2007 – 2008 Annual Report

OTREC
OREGON TRANSPORTATION RESEARCH AND EDUCATION CONSORTIUM

The Oregon Transportation Research and Education Consortium (OTREC) is a National University Transportation Center sponsored by the U.S. Department of Transportation's Research and Innovative Technology Administration.

Consortium Partners
Portland State University
University of Oregon
Oregon State University
Oregon Institute of Technology

This publication is a report of OTREC's transportation research, education, and technology transfer activities for October 1, 2007 – September 30, 2008.

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Contents

Message from
Robert L. Bertini, Ph.D., P.E., Director

The Oregon Transportation Research and Education Consortium (OTREC) is pleased to present our second Annual Report describing our accomplishments from October 1, 2007 through September 30, 2008. As OTREC celebrates its first 22 months of operation, we are excited to observe the numerous achievements of our students, faculty, staff, and our many partners. I would like to thank all of my colleagues, including the pre-award and post-award staff at our four campuses, for making these achievements possible.

During this past year we have enjoyed watching our students' many successes, and have marveled as our faculty researchers' innovative ideas come to fruition through completed projects. With a heightened focus on climate change and sustainable transportation solutions, it is clear that OTREC's multidisciplinary, multimodal theme, focusing on advanced technology and the integration of land use, transportation and healthy communities, continues to be relevant.

We continue to appreciate our strong partnership with the Oregon Department of Transportation (ODOT), with whom we have partnered on about half of our projects. We are also pleased that we now have partner relationships with 28 other transportation agencies and organizations — reflecting OTREC's diverse appeal.

We were honored to host our USDOT Research and Innovative Technology Administration (RITA) sponsors twice during this past year. Robin Kline, Amy Stearns and Lydia Mercado conducted a site visit in November. The visit provided a great opportunity for students and faculty to present their research results. RITA Administrator Paul Brubaker and Tom Marchessault, UTC RITA liaison, also visited OTREC this spring, and we were amazed at the Administrator's energy and passion for transportation. Mr. Brubaker reminded me (as a civil engineer myself) that we must have multidisciplinary solutions to transportation problems, and that civil engineers don't have all the answers! Fortunately, OTREC has faculty and students from 15 different disciplines leading our projects, and most projects involve more than one investigator, in many cases from more than one campus. We believe that we are on the right track with our collaborative, multidisciplinary approach.

I am proud of our students and faculty for their profuse accomplishments, and grateful to our staff, Executive Committee, Advisory Board, and our many partners and supporters in the transportation community for their backing. This Annual Report contains just a sampling of our accomplishments during this past year. As always, I encourage you to visit our Web site at www.otrec.us to learn more. I also hope you will contact me directly if you would like to join us in our work; you can reach me at bertini@pdx.edu or 503-725-4249. We look forward to working with you.

OTREC Milestones 2007–2008

01.10.08
Region X Consortium signs historic memorandum of understanding for partnership

01.11.08
OTREC issues third Request for Proposal

05.01.08
OTREC hosts RITA Administrator Brubaker

05.15.08
OTREC researcher Dill gives briefing at Congressional Bike Caucus

06.09.08
Executive Committee announces 2008-2009 projects

2007

Community Recognition of OTREC's Achievements

Peter DeFazio, U.S. Congressman

I am pleased to mark the second anniversary of the Oregon Transportation Research and Education Consortium (OTREC) – Oregon's first University Transportation Center created in the 2005 surface transportation law, SAFETEA-LU. The research being conducted at OTREC's partner institutions – Portland State University, the University of Oregon, Oregon State University and the Oregon Institute of Technology – highlights how this collaborative approach plays off the strengths of each partner institution's unique research specialty. This approach has the potential to develop innovative and cutting-edge research to advance our thinking about our nation's transportation policy framework. The future of our nation's transportation system will depend on rigorous research, education and technology transfer like that being conducted by OTREC and detailed in this report. Congratulations to OTREC's students and graduates on an outstanding year!

Rex Burkholder, Portland Metro Councilor, Chair Joint Policy Advisory Committee on Transportation

With the need to address our current challenges of climate change and funding our aging infrastructure, it is important to have reliable and useful research for policy makers to use in our decision-making. The partnership between Portland State University, the University of Oregon, Oregon State University and the Oregon Institute of Technology is an important one that will only strengthen the partnerships that jurisdictions are forming to identify solutions to Oregon's current transportation issues. Their research on smart growth in suburbs, road user fees and climate-friendly transportation are timely and relevant to the work of the Joint Policy Advisory Committee on Transportation in the Portland metro area . I look forward to working with other partners in this region and all across Oregon in utilizing the important work of OTREC and engaging with OTREC to determine how we can continue to work together to improve our region and state.

Gail Achterman, Chair of the Oregon Transportation Commission and Director of the OSU Institute for Natural Resources

The partnership between the Oregon Department of Transportation and OTREC comes at a time when the needs of the transportation system and the talents to be found within Oregon's university system are strategically aligned. Transportation in Oregon is at a crossroads, and as we move in new directions ODOT faces new challenges. These challenges will entail exploring new directions in transportation policy and finance, incorporating the best and most appropriate new transportation technologies, as well as careful examination and validation of both old and new practices. As ODOT moves forward, transportation research conducted by Oregon universities will provide vitally important tools to address these needs. At the same time, the transportation workforce is aging, both nationally and in Oregon. Over the next few years, ODOT faces an unprecedented brain drain due to retirements and career changes. In meeting this challenge, we also look to Oregon's institutions of higher education to recruit young people to the transportation field, as well as to provide continuing education to develop and retrain our existing workforce. I have high expectations for an ODOT/OTREC collaboration that delivers timely and practical solutions to address our research priorities and fill our workforce needs. We look forward to a long, healthy partnership.

06.24.08
OTREC Director Bertini testifies on sustainable energy-efficient transportation infrastructure before U.S. House of Representatives

09.08.08
New Portland State University President Wiewel visits OTREC

09.24.08
OTREC partner institution meeting at University of Oregon

10.01.08
OTREC partner institution meeting at Oregon State University

2008

OTREC Theme

OTREC supports innovations in sustainable transportation through "advanced technology, integration of land use and transportation, and healthy communities."

Developed with collaborative input of stakeholders in the consortium universities, along with external community partners, this theme addresses key transportation research and educational needs of Oregon and the region. At the same time, it contributes to the USDOT strategic objectives in research, development and technology transfer, including safety, mobility, global connectivity, environmental stewardship, security and congestion. The theme recognizes that solving complex transportation problems requires an integrated approach that can leverage talent across disciplines, and reflects the expertise of the partner universities.

Each OTREC proposal for a research, education or technology transfer project must describe how the theme will be addressed. A project's fit with the theme is part of the peer review criteria. The Executive Committee and Board of Advisors also provide continuing input on OTREC activities with respect to the theme.

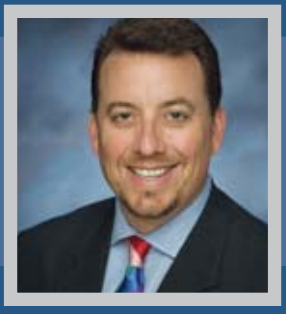
OTREC and its multidisciplinary faculty, guided by the theme, work to expand new knowledge and expertise. Our theme provides us with a dynamic perspective for studying the links between land use and transportation through integrated analysis techniques; understanding traveler behavior; improving non-motorized transportation modes; enhancing marine transportation at the interface with surface transportation; enhancing traffic and transit operations and intelligent transportation systems to reduce congestion and externalities; improving highway safety; understanding goods movement patterns; enhancing transportation infrastructure performance using advanced technologies and innovative design solutions; and developing innovative finance, pricing, project delivery and policy decisions. Our theme positions us uniquely among other UTCs, and we are proud to share the results of our work as it develops.

Mission

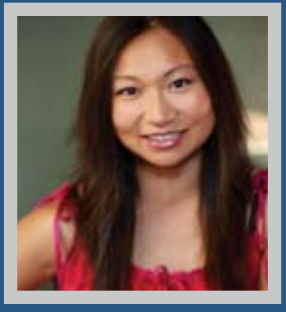
OTREC is committed to providing relevant and high-quality research to assist local, state and regional agencies in their work, and expanding the pool of highly trained graduates who choose to work in transportation-related fields. OTREC seeks to build upon our collective efforts and expertise to make Oregon a place where innovation, creativity and multidisciplinary collaboration on surface transportation research, education and technology transfer lead to more sustainable communities. OTREC is committed to this effort by supporting research, training and outreach in a wide variety of transportation-related disciplines.

OTREC Key Personnel

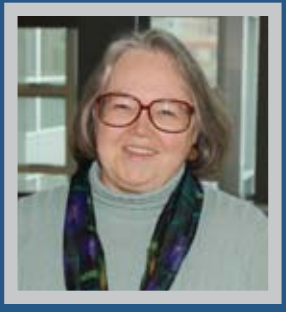
Below is a list of our principal staff, including OTREC administrative staff and partner university associate directors.



Robert L. Bertini, Ph.D., P.E.
Director



Hau Hagedorn
Research Program Manager



Carol Wallace
Fiscal Operations Coordinator

Melissa Leventhal
Office Coordinator

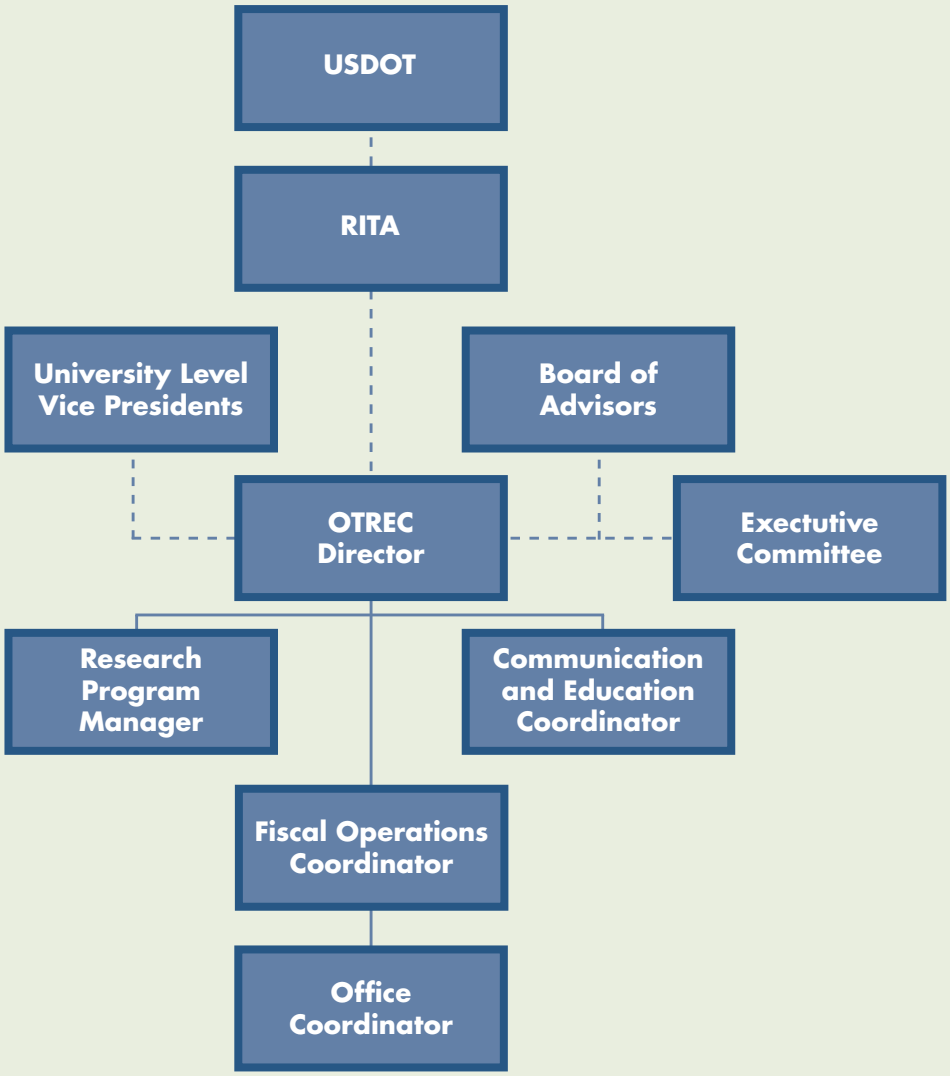
Marc Schlossberg, Ph.D.
Associate Director, University of Oregon

Chris Higgins, Ph.D., P.E
Associate Director, Oregon State University

Roger Lindgren, Ph.D., P. Eng.
Associate Director, Oregon Institute of Technology

OTREC Organizational Chart

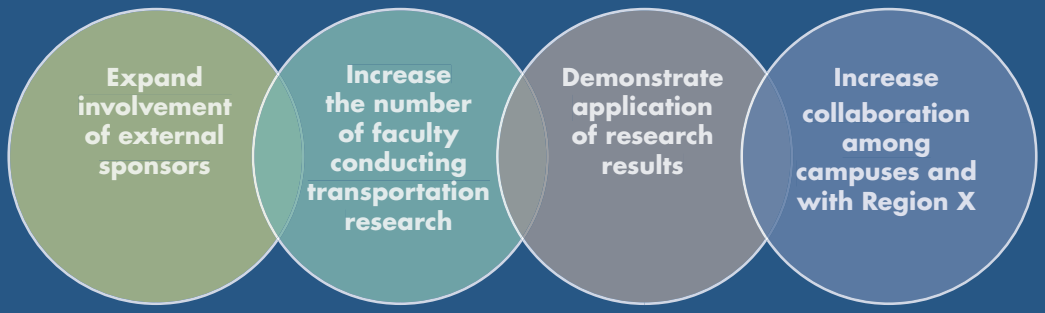
OTREC is a National University Transportation Center under the U.S. Department of Transportation's Research and Innovative Technology Administration (RITA). Dr. Robert Bertini directs OTREC, and there are three full-time staff members. An Executive Committee is made up of one faculty member from each partner institution, an ODOT representative and a FHWA representative. The OTREC Board of Advisors consists of representatives from transportation-related organizations. Each university's Vice President for Research (or equivalent) and their staff also devote time and energy to OTREC's administration and oversight.



Research

OTREC's research program is heavily rooted in the principles of rigorous peer review, essential not only to the project selection process, but also evident in the conduct of research. The proposal peer review criteria mimic that used by the National Science Foundation. Projects are selected after undergoing thorough peer review, and final reports are reviewed by a peer review panel. All research projects have a technology transfer component, with the goal of distributing the results for use and implementation across the transportation community.

Research projects that have intellectual merit, broad impact and good alignment with national transportation priorities are vital to accomplishing the research goals set forth in OTREC's Strategic Plan. Linking these principles with OTREC's theme of advanced technology, integration of land use and transportation, and healthy communities ensures strong research in national priority areas. Projects that correspond strongly with OTREC's theme fortify the depth of knowledge that will allow the research program to grow over time.



OTREC understands multidisciplinary involvement is essential to transportation research. This is particularly evident in the number and breadth of contributions made by research faculty across partner campuses, the involvement of external stakeholders and the cross-cutting research topics being tackled. This past year, with Executive Committee consensus, OTREC selected an additional 22 research projects for funding, totaling over $4.1 million for funded projects and activities (close to $9.4 million when the match from our partners is included). To date, OTREC research involves participation from 61 multidisciplinary faculty investigators, 29 external co-sponsors, and more than 90 undergraduate and graduate students working on OTREC projects. A complete list of our projects can be found on page 38. Following is a sampling of our research program highlights:

OTREC Sample Research Projects

THEME: Advanced Technology

Socio-Economic Effect of Vehicle Mileage Fees

B. Starr McMullen and Lei Zhang, Oregon State University

It's no secret that the gasoline tax is not keeping pace with road maintenance and operations needs. In recent years it has become evident that the gas tax may no longer be able to generate the funds necessary to build and maintain the increasingly expensive highway system. An alternative financing option, the vehicle mileage traveled (VMT) fee, assesses fees based on vehicle miles traveled instead of gallons of gas purchased. However, concerns have been raised regarding the possible tax-burden shift to lower-income groups or from urban to rural areas, and the possibility of discouraging people from driving alternative fuel vehicles. Dr. B. Starr McMullen and Dr. Lei Zhang at OSU developed analytical techniques to examine the distributional impacts of alternative fee structures. Graduate students Kyle Nakahara (Economics), Smita Biswas (Agriculture and Resource Economics) and Divya Valluri (Civil Engineering) helped develop and test the models.

Research results indicate that the impact of a VMT fee for the lowest income group amounted to a change of less than one percent of their income. In comparison, the increase in total gasoline expenditures caused by increases in gas prices between 2001 and 2006 was more than five percent of income for the lowest income group. The impact on rural areas was much less than expected. On average, a rural household would pay less under a VMT fee, whereas those in urban areas would pay slightly more, due to the lower overall average fuel efficiency in the rural vehicle fleet relative to the urban fleet and the greater average number of miles driven by rural households. The change in fee structure had a minor impact on the cost of driving relative to the price of gasoline and therefore was deemed unlikely to create a significant disincentive to purchase more fuel-efficient vehicles.

However, different policy goals (e.g., highway finance, vehicle emissions, insurance rates, etc.) may require different policy alternatives (e.g., congestion pricing, tolling, parking fees, hybrid subsidies, etc.), since it may not be possible to use one policy (such as a flat VMT fee) to achieve multiple objectives. To download the report, visit: http://otrec.us/main/show_abstract.php?prop_id=3

THEME: Advanced Technology

Using Archived ITS Data to Measure the Operational Benefits of a System-Wide Adaptive Ramp Metering System

Chris Monsere and Robert Bertini, Portland State University

Assessment and Refinement of Real-Time Travel Time Algorithms for Use in Practice Phases 1 & 2

Kristin Tufte, Portland State University, and Sue Ahn, Arizona State University

Two distinct projects with different end goals have helped contribute to increasing the traffic management knowledge base in Portland, OR, and therefore have impacted ODOT's operational strategies. The System-Wide Adaptive Ramp Metering (SWARM) research project helped to provide a better understanding of efficiencies gained between operating freeway and ramp meters using a pre-timed method and the SWARM operating mode. The Assessment and Refinement of Real-Time Travel Time Algorithms for Use in Practice Phases 1 & 2 provided statistical confidence in travel time estimates and in determining the best travel time estimation approach for ODOT.

While the main thrust of these research studies differs, the contributions and results have collectively made a substantial difference in the quality of traffic operations and management. ODOT understood intuitively the value of intelligent transportation systems (ITS) and uses of other technologies to better manage the freeway, but the ability to quantify and use data to show the impacts of these technologies was lacking. In the case of the travel time project, a methodology was developed to help ODOT determine where the addition of new detectors would help improve travel time estimates. The SWARM project validated that using SWARM let more vehicles onto the freeway than the pre-timed system, contrary to initial system expectations. Each study also revealed the importance of reliable communications and the need to install detectors to further improve operations beyond the current data limitations.

Both studies relied on the Portland Oregon Transportation Archive Listing (PORTAL), a system that archives the Portland metropolitan region's freeway loop detector data at its most detailed level as well as area weather data. The system was developed by PSU researchers and continually serves as a valuable tool for researchers and transportation practitioners alike. More significantly, the projects forged a stronger relationship between researchers and practitioners.

THEME: Integration of Land Use and Transportation

Options for Integrating Urban Land Use and Travel Demand Models

John Gliebe, Portland State University

PSU researchers are comparing two modeling programs developed in Oregon for the purposes of integrated land use and transportation planning. MetroScope, developed by Metro, the regional government for the Portland area, is based on classical economic assumptions of supply, demand and equilibrium prices in its depiction of urban land development. MetroScope is linked to a travel modeling system, with the accessibility afforded by the regional transportation network feeding back into a land use model; the land use model, in turn, generates the household and employment totals used by the travel model to generate and distribute trips around the region. Although developed for Portland, MetroScope has been implemented in Oregon's Salem-Keizer area for demonstration purposes and for this study. (continued on next page...)

Dr. John Gliebe is comparing MetroScope with another land use modeling tool, the Land Use Scenario Developer in R (LUSDR), which was originally developed by ODOT for a special study in the Medford, OR, area. While LUSDR also is integrated with a very similar network travel model, it differs markedly from MetroScope in its representation of the land development process. LUSDR is a risk-based modeling tool which produces forecasts of land development, households and employment using probabilistic methods. LUSDR produces multiple forecast results, which differ from each other due to random variation but are based on observed distributions of variables of interest. The result is a range of realistic, plausible outcomes. In this way, decision makers can consider the distribution of possible results and evaluate the likelihood of forecasts and potential problems.

In order to compare the two model systems, Dr. Gleibe and his team are implementing LUSDR in the Salem-Keizer area. The objectives of the research are to evaluate the costs and implementation requirements of both systems for possible generalized use. In addition, the researchers are comparing the relative performance capabilities of both systems, including run-time requirements and the type and quality of the outputs produced by each system for various planning purposes. The project's deliverables will include an evaluation report describing both implementation and performance capabilities, as well as user guides for both systems.

THEME: Healthy Communities

The Built Environment, Neighborhood Safety, and Physical Activity among Low Income Children

Jessica Greene, University of Oregon

How is childhood obesity a transportation issue? Walking to school has been shown to be a strong predictor of overall physical activity levels among older children (Alexander, Inchley et al. 2005; Cooper, Page et al. 2003). Between 1977 and 2001, the percent of children's school trips that involved walking declined precipitously, from 20% to 12% (Sturm 2005). Active transportation, biking and walking, are critical to healthy and vibrant communities. More importantly, among school-aged children active transportation to and from school is a significant component of a child's daily physical activity.

OTREC principal investigator Jessica Greene and her research team from UO recently concluded a study that examined the influences of the built environment and neighborhood safety on physical activity among low-income children. Since low-income children are more likely to live in areas with high crime rates and unsafe traffic, they are more likely to have high obesity rates.

The study found that the built environment factors, which included the ratio of major to minor roads, dead-end density and residential density, were not entirely good independent predictors of physical activity. However, for those who lived in lower safety neighborhoods, Dr. Greene did uncover that the greater the intersection density in a zip code area, the more likely children were to walk or bike regularly to school. Overall, neighborhood safety appeared to be a more consistent predictor of physical activity in this study.

Collaboration

Historic University Partnership The four OTREC partner universities signed a historic Memorandum of Understanding (MOU) in March 2007. The MOU commits the universities to a collaborative partnership as a National University Transportation Center and sets a precedent for future joint efforts.

Strong Ties to ODOT and Transportation Community Nearly 30 external partners provide matching funds of cash or in-kind support for OTREC projects. ODOT is a primary partner, jointly funding nearly half of our research projects to date. In addition to ODOT, cities, transit agencies, ports, associations and non-profit organizations around the region collaborate with faculty.

Regional Collaboration OTREC participates in Region X meetings, where regional collaboration for transportation research and education efforts is discussed.

Region X MOU A formal MOU was signed between the UTCs and state DOTs in Alaska, Washington, Idaho and Oregon, officially forming the Region X Transportation Consortium in January 2008.

Student Conference Over 60 students from eight universities around the Northwest visited PSU in November 2007 to participate in the Region X student research conference. Students convened at the University of Washington for the 2008 student conference.

National Connections OTREC strives to be a full participant at the national level. OTREC staff is active with AASHTO's Research Advisory Committee (RAC) and the Committee on Conduct of Research of TRB. The OTREC Director and staff participate in annual CUTC meetings, and OTREC will host the 2011 CUTC Summer Meeting in Portland.

OTREC Sample Multidisciplinary Project

THEME: Healthy Communities

Food Delivery Footprint: Addressing Transportation, Packaging and Waste in the Food Supply Chain

Madeleine Pullman, Portland State University

Bringing food products to the majority of U.S. consumers generally involves frequent and lengthy trips from the food growers and producers through a distribution network to the institutional, grocery and restaurant businesses. Increasingly, businesses are assessing the impact of their purchasing decisions on their carbon footprints. These decisions have complex implications for the environment based on the mode of transportation employed, the corresponding packaging used to transport the goods, and the resulting waste and disposal transportation.

Dr. Pullman is studying the extent of waste in the food delivery process though assessment of the current "food miles" of business supply chains, including modes of transport and distance traveled. She seeks to develop a strategy to measure progress toward reducing the total food miles traveled, and evaluate the overall impact of the transportation process. She will also assess the waste associated with the supply chains from a life cycle perspective, with a specific focus on the relationship between transportation mode and packaging.

The project uses surveys, depth-interviews and simulation modeling. Current purchasing practices, corresponding transportation modes, packaging, subsequent waste, and hauling of representative samples of institutional, grocery and restaurant businesses is being assessed. Existing food purchasing/carbon footprint initiatives (e.g., Bon Appetit Catering, Truitt Brothers) will inform Dr. Pullman's approach.

The research results from this project can be used to develop purchasing and logistics strategies and models for supplier collaboration to reduce carbon footprint as well as overall transportation and waste costs. Additionally, Dr. Pullman hopes to contribute to the knowledge on new packaging development and supplier load consolidation models to reduce energy requirements, emissions and waste.

Education and Student Achievement

OTREC Student of the Year - Oren Eshel

CUTC Student of the Year award ceremony in Washington, D.C. From left: Roger Lindgren, Hau Hagedorn, Robert Bertini, and Oren and Allison Eshel.

PSU's Oren Eshel was chosen as OTREC's 2007 Student of the Year. Oren's interest in regional planning techniques drew him to Portland, Oregon, where is he is a graduate student in urban and regional planning. After receiving a B.A. in geography from the University of California at Berkeley, Oren worked in systems engineering at the San Francisco International Airport. He embarked on graduate study to focus on public transit, equity in provision of transit services, and regional planning.

Oren is a research assistant in the Intelligent Transportation Systems Lab at PSU, and concluded working on a project to evaluate the adaptive ramp metering system in the Portland region. He is also an intern with the city of Portland's Transportation Planning section. Oren was nominated by faculty for this award not only because he excels at research and in the classroom, but also because he has made a significant mark on PSU's multidisciplinary transportation program. Oren was president of the PSU Students in Transportation Engineering and Planning (STEP) student group and coordinated the Fall 2007 Fifth Annual TransNow Student Conference (see article on page 21). Oren volunteers with community outreach and events that encourage bicycling and walking. He is an avid bicyclist and enjoys traveling and spending time with his wife, Allison, and new baby, Evan.

OTREC Impact on the Student Experience

As a civil engineering graduate student specializing in transportation, I am very grateful to be an OTREC Scholar. I have been working on an OTREC research project in the ITS Lab at PSU that will evaluate the effectiveness of the Safety Investment Program for Oregon highways. Through OTREC funding, I have been able to attend the ITE Regional Quad Conference and the 2008 Annual Meeting of TRB in Washington, D.C. The financial assistance is greatly appreciated; it relieves some of the financial burden of being a student!

Lisa Diercksen, Portland State University

The partnership between designBridge and OTREC has enabled the development and implementation of projects that have a meaningful and tangible impact on the local community. Through the support of OTREC, designBridge has been able to take the energy and enthusiasm of students at the University of Oregon and go out into the community and take on projects that provide designBridge students with an opportunity to learn professional practice skills and apply their studies to real projects. At the same time, the support of OTREC through these projects has empowered citizens (at every age level from parents to first graders) to make transportation choices that burn calories and not fossil fuels.

Erik Churchill, University of Oregon

The presence of OTREC on my campus – the University of Oregon – has provided a context and a place for my personal interest in active transportation and community design to be integrated with my academic studies and work. It has opened the door to a whole range of exciting career options related to transportation that I otherwise would not have known about.

Christo Brehm,
University of Oregon

Educational Programs

PORTLAND STATE UNIVERSITY

Department of Civil and Environmental Engineering
Maseeh College of Engineering and Computer Science

- Bachelor of Science (BS) in Civil Engineering
- Master of Science (MS) in Civil and Environmental Engineering
- Master of Engineering (MEng) in Civil and Environmental Engineering
- Master of Engineering (MEng) in Civil and Environmental Engineering Management
- PhD in Civil and Environmental Engineering

Toulan School of Urban Studies and Planning
College of Urban and Public Affairs

- Master of Urban and Regional Planning (MURP)
- Master of Urban Studies (MUS)
- PhD in Urban Studies

School of Business Administration

- Supply and Logistics Management (BA/BS)

Interdisciplinary Programs

- Dual Master's Degree in Urban and Regional Planning and Civil and Environmental Engineering
- Graduate Certificate in Transportation

UNIVERSITY OF OREGON

Department of Planning, Public Policy and Management
School of Architecture and Allied Arts

- Master of Community and Regional Planning (MCRP)

OREGON STATE UNIVERSITY

School of Civil and Construction Engineering
College of Engineering

- Bachelor of Science (BS) in Civil Engineering
- Master of Science (MS) in Civil Engineering
- Master of Engineering (MEng) in Civil Engineering
- PhD in Civil Engineering

OREGON INSTITUTE OF TECHNOLOGY

Department of Civil Engineering and Geomatics

- Bachelor of Science (BS) in Civil Engineering

OTREC-Supported University of Oregon designBridge Program Recognized for Achievement in Sustainability

Assistant professor Nico Larco stands in a renewed and re-invigorated bicycle parking area at Edison Elementary school in Eugene, Oregon.

The Sustainable Endowments Institute has chosen to honor the UO's designBridge program as a Champion of Sustainability in Communities. UO's designBridge program is a student-based, faculty-supervised service learning organization that offers environmentally friendly, community-based design-build services to the Eugene-Springfield area. designBridge was named as one of four honorable mentions nationwide.

designBridge utilizes resources from the UO School of Architecture and Allied Arts, other campus departments, and the cities of Eugene and Springfield community businesses to work on a variety of service projects, including the recently completed bike shelter re-design for Edison Elementary School in Eugene. This bike shelter is in full use daily, but was especially well utilized during International Walk and Bike to School day in early October. Edison Elementary, like many elementary and middle schools across the country, is part of a growing effort called Safe Routes to School, which aims to increase the numbers of children who walk and bike to school in order to increase physical activity, reduce emissions, eliminate school-based traffic congestion, and increase community quality of life. Thus, designBridge's work fits squarely within the area of healthy communities, one of three primary OTREC themes.

"The designBridge program is a nationally innovative way to get university students that are interested in physical and neighborhood design to think of transportation as a much-needed area of focus," says UO Associate Professor and OTREC Associate Director Marc Schlossberg. "All across the UO campus, OTREC has inspired faculty researchers and students who may not have thought of themselves as transportation scholars or practitioners to apply their expertise and interest to this vast interdisciplinary and critical area of work. Working to transform our existing urbanized areas into sustainable cities motivates all of this work, and designBridge clearly has a core pedagogical and service aspect that is important and unique. OTREC is thrilled to be able to support such innovative, and now nationally award winning, work like that of designBridge.

Assistant professor of architecture Nico Larco founded and now supervises the much-in-demand designBridge program. "The project has been fantastic," he says. "The students received real-world experience working with clients, and in this case that includes kids as well, managing a project, designing a concept that involved all, and then building out the design plans. The UO students had a great experience and will hopefully think about design aspects of the transportation system in their future work. With the re-designed bike shelter, I'm also hopeful that more young kids will grow up biking to school and possibly grow into our future leaders in sustainable transportation. We all appreciate OTREC's support for this and our continued work."

The students involved in the bike shelter re-design include Drew Hastings (project manager), Nick Wallace, Kent Wu, Truc Bui and Vito Cerelli. Last fall students Patrick Hannah (project manager), J. Ho Lee, Kelley Stewart, Lucas Gray and Paul McBride worked on the first phase of the effort.

The 15th Biennial International Symposium on Bicycling & Walking

The 15th Biennial International Symposium on Bicycling & Walking (Pro Walk Pro Bike Conference) was held September 2-5, 2008, in Seattle, WA. This year's theme was "Transforming Communities: Beyond Sustainability." The conference attracted bicycling and walking advocates, planners, public health practitioners and others interested in making their cities and communities more walkable and bikefriendly. The conference's location in Seattle also provided visitors with the opportunity to see the city's bicycle- and pedestrian-friendly innovations firsthand.

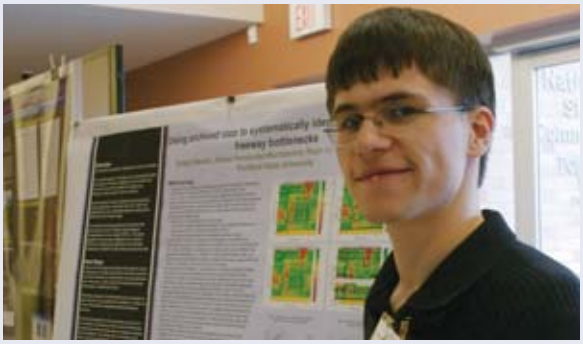
Four UO students attended the conference. The students were impressed by the diversity of the conference attendees. Landscape architecture Ph.D. student Lanbin Ren remarked, "The conference provided a multilevel platform for officials, bike/ped specialists, transportation experts, land-use planners, public health practitioners, and many more, like me, a graduate student and also a bicycle and pedestrian advocate, to exchange information, share ideas and learn from each other."

Briana Orr, a UO student who is attempting to start a new bike loan program at the University, was inspired to meet other bike advocates at the conference. She said afterwards, "ProWalk ProBike was a three-day reminder of why the work I'm doing is needed and how it is part of the larger whole."

ProWalk ProBike inspired and motivated all four students and introduced them to the wider transportation community. The conference gave them the opportunity not only to learn about pedestrian and bicycle planning, but also to make contacts with other planners from around the country. This experience will aid all four students in their careers as bicycling and walking advocates.

2007 Region X Student Conference at PSU

Over 60 students from eight universities around the Northwest visited PSU on November 16, 2007, to participate in a transportation research conference organized by and for students. Following a welcome breakfast, a panel consisting of representatives from TriMet, CH2M Hill, the Port of Portland and Kittelson & Associates, Inc. discussed "big picture" transportation issues with students. Ten students gave presentations relating to transportation research and practice, complemented by a student poster session. The conference concluded with a keynote address from Professor Brian Taylor from UCLA on "Rethinking Congestion." Many of the students who arrived the evening before also participated in the Oregon Section Institute of Traffic Engineer's Traffic Bowl. Thank you to graduate student Oren Eshel, who did an outstanding job of leading the conference organizing.



Student presenters:
Mathew Berkow, Portland State University
Shaoqing Ge, University of Alaska, Fairbanks
Peng Li, University of Alaska, Fairbanks
Yegor Malinovskiy, University of Washington
Jean Perez-Montesinos and Milan Sekulic, University of Idaho
Kenneth Perrine, University of Washington
Evan Siroky, University of Washington
Ariana Tipper, Portland State University
Yao-Jan Wu, University of Washington
Hong Zhu, Oregon State University

Best Presentations:
1. Kenneth Perrine, "RateMyRoads.org: A Place to Give Feedback on Roads"
   Ariana Tipper, "Evacuation Planning and Neighborhood Empowerment in New Orleans: The Broadmoor Model"
2. Mathew Berkow, "The Oregon Land Use Stories Project"
3. Hong Zhu, "Acceleration Models for Urban Signalized Condition"

Best Posters:
1. Dana Dickman and Hannah Kapell, PSU, "BikeGPS: Understanding and Measuring Bicycle Behavior"
2. Hong Zu and Michael Liebler, OSU, "Urban Roadside Safety"
3. Xuanwu Chen, University of Alaska, Fairbanks, "Dennis Road Extension Design Using AutoCAD and Eagle Point", and Enas Fayed, PSU, "Assessment and Refinement of Real-Time Travel Time Algorithms for Use in Practice"

The 2007 Conference was sponsored by the Region X UTCs – the Alaska University Transportation Center (AUTC http://www.alaska.edu/uaf/cem/ine/autc), the National Institute for Advanced Transportation Technology (NIATT http://www.webs1.uidaho.edu/niatt), the Oregon Transportation Research and Education Consortium (OTREC http://www.otrec.us) and Transportation Northwest (TransNow http://www.transnow.org).

Outstanding Students

Joe Broach grew up in Knoxville, Tenn., and moved to Missoula, Mont., to earn a B.A. in Liberal Studies and a M.A. in Economics. He is working toward a Ph.D in Urban Studies at PSU. In the past year, Joe worked with Dr. Jim Strathman and TriMet to model operator absenteeism using ITS data. He also developed a Web-based tool (B-SMART) that will collect and distribute data on cyclist-motor vehicle collisions and close calls. In the coming year, Joe will work with Dr. John Gliebe and Metro to model cyclist route choice behavior using Dr. Jennifer Dill's bike GPS data.

Erik Churchill is pursuing his Master's of Architecture and MBA at the UO. He is the student director of designBridge, a service-learning organization that offers environmentally friendly, community-based design-build services to the Eugene-Springfield area. Erik has helped to launch two design-build projects to promote Safe Routes to School in the 4J school district in the city of Eugene with OTREC's support. At Edison Elementary, designBridge transformed a dark and damp storage area into a brightly lit, fun bike shelter that includes new racks, a mural, a bench and new lighting. Ridership at Edison has increased more than 200%. designBridge is currently designing a new bike shelter for Roosevelt Middle School that will house upwards of 80 bikes. The partnership between OTREC and designBridge has created particularly meaningful and rewarding projects for Erik because of the impact they have had on the lifestyle of schoolchildren. Erik is proud to be designing and building facilities that encourage more exercise, less pollution, denser communities and safer biking practices.

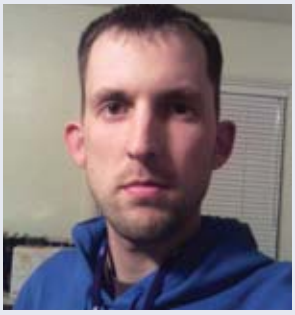
Matt Dawson received his bachelor's degree in Civil Engineering from Bucknell University in 2006. He entered a Master's of Science program at Oregon State University that fall. Advised by Dr. Chris Higgins, Matt explored how to scale down reinforced concrete beams strengthened for shear with carbon fiber-reinforced polymers, a relatively new repair material, from typical bridge girder size to quarter-scale laboratory specimens. He received his M.S. in June 2008 and returned to his home state of Maryland to work for Whitman, Requardt and Associates as a bridge engineer.

Lisa Diercksen received her bachelor's degree in Civil Engineering at Iowa State University and is now a PSU Master's student in Civil Engineering specializing in transportation. She was attracted to PSU's program because of its progressive transportation research projects as well as the city of Portland's rich culture and sustainable living. She works in the ITS Lab under the guidance of Dr. Chris Monsere, evaluating the Safety Investment Program (SIP) for ODOT. The purpose of this research is to study the effectiveness of SIP policies in meeting ODOT's goals and objectives. Upon graduation from PSU, she plans to work for a transportation engineering consulting firm to gain a strong foundation in the field. However, her ultimate goal is to return to school to attain her Ph.D in Civil Engineering and pursue a teaching and research position at the university level.

Sayaka Fukahori graduated with a B.S. in Public Administration from Western Oregon University and obtained her master's degree in Community Regional Planning at UO in September 2008. She was introduced to the planning field while working as a planning intern at the city of Salem Community Development Department. While earning her graduate degree, Sayaka worked as a research assistant for Dr. Yizhao Yang and assisted her with research pertaining to school travel. Her exit project focused on the influence of the School Choice Program on home-school distance, a key determinant for active commuting for students. Sayaka's primary focus has been on GIS, and her goal is to help aging/aged communities design barrier-free environments for the elderly through the use of GIS.

Eric Leaming is a Civil Engineering student at the Oregon Institute of Technology (OIT). While in high school Eric became fascinated with highway design and completed a yearlong highway design project with the help of ODOT engineers. At OIT, Eric has become intrigued by traffic engineering and mass-transit systems modeling, completing a basic traffic study of Highway 97 through Klamath Falls, Ore. The study required modeling the corridor's current traffic levels and making theoretical changes to the system to minimize delay based on current volume/capacity ratios. For his college capstone project, Eric will be in charge of the transportation engineering of a theoretical, walkable, transit-centered community in Klamath Falls.

Thomas Schumacher earned his B.S. degree in Switzerland in 2000, and subsequently worked for four years as a structural engineer. Always fascinated by bridges, and interested in the idea of studying abroad, he began a M.S. in Civil Engineering at OSU in 2004. As a graduate research assistant, Thomas works with Dr. Chris Higgins at OSU to investigate and develop non-destructive testing and monitoring methods to gain insight about the health of Oregon's vintage, reinforced concrete bridges. He completed his M.S. degree in November 2006 and started working on an innovative project investigating hurricane-caused wave forces on coastal highway bridges. This interdisciplinary, large-scale experiment, funded by OTREC and The Kiewit Center of Transportation, has received worldwide attention due to its importance and uniqueness. Thomas has presented research results in both the U.S. and Germany. He is planning to graduate from OSU with a Ph.D in Civil Engineering in June 2009.



Brandon Thomas is a civil engineering student at OIT and plans to graduate in March 2009. He worked with ODOT during two summer internships. During his time with ODOT, Brandon helped senior inspectors inspect a number of projects including Highway 97 paving (overlay and inlay), Highway 140 - Green Springs to Running Y paving (overlay) and the Spencer Creek Bridge construction. Brandon worked for the Washington Department of Transportation (WSDOT) during the summer of 2008. While at WSDOT, Brandon helped to inspect an I-5 paving project (inlay, overlay and safety improvements) from Castle Rock to –State Route 505 and collected field data for a future project on SR-4. Brandon's academic interests are developing future traffic impact studies and creating asphalt blends in the labs.

Sample Education Projects

Closing the Gap: Developing a Transportation Curriculum for the Oregon Young Scholars Program

Carla Gary, University of Oregon

The Oregon Young Scholars Program (OYSP) linked experiential and transportation education from the University of Oregon with minority high school students during a two-week session in the summer of 2008. Each afternoon, students were grouped into academic cohorts in business, community planning and design, public policy, arts, chemistry and psychology. All cohorts focused on transportation as it related to the cohort. For example, the chemistry cohort examined the chemistry of alternative fuels and the power derived verses the power needed to create such fuels. The public policy cohort looked at public health implications of transportation choices. The program culminated in a two-day charrette focusing on a transportation issue in the city of Eugene. Program participants worked with community leaders, professionals and fellow students to develop recommendations for a specific community topic.

Not only did the high school students benefit from the experience, the 10 undergraduate students who served as mentors and teaching and resident assistants were also immersed in transportation topics and activities. They were responsible for helping with homework and curriculum design. This direct involvement with the topic exposed and hopefully inspired them to pursue transportation-related classes at the university and consider it for a career. This project advanced OTREC goals and generated interest in the profession of transportation among those least represented in the field.

Increasing Capacity In Rural Communities: Planning for Alternative Transportation

Megan Smith, University of Oregon

Each year Resource Assistance for Rural Enviornments (RARE) at the University of Oregon places 20 graduate-level participants in rural Oregon communities, where they live for 11 months while working for local agencies on planning and community development projects. Through an OTREC grant, RARE developed three community projects focused on multimodal transportation planning at host sites. These projects include: a bike/pedestrian trails planning project with the city of Lebanon and Build Lebanon Trails, a local non-profit; a bike/pedestrian trails planning project with the city of Warrenton; and a transportation needs assessment for the Rogue Valley Transportation District. This project links service learning with rural multimodal transportation planning through a collaborative partnership between the UO experiential learning programs and three rural Oregon communities.

As this planning and technical support to rural communities occurs, the lessons learned are being used to create a multimodal transportation planning tool kit, designed for under-resourced, small communities, to be disseminated regionally and nationally.

Bicycle and Pedestrian Education Program

Lynn Weigand, Portland State University

The Initiative for Bicycle and Pedestrian Innovation (IBPI) is a multicampus and multidisciplinary program housed in PSU's Center for Transportation Studies. The program's goals are twofold: to enhance and expand opportunities for studying bicycle and pedestrian transportation throughout the university curricula; and, ultimately, to make Oregon the place that students come to study bicycle and pedestrian transportation.

These goals will be achieved by identifying and developing opportunities for incorporating bicycle and pedestrian issues into multidisciplinary undergraduate curricula. Existing engineering and planning curricula will be reviewed to ensure that all transportation courses include walking and bicycling needs, where relevant. Also, new or revised course modules that can be integrated into existing curricula will be developed. A pilot internship program will be created with the Community Cycling Center and the city of Portland. These internships will provide graduate students with training and hands-on experience collecting data related to bicycle and pedestrian travel, thus adding support opportunities for doctoral students to conduct research in bicycle and pedestrian transportation.

This project directly contributes to the OTREC theme of Healthy Communities, both in terms of its content and its collaborative, community-based approach, and to the USDOT strategic objectives of Safety and Environmental Stewardship.

Integrating a Service Learning Approach to Transportation Education

University of Oregon

Educating the transportation workers of tomorrow is as much a part of OTREC's charge as is conducting research. At the UO, "Service learning" is a widely used education model that provides teams of students with hands-on experience producing products for real-world clients. Recent projects include a student led evaluation of the city of Eugene's 4J School District travel behavior aimed at reducing school auto trips and charting a more walkable community, and a project that culminated in the development of the Eugene Bicycle/Pedestrian Strategic Plan. Through this service learning program, graduate students learn professional planning skills while assisting communities in planning and policy projects.

An upcoming project to study the bus rapid transit system in the Lane Transit District will also utilize this service learning approach. These projects combine teams of first-year students, managed by a second-year graduate student, that produce high-quality work for a local municipality, hands-on educational experience for students and, in some cases, also contribute to a scholarly research objective. This is a unique model that OTREC can offer to the nation.

Through facilitating public workshops, collaborating with planning professionals, group work, public presentations and applied research, students go beyond academic coursework to build the skills demanded by the planning profession. Planning is a discipline learned through practice. Service learning provides the opportunity to practice. Experiential learning encourages the development of transferable skills (e.g., communicating, problem solving, presenting, working with others) and more reflective practitioners, and results in a richer, more rewarding educational experience for students.

To review a report summarizing the experiential service learning approach and the Eugene Bicycle and Pedestrian Plan, visit http://otrec.us/main/show_abstract.php?prop_id=51

Technology Transfer

OTREC Offers Free Podcasts of Visiting Scholar Lectures

OTREC now offers free podcasts (audio files in mp3 format) of the PSU Transportation Seminar Series. As part of their technology transfer program, podcasts from seminars given by OTREC Visiting Scholars and others are now available for download. Covering a wide array of transportation topics—from policy and planning to operations and freight—recent speakers include Oregon Congressman Earl Blumenauer, Brian Taylor (UCLA), John Pucher (Rutgers University), Peter Stopher (University of Sydney), Susan Handy (UC Davis), Joseph Sussman (MIT) and Donald Shoup (UCLA). In addition, nearly 200 PSU seminars are available as streaming video and downloadable video files at http://www.cts.pdx.edu/seminars.htm.

Visiting Scholar

Dr. Brian Taylor, professor in Urban Planning and Director of the Institute of Transportation Studies at the University of California, Los Angeles, was a guest speaker and OTREC Visiting Scholar for the CTS Transportation Seminar on November 16, 2007, where he presented "Transit's Dirty Little Secret: Analyzing Patterns of Transit Use." He also was the keynote speaker at the Fall 2007 Region X Student Conference at PSU, presenting "Rethinking Congestion" to students from around the Northwest. His presentations focused on the socioeconomic and racial disparities between individuals who rely on buses, trains and automobiles for transportation. Dr. Taylor's research shows that these disparities have grown significantly over the past 30 years, and stresses the need for communities to invest in public transit not only as a means of reducing congestion and pollution, but also as a social service.

Sample Technology Transfer Projects

Active Transportation, Neighborhood Planning and Participatory GIS

Marc Schlossberg, University of Oregon
Nico Larco, University of Oregon

The ability to transfer knowledge from research to application is an important piece of OTREC's mission. One of the best examples of technology transfer and the application of university researchers' findings is the Active Transportation, Neighborhood Planning and Participatory GIS (geographic information system) project.

At the University of Oregon, Dr. Marc Schlossberg and Dr. Nico Larco recently developed and assessed mobile GIS tools designed to help citizens evaluate current walking and biking conditions in their communities. The tools allow communities to assess active transportation needs and assets, plan for the future, and catalyze and empower people to action. These tools are designed to help communities easily implement approaches for sustainable transportation. The tools were tested in Oregon, Minnesota, Wisconsin, Maryland and Virginia over a two-year period. Through hands-on community workshops, the tools have provided the impetus for communities to understand the physical and built environment barriers to walking and biking. Use of the GIS tools has also inspired the Oregon Department of Transportation (one of the agencies participating in the project) to investigate developing a similar tool that can be used to assess curb cuts statewide.

This project directly relates to OTREC's theme of healthy communities. Given the nation's obesity epidemic, combined with a global climate change threat significantly accelerated by automobile dependence, walking and biking are receiving attention from planners, policy makers, advocates and community members as never before.

To download the final report, visit: http://otrec.us/main/show_abstract.php?prop_id=18

Continuing Education and Professional Development

Building Future Transportation Leadership: Success Factors from Portland

OTREC co-hosted a seminar on January 24, 2008, to explore how rail transit and land-use planning have thrived in Portland. Portland is nationally recognized for its remarkable transportation system as well as its ability to catalyze community participation and secure funding for successful transit projects. Light rail and streetcars do more than move people; they support livability and have spurred over $6 billion in economic development. The Portland Metropolitan region has a 25-year history of achievement, including the development of the Interstate MAX line that opened in 2004 and two ongoing projects: the Washington County Commuter Rail, which will begin service in 2009, and the I-205/ Portland Mall light rail slated for completion in 2009. The Building Future Transportation Leadership Seminar provided more than 100 local planners and transportation professionals the opportunity to learn from leaders involved in these projects. The leaders shared both the strategies that worked and the creative responses that will be needed for future projects. The event was co-sponsored by David Evans and Associates, Metro, OTREC, ZGF Architects and TriMet.

The seminar examined the three success factors to which Portland's nationally recognized transportation system is attributed: Oregon's longstanding recognition of the importance of the connection between transportation decisions and land-use planning; community and alliance building; and excellence in execution. To view more details, download the written proceedings or view the video archives, visit: http://www.otrec.us/BuildingLeadership.php

Professional Development Short Courses

OTREC offers educational opportunities beyond those available to students. Every year, a number of short courses are offered covering a wide range of transportation related topics providing transportation professionals with continuing education opportunities. These courses allow transportation professionals to earn continuing education units or professional development hours. Over the past year, six short courses were offered relating to: Traffic Signal Design, Comprehensive Bicycle and Pedestrian Design and Planning, Geometric Design: Contemporary Considerations of Traditional Elements, Roundabout Analysis and Design, Engineering Intersections for Bicycles and Pedestrians, and Designing Pedestrian Facilities. To view more details, visit: http://www.otrec.us/profdev.php

Faculty Partners

Carl Abbott, Urban Studies and Planning, PSU: history of urban development and planning in the 20th-century United States, urban revitalization policy and regional development.

Soyoung Ahn, Civil and Environmental Engineering, Arizona State University: operations, control and intelligent transportation systems.

Robert Bertini, Civil and Environmental Engineering and Urban Studies and Planning, PSU: new data sources, sensor technology, data analysis, data fusion, traffic flow theory and macroscopic modeling, performance measures and evaluation of transportation systems, programs and policies, safety data analysis and improvements for pedestrians and bicyclists, and multimodal traveler information, routing and control.

Darrell Brown, School of Business Administration, PSU: factors that affect decision makers' reliance on decision aids, the relationship between accounting systems and business processes, and accounting for sustainable development.

Mecit Cetin, Civil and Environmental Engineering, University of South Carolina: Intelligent Transportation Systems (ITS), modeling and simulation of traffic operations, travel time estimation, probe vehicle applications, freight transportation and congestion pricing.

Heejun Chang, Department of Geography, PSU: hydrology and human modification of the hydrologic system using spatial analysis.

Keavy Cook, Community Service Center, UO: organizational development, strategic planning, rural community capacity building, service-learning, facilitation and management.

Daniel Cox, Civil, Construction and Environmental Engineering, OSU: coastal processes, particularly nearshore hydrodynamics, sediment transport, surf zone turbulence and boundary layer processes, and design and performance of coastal structures.

Catherine de Rivera, Department of Environmental Sciences and Resources, PSU: ecology and behavior of intertidal and near-shore marine and estuarine animals.

Jennifer Dill, Urban Studies and Planning, PSU: transportation and environmental planning, travel behavior, air quality and transportation-land use interactions.

Karen Dixon, Civil, Construction and Environmental Engineering, OSU: transportation design, operations and safety with particular emphasis on creating a transportation infrastructure that serves all prospective users.

Peter Dusicka, Civil and Environmental Engineering, PSU: seismic performance and design of structures, lifelines and non-structural components; implementation of innovative materials and special devices in bridge and building structural systems; and large-scale laboratory testing utilizing iSTAR Lab shake table and other equipment.

Miguel Andres Figliozzi, Civil and Environmental Engineering, PSU: development of new freight congestion measures, algorithms for vehicle routing and distribution in congested urban areas, impacts of toll and lane pricing on freight demand and supply chains, evaluation of environmental impacts of freight transportation and development of alternative sustainable freight transportation options.

Carla Gary, Office of Institutional Equity and Diversity, UO: institutional equity and diversity, recruitment, partnerships with business and community organizations for student projects, internships and employment opportunities.

Mark Gillem, Departments of Architecture and Landscape Architecture, UO: processes, players and politics involved in making urban space, urban design, qualitative and quantitative methods to uncover the relationship between institutions and the production of space.

John Gliebe, Urban Studies and Planning, PSU: advanced travel demand modeling, policy analysis, urban transportation planning and discrete choice modeling.

Jessica Greene, Planning, Public Policy and Management, UO: impact of changes in the health care system on access and quality of care, particularly for vulnerable populations including the poor, people of color and older adults.

Kathleen Harder, Center for Transportation Studies, University of Minnesota: how various systems (environmental contexts) can be designed to enhance human performance.

Chris Higgins, Civil, Construction and Environmental Engineering, OSU: passive structural control, structural testing, steel structures and connections, earthquake and wind engineering, repair and retrofit of structures, high-performance materials, historic structures and materials.

Deborah Howe, Department of Community and Regional Planning, Temple University: growth management, with particular emphasis on land-use systems, development of affordable housing alternatives, community planning for an aging society and community development.

David Jay, Department of Civil and Environmental Engineering, Portland State University: buoyant plume processes, estuarine circulation and salinity intrusion, suspended sediment transport, coastal tides, biophysical interactions, estuarine comparison and classification, human alteration of coastal environments, fisheries oceanography and turbulence/mixing in stratified flows.

Bethany Johnson, Community Service Center, UO: environmental stewardship, youth involvement in planning, outreach and education.

Martin Lafrenz, Department of Geography, PSU: Water resources, land-use change, geomorphology and geographic information systems.

Nico Larco, Department of Architecture, UO: connections between architecture and urbanism, alternative patterns of suburban development, multidisciplinary approaches to architecture and urban design.

Robert Layton, Civil, Construction and Environmental Engineering, OSU: transportation systems analysis, facility design, traffic operations and control, highway safety, transportation energy and economics, and environmental impact of transportation.

David Levinson, Department of Civil Engineering, University of Minnesota: transportation economics, urban transportation planning and networks.

Roger Lindgren, Civil Engineering, OIT: traffic flow theory, microscopic simulation of urban and rural traffic, pavement design and analysis.

Sam Lowry, Liberal Arts and Sciences, PSU: land use, planning, cartography and journalism.

Tim Maddux, School of Civil and Construction Engineering, OSU: coastal, estuarine and alluvial processes; sediment, beach, and bedform response; and swash and breaking wave processes.

David Maier, Computer Science, PSU: data and information management.

Noreen McDonald, Department of City and Regional Planning, University of North Carolina at Chapel Hill: Transportation policy, school travel, physical activity, transportation and land use, school transportation and school siting.

B. Starr McMullen, Economics, OSU: transportation economics and policy, and economics of governmental regulation/deregulation issues.

Scott Marshall, School of Business Administration, PSU: proactive environmental strategy, corporate governance and sustainability reporting, and environmental and social multistakeholder initiatives

Cynthia Mohr, Department of Psychology, PSU: processes by which interpersonal relationships and interactions exert effects on psychological well-being and physical health.

Christopher Monsere, Department of Civil and Environmental Engineering, PSU: safety, freight and operations.

Hamid Moradkhani, Department of Civil and Environmental Engineering, PSU: hydrologic and hydraulic modeling; impact assessment of climate change and variability on surface water hydrology and integrated water resources management; use of GIS and remote sensing in hydrology and hydrometeorology.

Andrew Nichols, College of Information Technology and Engineering, Marshall University: traffic signal control, real-time simulation applications, intelligent transportation system technology evaluation, weigh-in-motion, truck weight enforcement and animal-vehicle interactions.

Jiayi Pan, Department of Civil and Environmental Engineering, PSU: satellite oceanography, coastal ocean dynamics, estuary and plume dynamics, ocean numerical modeling, air-sea interaction and ocean waves, and ocean optics.

Robert Parker, Planning, Public Policy and Management, UO: land-use planning and transportation, housing needs assessment and computer modeling.

Lawrence Powers, Natural Sciences, OIT: behavioral ecology and sociobiology of invertebrates, evolution of primate behavior and hominid phylogeny, ecology of tide pool communities.

Madeleine Pullman, School of Business Administration, PSU: operations management, regional and sustainable food supply chain, new product and service design, recreation and experience design, and interdisciplinary issues in operations/marketing.

Daniel Rodriquez, Department of City and Regional Planning, University of North Carolina at Chapel Hill: transportation policy, transit planning and strategy, urban spatial structure, land development, transportation and individual behavior, physical activity, travel behavior, and land-use planning and urban development.

Tony Rufolo, Urban Studies and Planning, PSU: state and local finance, transportation, labor, economic development, and government forecasting and budgeting.

Marc Schlossberg, Planning, Public Policy, and Management, UO: fine scale mapping of walkability, linking urban form to physical activity, understanding how children get to school and community empowerment with mobile GIS technology.

John Jeffrey Schnabel, Department of Architecture, PSU: industrial and post-industrial landscapes as territories for new urban activities and contributors to sustainable practices.

Todd Scholz, Civil, Construction and Environmental Engineering, OSU: civil engineering materials, construction equipment and methods, pavement design, mechanistic analysis of pavement structures, performance-related and performance-based specifications, warranties, quality control/quality assurance, pavement management systems, geographical information systems, life cycle cost analysis, Monte Carlo simulations and engineering software applications development.

Michael Scott, Civil, Construction and Environmental Engineering, OSU: nonlinear structural analysis and dynamics, structural response sensitivity, object-oriented software design, parallel computing and numerical methods.

David Sillars, Civil, Construction and Environmental Engineering, OSU: inter-organizational relationships in the construction industry; cultural factors in facility delivering; project delivery alternatives; and strategic organizational structuring at the project and enterprise level.

Megan Smith, Community Service Center, UO: Community education and planning, experiential learning in community development, rural issues and watershed planning.

Trevor Smith, Department of Civil and Environmental Engineering, PSU: the role played by in situ tests in improving the quality of input to geotechnical numerical schemes.

James Strathman, Center for Urban Studies and Urban Studies and Planning, PSU: regional science and transportation planning.

Mark Sytsma, Environmental Sciences and Resources, PSU: limnology and the biology and management of aquatic invasive species.

Kristin Tufte, Computer Science and Civil and Environmental Engineering, PSU: intelligent transportation systems.

Wayne Wakeland, Systems Science, PSU: biomedical dynamics, software development process, criminal justice systems, sustainability, supply chain management, organizational dynamics and systems thinking, simulation and optimization methods.

Lynn Weigand, Initiative for Bicycle and Pedestrian Innovation, PSU: community design for active living, local transportation planning, and park and open space design.

Ida Van Schalkwyk, School of Civil and Construction Engineering, OSU: transportation safety for planning, design, operations, management (including pavement management), maintenance and different users.

Yizhao Yang, Planning, Public Policy, and Management, UO; Environmental planning, design and analysis for sustainable and active living, land-use planning and growth management, housing and residential quality, feminist study of the built environment.

Solomon Yim, Civil, Construction and Environmental Engineering, OSU: deterministic and stochastic modeling, analysis, simulation and design of nonlinear dynamical fluid/structure systems; applications in structural, ocean and earthquake engineering. Current projects include deterministic and stochastic analyses of structural and ocean systems.

Lei Zhang, Civil, Construction and Environmental Engineering, OSU: mathematic modeling and simulation of transportation and urban systems, land use and transportation planning; travel behavior and demand modeling; transportation economics and policy; network economics; and traffic control and optimization.

OTREC Partner Laboratories and Research Groups

Portland State University

- Intelligent Transportation Systems (ITS) Laboratory
- Traffic Signal Lab
- Freight & Logistics Lab
- Initiative for Bicycle and Pedestrian Innovation (IBPI)
- Transportation Modeling Lab
- InfraStructure Testing and Applied Research (iSTAR) Lab
- Center for Urban Studies / Center for Transportation Studies

University of Oregon

- Transportation & Livability Research Group

Oregon Institute of Technology

- Traffic Engineering Laboratory
- Pavement Engineering Laboratory

Oregon State University

- Kiewit Center for Infrastructure and Transportation
- National Center for Accessible Transportation (NCAT)
- Interdisciplinary Transportation Analysis and Modeling (iTram) Lab

OTREC Project Co-Sponsors

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Clackamas County

Community Cycling Center

Consejo Nacional de Ciencia y Technologia

Conway Trucking

Eugene School District, 4J

Institute of Transportation Engineers (ITE), District 6

Johnson Creek Watershed Council

Juan Young Trust

Lane County Transit District

Metro

National Center for Bicycling & Walking

National Multi Housing Council

Oregon Department of Transportation, Bridge Engineering Section

Oregon Department of Transportation, Pedestrian and Bicycle Program

Oregon Department of Transportation, Region 1

Oregon Department of Transportation, Research Unit

Port of Portland

Robert Wood Johnson Foundation, Active Living Research Program

Rogue Valley Transportation District

TriMet

Tualatin Riverkeepers

U.S. Department of Transportation, Western Federal Lands Highway Division

Institutional sponsors

Arizona State University, Office for Research and Sponsored Projects Administration

Oregon State University

- School of Civil and Construction Engineering
- College of Engineering
- Hinsdale Wave Research Laboratory
- Kiewit Center for Infrastructure and Transportation
- Research Office
- Oregon State University Foundation, Joyce and Bill Furman Fellowship for Research in Transportation Economics

Portland State University

- Department of Architecture
- Department of Civil and Environmental Engineering
- Department of Computer Science
- Department of Environmental Sciences and Resources
- Department of Geography
- Department of Psychology
- Nohad A. Toulan School of Urban Studies and Planning, College of Urban and Public Affairs
- Office of Research and Sponsored Projects
- Office of Sustainability
- School of Business Administration
- School of Extended Studies

Oregon Institute of Technology

- Department of Civil Engineering
- Environmental Sciences

Temple University

University of Oregon

- Community Service Center
- Department of Planning, Public Policy and Management
- Research Services and Administration
- School of Architecture and Applied Arts, Department of Architecture

University of Minnesota

University of North Carolina

University of South Carolina

Board of Advisors

OTREC's structure includes an external Board of Advisors (BOA) consisting of representatives from transportation-related organizations, primarily in Oregon. The role of the BOA is to help develop OTREC's foundation and provide guidance on OTREC's overall mission. These members are our advocates and champions, regionally, statewide and nationally. The role of the BOA includes:

- Long-range planning and direction
- Identify priority research topics
- Review annual report and plan for the future
- Serve as a connection to key agency partners at state and federal levels and with industry
- Provide OTREC with statewide, multimodal, public/private perspectives on research, education and outreach

Scott Bricker, Executive Director, Bicycle Transportation Alliance

Andy Cotugno, Senior Policy Advisor, Metro

Phillip Ditzler, Administrator, Oregon Division, Federal Highway Administration

Tomas Endicott, Founder, Policy and Business Development, SeQuential Biofuels

Mike Flanigon, Director, Office of Safety and Security, Federal Transit Administration

Lavinia Gordon, Director, City of Portland Office of Transportation, Bureau of Transportation System Management

Ruth Harshfield, Executive Director, Oregon Alliance for Community Traffic Safety

Rob Inerfeld, Transportation Planning Manager, City of Eugene

John Isbell, Director of Corporate Delivery Logistics, Nike, Inc.

Susie Lahsene, Corporate Planning Manager, Port of Portland

Jay Lyman, Chief Operating Officer, David Evans & Associates

Randy McCourt, Principal, DKS Associates

Neil McFarlane, Executive Director of Capital Projects, TriMet

Dr. Nancy Nihan, Director, Transportation Northwest (TransNow)

Hon. Lynn Peterson, Chair, Clackamas County Board of Commissioners

Tom Schwetz, Director of Development Services, Lane Transit District

Doug Tindall, Deputy Director, Highway Division, Oregon Department of Transportation

Bill Upton, Oregon Modeling Steering Committee, Transportation Modeling Program Manager, Oregon Department of Transportation

Executive Committee

OTREC is supported by an Executive Committee whose input and support has been instrumental to our operations. The committee played a key role in forming the Strategic Plan, theme and programmatic goals, and assisting with the first RFP and project funding decisions.

Dr. Marc Schlossberg
OTREC Associate Director
University of Oregon

Dr. Chris Higgins
OTREC Associate Director
Oregon State University

Dr. Roger Lindgren
OTREC Associate Director
Oregon Institute of Technology

Barnie Jones
Research Manager
Oregon Department of Transportation

Dr. Robert Bertini
OTREC Director

Satvinder Sandhu
Community Planner
Oregon Division, FHWA

OTREC Executive Committee (from left): Marc Scholossberg, Roger Lindgren, Robert Bertini, Barnie Jones, Chris Higgins and Satvinder Sandhu.

RITA Administrator and UTC Liaison Visit OTREC

On May 1, 2008, USDOT Research and Innovative Technology Administration (RITA) Administrator Paul Brubaker and Thomas Marchessault, UTC liaison for RITA, spent the day visiting OTREC. Our guests learned about OTREC's current activities, including project "spotlight" demonstrations by faculty, and visited with students during a special poster session.

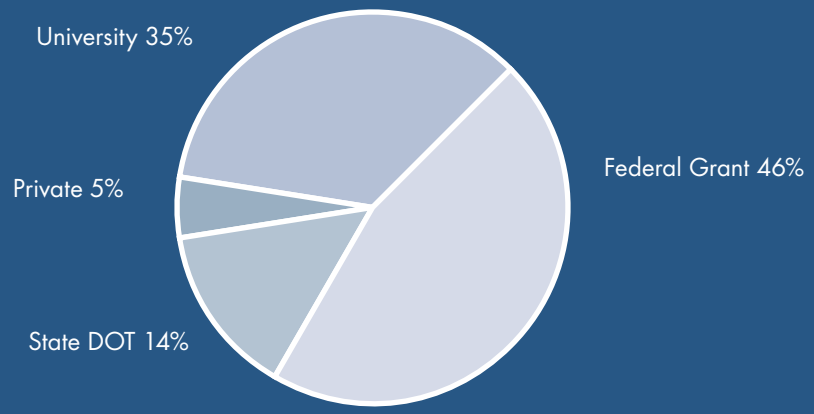
During an afternoon reception, Matthew Garrett, ODOT Director, and Administrator Brubaker gave remarks on the future of transportation technology to an audience that included the OTREC Board of Advisors, Executive Committee, faculty, students and community transportation leaders. Administrator Brubaker spoke about the need for an interdisciplinary approach to transportation problems of the future, as evident in the multidisciplinary nature of OTREC programs that bring together faculty and students from across our partner campuses.

Faculty and students visit with RITA guests in May. From left: Marc Schlossberg, Jennifer Dill, Dave Maier, RITA Administrator Paul Brubaker, Kristin Tufte, UTC RITA Liaison Tom Marchessault, and OSU graduate students Christo Brehm and Tim Brass.

Finance

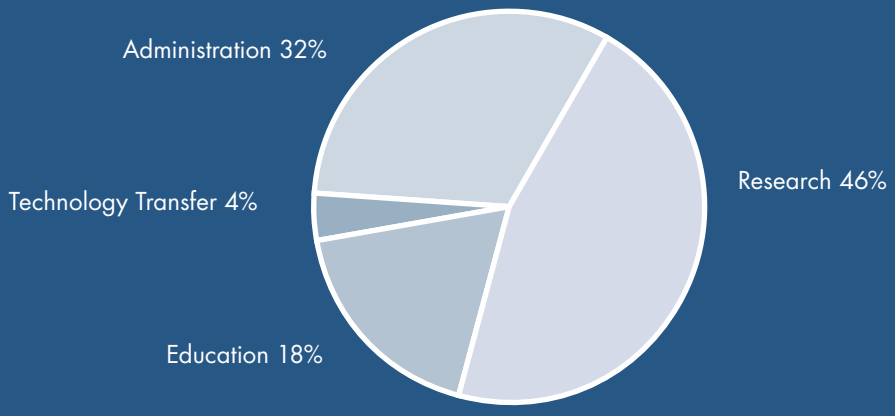
Funding Sources (Inception to September 30, 2008)

OTREC's funding sources include the federal UTC grant as well as matching funds from many sources, including the four universities in the consortium, the Oregon Department of Transportation and numerous public and private matching partners.



Expenditures (Inception to September 30, 2008)

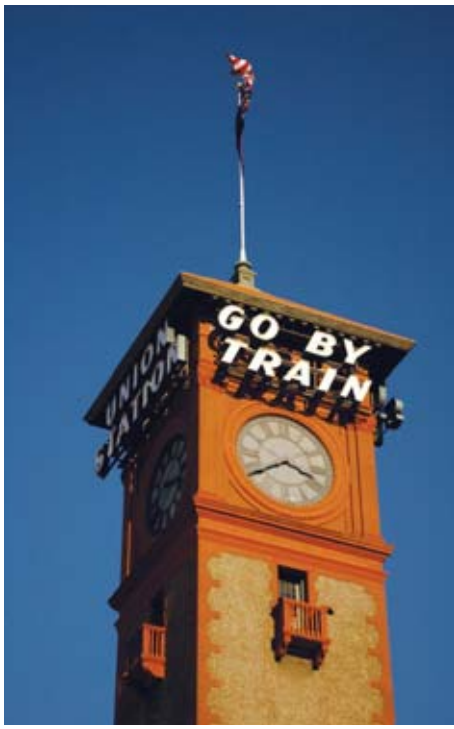
Since the Strategic Plan was approved on December 1, 2006, OTREC has funded 69 research projects, 27 education projects and 8 technology transfer projects. Expenditures reflect our priorities in these three key areas.



OTREC by the Numbers

A progress-to-date overview of Oregon Transportation Research and Education Consortium accomplishments through September 30, 2008.

	Projects Awarded for 2008-2009	Cumulative
Number of proposals received	50	**190**
Number of research projects funded	22	**65**
Number of multicampus projects	6	**17**
Number of multiPI projects	20	**48**
Number of research projects partnered with ODOT	7	**30**
Number of dollars awarded to research	$1,862,029	**$4,100,447**
Number of faculty partners (numbers reflect running total)	61	**61**
Number of external sponsors participating in OTREC	29	**29**
Number of peer reviewers invited	181	**965**
Number of peer reviews received	138	**563**
Number of education projects funded	5	**12**
Number of dollars awarded to education projects	$127,448	**$335,585**
Number of graduate students involved in projects (estimate)	7	**64**
Number of undergraduate students involved in projects (estimate)	7	**31**
Number of technology transfer projects funded	1	**9**
Number of dollars awarded to technology transfer projects	$69,900	**$367,902**



OTREC Project List

New Projects

Research

2009-216 Overlooked Density: Re-Thinking Transportation Options in Suburbia, Phase 2. Nico Larco, UO

2009-221 Factors for Improved Fish Passage Waterway Construction, Phase 2. David Sillars, OSU, Hamid Moradkhani and Trevor Smith, PSU

2009-224 Healthy Communities and Urban Design: A Multi-Disciplinary National Analysis of Travel Behavior, Residential Preference, and Urban Design. Jessica Greene and Marc Schlossberg, UO, Daniel Rodriguez and Noreen McDonald, UNC

2009-226 Maintaining Safe, Efficient and Sustainable Intermodal Transport through the Port of Portland. David Jay and Jiayi Pan, PSU

2009-227 Evaluation of Bike Boxes at Signalized Intersections. Jennifer Dill and Chris Monsere, PSU

2009-229 Implementation of Active Living Policies by Transportation Agencies and Departments. Jennifer Dill, PSU, Deborah Howe, Temple University

2009-230 Exploratory Methods for Truck Re-identification in a Statewide Network Based on Axle Weight and Axle Spacing Data to Enhance Freight Metrics. Chris Monsere, PSU, Mecit Cetin, USC, Andrew Nichols, Marshall University

2009-232 Expanding Development of the Oregon Traffic Safety Data Archive, Phase 2. Chris Monsere, PSU

2009-239 The Effectiveness of Vertebrate Passage and Prevention Structures: a Study of Boeckman Road in Wilsonville. Catherine de Rivera, PSU

2009-242 Financing Mechanisms for Capacity Improvements at Interchanges. James Strathman, PSU

2009-243 A Novel Design Strategy for Integrating Freight Rail Into Urban Settings: A Capping Study. John Jeffrey Schnabel, PSU

2009-248 Value of Reliability, Phase 2. Robert Bertini, PSU, David Levinson and Kathleen Harder, U of M

2009-249 Improving Regional Travel Demand Models for Bicycling. John Gliebe and Jennifer Dill, PSU

2009-252 Hurricane Wave Forces on Highway Bridge Superstructure: Psuedo-dynamic Testing for Bridge Subassembly. Daniel Cox and Tim Maddux, OSU

2009-255 Calibrating the Highway Safety Manual (HSM) Predictive Methods for Oregon Highways. Karen Dixon, OSU, Chris Monsere, PSU

2009-256 Advisory Speed Safety Study. Karen Dixon and Ida van Schalkwyk, OSU

2009-257 Future Flooding Impacts on Transportation Infrastructure and Traffic Patterns Resulting from Climate Change. Heejun Chang, Martin Lafrenz and Miguel Figliozzi, PSU

2009-261 Combined Seismic Plus Live Load Analysis of Highway Bridges. Michael Scott, OSU

2009-269 Exploiting a Next Generation Intelligent Transportation Systems (ITS) Data Warehouse for Improved System Performance and Congestion Monitoring. Robert Bertini, David Maier and Kristin Tufte, PSU

2009-270 Seismic Hazard Assessment of Oregon Highway Truck Routes. Peter Dusicka and John Gliebe, PSU

2009-276 Analyzing and Quantifying the Impact of Congestion on Less-Than-Truckload (LTL) Industry Costs and Performance in the Portland Metropolitan Region. Miguel Figliozzi and Chris Monsere, PSU

2009-277 Analysis of Travel Time Reliability for Freight Corridors Connecting the Pacific Northwest. Miguel Figliozzi, PSU

Education

2009-223 Trail Planning and Community Service Curriculum. Lynn Weigand, PSU

2009-247 designBridge: Integrating Transportation into Service Learning Design/Build Projects. Nico Larco and Juli Brode, UO

2009-254 Rural Young Women Transportation Education Outreach. Roger Lindgren and Katie Edwards, OIT, William Mac Brock, National Park Service

2009-264 Expanding Service Learning Models in Transportation. Robert Parker and Terry Moore, UO

2009-279 Bicycle and Pedestrian Design Curriculum Expansion Proposal. Lynn Weigand, PSU

Technology Transfer

2009-214 Transferring Geographic Information Systems (GIS) / Community-Based Transportation Assessment Tools Nationwide. Marc Schlossberg and Nico Larco, UO

Ongoing Projects

Research

2007-01 From Arterial to Asset: Examining the Role of the Multi-way Boulevard in Coordinated Transportation and Land Use planning. Mark Gillem, UO

2007-14 Using Existing Intelligent Transportation Systems / Commercial Vehicle Operation (ITS/CVO) Data to Develop Statewide (and Bi-State) Truck Travel Time. Christopher Monsere and Robert Bertini, PSU

2007-20 The Influence of Community Walkability and Safety on Active Transportation Among Low Income Children. Jessica Greene, UO

2007-30 Hurricane Wave Forces on Highway Bridge Superstructure. Daniel Cox, OSU

2007-33 Understanding and Measuring Bicycling Behavior: a Focus on Travel Time and Route Choice. Jennifer Dill, PSU

2007-37 Characteristics of Transitions in Freeway Traffic. Robert Bertini, PSU, Soyoung Ahn, ASU

2007-43 Factors for Improved Fish Passage Waterway Construction. David Sillars, OSU, Hamid Moradkhani and Trevor Smith, PSU

2007-45 Influence of Environmental Effects on Durability of Composite Reinforced Fiber Polymer (CFRP) for Shear Strengthening of Reinforced Concrete (RC) Girders. Chris Higgins, OSU

2007-53 Performance Enhancement of Bridge Bracing Under Service and Extreme Loads. Peter Dusicka, PSU

2007-64 Improving Travel Information Products via Robust Estimation Techniques. David Maier and Kristin Tufte, PSU

2007-68 Co-evolution of Transportation and Land Use. Lei Zhang, OSU

2007-79 Identify and Address Institutional Barriers Delaying Incident Clearance. Karen Dixon and Lei Zhang, OSU

2007-80 Evaluation of the Oregon DMV At-Risk Driver Program. James Strathman, PSU

2008-91 Evaluation of the Oregon DMV At-Risk Driver Program, Phase 2. James Strathman, PSU

2008-93 Analysis of TriMet Bus Operator Absence Patterns. James Strathman, PSU

2008-102 Operational Analysis of Transit Bus Collisions. James Strathman, PSU

2008-108 Empirical Observation of the Impact of Traffic Oscillations on Freeway Safety. Christopher Monsere, PSU, Soyoung Ahn, ASU

2008-115 Application of WIM Data for Improved Modeling, Design, and Rating. Christopher Monsere, PSU, Christopher Higgins, OSU, Andrew Nichols, Marshall University

2008-116 Understanding Driver Behavioral Changes Associated with Road User Fees. Anthony Rufolo, PSU

2008-130 Value of Reliability. Robert Bertini, PSU, David Levinson, U of M

2008-131 Oregon Freight Data Mart. Miguel Figliozzi and Robert Bertini, PSU

2008-133 Freight Distribution Problems in Congested Urban Areas: Fast and Effective Solution Procedures to Time-Dependent Vehicle Routing Problem. Miguel Figliozzi, PSU

2008-134 Practical Approximations to Quantify the Impact of Time Windows and Delivery Sizes on Freight Vehicle Miles Traveled (VMT) in Urban Areas. Miguel Figliozzi, PSU

2008-137 Dynamic Activity-Based Travel Forecasting System. John Gliebe, PSU

2008-145 Assessment and Refinement of Real-Time Travel Time Algorithms for Use in Practice, Phase 2. Kristin Tufte, PSU, Soyoung Ahn, UA

2008-147 Influence of Environmental Effects on Durability of Composite Reinforced Fiber Polymer (CFRP) for Shear Strengthening of Reinforced Concrete (RC) Girders Phase 2. Christopher Higgins, OSU

2008-148 Seismic Damage State Models for Oregon Bridges. Peter Dusicka, PSU

2008-152 Overlooked Density: Re-Thinking Transportation Options in Suburbia, Phase I.Nico Larco and Marc Schlossberg, UO

2008-154 Food Delivery Footprint: Addressing Transportation, Packaging, and Waste in the Food Supply Chain. Madeleine Pullman, Darrell Brown and Scott Marshall, PSU

2008-155 Instrumentation for Mechanistic Design Implementation. Todd Scholz, OSU

2008-156 Development of an Open Source Bridge Management System. Michael Scott, OSU

2008-160 Long term Evaluation of Individualized Marketing Programs for Travel Demand Management. Jennifer Dill and Cynthia Mohr, PSU

2008-161 Hurricane Wave Forces on Highway Bridge Superstructure: Repair and Retrofit of Existing Bridges, Phase 2. Daniel Cox and Solomon Yim, OSU

2008-163 No More Freeways: Urban Land Use-Transportation Dynamics without Freeway Capacity Expansion. Lei Zhang, OSU

2008-176 Expanding Development of the Oregon Traffic Safety Data Archive. Christopher Monsere, PSU

2008-184 Understanding School Travel: How Residential Location Choice and the Built Environment Affect Trips to School. Yizhao Yang and Marc Schlossberg, UO

2008-190 Using Archived Intelligent Transportation Systems (ITS) Data to Measure the Operational Benefits of a System-wide Adaptive Ramp Metering System. Robert Bertini and Chris Monsere, PSU

2008-192 Evaluating the Effectiveness of the Safety Investment Program (SIP) Policies for Oregon. Chris Monsere, PSU, Karen Dixon, OSU

2008-195 Freight Performance Measures: Approach Analysis. B. Starr McMullen, OSU, Christopher Monsere, PSU

2008-196 Access Management Best Practices Manual. Karen Dixon, OSU

Education

2007-02 City Design Lecture Series: Linking Transportation and Land Use Planning. Mark Gillem, UO

2007-21 Road Ecology Course and Seminar Series. Mark Sytsma, PSU

2008-97 Closing the Gap: Developing a Transportation Curriculum for the Oregon Young Scholars Program. Carla Gary, Bethany Johnson and Chuck Kalnbach, UO

2008-126 Bicycle and Pedestrian Education Program. Lynn Weigand, PSU, Jennifer Dill and Marc Schlossberg, UO, Karen Dixon, OSU

2008-144 Traffic Engineering Training for Rural Communities. Roger Lindgren, OIT

2008-187 Distribution Logistics Course. Miguel Figliozzi, PSU

Technology Transfer

2007-13 Developing a Coordinated Professional Development Program for OTREC. Robert Layton, OSU, Christopher Monsere, PSU

2007-41 Application of Load and Resistance Design Factor Design (LRFD) Principles for Deep Foundations in Oregon: Phase 1. Trevor Smith and Peter Dusicka, PSU

2008-138 Oregon Transportation Planning Experience. Carl Abbott, Samuel Lowry, PSU

2008-173 Options for Integrating Urban Land Use and Travel Demand Models. John P. Gliebe

2008-175 Increasing Capacity in Rural Communities: Planning for Alternative Transportation. Megan Smith, Keavy Cook, Bethany Johnson, OSU

Completed Projects

Research

2007-03 Socio-Economic Effect of Vehicle Mileage Fees. B. Starr McMullen and Lei Zhang, OSU

2007-57 Assessment and Refinement of Real-Time Travel Time Algorithms for Use in Practice. Kristin Tufte, PSU

2008-81 Socio-Economic Effect of Vehicle Mileage Fees, Phase 2; B. Starr McMullen and Lei Zhang, OSU

Education

2007-51 Linking Experiential Learning to Community Transportation planning. Robert Parker and Bethany Johnson, UO

Technology Transfer

2007-18 Active transportation, neighborhood planning and participatory Geographic Information Systems (GIS). Phase 1. Marc Schlossberg, UO

2007-67 Initiative for Bicycle and Pedestrian Innovation. Jennifer Dill, PSU, Marc Schlossberg, UO, Karen Dixon, OSU

2008-98 Active Transportation, Neighborhood Planning and Participatory Geographic Information Systems (GIS), Phase 2. Marc Schlossberg, UO

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