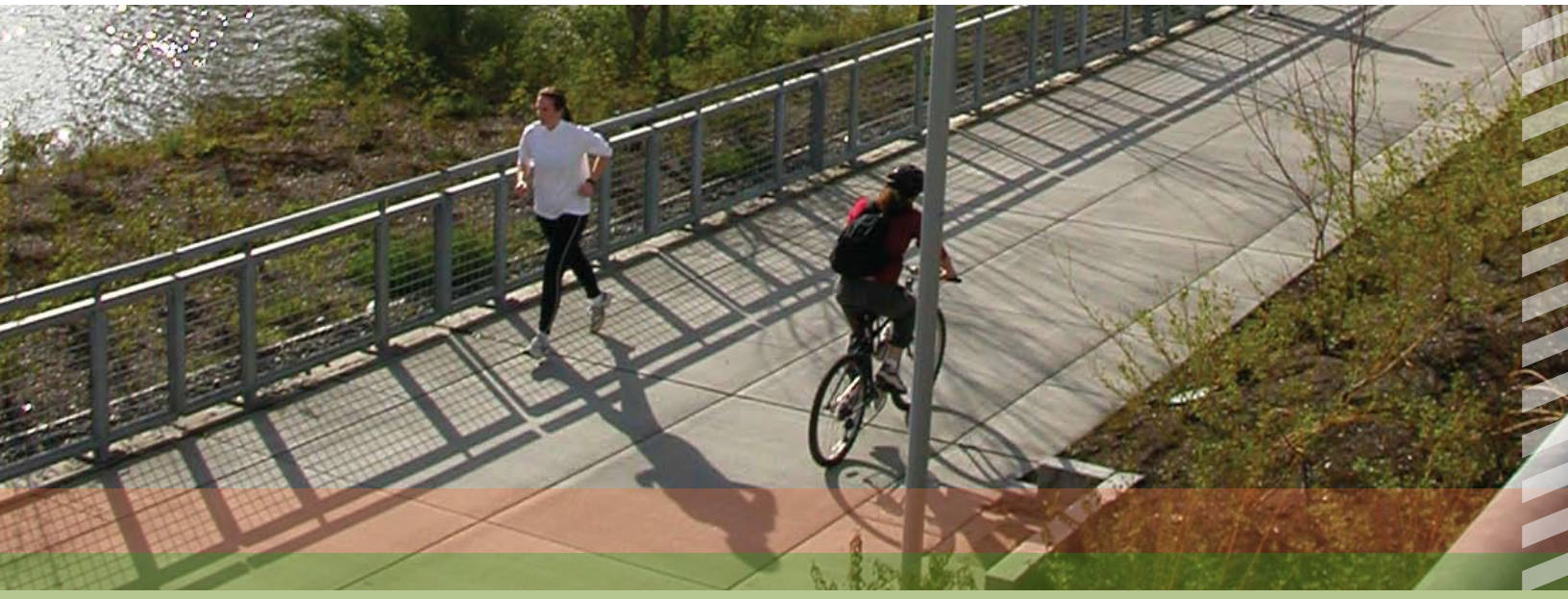


2006 – 2007 Annual Report

OTREC
OREGON TRANSPORTATION RESEARCH
AND EDUCATION CONSORTIUM

Contents

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 transportation research, education and technology transfer activities of OTREC for December 1, 2006–September 30, 2007.

Oregon Transportation Research and Education Consortium (OTREC)
P.O. Box 751
1930 SW 4th Avenue
Suite 300
Portland, OR 97207

Phone: 503-725-2866
E-mail: otrec@pdx.edu
Web: www.otrec.us

Designed by: emilymdesign.com
Edited by: Jenny Kincaid
Contributors: Rie Anderson, Robert Bertini, Hau Hagedorn, Roger Lindgren, Marc Schlossberg

Printed on recycled paper

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

On behalf of the Oregon Transportation Research and Transportation Consortium staff, faculty, students, and our many partners, I am thrilled to present our first Annual Report documenting our progress during our first year of operation, from December 1, 2006 through September 30, 2007. During these ten short months, we hope you will agree that we have accomplished much towards fulfilling our mission, and we are pleased to have the chance to share some of our success stories here.

As stated in our Strategic Plan, the Oregon Transportation Research and Education Consortium (OTREC) is committed to providing relevant and high-quality research to assist local, state, and regional agencies in their work; expanding the pool of highly trained graduates who choose to work in transportation, and sharing the results of our work so it may be implemented. We strive for innovation, creativity, and multi-disciplinary collaboration on surface transportation research, education and technology transfer projects that 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. We like to refer to our mission often, since it captures our enthusiasm for creating new partnerships and contributing toward the many national and statewide needs in transportation research, education and technology transfer.

As director, I am extremely proud of our students, staff, and of the many new collaborations and partnerships that have resulted from OTREC's creation. As you read about some of our progress and successes, please note that this is just a sampling of our activities—I encourage you to visit our website at www.otrec.us to learn more. We would love for you to become involved in our work—please contact me directly at bertini@pdx.edu or at 503-725-4249 to discuss further or to provide any suggestions.

Congratulations on First Year Achievements

Peter DeFazio, U.S. Congressman

With this Annual Report, I am pleased to mark the one year anniversary of the establishment of the Oregon Transportation Research and Education Consortium (OTREC), Oregon's first University Transportation Center, funded as part of the 2005 surface transportation bill, SAFETEA-LU. The future of our nation's transportation system depends on the kind of research, education and technology transfer that OTREC is engaged in, and I have been very happy to see the partnership between Portland State University, the University of Oregon, Oregon State University and the Oregon Institute of Technology come to fruition. As OTREC continues to evolve, I know OTREC researchers will make key contributions to advance our nation's transportation policy. I also know that OTREC's students and graduates will help meet our nation's needs for a 21st century transportation workforce. Congratulations on a remarkable year!

Matthew Garrett, Director of the Oregon Department of Transportation

ODOT is pleased to be an active partner with OTREC. ODOT's employees work hard every day to provide a safe, efficient transportation system that supports economic opportunity and livable communities for Oregonians. Working closely with OTREC staff, faculty, and students, we are developing solutions to today's transportation challenges as well as those in the future. We are particularly pleased about the number and diversity of research projects that are underway as ODOT/OTREC collaborations. The federal investment in OTREC is also helping develop a critical pipeline of transportation professionals, and providing continuing education and training to today's workforce. We know that you'll find many examples of OTREC's great progress in this first Annual Report, and we look forward to a long, healthy partnership!

George Pernsteiner, Chancellor of the Oregon University System

I am delighted to express my support for OTREC, a key multi-campus partnership aimed toward leveraging the talents of our faculty in support of the transportation research needs of our state and nation. The partnership between Portland State University, the University of Oregon, Oregon State University and the Oregon Institute of Technology is a pillar of excellence within OUS, and I am pleased that the four campuses have embarked on this collaborative venture, cemented by their historic Memorandum of Understanding. This spirit of collaboration is reflective of the mission and values of the OUS, and provides a model for other partnerships being develop across other fields. I am looking forward to many successful outcomes in the years to come.

OTREC Milestones 2005–2007

08.10.05 OTREC established as a National University Transportation Center

09.20.05 Dr. Robert L. Bertini is named UTC Director by Portland State University

10.16.06 OTREC hires first staff

12.08.06 OTREC issues first Request for Proposal

12.01.06 RITA approves Strategic Plan

01.20.07 First OTREC Student of the Year is recognized

03.30.07 PSU, UO, OSU and OIT sign historic memorandum of understanding for partnership

04.03.07 OTREC announces first 22 project awards

04.15.07 First OTREC newsletter issued

04.11.07 OTREC issues second Request for Proposal

09.07.07 OTREC announces 36 Year 2 project awards

09.10.07 Board of Advisors named

11.05.07 First RITA site visit

2005 2006 2007

OTREC Theme

Advanced Technology, Integration of Land Use and Transportation, and Healthy Communities

OTREC's theme, "advanced technology, integration of land use and transportation, and healthy communities," was developed with collaborative input of stakeholders in the consortium universities, along with external community partners. The theme addresses key transportation research and educational needs of Oregon and the region, while focusing on contributing 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 expertise across disciplines, and reflects the expertise of the partner universities.

Each OTREC proposal for a research, education or technology transfer project describes how the theme will be addressed, and fit with 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.

Under the guidance of our theme, OTREC and its multidisciplinary faculty work to expand new knowledge and expertise including: understanding 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. We believe that our theme positions us uniquely among other UTCs and we look forward to sharing the results of our work as it develops.

Mission

The Oregon Transportation Research and Education Consortium is committed to providing relevant and high-quality research to assist local, state, and regional agencies in their work; expanding the pool of highly trained graduates who choose to work in transportation-related fields; and building upon our collective efforts and expertise to make Oregon a place where innovation, creativity, and multi-disciplinary 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 principal center staff, including OTREC administrative staff and partner university associate directors. Dr. Bertini was named Director in September 2005, and the first staff was hired in October 2006.

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

Hau Hagedorn
Research Program Manager

Jenny Kincaid
Communication and
Education Coordinator

Rie Anderson, CPA
Fiscal Operations Coordinator

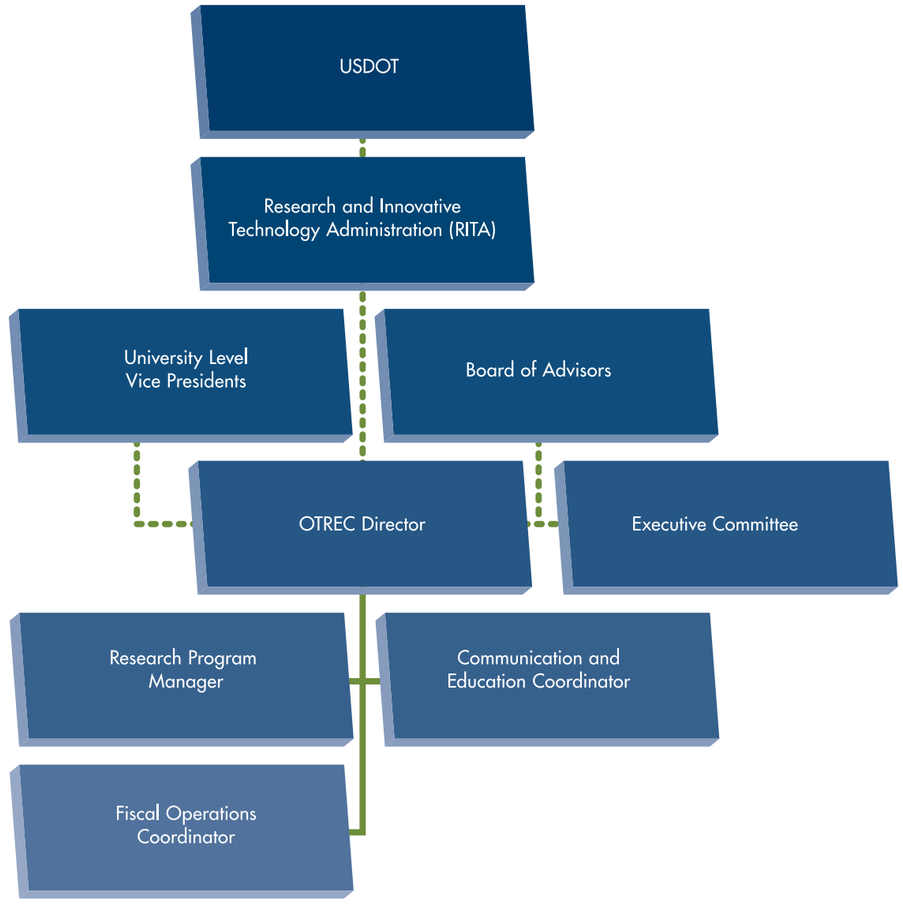
Marc Schlossberg, Ph.D.
Associate Director
University of Oregon

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

Roger Lindgren, Ph.D.
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 is the Director, and there are three full-time staff members. There is an Executive Committee made up of one faculty member from each partner institution, ODOT representative, and 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 are also devoting time and energy to the administration and oversight of OTREC.



Research

OTREC's research program brings together a complement of expertise from the collaboration and strengths of its partner campuses. Peer-review is fundamental to OTREC's project selection and conduct of research, and is based on the rigorous criteria used by the National Science Foundation. Projects are selected after undergoing a thorough peer-review process, and final reports are also 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 with a strong fit with OTREC's theme strengthen the depth of knowledge that will allow the research program to grow over time.

This past year, OTREC chose 45 research projects for funding, totaling over $4.9 million. There are 45 multi-disciplinary faculty investigators, 22 external co-sponsors, and more than 80 undergraduate and graduate students working on OTREC projects. A complete list of our projects can be found on page 34. Following is a sampling of our research program highlights.

Project Management System

Over the past year, OTREC has developed a web-based project management system that allows faculty, staff and reviewers to participate in many aspects of the proposal process via a secure web interface. Principal investigators submit their abstracts, proposals, budgets and final reports via this web-based system, and may view their proposal reviews and award decisions. Reviewers are invited to use the system to submit confidential peer reviews of proposals. This system helped OTREC staff coordinate two Request for Proposal cycles this year, for which 141 proposals were submitted and over 400 reviews received. The project management system will soon include quarterly report submission and final report search capabilities, and will continue to expand in capacity as our program grows.

Sample OTREC Research Projects

THEME: Advanced Technology

Socio-Economic Effect of Vehicle Mileage Fees

B. Starr McMullen and Lei Zhang, Oregon State University

In-vehicle display that tracks mileage traveled as part of a vehicle mileage tax pilot program in Portland, OR.

In recent years it has become evident that the gasoline tax—the primary way that highway user fees are collected at both state and federal levels in the U.S.—may no longer be able to generate the funds necessary to build and maintain the highway system. A frequently mentioned alternative is a fee based on vehicle miles traveled. Technology to enable implementation of such a system has been developed, and now Dr. B. Starr McMullen and Dr. Lei Zhang at Oregon State University are working to assess the social impacts of a change from gas tax to mileage fee. Concerns have been raised regarding the possible shift of tax burden to lower income groups or from urban to rural areas, or about discouraging people from driving alternative fuel vehicles like hybrids. McMullen and Zhang are working with graduate students Kyle Nakahara (Economics), Divya Valluri (Engineering) and Smita Biswas (Agricultural and Resource Economics) to develop and test models that describe possible impacts of this policy change on different socio-economic and geographic groups. This study will provide policymakers the information necessary to make informed decisions regarding the vehicle-mile tax. Preliminary results have been presented at the annual meeting of the Transportation Research Forum, the World Conference on Transport Research, and the New Directions in Asset Management and Economic Analysis Conference (TRB). Final testing of the preliminary model will continue, and a discrete choice model that will better predict vehicle choice will soon be added. Co-sponsor of this project is the Oregon Department of Transportation, and this project fits within the USDOT mobility strategic objective of maintenance and management of sustainable transportation infrastructure.

Using Existing ITS Commercial Vehicle Operation (ITS/CVO) Data to Develop Statewide (and Bi-state) Truck Travel Time Estimates and Other Freight Measures

Christopher Monsere and Robert Bertini, Portland State University

Weigh-in-motion (WIM) site at the Farewell Bend Point of Entry (POE) on Oregon's I-84 (Columbia River in background). Photo courtesy of the Oregon Department of Transportation.

Over 40,000 transponder-equipped trucks have helped the Oregon Department of Transportation (ODOT) weigh and pre-clear trucks while moving. Now this large data source can be used to predict travel times in freight corridors. Knowing more about travel times can save Oregonians time and money, especially in congested areas of the state.

Dr. Christopher Monsere and his research team at Portland State University are mining two years worth of data totaling over 20 gigabytes. The data are integral to developing an algorithm that will filter, match, and estimate link travel times. The research will also investigate additional locations for deployment of transponder readers for enhanced travel time information. Providing more accurate travel time in the Portland metropolitan region (where

congestion is of significant concern) and across the state will help to improve mobility for travelers and freight. The research team hopes that by the end of the project, they will become familiar enough with the data to lay the groundwork for producing freight corridor performance measures. Performance measures are key indicators that help transportation agencies understand how well they are operating the transportation network. This research addresses several USDOT research priorities and mobility objectives by developing methods to use existing technology to maximize the efficiency of the transportation system.

THEME: Integration of Land Use and Transportation

From Arterial to Asset: Examining the Role of the Multi-way Boulevard in Coordinated Transportation Land use Planning

Mark Gillem, University of Oregon

Student rendition of a multi-way boulevard that could accommodate local and through traffic (drawing by Tyler Nishitani and Jesse Golden, UO).

Could it be possible to re-examine the problem of congested arterials by approaching it from a land use perspective? Where land availability is a significant constraint, street design that separates faster moving traffic from slower local traffic appears to be a promising alternative to the standard U.S. practice of designating streets for a single purpose. Faculty and students at the University of Oregon are investigating the feasibility of converting a congested arterial into a multiway boulevard, and determining whether the boulevard can reduce congestion, improve pedestrian and automobile safety and support more unified land uses. The Franklin Corridor, the case study site in Eugene, Oregon, is under intense development pressure, and this project looks beyond individual development proposals to study the potential benefits for the corridor as a whole.

Dr. Mark Gillem brings together a diverse team that includes over 30 students in architecture, landscape architecture and planning, along with local professionals. True to the spirit of UO's signature community involvement approach to education and research, public involvement is also key to this study; public workshops held earlier this year drew over 300 people. A primary co-sponsor of the project is the American Institute of Architects, and this project addresses USDOT strategic objectives of improved safety, enhanced mobility and investigation of minimizing environmental impacts of transportation.

THEME: Healthy Communities

Understanding and Measuring Bicycling Behavior: A Focus on Travel Time and Route Choice

Jennifer Dill, Portland State University

Biking behavior and route choice are research topics of interest to Dr. Jennifer Dill and her research team at PSU.

GPS units attached to bikes help track trip data.

To get at the heart of why many people do not seriously consider bicycling as a travel option for short trips, researchers at Portland State University are equipping bicycles with global positioning system (GPS) units to better understand biking behavior and route choice. According to the 2001 Nationwide Household Travel Survey (NHTS), over 60% of all personal trips are five miles or less in length and nearly 40% are two miles or less. Dr. Jennifer Dill, Associate Professor in the School of Urban Studies and Planning, is conducting research that will help explain why bicycles are not chosen more often for these short trips. Dr. Dill has collected attitudinal data from a random survey of 566 adults in and around Portland, OR. These data will be combined with data collected from nearly 200 bike GPS units to measure actual bicycle usage and patterns and compare travel time between bicycling and driving. The transportation network characteristics will also be studied to see how this may influence travelers' decisions. Early results indicate that men and younger adults are more likely to be regular bicyclists, and the biggest barrier to cycling appears to be the amount of traffic on the road. The data gathered from the project will be shared with Metro (the Portland region Metropolitan Planning Organization) to help model bicycle behavior and plan for bicycle users. This research project relates to a number of USDOT objectives, priorities and critical issues relating to land use, including how the built environment influences travel behavior and advancing multimodal transportation planning. It also specifically addresses developing best practices for bicycle and pedestrian programs as identified in the USDOT Strategic Plan. This project is co-sponsored by the Robert Wood Johnson Foundation's Active Living Research Progam.

Collaboration

Historic University Partnership

Collaboration among the four OTREC universities has been a cornerstone of OTREC's activities since its inception. Associate Directors at each campus, along with faculty and community stakeholders, helped draft the Strategic Plan and envision the partnerships that were to come. Setting a precedent for strong collaboration, the four partner universities—PSU, UO, OSU and OIT—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. Each university's Vice President for Research (or equivalent) supports the partnership, and the research administration and accounting staff at each institution participate actively in the pre- and post-award processes. This strong communication among all parties is setting a precedent for future joint efforts.

New Collaboration Among Faculty

Faculty are encouraged throughout the proposal and project process to think of innovative collaborative approaches to research, education or technology transfer. Associate Director Marc Schlossberg notes that many faculty at UO who did not consider themselves to be transportation researchers have found strong interdisciplinary ties to transportation. He says, "OTREC has allowed these individuals to explore the transportation component of their work to a greater extent, and in so doing have connected a diverse and very complementary set of interests and skills to the OTREC theme of transportation and livability." In our first and second rounds of project awards, 13 projects involve faculty at more than one campus, and 28 have multiple investigators.

Strong Ties To ODOT and Transportation Community

Cooperation at the university level is just the beginning of OTREC's community relationships. More than 20 external partners provide matching funds of cash or in-kind support for faculty-led projects. The Oregon Department of Transportation (ODOT) is a primary partner, jointly funding nearly half of our research projects selected to date. In addition to ODOT, cities, transit agencies, ports, associations and non-profit organizations around the region collaborate with faculty. These organizations also hire our students for internships and after graduation for permanent positions. OTREC's Board of Advisors is serving as another vital link to our key agency and organization partners at the state, federal and industry levels. These partnerships are critical to ensuring that broad and relevant research objectives across the state and region are reflected in the work undertaken by OTREC. Meeting partners' needs will add real-world technology transfer capabilities to the program.

Northwest Perspective

OTREC is proud to be part of the Region X Transportation Consortium, made up of UTCs in Oregon, Washington, Idaho, and Alaska, as well as the four state DOTs, with input and participation by representatives of the USDOT. The Consortium's goal is to improve transportation research and education collaboration in the Pacific Northwest. The universities alternate hosting bi-annual meetings, and representatives from OTREC participated in meetings in Seattle and Idaho this year. The Region X group supports an annual student conference, is exploring pooled fund research that would fund projects from a regional needs perspective, and is discussing joint educational initiatives.

National Connections

OTREC recognizes the distinction and expectations that come with National UTC designation, and strives to be a full participant at the national level. OTREC staff is active with AASHTO's Research Advisory Committee (RAC), and our Research Program Manager has been appointed to the Committee on Conduct of Research of the Transportation Research Board (TRB). The OTREC Director and staff attend annual CUTC meetings, most recently in Madison, WI in June 2007. In addition, OTREC participates in joint activities among all ten National UTCs.

OTREC Sample Multidisciplinary Collaborative Project

THEME: Healthy Communities

Factors for Improved Fish Passage Waterway Construction
David Sillars, Oregon State University
Hamid Moradkhani and Trevor Smith, Portland State University

Example of a roughed chute failure where channel bed scouring and loss of above-ground water flow prevent fish passage (Chenoweth Creek, OR). Photo courtesy of Hamid Moradkhani.

Understanding the impact of transportation networks on the natural environment is of growing concern, and environmental stewardship is a key USDOT priority. OTREC faculty are finding innovative links between transportation and the OTREC theme of healthy communities. Dr. David Sillars (OSU), Dr. Hamid Moradkhani (PSU), Dr. Trevor Smith (PSU) and their students are putting to work their combined expertise in construction, stream hydraulics, watershed modeling, soils, and structural performance for a unique collaborative project. In their project, "Factors for Improved Fish Passage Waterway Construction," the research team is studying whether current construction methods for fish passageways are actually a detriment to streambed quality over time. The research team is working with ODOT to identify culvert designs that have unexpected performance results, with the goal of recommending better design. Multidisciplinary projects such as these show how transportation research can intersect with the natural environment and our communities.

"We are excited to be working with our sister institutions in Oregon. Project collaborations will benefit all OTREC partners, as well as Oregon and the region."

Bill Feyerherm,
PSU Vice Provost
for Research

Education and Student Achievement

All OTREC activities have student success as a primary goal. Whether it's offering students hands-on research experience with hot topic transportation issues, opportunities to present their research at conferences, including the national TRB Annual Meeting, scholarships and fellowships to help them reach their degree goals, or providing continuing education opportunities to practicing professionals, students are central to our mission.

Students in a variety of degree programs across the state are participating in OTREC activities. These degree programs include engineering, urban studies and planning, business, public policy and management and architecture, with more than 100 students enrolled with transportation specializations. During this past year 36 students graduated with transportation related graduate degrees and are now working in the transportation field. OTREC strives to enhance the educational experience of our future leaders in transportation and to attract more students to the transportation fields by helping our partner universities build stronger programs and offer enhanced education and research opportunities.

OTREC is proud to support transportation student groups at all our partner campuses, allowing undergraduate and graduate students to travel to conferences, host guest speakers, coordinate events and field trips, and communicate transportation issues and opportunities to students across the campuses. These multidisciplinary groups include engineers and planners, but also involve students from areas such as architecture, environmental science, economics and business.

We invite you to meet a few of our stellar students highlighted in the following pages.

"Working on transportation planning as part of my education gave me the opportunity to work on a real-world problem with real results. It gave me a much deeper view of the intricacies that go into working with the public on transportation issues."

CPW Student at the University of Oregon

2007 UTC Outstanding Student of the Year Max Coffman

Norman Y. Mineta (left), former Secretary of Transportation and Max Coffman.

As part of OTREC's efforts to recognize top transportation students, Max Coffman was selected as our first UTC Outstanding Student of the Year. This award was presented as part of the annual Council of University Transportation Centers (CUTC) Banquet at the Annual Meeting of the Transportation Research Board (TRB) in January 2007. Criteria for this award include technical merit, research accomplishments, academic performance, professionalism and leadership. Max graduated from the Portland State University Master of Urban and Regional Planning program in spring 2007, and now works at the Federal Highway Administration's Budget Office in Washington, D.C. as a Presidential Management Fellow.

At PSU, Max was an active member of the ITS Lab research group. He presented "Enhancing Targeted Traffic Enforcement Efforts in Portland, Oregon" at the ITE District 6 Annual Meeting in June 2006, attended the Rail~volution conference in Chicago in November 2006, developed a paper for the ITS World Congress, and presented, "State of ITS: Telling Intelligent Transportation Systems Success Story for Portland, Oregon" at the 86th Annual Meeting of TRB. Max was also selected from transportation programs across the nation as one of 20 Eno Fellows. While in graduate school, Max interned as a policy analyst at the Portland Office of Transportation and worked as a Transportation Staff Associate for Portland City Commissioner Sam Adams. Max is from Houston, Texas, where he says he sat in more traffic than he cares to remember. As an undergraduate in Washington, DC, he grew accustomed to being within walking distance of cultural, shopping, entertainment and community resources, and would like to never go back to an automobile-dependent life. At Georgetown, Max majored in Science, Technology and International Affairs, with an environmental focus, and has found that he has a strong interest in sustainable transportation issues.

Outstanding Students

Matt Berkow — Oregon Land Use Stories Project

Last summer Matt Berkow and fellow student George Zaninovich undertook a unique project to collect Oregon land use stories by bicycling around the state and talking to a wide variety of citizens about community, land use, and a controversial Oregon property rights law (Measure 37). They rode almost 1,000 miles through 20 counties and recorded over 100 interviews that give voice to many sides of the land use debate. Matt is currently pursuing a Master of Urban and Regional Planning degree at PSU, with a focus on transportation. He was inspired to study urban planning upon his return from a 10-month cycling trip throughout seven countries in Asia, where he realized that transportation issues are at the crux of many cultures' challenges. Matt is a graduate research assistant in the ITS Lab, where he is working on using data gathered by TriMet buses to analyze the performance of arterial streets in Portland.

Christo Brehm — Undergraduate Studies How Street Design Supports Walking and Biking

Christo Brehm is an undergraduate planning & public policy student at the University of Oregon. Christo's current research interest is in evaluating the design of streets in regard to how they support or fail to support walking and biking as viable transportation options. Christo says he believes this interest was inspired by his father, who rode a bike to work almost every day in Boise, Idaho, even through much of the winter. Christo is finishing up his undergraduate degree with coursework in landscape architecture, and holds an internship with the City of Eugene Transportation Planning office. He plans to begin graduate studies next year in landscape design and community and regional planning.

Delia Chi — Recent Graduate Combines Safety and Transportation Interests

Delia Chi graduated from the Master of Urban and Regional Planning program at PSU in Spring 2007, and is now working for HNTB, a transportation/architecture/planning firm in Los Angeles, CA. She is working primarily with airport planning issues, and appropriately, will be working on the Portland Airport Master Planning project. She'll also work on a pedestrian crossing study at LAX. Delia says, "When I expressed to HNTB my interests in safety and in surface transportation, they said they could accommodate me in both interests." Delia first earned an Environmental Science degree at the University of California at Berkeley, where she explored the role of big box businesses as an indirect source of air pollution. While exploring root causes of vehicle incidents at ABM Industries Incorporated, she became interested in transportation safety planning, and as a graduate research assistant at PSU, she was able to work on a community and school traffic safety partnership project.

Kyle Nakahara — Economics Graduate Studies Transportation Issues

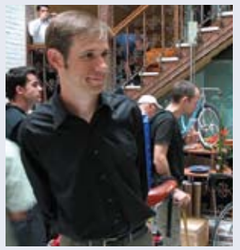
Kyle Nakahara recently completed a Master's degree in Economics at Oregon State University. During her graduate studies, she worked with Dr. B. Starr McMullen on the "Socio-Economic Effects of Vehicle Mileage Fees" project. Kyle's thesis was entitled "Estimating Impacts of a Vehicle Mile Tax on Oregon Households." She worked on the preliminary regression models for the study. Kyle has returned to Hawaii where she is a research statistician for the Hawaiian State Department of Taxation, Research and Planning.

Tyler Nishitani — Architecture Student Looks at Transportation Design

Currently pursuing his bachelor's degree in architecture at the UO Portland Campus, Tyler was a coordinator this year for an urban planning studio instructed by Dr. Mark GIllem. As part of the studio, undergraduate and graduate students were assigned to re-design one of seven consecutive sections of the 3-mile long Franklin Corridor in Eugene, OR. Students conducted field research and organized meetings with community stakeholders. As studio coordinator, Tyler was responsible for combining design concepts from each corridor section and analyzing the cohesive design. Through this perspective, Tyler says he gained insight and appreciation for the magnitude of a strong, publicly supported urban development plan, specifically related to public transit, economic viability, and pedestrian environment. He says the multi-discipline and collaborative design process was a valuable "real-life" experience (for more about this multi-way boulevard project, see page 12).

Matt Peterson — Community and Regional Planning and Environmental Studies

Matt Peterson is in his third and final year of working on concurrent master's degrees in Community and Regional Planning and Environmental Studies. This year Matt worked on the City of Eugene Pedestrian and Bicycle Strategic Plan as part of an "experiential learning and community transportation planning" project. Matt says the project has given him a greater appreciation and understanding of transportation funding that he hadn't been exposed to yet in his studies. For his master's project, he is looking at how communities reduce structural vulnerability to wildfires through community wildfire protection plans.



Michael Wolfe — Bicycle Aficionado

Michael Wolfe recently decided to return to higher learning after a ten year hiatus. After receiving his B.A. in Mathematics and Physics from Macalester College in St. Paul, MN, he spent 10 years working on information technology in the health care field. Michael's lifelong love of bicycles led him to an interest in transportation, and he says he is excited to be a graduate student in civil engineering at Portland State University, with the ultimate goal of pursuing a new career in that field. As a graduate research assistant, he is studying automated techniques to measure arterial performance combining signal system data and bus AVL data. Michael completed some amazing bicycle events this summer, including a 1000k ride from Portland to Glacier National Park (62 hours), the Race Across Oregon (538 miles, 41 hours), the Paris-Brest-Paris ride (1200k, 78 hours), and the Ring of Fire Time Trial (392 miles, 24 hours).

Wei Xu — Studying PPP Toll Roads

Wei Xu received his bachelor degree in Transportation Engineering in June 2006 from Beijing Institute of Technology in China. Living in Beijing, a huge city with a large population and that suffers severe traffic congestion problems, led to Wei's desire to learn more about the transportation field. He is pursuing his master's degree in transportation at Oregon State University. As a graduate research assistant with the Interdisciplinary Transportation Analysis and Modeling Research Group (iTram), he is working on a project about Public-Private Partnership (PPP) toll roads in the U.S., analyzing the public welfare and private profit of such toll roads projects and other impacts.

Student Groups Offer Interdisciplinary Camaraderie

Several of the Students in Transportation Engineering and Planning (STEP) participants at the ITE District 6 Annual Meeting (from left: John Chee, Michael Wolfe, Rafael Fernandez).

Local elementary students and parents in Eugene, OR partnered with UO service learning program students to re-design their school bike shelter with the goal of increasing rates of biking to school.

Transportation student groups at OTREC partner campuses provide students great opportunities to get involved in transportation activities. At the University of Oregon, a new group called LiveMove has hit the ground running. This transportation & livability group involves students from a wide variety of disciplines who are interested in transportation issues as they relate to community quality of life and livability. Activities this year have included:

- A campus wide bike fair that included education about bike transportation options, free bike tune ups and repairs, and a drawing for a new bike;
- Lectures by guests from the Lane Transit District, Metro, and a Vancouver developer; and
- Student attendance at conferences, including a national conference on public health and transportation in New Orleans, and a national biodiesel workshop.

In a collaborative project between LiveMove and Design Bridge, a service learning program at UO, students are working with the principal, children, and parents at Edison Elementary School in Eugene to re-design their bike shelter into a more welcoming space that helps increase the rates of children biking to school. By involving kids at the school, the project could inspire a future generation of sustainable transportation experts!

At Portland State University, the Students in Transportation Engineering and Planning group (STEP) also had an active year. Twelve students attended the TRB 86th Annual Meeting in January. STEP students also participated in the Institute of Transportation Engineers (ITE) District 6 annual meeting in Portland, presenting research posters and presentations. Student Josh Crain was on the winning team for the James Kell Student Competition. The group toured the new Portland aerial tram and Port of Portland, visited a road user fee demonstration station, and hosted a presentation about transportation careers. STEP students also participated in the annual TransNow Student Conference, giving presentations on their research and getting to know other transportation students from around the region.

During the 2006–07 year, the Oregon State University ITE Student Chapter participated in the Oregon Section ITE Traffic Bowl and met each quarter for a speaker presentation. They also reached out to high school students during the annual "Beaver Open House," where seniors and their parents visited campus and learned about different areas of civil engineering. ITE students demonstrated traffic simulation, spoke about the program and their specialties in three speaker sessions, and interfaced one-on-one with prospective students and their parents.

The Oregon Institute of Technology ITE Student Chapter was reinvigorated in the 2006–2007 year, due in part to OTREC support. Students planned a successful technical tour of two large freeway interchange projects in central and southern Oregon. ODOT and project contractors showed them a long "flyover" exit lane and a single point urban interchange (SPUI). Several students went on to take an elective course in traffic engineering and performed microscopic simulation of these and other freeway interchanges. The Chapter continued its support of engineering professionalism and ethics by co-sponsoring the 2007 OIT Engineer's Ring Ceremony. The Chapter elected juniors to key executive positions for the upcoming academic year.

Sample OTREC Education Projects

City Design Lecture Series

Mark Gillem, University of Oregon

The objective of this multidisciplinary educational program is to host an annual lecture series that will inform area professionals, students, and the broader public about the need to consider transportation and land use strategies together to create more livable cities with enhanced safety, reduced congestion, greater mobility choices, and more housing variety. A variety of experts in the fields of transportation planning, urban design, and transit-oriented development from around the country served as guest speakers this year. Five lectures were held, with nearly 400 participants, and additional lectures are planned. In addition, the videotaped lectures have been broadcast on cable TV in Eugene, OR, and will be available via webcast.

New Road Ecology Course and Seminars

Mark Sytsma, Portland State University

The Department of Environmental Science and Resources at PSU offered a new course on road ecology this past year, and added road ecology topics to their weekly seminar series. The course objective was to introduce students to fundamental concepts of road ecology through discussion, guest speaker presentations, and field trips. Speakers from the US Forest Service, Oregon and Washington Departments of Transportation, Oregon Department of Fish and Wildlife, City of Wilsonville, the Federal Highway Administration, and others provided guest lectures. Topics included impacts of highway runoff and roadside spraying on water quality, impacts of roads on erosion, impacts of culverts on anadromous fish passage, mitigation of habitat fragmentation, impacts of roads on animal movements, and the role of maintenance activities in facilitating weed invasions. The course generated new interest among faculty and students who had not previously thought about the transportation angle of environmental studies. They are now investigating projects related to air quality mitigation on a freeway near campus and impacts of highway runoff on marine invertebrates. The course will be offered next year with a greater emphasis on student projects developed in consultation with state and federal agencies.

Students go into the field to learn about mitigation of wildlife impacts of a road extension by the City of Wilsonville, OR, as part of a new Road Ecology course at PSU.

Linking Experiential Learning to Community Transportation Planning

Robert Parker and Bethany Johnson, University of Oregon

Through the Community Planning Workshop (CPW) at UO, students are involved in all levels of a project to develop a City of Eugene, OR Bicycle and Pedestrian Strategic Plan. Under the guidance of CPW and City of Eugene staff, students have an opportunity to work with professionals in the transportation field, and to conduct research, facilitate public workshops, and work with an advisory committee. In short, this project provides students direct, hands on experience in developing the strategic plan. More than 20 students have been involved in this rich experiential learning process. Results will also include a website describing the benefits of experiential learning in transportation planning and strategies for engaging students in community-based transportation planning projects.

Technology Transfer

Sharing of knowledge and dissemination of program results are key components of all OTREC programs. All research projects have a technology transfer plan, so that research results are available to potential users in a form that can be directly implemented, utilized, or otherwise applied. OTREC is working towards an expanded and coordinated statewide program of transportation outreach involving accessible communication of research results and continuing education and training courses for transportation professionals in a variety of formats. A study by OTREC PIs and students is underway to identify the current transportation training opportunities in the region, and to determine how OTREC can best fill training needs for transportation professionals.

Developed this year, the OTREC website (www.otrec.us) serves as a primary communication tool, and includes up-to-date news, newsletters, annual reports, recorded seminars, project information, and professional development opportunities. Final research reports with search options will be available. Website capabilities will expand to fill technology transfer needs as OTREC programs evolve. For example, audio files (mp3) of the PSU Transportation Seminars have recently been made available through iTunes (see http://www.cts.pdx.edu/seminars.htm). OTREC visiting scholars that were part of this series are highlighted below.

Visiting Scholars

Visiting Scholars Program

OTREC regularly sponsors guest speakers as part of our Visiting Scholar Program. At PSU, the Center for Transportation Studies (CTS) offers weekly transportation seminars that are broadcast live on the web, and archived in streaming video and podcast. More than 30 guest speakers from a variety of universities, public agencies and organizations presented a variety of transportation topics in 2006-2007. In addition to registered students, over 500 professionals and guests also attended the seminars. OTREC sponsored several of the visiting scholars, as highlighted below.

Students, professionals and guests attend a weekly transportation seminar at PSU. OTREC sponsors visiting scholars who speak on a variety of subjects.

"Commuting in America" Author Alan Pisarski

Alan Pisarski, author of Commuting in America III, visited PSU in October 2006 as part of the OTREC Visiting Scholar Program. Pisarski is a transportation expert known for his major studies of American commuting patterns. During his visit, he spoke at a Women's Transportation Seminar (WTS) breakfast meeting, visited with students in the PSU ITS Lab, and was the guest speaker for the weekly CTS Transportation Seminar. Pisarski summarized changes and trends in commuting patterns in the United States and noted such statistics as lengthening average daily commutes, (many are more than 90 minute or "extreme" commutes), increases in carpooling and transit use, shifts in city to suburb vs. suburb to city commuters and increases in numbers of people working at home. Pisarski's research shows that transportation is influenced significantly by economic and social phenomena.

Visiting scholar Alan Pisarski (right) talks with members of the Women's Transportation Seminar (WTS) during his visit to Portland.

Donald Shoup: "High Cost of Free Parking"

Donald Shoup, Professor of Urban Planning at UCLA, visited Portland in February 2007. Professor Shoup spoke to 130 members of the Lloyd District Transportation Management Association (TMA), and was the speaker at a WTS breakfast round table. Shoup presented "The High Cost of Free Parking" at the CTS Seminar. His presentation showed aerial photos of gigantic parking lots that do little to enhance communities, gave examples of on-street/off-street parking discrepancies and explained how "free" parking is not really free to anyone, including businesses, consumers and drivers. He noted that planning requirements for minimum parking can be arbitrary and contrary to the best urban design practices, and showed how smart parking pricing can benefit communities and drivers.

ITS Expert Joseph Sussman

Professor Joseph Sussman, JR East Professor of Civil and Environmental Engineering and Engineering Systems at Massachusetts Institute of Technology, was an OTREC Visiting Scholar in March 2007. Dr. Sussman has been instrumental in developing Intelligent Transportation Systems (ITS) in the US, and is the author of several books on the subject. The PSU Students in Transportation Engineering and Planning (STEP) Group hosted an interactive discussion with Professor Sussman which was followed by his seminar, "Where Transportation in Going: Transportation in the CLIOS System Era." CLIOS is short for "Complex, Large-Scale, Interconnected, Open, Socio-technical Systems."

Dr. Joseph Sussman (center holding mug), MIT, was part of an interactive discussion with students before his guest lecture at the PSU Transportation Seminar Series.

Susan Handy on Bicycling in Davis, CA

In May 2007 OTREC hosted a visit by Dr. Susan Handy from the Sustainable Transportation Center at the University of California Davis. Dr. Handy's research focuses on the connections between land use and transportation, and she is well known for her work on the impact of neighborhood design on travel behavior. Dr. Handy presented "Bicycling in Davis, CA: A Critical Look at Policy and Behavior in the First Platinum Bicycle City in the U.S." at the transportation seminar.

Peter Stopher, University of Sydney

Dr. Peter Stopher, Professor of Transport Planning at the University of Sydney, was the OTREC Visiting Scholar in May 2007. In his presentation, "Using a GPS Panel to Evaluate Travel Behavior Changes," Dr. Stopher outlined several projects that are using personal GPS devices to collect travel behavior data of individuals. Dr. Stopher has more than 40 years of experience as an educator and consultant in transport planning and has published many papers and books in transport-related topics. He teaches and researches transport policy and planning, survey methods, travel demand modeling, and environmental analysis, and is pioneering the use of GPS devices in transport surveys.

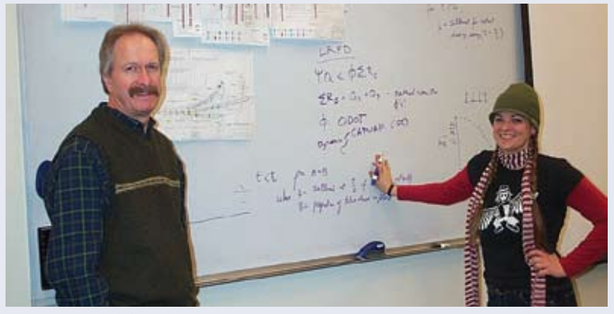
Dr. Peter Stopher from the University of Sydney was an OTREC guest in May 2007 (from left: Dr. John Gliebe, PSU, Peter Stopher, Dr. Chris Monsere, PSU, and Sirisha Kothuri, PSU Ph.D. student).

Sample Technology Transfer Projects

Initiative for Bicycle and Pedestrian Innovation: New Center For Research and Education

Lynn Weigand and Jennifer Dill, Portland State University

Initiative for Bicycle and Pedestrian Innovation (IBPI) is a new center for research and education that is focused on bicycle and pedestrian travel. The center supports research and education on transportation planning and design that promotes the integration of walking and bicycling facilities into community design and daily transportation needs. The creation of IBPI has been enthusiastically supported by the transportation community in Portland, known for being one of the most bike-friendly cities in the country. IBPI is housed at PSU, and draws on the resources of partner faculty at the UO and OSU, as well as the public, private and non-profit organizations who work on bicycle and pedestrian transportation and advocacy. OTREC is pleased be a co-sponsor for IBPI technology transfer activities, including continuing education workshops and curriculum development.



Dr. Trevor Smith (left) and graduate student Bethany Jackson, PSU Department of Civil and Environmental Engineering, work on LRFD analysis of ODOT bridge sites to better understand implications of new foundation design standards.

Application of LRFD Principles for Deep Foundations in Oregon: Sharing the Knowledge

Trevor Smith, Portland State University

With the Oregon Department of Transportation's $1.3 billion program to replace the aging bridge infrastructure in Oregon, the agency is also faced with implementing new design standards for foundations. Using the new Load and Resistance Factor Design (LRFD) guidelines for foundations will result in more conservative designs than the method the agency has been using for the last 15 years. Consequently there may be unanticipated higher costs to meet the new design requirements. Before embarking on a complete overhaul, ODOT is working with Portland State University researcher Dr. Trevor Smith to better understand applying LRFD design principles in Oregon. The project consists of understanding the cost and magnitude of using LRFD in ODOT designs, working with the transportation community to understand and build support for using new design standards, developing implementation policies, and providing feedback to the governing body that oversees the LRFD requirements. Graduate research assistant Bethany Jackson has completed rigorous LRFD analysis of two case history bridge sites, and assessed the increase in foundation sizes under the new code. Regional DOT and national surveys initiated by this study are complete, and feedback from DOT foundation engineers indicates the LRFD implementation for pile foundations will require additional study, with delivery of LRFD deep pile foundation knowledge in more user friendly form. Since states across the country are faced with the same new requirements, information sharing will be a key element of this project.

Faculty Partners

OTREC has funded 45 faculty from 12 disciplines across our partner campuses and several Co-PIs from colleague universities in other states. Faculty are working on 58 research, education and technology transfer projects funded in 2006–2007.

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

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

Robert Bertini Civil and Environmental Engineering and Urban Studies & 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; 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.

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

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

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

Karen Dixon School of Civil and Construction 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; large-scale laboratory testing utilizing iSTAR Lab shake table and other equipment.

Miguel 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, development of alternative sustainable freight transportation options.

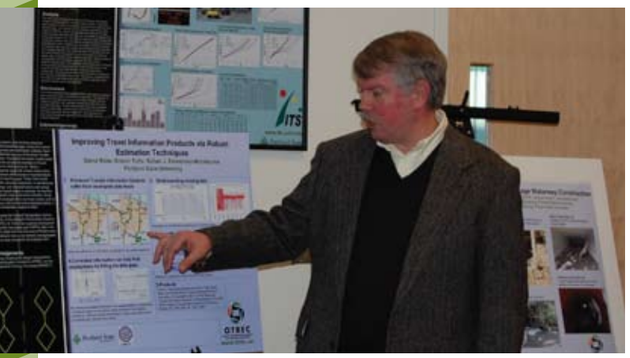
Carla Gary Office of Institutional Equity and Diversity, UO: institutional equity and diversity, recruitment, partnerships with business and community organizations for student projects, internships and employment opportunities.

Mark Gillem Departments of Architecture and Landscape Architecture, UO: processes, players, and politics involved in the making of 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, discrete choice modeling.

Dr. Jennifer Dill, PSU School of Urban Studies and Planning, discusses her research project in which she has enlisted bike volunteers equipped with GPS units for trip data collection (for more on this project, see page 13).

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.



Dr. David Maier, PSU Department of Computer Science, presents a poster about his research project, "Improving Travel Information Products via Robust Estimation Techniques."

Chris Higgins School of Civil and Construction 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.

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

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

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

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

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

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

B. Starr McMullen Economics, OSU: econ-transportation economics and policy; 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 multi-stakeholder 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, 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.

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

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.

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

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

Todd Scholz School of Civil and Construction 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, engineering software applications development.

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

David Sillars School of Civil and Construction Engineering, OSU: interorganizational relationships in the construction industry; cultural factors in facility delivering; project delivery alternatives; 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, 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 & 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.

Yizhao Yang Planning, Public Policy, & 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 School of Civil and Construction Engineering, OSU: deterministic and stochastic modeling, analysis, simulation, and design of nonlinear dynamical fluid/structure systems; applications in structural, ocean and earthquake engineering.

Lei Zhang School of Civil and Construction 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; traffic control and optimization.

Faculty, staff and partner university representatives talk about transportation research with Allison Dane, staff member for Congressman Peter DeFazio.

OTREC Partner Laboratories and Research Groups

OTREC has 12 partner laboratories and research groups across our partner campuses of PSU, UO, OSU and OIT. Faculty partners work on a wide range of transportation issues. For more information about these labs, visit the OTREC web site: www.otrec.us

Portland State University

Intelligent Transportation Systems (ITS) Laboratory

Traffic Signal Lab

Freight & Logistics Lab

Infrastructure Testing and Applied Research (iSTAR) Lab

Initiative for Bicycle and Pedestrian Innovation

Transportation Modeling Lab

Center for Urban Studies/
Center for Transportation Studies

University of Oregon

Transportation & Livability Research Group

Oregon State Unversity

Kiewit Center for Infrastructure and Transportation

National Center for Accessible Transportation (NCAT)

Interdisciplinary Transportation Analysis and Modeling (iTram) Lab

Oregon Institute of Technology

Traffic Engineering Laboratory/
Pavement Engineering Laboratory

A beam strengthened with carbon fiber-reinforced polymer (CFRP) undergoes testing at the Kiewit Center for Infrastructure and Transportation at OSU.

Congressman David Wu (right) visits the Intelligent Transportation Systems Lab at PSU (PSU faculty from left: Chris Monsre, Kristin Tufte, Robert Bertini).

Professor Roger Lindgren (standing) and student Jared Lowther perform computer based traffic simulations in the new OIT Traffic Engineering Lab.

Graduate students study transportation accessibility issues with Dr. Katharine Hunter-Zaworski at the National Center for Accessible Transportation at OSU.

OTREC Project Co-Sponsors

External sponsors providing cash match and/or in kind support for current OTREC projects are listed below.

American Society of Landscape Architects

American Institute of Architects Southwestern Oregon Chapter

Center for Health Care Strategies, Inc.

City of Eugene

City of Lebanon

City of Portland

City of Springfield

City of Warrenton

Community Cycling Center

Consejo Nacional de Ciencia y Technologia (CONACYT)

Eugene School District, 4J

Institute of Transportation Engineers (ITE), District 6

Juan Young Trust

Lane County Transit District

Metro

National Center for Bicycling & Walking

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

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

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, identification of research priorities and strategic planning. The Board serves as a key connection agency partners at state and federal levels and with industry, and provides OTREC with statewide, multimodal and public/private perspectives on research, education and outreach.

Scott Bricker
Executive Director, Bicycle Transportation Alliance

Andy Cotugno
Director of Planning, Metro

Phillip Ditzler
Administrator, Oregon Division,
Federal Highway Administration

Tomas Endicott
Founder, Policy and Business Development,
SeQuential Biofuels

Mike Flanigon
Director, Office of Technology, 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
Project Manager, Columbia River Crossing Project, 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
Clackamas County Commissioner

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 wishes to acknowledge and thank the Executive Committee for their input and support during our first year of operation. The Committee was instrumental in forming the Strategic Plan, theme and programmatic goals, as well as playing a key role in the first and second RFP and project funding decisions.

Dr. Marc Schlossberg
OTREC Associate Director
University of Oregon

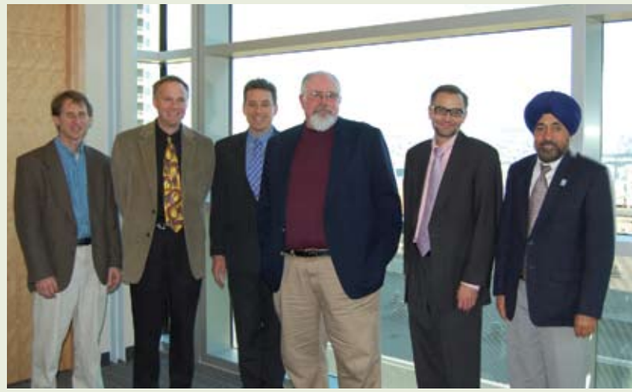
Dr. Chris Higgins
OTREC Associate Director
Oregon State University

Dr. Roger Lindgren
OTREC Associate Director
Oregon Institute of Technology

Dr. Robert Bertini
OTREC Director

Barnie Jones
Research Manager
Oregon Department of Transportation

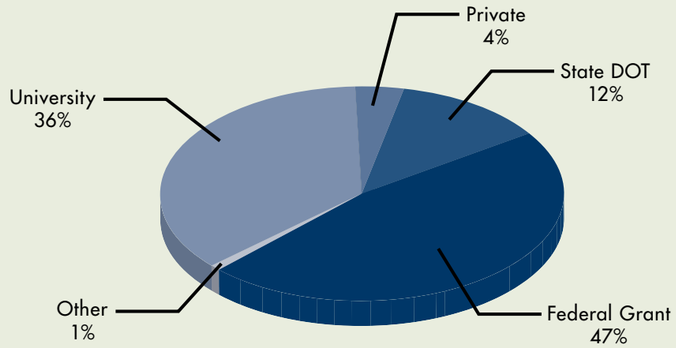
Satvinder Sandhu
Community Planner
Oregon Division, FHWA



Finance

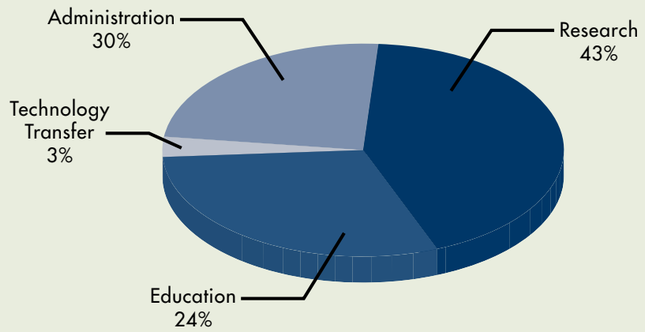
Funding Sources (Inception to 9/30/07)

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. The "other" category includes matching funds from the Consejo Nacional de Ciencia y Tecnologia (The Mexican National Council for Science and Technology).



Expenditures (Inception to 9/30/07)

Since the Strategic Plan was approved on December 1, 2006, OTREC has funded 45 research projects, 7 education projects and 6 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, 2007):

Number of proposals received: **139**

Number of research projects funded: **45**

Number of research projects partnered with ODOT: **20**

Number of dollars awarded to research: **$2,410,336**

Number of faculty having projects funded: **45**

Number of external sponsors participating in OTREC: **22**

Number of disciplines participating in OTREC: **12**

Number of peer reviewers invited: **622**

Number of peer reviews: **429**

Number of labs and research groups: **12**

Number of education projects funded: **7**

Number of dollars awarded to education projects: **$211,098**

Number of graduate students involved in projects: **57**

Number of undergraduate students involved in projects: **24**

Number of technology transfer projects funded: **6**

Number of dollars awarded to technology transfer projects: **$181,873**

Photo Credit: Port of Portland

OTREC Project List

RESEARCH

07-01 From arterial to asset: examining the role of the multi-way boulevard in coordinated transportation and land use planning. Mark Gillem, UO

07-03 Socio-economic effect of vehicle mileage fees. B. Starr McMullen and Lei Zhang, OSU

07-14 Using existing ITS commercial vehicle operation (ITS/CVO) data to develop statewide (and bi-state) truck travel time. Christopher Monsere and Robert Bertini, PSU

07-18 Active transportation, neighborhood planning and participatory GIS. Marc Schlossberg, UO

07-20 The influence of community walkability and safety on active transportation among low income children. Jessica Greene, UO

07-30 Hurricane wave forces on highway bridge superstructure. Daniel Cox, OSU

07-33 Understanding and measuring bicycling behavior: a focus on travel time and route choice. Jennifer Dill, PSU

07-37 Characteristics of transitions in freeway traffic. Robert Bertini, PSU and Soyoung Ahn, ASU

07-43 Factors for improved fish passage waterway construction. David Sillars, OSU, Hamid Moradkhani and Trevor Smith, PSU

07-45 Influence of environmental effects on durability of CFRP for shear strengthening of RC girders. Chris Higgins, OSU

07-53 Performance enhancement of bridge bracing under service and extreme loads. Peter Dusicka, PSU

07-57 Assessment and refinement of real-time travel time algorithms for use in practice. Kristin Tufte, PSU

07-64 Improving travel information products via robust estimation techniques. David Maier and Kristin Tufte, PSU

07-68 Co-evolution of transportation and land use. Lei Zhang, OSU

07-79 Identify and address institutional barriers delaying incident clearance. Karen Dixon and Lei Zhang, OSU

07-80 Evaluation of the Oregon DMV at-risk driver program. James Strathman, PSU

08-81 Socio-economic effect of vehicle mileage fees, phase 2. B. Starr McMullen and Lei Zhang, OSU

08-91 Evaluation of the Oregon DMV at-risk driver program, phase 2. James Strathman, PSU

08-93 Analysis of TriMet bus operator absence patterns. James Strathman, PSU

08-98 Active transportation, neighborhood planning and participatory GIS, phase 2. Marc Schlossberg and Nico Larco, UO

08-102 Operational analysis of transit bus collisions. James Strathman, PSU

08-108 Empirical observation of the impact of traffic oscillations of freeway safety. Chris Monsere, PSU and Sue Ahn, ASU

08-115 Application of WIM data for improved modeling, design and rating. Chris Monsere, PSU, Christopher Higgins, OSU and Andrew Nichols , Marshall U.

08-116 Road user fee. Anthony Rufolo, PSU

08-130 Value of reliability. Robert Bertini, PSU and David Levinson, Univ of MN

08-131 Oregon freight data mart. Miguel Figliozzi and Robert Bertini, PSU

08-133 Freight distribution problems in congested urban areas: fast and effective solution procedures to time-dependent vehicle routing problems. Miguel Figliozzi, PSU

08-134 Practical approximations to quantify the impact of time windows and delivery sizes on freight VMT in urban areas. Miguel Figliozzi, PSU

08-137 Dynamic activity-based travel forecasting system. John Gliebe, PSU

08-145 Assessment and refinement of real-time travel time algorithms for use in practice, phase 2; Kristin Tufte, PSU and Sue Ahn, ASU

08-147 Influence of environmental effects on durability of CFRP for shear strengthening of RC girders, phase 2. Christopher Higgins, OSU

08-148 Seismic damage state models for Oregon bridges. Peter Dusicka, PSU

08-152 Overlooked density: re-thinking transportation options in suburbia. Nico Larco, UO

08-154 Food delivery footprint: addressing transportation, packaging and waste in the food supply chain. Madeleine Pullman, Darrell Brown, Scott Marshall, and Wayne Wakeland, PSU

08-155 Instrumentation for mechanistic design implementation. Todd Scholz, OSU

08-156 Development of an open source bridge management system. Michael Scott, OSU

08-160 Long-term evaluation of individualized marketing programs for traval demand management. Jennifer Dill and Cynthia Mohr, PSU

08-161 Hurricane wave forces on highway bridge superstructure: repair and retrofit of existing bridges, phase 2. Daniel Cox and Solomon Yim, OSU

08-163 No more freeways: urban land use-transportation dynamics without freeway capacity expansion. Lei Zhang, OSU

08-176 Expanding Development of the Oregon traffic safety data archive. Chris Monsere, PSU

08-184 Healthy communities, transportation-land use connection and children's travel. Yizhao Yang and Marc Schlossberg, UO

08-190 Using archived ITS data to measure the operational benefits of a system-wide adaptive ramp metering system. Robert Bertini, PSU and Lei Zhang, OSU

08-192 Evaluating the effectiveness of the Safety Investment Program (SIP) policies for Oregon. Chris Monsere, PSU and Karen Dixon, OSU

08-195 Freight performance measures: approach analysis. Lei Zhang, OSU and Chris Monsere, PSU

08-196 Access management best practices manual. Karen Dixon, OSU

EDUCATION

07-02 City design lecture series: linking transportation and land use planning. Mark Gillem, UO

07-21 Road ecology course and seminar series. Mark Sytsma, PSU

07-51 Linking experiential learning to community transportation planning. Robert Parker and Bethany Johnson, UO

08-97 Closing the gap: developing a transportation curriculum for the Oregon Young Scholars Program. Carla Gary and Bethany Johnson, UO

08-126 IBPI: bicycle and pedestrian education program. Lynn Weigand, Jennifer Dill, PSU, Marc Schlossberg, UO, and Karen Dixon, OSU

08-144 Traffic engineering training for rural communities. Roger Lindgren, OIT

08-187 Distribution logistics course. Miguel Figliozzi, PSU

TECHNOLOGY TRANSFER

07-13 Developing a coordinated professional development program for OTREC. Robert Layton, OSU and Christopher Monsere, PSU

07-41 Application of LRFD principles for deep foundations in Oregon: phase 1. Trevor Smith and Peter Dusicka, PSU

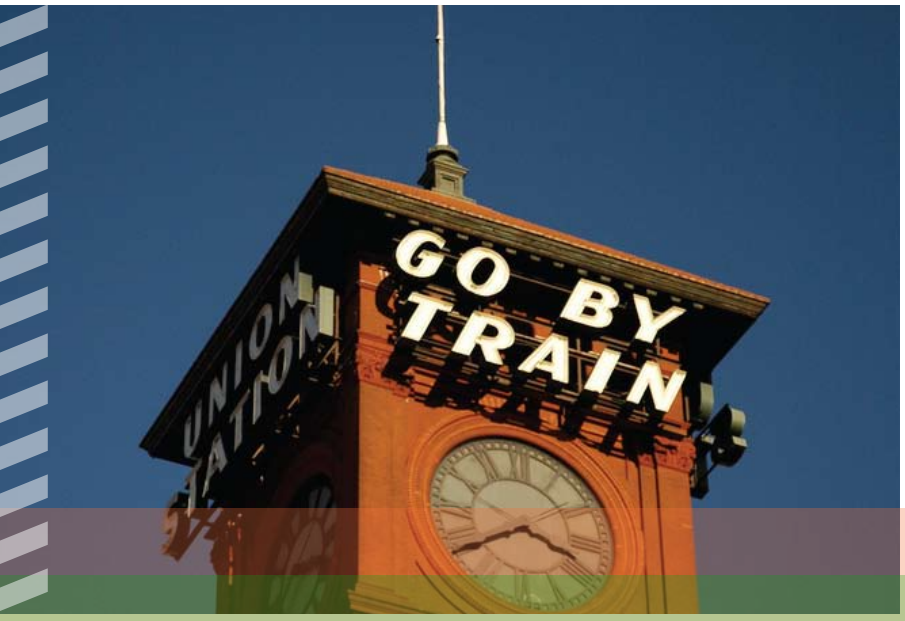
07-67 Initiative for bicycle and pedestrian innovation. Jennifer Dill, PSU, Marc Scholssberg, UO and Karen Dixon, OSU

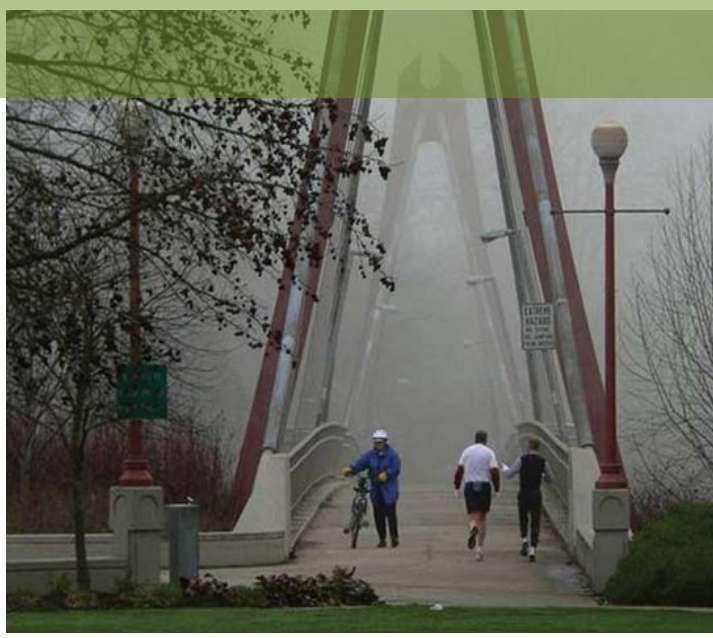
08-138 Oregon transportation planning experience. Carl Abbott and Sam Lowry, PSU

08-173 Options for integrating urban land use and travel demand models. John Gliebe, PSU

08-175 Increasing capacity in rural communities: planning for alternative transportation. Megan Smith, Keavy Cook and Bethany Johnson, UO

Note: 2006–2007 projects were awarded April 2, 2007 and 2007–2008 projects were awarded September 7, 2007. All projects are in progress.





OTREC
OREGON TRANSPORTATION RESEARCH AND EDUCATION CONSORTIUM

P.O. Box 751
Portland, OR 97207
www.otrec.us