

University Transportation Center for Federal Region X at the University of Washington

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## RITA Administrator Brubaker Visits TransNow, OTREC, & CUTC

The USDOT Research and Innovative Technology Administration (RITA) Administrator, Paul Brubaker, and University Transportation Center (UTC) Liaison, Thomas Marchessault, visited the TransNow center on April 30, 2008.



*Paul Brubaker*

TransNow Director, Nancy Nihan, presented an overview of the center's administrative structure, research projects, technology transfer activities, and Advanced Institute program. Executive staff and transportation faculty were introduced and presented brief overviews of their current research activities. Students also spoke of their experiences with the TransNow Advanced Institute program, highlighting the many educational opportunities provided by TransNow.

The afternoon provided the visitors with demonstrations from the Smart Transportation Applications and Research Laboratory (STAR Lab), highlighting current TransNow ITS research projects. A videoconference was also held at the new TransNow Communication Center (TCC) with remote attendees from the Washington State Department of Transportation (WSDOT) Research Office and representatives from the TransNow consortium member, Washington State University (WSU). The group also met with the UW College of Engineering Associate Dean of New Initiatives, Dan Schwartz, and the Acting Chair of the Department of Civil & Environmental Engineering, Tim Larson.

Mr. Brubaker commented on the future of transportation and was impressed by the innovative and collaborative approaches TransNow is making towards current and future transportation issues. The visit culminated with a working dinner attended by TransNow executive staff and principal investigators.

The following day Administrator Brubaker visited the Oregon Transportation Research and Education Consortium (OTREC) on the Portland State University campus where he was impressed by OTREC's interdisciplinary approach to the transportation problems of the future. By the end of his term in office (i.e., before January 2009) Mr. Brubaker plans to have visited at least half of the UTCs in RITA's UTC Program.

Administrator Brubaker, along with other representatives from RITA, also attended the Council of University Transportation Centers (CUTC) meeting held June 24-27, 2008 in San Jose, California. During a panel presentation to that group, Brubaker underscored the national importance of the UTC program and his plans to be a strong advocate for it in the months ahead stating that: "As we move forward towards reauthorization, the Department is focused on ensuring that Congress shares our belief that the UTC program is a vital asset of our nation's national transportation strategy."



*CUTC Summer Meeting in San Jose, CA*

**Transportation Northwest  
Regional Center  
Newsletter**

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## TransNow Research FY09

Each year, TransNow sponsors research projects which align with the center theme set out in our strategic plan of: Traffic Operations with an emphasis on ITS, Freight Operations and Logistics with an emphasis on freight mobility, and Infrastructure Construction with an emphasis on smart infrastructure. As we enter a new fiscal year, TransNow and its matching partners will support the following new and continuing research projects:

### *New Research:*

***Low-Cost, Distributed-Sensor-Based Weigh-In-Motion Systems:*** Monitoring truck weights is essential for traffic operations and safety, roadway design, and regulations. This work aims to investigate an approach to Weigh-In-Motion systems that can greatly reduce costs and increase flexibility and reliability. Contact: Greg Miller, UW, gmiller@u.washington.edu

***Fatigue Testing of a Critical WSDOT Luminaire and Traffic Pole Details:*** A WSDOT research program is underway to review fatigue life of luminaire and traffic signal poles. This proposal aims to develop a laboratory fatigue test program to investigate the most critical details identified from the research and thereby assist the WSDOT program. Contact: Jeff Berman, UW, jwberman@u.washington.edu

***Dynamically calibrated arterial cameras:*** In the heart of the urban area, transit passenger tracking and prediction capabilities degrade substantially due to the inability to reliably obtain satellite ranges. Using existing Wi-Fi sites as beacons would vastly improve the tracking in the urban area and this project will expand the scope of tracking to include buses in urban areas. Contact: Dan Dailey, UW, dan@its.washington.edu

***Developing a truck trip generation tool:*** Truck transportation is a derived demand and there is little information available on how varying land uses generate truck trips. Such information is necessary for assisting travel forecasting models as well as for planning for a range of freight-oriented infrastructure construction projects. The project will use Geographic Information Systems tools to explore innovative means of linking a diverse set of transportation, land use, economic, and business location databases to develop a non survey-based truck trip generation and truck volume tool. Contact: Ed McCormack, UW, edm@u.washington.edu

***Transportation Impacts of Structural and Geographic Shifts in the Pacific Northwest Warehousing Industry:*** Employment data indicate that the warehousing industry experienced rapid growth that resulted in geographic shifts at the national, regional, and local scales. Uneven growth in warehousing establishments across the Pacific Northwest has likely exerted a significant impact on the regional transportation system, and identifying the impact is the goal of the proposed study. Contact: Anne Goodchild, UW, annegood@u.washington.edu

***Pacific Northwest Logistics Patterns and the Port of Prince Rupert:*** The Port of Prince Rupert is developing a significant marine container terminal. The port's rural location may be viewed as both an asset and vulnerability as there is less congestion yet less freight infrastructure. This project will gather goods movement data on trade between Alaska, Washington, and British Columbia and provide a framework for future research concerning the role of rural ports, in particular those in northern locations. Contact: Anne Goodchild, UW, annegood@u.washington.edu

***Requirements for Washington Statewide Freight Simulation Model:*** This work will develop a Geographic Information System-based data flow network and will help increase our understanding of the sensitivity of economic productivity to infrastructure availability. Contact: Anne Goodchild, UW, annegood@u.washington.edu; Eric Jessup, WSU, eric\_jessup@wsu.edu

***School Based Travel: A Mobility Assessment:*** The numbers of children being driven to schools by their caretakers has increased and has contributed to worsening traffic congestion. This project aims to improve the quality and extent of the data needed to understand current mode split in school based travel, and examine associations between mode split and school size, location, student population, and transportation facilities available around schools. Contact: Anne Vernez Moudon, UW, moudon@u.washington.edu

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***Design Choice of Aggregate Gradation for Hot Mix Asphalt Mixtures:*** The objective of this project is to perform an extensive study on aggregate materials so that the suitable aggregate gradation can be designed for achieving the highest Hot Mix Asphalt performance. Contact: Shihui Shen, WSU, sshen2@wsu.edu

***Real-Time Travel Time Prediction on Urban Traffic Network:*** Travel time is one of the most desired variables for Advanced Traveler Information Systems. In this research, an arterial travel time prediction algorithm will be developed and implemented in an interactive online platform that interfaces with the Google Map software. Contact: Yin Hai Wang, UW, yinhai@u.washington.edu

***A Microscopic Approach for Quantifying Recurrent and Non-Recurrent Delays on Freeways:*** Travel delays associated with freeway bottlenecks and/or incidents are important data for estimating freeway travel cost. Quantifying recurrent and non-recurrent delays proves challenging, and this project will develop a new algorithm that will utilize data from varying congestion conditions. Contact: Yin Hai Wang, UW, yinhai@u.washington.edu

***Online Training Course in Sustainable Transportation Infrastructure:*** This work will develop an online course in sustainable transportation infrastructure available for use by Region X Consortium universities. Contact: Shane Brown, WSU, shanebrown@wsu.edu; Steve Muench, UW, stmuench@u.washington.edu

***Power Roads:*** The proposed basic research project will investigate our ability to produce electricity from transportation infrastructure via inexpensive photovoltaic systems. It will test whether or not roads and bridges can be converted into a utility via the production of renewable energy. Contact: Joe Mahoney, UW, jmahoney@u.washington.edu

***The Effect of Light Rail Transit on Travel Mode Choice and Physical Activity: A Natural Experiment:*** This project will conduct before- and after-surveys of the travel mode choice and physical activity for those adults who live within one mile of a light rail system. Contact: Anne Vernez Moudon, UW, moudon@u.washington.edu

## ***Continuing Research:***

***Improved Freight Modeling:*** This research addresses an emerging need by local, state and regional transportation planners, academics, and policymakers to better understand the dynamics of ocean port-to-handling facility and handling facility-to-final market freight movements as a function of the regional transportation network, land values, volumes, and value of goods moved. Contact: Anne Goodchild, UW, annegood@u.washington.edu; Eric Jessup, WSU, eric\_jessup@wsu.edu

***Incorporation of Forward-Directivity into Seismic Hazard Analysis:*** This research proposes the development of a methodology for the inclusion of the effects of near-fault forward-directivity into the determination of seismic demand for a structure or a geotechnical system. The study focuses on the potential for near-fault effects associated with the Seattle and Tacoma faults in Washington State. Contact: Adrian Rodriguez-Marek, WSU, adrian@wsu.edu

***De-Bonding Cracking in Hot Mix Asphalt Pavement:*** This research will identify and perform statistical and forensic analyses on pavements thought to suffer from de-bonding cracks. This project will provide an understanding of this failure phenomenon in order to improve specifications and practice for tack coat application to combat this failure, and results in pavements with lower life-cycle costs. Contact: Steve Muench, UW, stmuench@u.washington.edu

***Developing an Area-Wide System for Coordinated Ramp Meter Control:*** This research addresses the problem with current freeway ramp metering methods. The development of an area-wide ramp metering system will coordinate the previously isolated ramp meters for system-wide optimization and thereby decrease congestion on local streets surrounding freeway ramps. Contact: Yin Hai Wang, UW, yinhai@u.washington.edu

***Occlusion Robust Vehicle Tracking Using Motion-based Features:*** This research proposes an improved method of tracking vehicles for traffic data collection and operations. The development of an occlusion robust vehicle tracking algorithm using the Kanade-Lucas-Tomasi feature tracking algorithm will improve vehicular tracking where there were previous troubles with vehicle occlusion and camera shaking. Contact: Yin Hai Wang, UW, yinhai@u.washington.edu

# Eno Conference: Educating Future Transportation Leaders

Contributed by Kari Watkins

Each year, TransNow sponsors a student's attendance to the Eno Leadership Development Conference in Washington, DC. The student is selected for demonstration of strong leadership skills and will join a small group of America's top graduate students to participate in a week-long program focused on transportation policy-making. This year, TransNow sponsored Kari Watkins, a UW PhD student, to participate in the conference. Below is a letter from Kari to TransNow about her experience:



Kari Watkins

*The overall theme of the Eno Program this year was the new authorization of the transportation bill. Rather than refer to a reauthorization as in years past, the policy-makers in Washington DC are generally agreeing that the 2009 bill should mark a new era in transportation. Since the creation of ISTEA in 1991, the transportation program has stayed the course, and it has been since the creation of the Eisenhower Interstate program that a dramatic investment in transportation has taken place. Throughout the conference speakers emphasized that greater investment in transportation will be critical to continued livability and economic development in America.*

*Although the general agreement seems to be one of change, there is little agreement about what the specific elements of the bill should be. One area of general consensus is that of implementing more direct user fees for the use of America's highways, rather than the continued application of the gas tax. With the insolvency in the Highway Trust Fund, a change in the manner in which transportation is funded is a major point of discussion amongst policy-makers. Public-private partnerships, limited earmarking of funds and the elimination of silos of modal funding were all discussed at length by the speakers at Eno. General themes of greater investment in public transportation and exclusive infrastructure for freight movement were generally agreed upon, although with some dissention. Accountability for system performance, global warming, rising gas prices, freight mobility, urban congestion, and decreasing the highway fatality rate were also major topics of focus.*

*All in all, the Eno program was an amazing introduction to the policy-making process in transportation. We were introduced to the role of interest groups, lobbyists, Congressional committees and government agencies in developing policy and financing of transportation at the federal level. In addition to sessions mentioned above and others on aviation, public transportation, and safety, the program also focused on career planning advice. The caliber of the speakers was extraordinary and the program was designed to encourage the students to interact with the speakers to ask questions and advice about their topics and careers.*



Lillian Borrone, Chair of Eno Board of Directors, and Kari Watkins

*The experience was one which I will never forget and the contacts I made will be invaluable to my career in transportation. I want to thank you again for the opportunity to attend. I urge you to continue to invest in the Eno program and to encourage University of Washington students to apply.*

TransNow is pleased to partner with the Eno Transportation Foundation in providing this invaluable opportunity for graduate students. The Eno Leadership Development Conference is an excellent resource for students to explore their professional potential. For more information about Eno or the Leadership Conference, visit their website at <http://www.enotrans.com/>.



Alaska



Idaho



Oregon



Washington

## Regional News

### *UTC Administrators Meet, Build Collaboration*

UTC Administrators met in conjunction with the CUTC summer meeting, June 24-27, 2008 in San Jose, California. The Mineta Transportation Institute (MTI), RITA, and CUTC combined their talents to organize the highly successful meeting. RITA Administrator Paul Brubaker also took time to meet with the administrators to answer questions and participate in discussion topics such as best practices and various ideas as to how to enhance collaboration between administrators across the UTC program.



*Paul Brubaker and UTC Administrators*

### *OTREC Sponsors Professional Development Course on Roundabout Design and Analysis*

OTREC sponsored a two-day course on Roundabout Design Analysis, taught by Brian Ray and Wade Scarborough of Kittelson & Associates. Professionals from around the Northwest and Canada participated in the interactive course. This is part of OTREC's ongoing effort to provide relevant and affordable training and education opportunities for working professionals.

### *TransNow to Host 2008 Student Conference*

TransNow will host the 6th Annual Region X Student Conference at the UW. The conference is scheduled to take place in autumn 2008. It will include an address by a keynote speaker as well as student research presentations. Students from Region X Consortium universities are invited to share research with their peers and expand connections in the field of transportation engineering.

### *Region X Transportation Consortium Meeting*

On May 19 and 20, Representatives of the Region X Transportation Consortium met at the Alaska UTC in Fairbanks. Discussion topics included the Region X Consortium Reception held at TRB, Region X Student Conference, Pooled Fund proposal, upcoming meetings between UTC directors, and future collaboration between UTC administrators. The meeting is scheduled for November 6 and 7 and will be hosted by Portland State University.

### *Region X Educational Proposal Approved*

The Region X collaborative proposal to deliver a new educational program to a target audience of university students and transportation professionals in the Pacific Northwest was selected for funding by the Federal Highway Administration (FHWA). Region X representatives will be meeting this summer to discuss initial planning to develop four course models to be delivered in a distance-based learning environment.

## Traffic Management Center Internship Enriches Education, Benefits Future Contributed by Will Kim and Jerome Drescher

The WSDOT Traffic Management Center (TMC) located in Shoreline is the control center for all of the Intelligent Transportation Systems (ITS) equipment present on freeways in the greater Seattle area. The main mission of the TMC is to provide drivers with relevant traffic information as well as use equipment to help reduce congestion on freeways in the area. Each year, TransNow supports tuition costs for interns at the TMC. Will Kim and Jerome Drescher (BSCE, '08) are two such interns who benefited from this support. Below, they share their experience and plans for the future.

**Will Kim:** *I've learned how to operate a lot of important equipment such as ramp meters, cameras, and Highway Advisory Radio Transmitters, tools used in managing traffic. After graduation I am working for Parsons Brinckerhoff in the 520 Floating Bridge Replacement Team. Within this team, I will be using transportation engineering software such as Microstation and Autocad to help design certain components of the bridge replacement.*

**Jerome Drescher:** *My two years as a flow operator helped me achieve an extremely high level of familiarity with the traffic conditions, roadways, and equipment present on the freeways in the greater Seattle area. Now as an engineer, I'm able to apply that familiarity I've developed to applications such as ramp metering to improve conditions on Seattle freeways. After graduation, I'm working in the Freeway Operations division of WSDOT. My job consists of managing operators in the TMC, conducting traffic studies, and managing the ramp meters in the Seattle area.*



*Jerome Drescher and Will Kim*

## TransNews

### *TransNow Hosts Exhibits at COE Open House*

TransNow hosted three interactive exhibits at the annual College of Engineering Open House: Transportation Jeopardy, Radar Gun Race, and Magnetic Levitation Cars. There was ample volunteer support from transportation students. This year's event was held April 25-26 and was attended by over 8,000 individuals. Thanks for another successful year!

### *Kelly Pitera Receives Fellowship*

Graduate student Kelly Pitera has been awarded the Henry L. Gray Memorial Fellowship for the upcoming academic year. Her paper, "Interpreting Resilience: An Examination of the Use of Resiliency Strategies within the Supply Chain and Consequences for the Freight Transportation System," was recently accepted for presentation at the 2008 International Trade and Freight Transportation Conference in September.

### *TransNow Sends-Off Students into Summer Break*

TransNow celebrated the end of the academic year by hosting an ice cream party for transportation faculty and students. TransNow wishes everyone a relaxing and safe summer.

### *TransNow Communication Center Completed*

TransNow completed construction of a video conference facility that will allow participants to connect with others via Polycom technology. It is equipped with a speaker's podium and has the capability to record lectures. The room seats 10 participants at tables with room for four additional participants.

Procedures and fees for the use of the room are currently being established. Please stay posted for updates about the center's formal opening. Thank you to all who assisted the construction of the TransNow Communication Center.

### *Congratulations to TransNow Graduates of 2008*

Congratulations to TransNow students who completed degrees at the UW and WSU in 2008. Best wishes to you as you continue your education or pursue a career in transportation engineering and/or planning. Listed below are this year's graduates of the TransNow Advanced Institute's core program currently housed in the UW CEE Department.

**BSCE:** Jerome Drescher, Daniel Johnson, Sayuri Kato, Will Kim, Clint Monken, Adam Parast, Landon Rawson, Tyler Winkley

**MS, MSE, MSCE:** Kathy Davis, Masoud Kayanda, Dustin Rasmussen, Carl Langford, Kelly Pitera

**Ph.D.:** Ryan Avery, Patikhom Cheeverunothai, Jianyeng Zheng, Guohui Zhang