



## 2011 – 2012 Annual Report



**OTREC**

OREGON TRANSPORTATION RESEARCH  
AND EDUCATION CONSORTIUM

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**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 lead to sustainable, livable communities. OTREC serves its mission by supporting research, training and outreach in a wide variety of transportation-related disciplines.

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

The Oregon Transportation Research and Education Consortium (OTREC) is a university transportation center based at Portland State University and sponsored by the U.S. Department of Transportation's Research and Innovative Technology Administration.

This publication is a report of OTREC's transportation research, education and technology transfer activities for October 1, 2011 – September 30, 2012.

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Contributors: Jennifer Dill, Hau Hagedorn, Jon Makler, Carol Wallace, Margaret Sanger

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## Message from OTREC Director Jennifer Dill

This annual report comes at a time of transition for OTREC. The projects described in these pages are among the last awarded under OTREC's original grant. Since OTREC was created six years ago under the federal SAFETEA-LU transportation law, we've established an impressive list of accomplishments in our research, education and technology transfer program areas. Our work has informed policy and educated students who went on to become leaders in their fields.

It has gone into practice at public agencies, private firms and organizations in Oregon and across the nation.

At OTREC, we've always understood the importance of measuring the value of our investments and the value of the public's investment in our center. While the type of groundbreaking multidisciplinary work that takes place at OTREC campuses can often defy traditional measures, we have worked even harder to make sure we record and communicate results. From our running "OTREC by the Numbers" tally (Page 5) to our follow-up tracking with project partners, OTREC has always operated with the conviction that our work doesn't end with the publication of a final report. Implementation is a key part of every project. As a demonstration of this commitment, we're pleased to have recently instituted a system that allows us to track and analyze information about each user who downloads an OTREC report, including that report's intended use. This system helps us follow up to ensure that the intended use succeeds and lets us enjoy the surprises that come with our research driving an application that the researcher never imagined.

As OTREC administers the new National Institute for Transportation and Communities program, we're pleased that the U.S. Department of Transportation has written a similar philosophy into its new guidelines. Every university transportation center will now report in detail on the results of the program and how its investments benefit the nation. These results are divided into three categories: outputs, outcomes and impacts. Whereas outputs describe the typical products associated with university transportation research, such as papers published and reports presented, outcomes and impacts take accountability one step further. Outcomes show how a project increases understanding and knowledge of transportation issues, for example, or increases the pool of trained transportation professionals. Finally, impacts show how a transportation center makes real, long-term changes on topics such as improving safety for all transportation system users, increasing travel-time reliability or increasing the acceptance and use of active transportation modes.

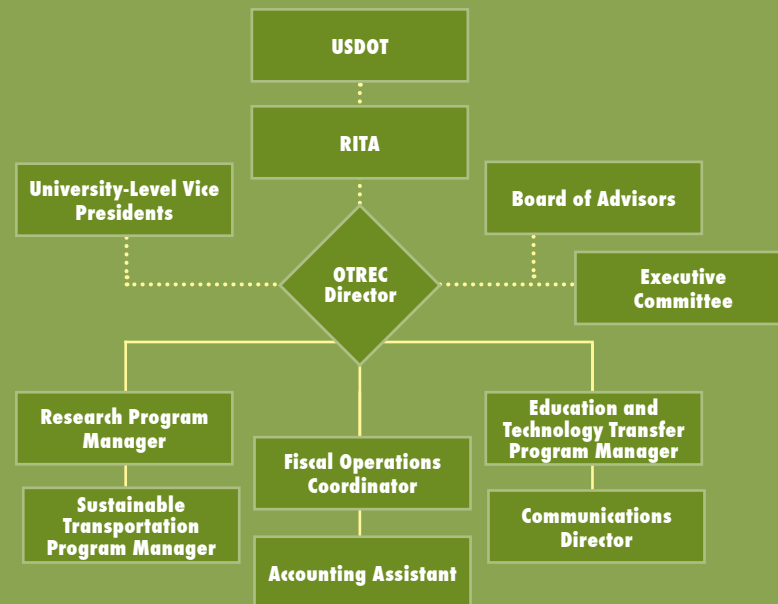
As we go forward with the NITC program—and look forward to the next grant competition—OTREC will continue to focus on all three categories of results. With the research phase of projects awarded under the initial grant coming to a close, we're aware that our commitments have just begun. We're still ensuring the work we've done gets into the hands of the practitioners who put it to use, the researchers who will build upon it and the innovators who will find new ways to solve the transportation problems of the future.

Jennifer Dill, Ph.D.  
Director, Oregon Transportation Research and Education Consortium  
Professor, Nohad A. Toulon School of Urban Studies and Planning  
Portland State University

# OTREC Staff and Structure

## Organizational Chart

OTREC is a national university transportation center under the U.S. Department of Transportation's Research and Innovative Technology Administration. Jennifer Dill directs OTREC. An Executive Committee is made up of one faculty member from each partner institution, an Oregon DOT 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 assist with OTREC administration and oversight.



## Key Personnel

Jennifer Dill, Ph.D.  
Director

Hau Hagedorn  
Research Program Manager

Jon Makler, AICP  
Education and Tech Transfer Program Manager

John MacArthur  
Sustainable Transportation Program Manager

Justin Carinci  
Communications Director

Carol Wallace  
Fiscal Operations Coordinator

Margaret Sanger  
Accounting Assistant

## Executive Committee

Jennifer Dill, Ph.D.  
Director,  
Portland State University

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. E.  
Associate Director,  
Oregon Institute of Technology

Satvinder Sandhu  
Oregon Division, Federal Highway Administration

Barnie Jones  
Research Manager,  
Oregon Department of Transportation

## Board of Advisors

Mike Baltus Director  
Office of Technology, Federal Transit Administration

Jerri Bohard Interim Deputy Director of Operations, Oregon Department of Transportation

Phillip Ditzler Administrator  
Oregon Division, Federal Highway Administration

Brian Dunn Oregon Modeling Steering Committee, Oregon Department of Transportation

Mike Hoglund Research Director  
Metro

Rob Inerfeld Transportation Planning Manager, City of Eugene

Susie Lahsene Senior Manager  
Transportation and Land Use Policy,  
Port of Portland

Alan Lehto Director of Project Planning, TriMet

Jay Lyman Chief Operating Officer  
David Evans & Associates

Randy McCourt Principal  
DKS Associates

Lynn Peterson Sustainable Communities and Transportation Policy Adviser, Oregon Gov. John Kitzhaber's office

G. Scott Rutherford Interim Director  
Transportation Northwest (TransNow)

Rob Sadowsky Executive Director  
Bicycle Transportation Alliance

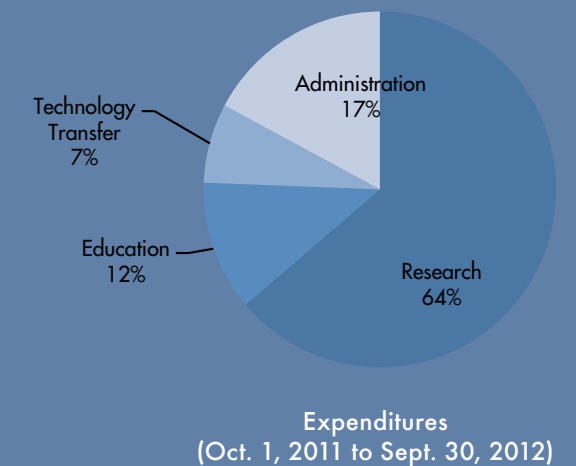
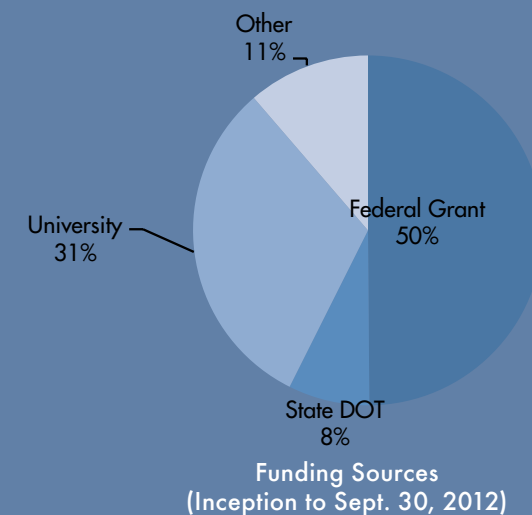
Tom Schwetz Director of Development Services  
Lane Transit District

# OTREC by the Numbers

A numerical overview of the Oregon Transportation Research and Education Consortium.

	2011-2012	Cumulative
Proposals received	42	307
Research projects funded	13	118
Multi-campus projects	3	37
Multi-principal investigator projects	9	92
Research projects partnered with Oregon DOT	4	56
Dollars awarded: research projects	\$1,543,292	\$9,781,786
Faculty partners (running total)	90	90
External sponsors participating (running total)	42	42
Labs and research groups (running total)	13	13
Education projects funded	1	20
Dollars awarded: education projects	\$26,734	\$597,244
Technology transfer projects funded	1	15
Dollars awarded: technology transfer projects	\$41,566	\$828,301
Graduate students involved in projects	81	760
Undergraduate students involved in projects	97	612

## Finance



# Student Achievement



## 2012 Outstanding Student of the Year: Kristina Currans, Portland State University

Kristina Currans is a graduate student at Portland State University whose work focuses on the relationship between land use and travel behavior, with a particular interest in multimodal transportation. After graduating Oregon State University with a civil engineering bachelor's degree in 2010, Currans soon made a name for herself in transportation circles. She started her graduate coursework at Portland State and worked during academic breaks with the Oregon Department of Transportation's Transportation Planning Analysis Unit, home to state and regional transportation models. There, she worked with the Statewide Integrated Model, SWIM2, and the GreenSTEP transportation emissions model. Currans works as a part of OTREC's Oregon Modeling Collaborative and on several OTREC research projects. Her work on trip generation has attracted national attention. Currans was the 2012 outstanding student inductee to the Denise Dee Denton Women Engineers Hall of Fame.

# Doctoral Dissertation Fellows

OTREC awards fellowships to assist doctoral candidates in completing their dissertation research. The \$15,000 fellowships are awarded through a competitive process open to doctoral candidates at OTREC universities.



**Oliver Smith** is a Ph.D. candidate in Portland State University's urban studies program, studying travel behavior and health, and energy use as it relates to transportation. Smith's dissertation research examines whether commute well-being is greater among users of active transportation modes than among motorized mode users. It also examines the connections between commute well-being and overall subjective well-being. The research is important in part because evidence of connections between active commute modes and well-being could help policymakers and advocates to better market active transportation policies.



**Nicole Iroz-Elardo** is a Portland State urban studies Ph.D. candidate. She joined the program after working for several years as a statistician in environmental health. Her areas of expertise include urban health and understanding how conflict is resolved in urban planning. She was drawn to these specializations because she wants to understand how planning curriculum and public planning processes can better support social justice ideals and outcomes. Her dissertation investigates the potential of health impact assessments to provide communities an additional avenue for participation and influence in transportation planning activities.

# Student Groups and Activities

Transportation student groups are a big part of student life on each OTREC campus. Activities include field trips, guest speakers, job fairs and social activities. Group profiles below include the name of the group leader for 2011-2012:



Students in Transportation Engineering and Planning (STEP) is the name of PSU's group. In 2010-11, STEP hosted the Region X Student Conference (more below), organized a holiday Gingerbread Transit Competition, sent 32 students to TRB, hosted a local TRB "after-shock" community debrief, toured the Port of Portland and organized a multi-modal hiking adventure. 2011-12 Leader: Chris Muhs (MSCE '12)



Transportation and Livability Student Group (LiveMove) is the UO's group. The students organized and hosted eight events in their ongoing speaker series, bringing prominent guests to Eugene to interact with the campus and community. In addition to TRB and several regional transportation events, LiveMove members attended the invitation-only Clinton Global Initiative University Conference. Notably, the group's number of active members grew to 21. 2011-12 Leader: Cortney Mild (MCRP '12)



The OSU Student Chapter of ITE hosted visiting scholars including Shane Brown (Washington State Univ.), David Noyce (Univ. of Wisconsin) and local professionals. The group examined air- and land-side operations at Eugene Regional Airport and helped host Oregon DOT's Northwest Transportation Conference in February. The OSU team won Traffic Bowl for the Oregon Section of ITE and placed second at the Western District competition. 2011-12 Leader: Lacy Brown (MSCE '12)



OIT's ITE Student Chapter uses OTREC's support to send students to events such as the annual Traffic Bowl and on transportation field trips. OIT students this year toured a Knife River Pre-Stress plant and the Willamette River Bridge in Eugene, Ore., visited the Asphalt Pavement Association of Oregon lab and the Antlers Bridge project in Lakehead, Calif. Students also traveled to conferences and hosted speakers. 2011-12 Leader: Zach Davis (BSCE '12)

Frequently, the highlight of the academic year for Oregon's transportation students falls in mid-November. The 20th annual William C. Kloos Traffic Bowl was held by the Oregon Section of the Institute of Transportation Engineers on November 17, 2011. The Oregon State Beavers, reigning Best Student Chapter in ITE's Western District, won the Jeopardy-style tournament. The traffic bowl was followed immediately on November 18th by the 9th annual Region X Student Conference. Portland State played host and offered several exciting technical tours: bridges, bikes, signals, and incident command. The 75 students in attendance selected Lacy Brown (Oregon State) for the best presentation award and the team of Sara Morrissey and Chloe Ritter for best poster.



Visit student group Web pages at [http://otrec.us/for\\_students/groups](http://otrec.us/for_students/groups)

# 2011-2012 Year in Review

10.07.11  
OTREC visiting scholar Andrew Dannenberg, at right, meets with students before a transportation seminar presentation at Portland State.



12.07.11  
Teams from Portland State University's STEP student group (above) compete to build edible designs of the multibillion-dollar Columbia River Crossing highway project.



03.19.12  
OTREC staff meet with University of Utah faculty, students and partners to kick off the new National Institute for Transportation and Communities program. Keith Bartholomew, above left, leads the group to Utah Transit Authority headquarters.

04.13.12  
Denver Igarta, right, principal author of the Portland Bicycle Plan, discusses planning for livable streets at an OTREC seminar.



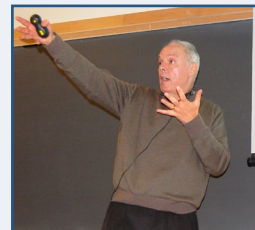
06.20.12  
OTREC staff attends the Council of University Transportation Centers summer meeting in Houghton, Mich.



11.10.11  
Above, historic road preservation planner Dan Marriott answers questions in Eugene during the University of Oregon LiveMove Speaker Series.

11.17.11  
Students from OTREC campuses and beyond participate in the annual Oregon ITE Traffic Bowl competition.

12.19.11  
The Initiative for Bicycle and Pedestrian Innovation at Portland State University receives a gift creating an endowment for an annual transportation lecture in Portland.



04.06.12  
Rick Donnelly, above, opens the OTREC transportation seminar series with a modeling overview.



05.04.12  
Visiting scholar Peter Furth, above, shares his research on low-stress bicycle networks at Portland State University.

09.10.12  
The fourth annual Oregon Transportation Summit, OTREC's signature event, features a plenary session on the future of metropolitan planning organizations and workshops on topics ranging from car and bike sharing to the economics of transportation systems. Keynote speaker Eran Ben-Joseph of MIT details the design and culture of parking. Above, Carolina Iraheta Gonzalez of the Portland Bureau of Transportation discusses the Walking School Bus campaign.

## 2011

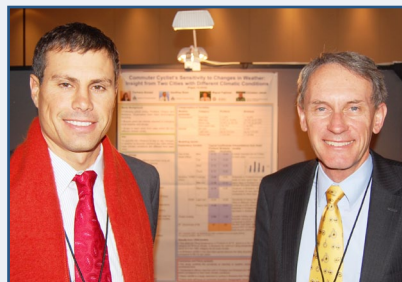
10.21.11  
Ronald Tamse with the city of Utrecht, Netherlands, speaks to students as a visiting scholar at the University of Oregon and Portland State.



11.18.11  
Students get a tour of signal systems as Portland State hosts the Region X Student Transportation Conference. The student-run conference showcases student research in Oregon, Washington, Idaho and Alaska.

## 2012

01.22.12  
Students and faculty researchers from OTREC universities present 45 papers at the Transportation Research Board's annual meeting. Below, Miguel Figliozzi, left, and Geoffrey Rose present on cyclists' sensitivity to weather changes.



03.20.12  
OTREC helps organize and facilitate a transportation workforce summit convened by Portland Mayor Sam Adams, above center, and Multnomah County Commissioner Loretta Smith, second from right. The 35 transportation leaders attending discussed ways to meet expected workforce challenges.

05.01.12  
University of Oregon LiveMove student Casey Gifford receives Fulbright scholarship to study transportation in Denmark.

04.11.12  
Oregon Tech students and faculty give OTREC staff a tour of projects in action. Below, Director Jennifer Dill tests out an electric vehicle under development.



06.06.12  
Below, U.S. DOT Research and Innovative Technology Administration staff tour a living laboratory for OTREC research: Portland streets.



06.11.12  
OTREC makes available its entire eight-week transportation modeling seminar series. The series shows how modeling can support better decision making.



07.02.12  
U.S. Sen. Jeff Merkley, above center, sets out on his "Oil-Free Across Oregon" electric vehicle tour from the Electric Avenue charging hub at Portland State University. Portland Mayor Sam Adams, left, and Portland State President Wim Wiewel examine a charger.

# Completed Projects

## RESEARCH

Relocation of Homeless People from ODOT Rights-of-Way  
**Ellen Bassett**

Integrated Multimodal Transportation, Air Quality, and Livability Corridor Study: Measuring, Understanding, and Modeling the Interactions  
**Miguel Figliozi**

The Relationship Between VMT and Economic Activity  
**B. Starr McMullen**

Contextual Influences on Trip Generation  
**Kelly Clifton**

Wireless Data Collection System for Travel Time Estimation and Traffic Performance Evaluation  
**David Kim**

Real-time Change And Damage Detection Of Landslides and Other Earth Movements Threatening Public Infrastructure  
**Michael Olsen**

Climate Change Impact Assessment for Surface Transportation in the Pacific Northwest and Alaska  
**John MacArthur**

A Study of Headway Maintenance for Bus Routes: Causes and Effects of “Bus Bunching” In Extensive and Congested Service Areas  
**Miguel Figliozi**

Tools for Gusset Plate Evaluation  
**Christopher Higgins**

Development of a Model to Predict and Mitigate Environmental and Public Health Impacts of Traffic Flows and Traffic Management Policies in Urban Transportation Microenvironments  
**Linda George**

Regional Transportation and Land Use Decision Making: A Multistate Analysis  
**Richard Margerum**

Durability Assessment of Recycled Concrete Aggregates for use in New Concrete  
**Jason Ideker**

Exploratory Methods for Truck Re-identification in a Statewide Network Based on Axle Weight and Axle Spacing Data to Enhance Freight Metrics: Phase 2  
**Christopher Monsere**

Wireless Data Collection System for Real-Time Arterial Travel Time Estimation  
**David Porter**

Extraboard Management  
**James Strathman**

Green and Economic Fleet Replacement Modeling  
**David Kim**

Impacts of Neighborhood Electric Vehicles (NEVs) on Transportation Infrastructure Safety and Regulation  
**Kate Hunter-Zaworski**

Evaluation of Safe Routes to School Programs: Qualitative and Quantitative Analysis of Parental Decision-Making  
**Lynn Weigand**

Analysis of Travel Time Reliability for Freight Corridors Connecting the Pacific Northwest  
**Miguel Figliozi**

Analyzing and Quantifying the Impact of Congestion on LTL Industry Costs and Performance in the Portland Metropolitan Region  
**Miguel Figliozi**

Seismic Hazard Assessment of Oregon Highway Truck Routes  
**Peter Dusicka**

Combined Seismic Plus Live Load Analysis of Highway Bridges  
**Michael Scott**

Future Flooding Impacts on Transportation Infrastructure and Traffic Patterns Resulting from Climate Change  
**Heejun Chang**

Advisory Speed Safety Study  
**Karen Dixon**

Calibrating the HSM Predictive Methods for Oregon Highways  
**Karen Dixon**

Hurricane Wave Forces on Highway Bridge Superstructure: Psuedo-dynamic Testing for Bridge Subassembly  
**Daniel Cox**

Value of Reliability, Phase 2  
**Miguel Figliozi**

A Novel Design Strategy for Integrating Freight Rail Into Urban Settings: A Capping Study  
**John Jeffrey Schnabel**

Financing Mechanisms for Capacity Improvements at Interchanges  
**James Strathman**

The Effectiveness of Vertebrate Passage and Prevention Structures: a Study of Boeckman Road in Wilsonville  
**Catherine de Rivera**

Expanding Development of the Oregon Traffic Safety Data Archive Phase 2  
**Christopher Monsere**

Exploratory Methods for Truck Re-identification in a Statewide Network Based on Axle Weight and Axle Spacing Data to Enhance Freight Metrics  
**Christopher Monsere**

Evaluation of Bike Boxes at Signalized Intersections  
**Jennifer Dill**

Maintaining Safe, Efficient and Sustainable Intermodal Transport Through the Port of Portland  
**David Jay**

Healthy Communities and Urban Design: A Multi-Disciplinary National Analysis of Travel Behavior, Residential Preference, and Urban Design  
**Jessica Greene**

Factors for Improved Fish Passage Waterway Construction, Phase 2  
**David Sillars**

Overlooked Density: Re-Thinking Transportation Options in Suburbia, Phase 2  
**Nico Larco**

Freight Performance Measures: Approach Analysis  
**B. Starr McMullen**

Evaluating the Effectiveness of the Safety Investment Program (SIP) Policies for Oregon  
**Christopher Monsere**

Using Archived ITS Data to Measure the Operational Benefits of a System-wide Adaptive Ramp Metering System  
**Robert Bertini**

Understanding School Travel: How Residential Location Choice and the Built Environment Affect Trips to School  
**Yizhao Yang**

Expanding Development of the Oregon Traffic Safety Data Archive  
**Christopher Monsere**

No More Freeways: Urban Land Use-Transportation Dynamics without Freeway Capacity Expansion  
**Lei Zhang**

Hurricane Wave Forces on Highway Bridge Superstructure: Repair and Retrofit of Existing Bridges, Phase 2  
**Daniel Cox**

Long-term Evaluation of Individualized Marketing Programs for Travel Demand Management  
**Jennifer Dill**

Development of an Open Source Bridge Management System  
**Michael Scott**

Instrumentation for Mechanistic Design Implementation  
**Todd Scholz**

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

Overlooked Density: Rethinking Transportation Options in Suburbia  
**Nico Larco**

Seismic Damage State Models for Oregon Bridges  
**Peter Dusicka**

Influence of Environmental Effects on Durability of CFRP for Shear Strengthening of RC Girders, Year 2  
**Christopher Higgins**

Assessment and Refinement of Real-Time Travel Time Algorithms for Use in Practice, Phase 2  
**Kristin Tufte**

Practical Approximations to Quantify the Impact of Time Windows and Delivery Sizes on Freight VMT in Urban Areas  
**Miguel Figliozi**

Freight Distribution Problems in Congested Urban Areas: Fast and Effective Solution Procedures to Time-Dependent Vehicle Routing Problems  
**Miguel Figliozi**

Oregon Freight Data Mart  
**Miguel Figliozi**

Value of Reliability  
**Miguel Figliozi**

Understanding Driver Behavioral Changes Associated with Road User Fees  
**Anthony Rufolo**

Empirical Observation of the Impact of Traffic Oscillations on Freeway Safety  
**Christopher Monsere**

Operational Analysis of Transit Bus Collisions  
**James Strathman**

Analysis of TriMet Bus Operator Absence Patterns  
**James Strathman**

Evaluation of the Oregon DMV At-Risk Driver Program, Phase 2  
**James Strathman**

Socioeconomic Effect of Vehicle Mileage Fees, Phase 2  
**B. Starr McMullen**

Evaluation of the Oregon DMV At-Risk Driver Program  
**James Strathman**

Coevolution of Transportation and Land Use  
**Lei Zhang**

Improving Travel Information Products via Robust Estimation Techniques  
**David Maier**

Assessment and Refinement of Real-Time Travel Time Algorithms for Use in Practice  
**Kristin Tufte**

Performance Enhancement of Bridge Bracing Under Service and Extreme Loads  
**Peter Dusicka**

Influence of Environmental Effects on Durability of CFRP for Shear Strengthening of RC Girders  
**Christopher Higgins**

Factors for Improved Fish Passage Waterway Construction  
**David Sillars**

Characteristics of Transitions in Freeway Traffic  
**Robert Bertini**

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

Hurricane Wave Forces on Highway Bridge Superstructure  
**Daniel Cox**

The Influence of Community Walkability and Safety on Active Transportation Among Low-Income Children  
**Jessica Greene**

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**

Socioeconomic Effect of Vehicle Mileage Fees  
**B. Starr McMullen**

From Arterial to Asset: Examining the Role of the Multi-Way Boulevard in Coordinated Transportation and Land Use Planning  
**Mark Gillem**

# Completed and Ongoing Projects

## Completed Projects (continued)

### EDUCATION

Enhancing Bicycle and Pedestrian Education through Curriculum and Faculty Development

**Lynn Weigand**

Bicycle and Pedestrian Engineering Design Curriculum Expansion

**Ashley Haire**

designBridge: Integrating Transportation into Service Learning Design/Build Projects, Phase 2

**Nico Larco**

Electric Vehicle Charging Infrastructure Community Needs Assessment

**Robert Parker**

Bicycle and Pedestrian Design Curriculum Expansion

**Lynn Weigand**

Expanding Service Learning Models in Transportation

**Robert Parker**

Rural Young Women Transportation Education Outreach

**Roger Lindgren**

designBridge: Integrating Transportation into Service Learning Design/Build Projects

**Nico Larco**

Trail Planning & Community Service Curriculum

**Lynn Weigand**

Distribution Logistics Course

**Miguel Figliozzi**

Traffic Engineering Training for Rural Communities

**Roger Lindgren**

Bicycle and Pedestrian Education Program

**Lynn Weigand**

Linking Experiential Learning to Community Transportation Planning

**Robert Parker**

Road Ecology Course and Seminar Series

**Mark Sytsma**

City Design Lecture Series: Linking Transportation and Land Use Planning

**Mark Gillem**

### TECHNOLOGY TRANSFER

Pedestrian and Bicycle Master Planning: Training for Practitioners

**Lynn Weigand**

Transportation Planning Through Mobile Mapping Technology

**Marc Schlossberg**

Transferring GIS / Community-Based Transportation Assessment Tools Nationwide

**Marc Schlossberg**

Increasing Capacity In Rural Communities: Planning for Alternative Transportation

**Megan Smith**

Oregon Transportation Planning Experience

**Carl Abbott**

Active Transportation, Neighborhood Planning and Participatory GIS, Phase 2

**Marc Schlossberg**

Initiative for Bicycle and Pedestrian Innovation

**Jennifer Dill**

Application of LRFD Principles for Deep Foundations in Oregon: Phase 1

**Trevor Smith**

Active Transportation, Neighborhood Planning and Participatory GIS

**Marc Schlossberg**

Developing a Coordinated Professional Development Program for OTREC

**Robert Layton**

## Ongoing Projects

### RESEARCH

Development of Pedestrian Planning Tools for Use in Travel Demand Modeling

**Kelly Clifton**

Integrated Multimodal Transportation, Air Quality, and Livability Corridor Study, Phase II

**Miguel Figliozzi**

The Application of Smart Phone Truck Data to Develop Freight Performance Measures and Support Transportation Planning

**Miguel Figliozzi**

Operational Guidance for Bicycle-Specific Traffic Signals

**Christopher Monsere**

Commute Friendly Gas-Electric Hybrid Vehicle

**James Long**

Assessing Transit Agencies' Climate Change Adaptation Needs

**John MacArthur**

Wider Dissemination of Household Travel Survey Data Using Geographical Perturbation Methods

**Nebahat Noyan**

Improved Pedestrian Safety at Signalized Intersections Operating the Flashing Yellow Arrow

**David Hurwitz**

Promoting Active School Travel by Making it Cool: a Quasi-Experimental Study Using Boltage

**Yizhao Yang**

Bus Safety Performance Monitoring and Analysis

**James Strathman**

Increasing Bicycling for Transportation: The Role of Cyclist Type and Infrastructure

**Jennifer Dill**

Prioritization for Seismic Retrofit with Statewide Transportation Assessment

**Peter Dusicka**

Transit Bus Fleet Management and Optimization Models Addressing New Engine Technologies and Emissions Constraints

**Miguel Figliozzi**

Overlooked Destinations: Suburban Nodes, Centers, and Trips to Strips

**Nico Larco**

Influence of Road Cross Section on Access Spacing

**Karen Dixon**

Multimodal Data at Signalized Intersections: Strategies for Archiving Existing and New Data Streams to Support Operations and Planning

**Christopher Monsere**

Livability Performance Metrics for Transit

**Marc Schlossberg**

Reducing Seismic Risk to Highway Mobility: Assessment and Design Tools for Pile Foundations Affected by Lateral Spreading

**Scott Ashford**

Durability Assessment of Recycled Concrete Aggregates for use in New Concrete, Phase 2

**Jason Ideker**

Evaluation of Bike Boxes at Signalized Intersections: Phase 2

**Christopher Monsere**

Tools for Gusset Plate Evaluation, Phase 2: Strengthening

**Christopher Higgins**

Economic Benefits of Cycling

**Kelly Clifton**

Green Schools in Gray Zones: Assessing Alternative Transportation & Land Use Credits of LEED™ and non LEED™ Rated K-12 Schools on Student Health & Academic Performance in Oregon

**Ihab Elzeyadi**

Fusion and Integration of Arterial Performance Data

**Kristin Tufte**

Incorporating New Data Needs into Travel and Activity Surveys

**Jennifer Dill**

Exploiting a Next Generation ITS Data Warehouse for Improved System Performance and Congestion Monitoring

**Kristin Tufte**

Improving Regional Travel Demand Models for Bicycling

**John Gliebe**

Implementation of Active Living Policies by Transportation Agencies and Departments

**Jennifer Dill**

Access Management Best Practices Manual

**Karen Dixon**

Dynamic Activity-Based Travel Forecasting System

**John Gliebe**

Application of WIM Data for Improved Modeling, Design, and Rating

**Christopher Monsere**

Identify and Address Institutional Barriers Delaying Incident Clearance

**Karen Dixon**

### EDUCATION

An Activity-Based Learning Module for Human Factors in the Introductory Transportation Engineering Course

**David Hurwitz**

University of Oregon Transportation Speaker Series

**Marc Schlossberg**

Sustainable Cities Lecture Series

**Mark Gillem**

Development, Deployment, and Assessment of a New Educational Paradigm for Transportation Professionals and University Students

**Ashley Haire**

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

**Carla Gary**

### TECHNOLOGY TRANSFER

Transportation Electrification Initiative

**John MacArthur**

Sustainable Cities Initiative (SCI)

**Robert Liberty**

Development of Mobile Mapping Technology to Facilitate Dialog between Transportation Agencies and the Public

**Ken Kato**

Transportation Electrification Initiative

**John MacArthur**

Oregon Modeling Collaborative

**Kelly Clifton**

Sustainable Cities Initiative (SCI)

**Nico Larco**

A Comprehensive Roadmap for the Development of Low/No Emission Vehicle Infrastructure in the Portland Metro Region

**John MacArthur**

Expanding Development of the Oregon Traffic Safety Data Archive: Phase 3

**Christopher Monsere**

Overlooked Density: Re-Thinking Transportation Options in Suburbia, Phase 3

**Nico Larco**

Options for Integrating Urban Land Use and Travel Demand Models

**John Gliebe**

Learn more about each of these projects and download available final reports and other products at:  
[http://otrec.us/research/final\\_reports](http://otrec.us/research/final_reports)

# OTREC Award Winners

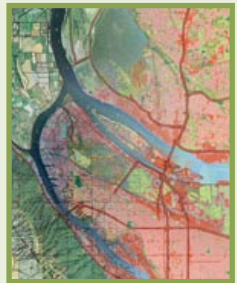
Each year, OTREC recognizes transportation leaders at the Oregon Transportation Summit. We honor a partner agency that makes OTREC projects possible and a researcher who exemplifies our goals. The Congressman Peter DeFazio Transportation Hall of Fame Award goes to an Oregonian whose leadership reflects Rep. DeFazio's values and advances OTREC's theme.

## DeFazio Hall of Fame: Andy Cotugno, Metro

Andy Cotugno has 35 years of professional experience in transportation and planning. He earned a bachelor's degree in city and regional planning from California Polytechnic State University, San Luis Obispo, in 1974, and did graduate work in public administration at Lewis & Clark College in Portland. Cotugno worked as a transportation planner before being appointed Metro's transportation director in 1980. In 2000, the Transportation and Growth Management Services departments were merged into one. Cotugno managed this combined Planning Department until 2008, when he was appointed senior policy advisor to the Metro Council and chief operating officer. As head of transportation planning for Metro, Cotugno advanced the development of a transportation system that balances the needs of all users. He pushed for development of active transportation options and engaged agencies across the region and beyond in smart growth discussions. A staunch supporter of OTREC since its creation in 2006, Cotugno has worked to further research in transportation planning.



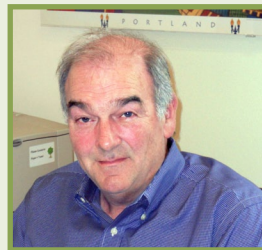
## Partner of the Year: Metro



Metro, the Portland metropolitan area's regional government, is the only directly elected metropolitan planning organization in the country. Metro has been a long-standing partner and collaborator with OTREC and our researchers. In spite of restrictions on specific project match, Metro has partnered on over 10 projects in the past five years, leveraging nearly \$500,000 of research for OTREC projects. The partnership between OTREC and Metro has helped advance research on topics such as: improving the regional travel demand model for bicycling, exploring the effect of the suburban built environment and land uses on mode choice, and adjusting the Institute of Transportation Engineers trip generation rates for compact urban settings. Metro is an early adopter of research results, helping the region lead the way in sustainable transportation, which has been integral to creating livable communities.

## Researcher of the Year: James Strathman

James Strathman has served as director of the Center for Urban Studies at Portland State University since 1998, having joined the faculty in 1982. He is Portland State's university representative to the Transportation Research Board. His external research portfolio spans 40 projects and nearly \$3.5 million and he is the author or coauthor of work appearing in more than 100 refereed publications. He is the principal investigator on seven OTREC projects. Strathman has long-standing relationships with both the Oregon Department of Transportation and TriMet, and his research has been invaluable to those agencies. His research on transit driver scheduling, for example, is helping TriMet improve its operations and realize savings of nearly \$1 million per year.

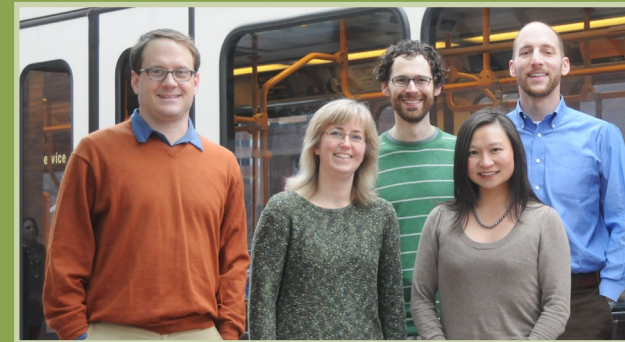


## In Memoriam: Gail Achterman



One of Oregon's most stalwart and effective public servants, Gail Achterman, died in 2012. Achterman committed her life to furthering environmental and transportation issues to improve the quality of life in Oregon. Her commitment to improving and connecting transportation with land use and environmental policy was the reason she received the 2011 OTREC DeFazio Hall of Fame Award. As chair of the Oregon Transportation Commission, she helped guide the Oregon Department of Transportation toward leadership in sustainability and integrated modeling. We honor her legacy.

# OTREC Points of Pride



OTREC staff members, from left, John MacArthur, Jennifer Dill, Justin Carinci, Hau Hagedorn and Jon Makler.

After six years of success, OTREC is growing and changing rapidly. In 2011, Portland State University joined with the University of Oregon, Oregon Institute of Technology and the University of Utah to compete successfully for one of 22 U.S. DOT university transportation center grants, creating the National Institute for Transportation and Communities program, or NITC. In 2012, NITC's executive committee chose 19 research, education and technology projects to be carried out in 2012-2013.

Meanwhile, OTREC's first six years of grants continue to produce research findings and other products from the partnership of Portland State, University of Oregon, Oregon State University and Oregon Tech. And we continue to diversify our efforts with new partnerships and research, including an evaluation of the District (of Columbia) Department of Transportation's bicycle facilities and an examination of how peer-to-peer car sharing affects the travel behaviors and opportunities of vehicle owners and renters. OTREC at Portland State University now administers all of these programs.

In research news, OTREC researchers are fine tuning the methodology they used to evaluate bicycle facilities in Portland and Washington, D.C., for the Green Lane Project of the Bikes Belong Foundation. The researchers are assessing the safety, operations, economic effects, user experience and perceptions of new protected bikeways in six cities across the country. The project is led by Christopher Monsere, with co-investigators Jennifer Dill, Kelly Clifton and Nathan McNeil.

OTREC research continues to advance the understanding of active transportation in suburbia. The project "Overlooked Destinations: Suburban Nodes, Centers and Trips to Strips," by University of Oregon's Nico Larco, challenges conceptions of suburbia as the exclusive domain of the automobile. Active travel is widespread around suburban commercial strips, Larco found. Even where land use doesn't encourage walking and cycling, the demand for active trips leads residents to literally beat their own path to commercial centers.

Communities that invest in active transportation facilities face a nagging question: will businesses suffer if people trade car trips for ones on foot, bicycle or transit? New OTREC research from Kelly Clifton of Portland State suggests that drivers bring no greater monetary benefit to businesses than do other mode users. Her project, "Examining Consumer Behavior and Travel Choices," did find that consumers who arrive at restaurants, bars and convenience stores by automobile spend more on average per trip than others. However, they also average fewer trips. Taking this frequency into account, people arriving by bicycle or on foot are greater spenders on average.

OTREC research led by Miguel Figliozzi of Portland State has turned a busy Portland corridor into a living laboratory, with ongoing research on advanced traffic controls, transit signal priority and air quality. Findings suggest that turning bus shelters away from the roadway can greatly reduce exposure to pollution for transit users. Work on adaptive signal systems shows both traffic volumes and speeds increasing, while signal priority allows more buses to stick to their schedules.

OTREC uses Twitter to share news and keep up with others in transportation-related fields. In August 2012, our Twitter account reached 1,000 followers. If you're not yet one of the 1,000, you can follow @OTREC to keep up with OTREC research and programs and to join in the discussion.



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