, funding opportunities,



Jeff Muhs, Director of the Utah State University Energy Dynamics Lab, presents to workshop attendees a timeline for PREA efforts.

and the direction that PREA wants to take in terms of growth in membership and activities.

The second day consisted of two break out groups, one focused on the inductive transfer of energy between the roadway and vehicles, and the other focused on the automation of the vehicles and roadway system. The objective of these groups was to better define short term research and implementation goals for each of these areas. The results of these discussions are to feed into the development of the roadmap.

It is anticipated that through the efforts of PREA, the move to an automated and electric roadway system will take on importance not only in the United States—in terms of reducing the dependence on foreign oil, reducing carbon emissions, reducing roadway congestion, and increasing traveler safety—but around the world as well.

UDOT Research Director Visits UTC

On Monday, November 1 Dr. Cameron Kergaye, Director of Research at the Utah Department of Transportation (UDOT), and Abdul Wakil, Technology Transfer and Implementation Engineer, paid a visit to the Utah Transportation Center (UTC).

Dr. Kergaye has worked for UDOT for the last 18 years and was recently appointed to the position of Director of Research at UDOT after serving for two years as the Statewide Program Manager. This was his first visit to the UTC in his new assignment. The objective of the visit was to familiarize Dr. Kergaye with the efforts and operations of the UTC and the Utah Local Technical Assistance Program (LTAP) Center, which is also part of the UTC.

The initial portion of Dr. Kergaye's visit was spent with UTC Director, Dr. Kevin Womack, who explained the history of the UTC and the federal University Transportation Centers program, the educational and research objectives of the program, and the funding sources for these efforts, which includes UDOT. The discussion emphasized the excellent relationship between the UTC and UDOT, and that the relationship is not only a win-win for both groups but is very much synergistic.

After meeting with Dr. Womack, Dr. Kergaye was introduced to Nick Jones, the Utah LTAP Director, who explained to Dr. Kergaye the goals and efforts of the LTAP program and the success that LTAP has had in

Utah since it's establishment in 1988.

Subsequent to the time Dr. Kergaye spent with Mr. Jones, he met with a group of research colleagues from the UTC who explained their efforts. Within this group was Dr. Marv Halling, UTC Associate Director, and Dr. Paul Barr who explained the FHWA Long Term Bridge Performance (LTBP) activities within the UTC, and Dr. Kevin Heaslip who discussed research efforts in the transportation engineering area.



*Dr. Cameron Kergaye,
Director of Research, Utah
Department of Transportation*

Before Dr. Kergaye left the campus he was also able to tour the UTC facilities on the main Utah State University campus, which included the LTAP offices, the LTBP laboratory, and the area which will soon contain the combined UDOT northern Utah traffic operations center and UTC ITS laboratory. Both the LTBP laboratory and UDOT traffic operations center/ITS laboratory are contained in the new Sant Engineering Building (see related article, below).

ITS Lab Under Construction at USU

When I met with Dr. Heaslip in what will soon become the Intelligent Transportation Systems (ITS) Lab at Utah State University, the walls were bare and the desks and chairs that lined the area were awaiting relocation. But, before our next issue of the newsletter, this barren space will be transformed into a functioning, high-tech ITS Lab.

The fiber-optic connections are already in place, laid along U.S. Highway 89 this past summer. Next to come will be the 6, 40 inch flat screen monitors across the back wall, with work stations lined up in T-formation to allow for access to the data collected as part of

the system managed by the Utah Department of Transportation (UDOT) Traffic Operations Center headquartered in Salt Lake City. Anywhere from 6-8 faculty and student researchers will be able to work with the state-of-the-art modeling software to analyze the traffic data collected by the system.

The nearly \$3.2 million overall funding for the Lab comes from UDOT, Utah State University and the Utah Transportation Center. The purpose of the lab is to allow expanded analysis of traffic data to help UDOT and local agencies deal with traffic issues. The lab will be up and running in early 2011.

The Utah State University Systems, Materials & Structural Health (SMASH) Lab continues to be a vital part of the many research projects conducted by Utah Transportation Center faculty researchers and their students.



Center Projects in Progress

- UTC0803 “ABC Deck Connections, Laboratory Testing and Evaluation,” Dr. Marvin Halling, PI. Co-funded by UDOT and UTC.
- UTC1001 “Work Zone Design Evaluation,” Dr. Kevin Heaslip, PI. Co-funded by UDOT and UTC.
- UTC1002 “Forecasting Network Traffic for Small Communities in Utah,” Dr. Anthony Chen, PI. Funded by UTC.
- UTC1003 “Highway Wildlife Crossing Design Study,” Dr. Patricia Cramer, PI. Funded by UTC.
- UTC1004 “Investigation of the Use of Texel Cameras for Counting Passengers on Public Transportation, Phase II,” Dr. Scott Budge, PI. Funded by UTC.
- UTC1101 “Parametric Study of the Effects of Seismic Strength Degradation of Fine Grained Soils Beneath Highway Embankments and Bridge Abutments,” Dr. James Bay, PI. Funded by UTC.
- UTC 1102 “Integrated Corridor Pricing Structure Modeling and Evaluation,” Dr. Kevin Heaslip, PI. Funded by UTC.
- UTC 1103 “Surveying the Transportation Needs of Low Mobility Individuals in Cache Valley,” Dr. Anthony Chen, PI. Funded by UTC.
- UTC 1104 “Transportation Network Resiliency Framework Development,” Dr. Kevin Heaslip, PI. Funded by UTC.

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