Program Progress Performance Report for University Transportation Center at

Portland State University

Submitted to:	U.S. Department of Transportation Research and Innovative Technology Administration (RITA)
Grant Number:	DTRT12-G-UTC15
Project Title:	University Transportation Center National Institute for Transportation and Communities (NITC) *Consortia members: Portland State University (PSU), University of Oregon (UO), Oregon Institute of Technology (OIT), University of Utah (UU)*
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Signature:	

1. ACCOMPLISHMENTS: What was done? What was learned?

The information provided in this section allows the RITA grants official to assess whether satisfactory progress has been made during the reporting period.

What are the major goals of the program?

The major goals for NITC as described in our application fall into five categories:

Research

- **Competitive, peer-review project selection process.** NITC projects are to be selected through an open RFP process. All faculty at the member campuses, as well as approved Faculty Associates, will be eligible to submit research, education and technology transfer project proposals responsive to our theme. The proposal evaluation process will emphasize external peer review and draw on the expertise of practitioners and researchers nationally.

- **Transportation for Livable Communities Pooled-fund research.** To help maximize implementation of U.S. DOT's commitment to livable communities, NITC's Transportation for Livable Communities Pooled-Fund Research program will provide regional and local agencies, such as metropolitan planning organizations and municipalities, more opportunity to be invested in research

- **Transportation Data for Livable Communities.** This initiative aims to create a model for data collection, management and dissemination that will foster the wider, national use of data resources collected on a local level.

- **Engaging Citizen Leaders.** This initiative will expand NITC's scope of work to reach a wide range of current and future transportation leaders. We will accomplish this in two ways. First, our competitive RFP process will include a score for community engagement; this will result in projects that achieve the first two goals. Second, we will set aside $70,000 for projects that specifically target creating community leaders among the general public (not university students) and where community leadership is the *primary* objective, not a secondary or complementary objective to a larger research project.

Leadership

- **Shape national & international conversations on transportation research and education**. NITC faculty are well regarded nationally and internationally as leaders in their fields. They will continue to demonstrate this leadership through publishing in the top journals and presenting their work at conferences. NITC will take the concept of leadership far beyond academic circles, as evidenced by the wide

dissemination of research results in professional, technical and general publications and other media.

- **Serve on national committees and panels.** NITC faculty help address national transportation problems through volunteer leadership on TRB committees and in other positions, including journal editorial boards, national and international conference organizing committees, NSF panels, and other advisory boards. To continue and reinforce this practice, NITC will mentor our new, junior faculty to apply for committee and panel membership and recognize the activities of all faculty members.

- **Respond to needs of practitioners and policymakers.** NITC researchers have a long history of conducting research that is useful in solving the problems practitioners and decision-makers face every day. Our theme and project selection process will ensure that our research continues to address our nation's transportation problems. NITC's Director and staff will serve as points of contact for agency leaders and policymakers both regionally, statewide and nationally. When we identify needs that match the expertise of our researchers, we will make a connection. We will work with key staff at the DOT administrations (FHWA, FTA, etc.), both in Washington, D.C., and within the region, whose work relates to our theme to determine the most effective way for our researchers to learn from and inform agency activities.

Education and Workforce

- **Offer degrees and courses in multiple disciplines.** NITC will continue to offer a rich array of degrees that serve the transportation profession.

- **Provide experiential learning.** A key component of our education strategy is experiential learning, which will help attract and retain students. Our campuses will continue to provide these opportunities, and NITC will seek ways to expand them.

- **Attract and support undergraduate students.** NITC will build upon existing and effective mechanisms to expose K-12 students to transportation, attract and retain new undergraduate students to our degree programs, and involve undergraduates in our research.

- **Attract and support graduate students.** NITC will support graduate students directly through the following: Research assistantships working on projects; Dissertation fellowships for students to carry out research on surface transportation topics that fit under the NITC theme; Funds for scholarships at each campus to recruit new and retain existing high-performing students; and Funds for transportation student group activities.

- **Sponsor a student conference.** NITC will host a national student conference focusing on our theme.

- **Educate professionals.** NITC will maintain a vibrant program of seminars, workshops, professional courses and other training opportunities that provide transportation practitioners with the latest tools and techniques.

Technology Transfer

- Move research into practice. Moving research into practice first requires research findings that are relevant to practice. Our competitive project selection process will help ensure that we select projects that have direct implications for practitioners in the short- or long-term. In addition, we will use practitioners to help inform projects after selection and review final products. Additional efforts will include short workshops to share research results, one-page research briefs, presenting work at conferences aimed at practitioners, holding one-day conferences, funding technology transfer projects, and encouraging the commercial application of research results when possible.

- **Inform researchers.** The quality of scientific inquiry depends upon researchers sharing their findings with other researchers through the peer-review publication processes. Fellow researchers are important targets for our technology transfer program. We will accomplish this through two primary activities. First, NITC's faculty will continue to publish extensively in peer-reviewed journals. Second, OUTREC will support our faculty in presenting their work at nationally recognized academic conferences by including travel funds for each project.

- **Use innovative technologies to communicate research results.** NITC will embark on an ambitious program of sharing information through traditional and new media.

Collaboration

- **Collaborating within our consortium.** NITC's governance structure is cooperative and leadership is distributed. The Executive Committee includes one faculty member from each campus. The Executive Committee provides overall direction for the Center, makes project funding decisions, and selects Center award recipients, including student of the year. They will meet in person at least twice a year, rotating the location between campuses, and hold regular conference calls. Each Executive Committee member will be responsible for representing and supporting their respective campus

- **External collaboration.** In addition to the partnerships that occur through individual projects and the pooled-fund program, NITC will foster collaboration with a range of "end-users" of our work through an External Advisory Board.

What was accomplished under these goals?

Research

- **Competitive, peer-review project selection process.**
  A total of 42 proposals were submitted by the May 11, 2012 deadline, requesting $4,659,138. Of those, 35 proposals were for research, five for education, and two for technology transfer. Each proposal was reviewed by at least three external reviewers, usually two academic researchers and one practitioner. The external review criteria mirror the NSF process, including intellectual merit, broad impacts, and budget. Each proposal was also reviewed and scored by the research program manager for the following programmatic criteria: fit with the NITC theme; transportation focus; student support/mentoring; support for untenured, tenure-track faculty; leveraging of matching funds; substantive and meaningful external collaboration; multi-disciplinary and/or multi-campus collaboration; national relevance; and equity/diversity. External and programmatic review scores were then combined (weighted 70/30) and proposals were ranked. The Executive Committee met on July 2, 2012 and selected nineteen projects, totaling $1.97 million. The projects are listed below, with the principal investigator and university noted:

  - Lessons from the Green Lane: A Comprehensive Evaluation of Protected Cycling Facilities: Christopher Monsere, PSU
  - Understanding the Transit-Dependent Population: Jennifer Dill, PSU
  - Making Streets into Complete Streets: An Evidence Based Design Manual: Marc Schlossberg, UO
  - Multi-modal Household Vehicle Fleets and Residential Location Choices: Roger Chen, PSU
  - Understanding Market Segments for Current and Future Residential Location and Travel Choices: Kelly Clifton, PSU
  - Effect of Light-Rail Transit on Traffic in a Travel Corridor: Reid Ewing, UU
  - Encouraging Active School Travel by Making it "Cool": A Quasi-Experimental Study Using Boltage, Phase II: Yizhao Yang, UO
  - Evaluation of Bicyclists' Exposure to Traffic-Related Air Pollution Along Distinct Facility Types: James Pankow, PSU
  - Assessing Transit Fare Equity in Utah Using a Geographic Information System: Steven Farber, UU
  - Continuous Data Integration for Land Use and Transportation Planning and Modeling: Liming Wang, PSU
  - Application of Interactive Video Sensing and Management for Pedestrian and Bicycle Safety Studies: Wu-chi Feng, PSU

- Latino Immigrant Communities and Equity in Transit Oriented Development: Gerardo Sandoval, UO
- Evaluation of Electric Bike Use in Portland Metro Region: John MacArthur, PSU
- Combined Traction and Energy Recovery Motor for Electric Vehicles: James Long, OIT
- Strategic Design and Policy for Improving the Livability and Multi-modal Use of U.S. Urban Arterials and Commercial Highways: Michael Larice, UU
- Oregon Leadership in Sustainability (OLIS) Sustainable Transportation Class: Vicki Elmer, UO
- Transportation Leadership Education: Lynn Weigand, PSU
- Modeling and Analyzing the Impact of Advanced Technologies on Livability and Multimodal Transportation Performance Measures in Arterial Corridors: Miguel Figliozzi, PSU
- Do TODs Make a Difference?: Arthur Nelson, UU

NITC and PSU staff worked with each campus to execute task orders to start each project in August/September, including approving budgets and documenting match sources. We also implemented an on-line reporting system for PIs to provide semi-annual progress reports.

- **Transportation for Livable Communities Pooled-fund research.**
  NITC staff has drafted a process to solicit and selected pooled-fund projects. The NITC Executive Committee will discuss and implement this during the next six months.

- **Transportation Data for Livable Communities.**
  Two projects among those selected focus on data: (1) Continuous Data Integration for Land Use and Transportation Planning and Modeling; and (2) Application of Interactive Video Sensing and Management for Pedestrian and Bicycle Safety Studies.

- **Engaging Citizen Leaders.** We funded one proposal for this program through the RFP process: Transportation Leadership Education . In addition, our programmatic scoring criteria gave higher points to projects that actively engaged external partners and addressed equity and diversity issues. Partly as a result, three of our funded projects focus on equity: (1) Understanding the Transit-Dependent Population; (2) Assessing Transit Fare Equity in Utah Using a Geographic Information System; and (3) Latino Immigrant Communities and Equity in Transit Oriented Development

Leadership

- **Shape national & international conversations on transportation research and education.**
  NITC staff attended and actively participated in the RITA UTC Spotlight Conference in November 2012.

- **Serve on national committees and panels.**
  Faculty members and students at the four NITC member campuses currently serve on 26 TRB committees/task forces and ten NCHRP/SHRP2/NCFRP panels.

- **Respond to needs of practitioners and policymakers.**
  One way NITC intends to respond to the needs of practitioners and policymakers is through the use of external Advisory Board. More information about the Board is in the section below on Collaboration.

  NITC sponsored two events focusing on non-motorized transportation data with outside experts (Dr. Greg Lindsey, University of Minnesota and Dr. Krista Nordback, University of Colorado). For both events, NITC invited local practitioners to hear the presentation and talk afterwards with the speaker, PSU faculty, and students about collaborative research on this topic. About a dozen practitioners attended those discussions, from city, regional, and state transportation agencies.

Education and Workforce

- **Offer degrees and courses in multiple disciplines.**
  The four NITC campuses continue to offer 18 degrees in transportation and closely related fields.

- **Provide experiential learning.**
  Our campuses continue to incorporate community partners in a number of courses. For example, graduate students in PSU's Planning Methods course partnered with the City of Portland to help plan for a new bikeway. Students conducted bicycle counts, developed and implemented an intercept survey, interviewed residents and businesses along the corridor, and analyzed demographic data along the corridor to help ensure an equitable public participation process. The data and findings from these assignments are provided to the City for their use. At the University of Oregon, the Sustainable City Year program is working with Lane Transit District (LTD) and the City of Springfield, incorporating experiential learning in eight courses during Fall 2012. For example, a journalism courses on strategic communications worked in the City of Salem assessing levels of support for expanding transit service and LTD on marketing benefits of new transit to the community. A law course examined legal issues and proposed changes to Springfield's system development charges to encourage development along transit corridors and reduce the demand for additional highway construction. A planning course examined ways that LTD could expand its service areas by linking transit to customers arriving by bike and on foot.

- **Attract and support undergraduate and graduate students.**

During this reporting period, we solicited applications for funding to support undergraduate students in research projects. Applications were due during the next reporting period.

Student groups were active on each campus. Most notably, at the University of Utah, a new, interdisciplinary group formed as a result of NITC called Point B, the University of Utah Student Transportation Group. The group ratified a constitution (per university requirements), elected officers and appointed committees to develop a "summit" event and develop and launch a transportation student research scholarship competition. The group is working closely with the local Women's Transportation Seminar chapter. Two members of the group traveled to Portland to attend the Region X Student Conference in November.

At Portland State University, STEP (Students in Transportation Engineering and Planning) continued activities involving about 50 graduate and undergraduate students in Civil and Environmental Engineering, Urban Studies and Planning, and Public Health. The group took the lead in organizing the Region X Student Conference which attracted about 100 students to Portland in November (http://otrec.us/news/entry/california_students_flock_to_oregon_for_student_run_transportation_conferen). The event also included Traffic Bowl, a competition sponsored by the local ITE chapter. Students the University of Oregon and Oregon Institute of Technology (OIT) also attended the student conference and Traffic Bowl. STEP also organized students to participate in the following events: (1) regional trail counts; (2) "Planning 101 for Transportation Engineers" session; (3) information session with a consulting firm about careers; (4) ITE webinar; and (5) two social events with students and faculty.

The student group at OIT is also the ITE student chapter. A highlight of the fall was a field trip; 16 students and two faculty members visited the Antlers Bridge Replacement construction site. The trip was organized by Oregon Tech's Institute of Transportation Engineers student chapter with funding provided by OTREC. Engineers from the California Department of Transportation hosted the tour, which focused on a new bridge will consist of five spans coming together to make a 1,942-foot structure. The Oregon Tech group met with CalTrans engineers for an extensive project review presentation at the field office and then proceeded to the construction site where they spent over two hours viewing foundation preparation, pier construction, pier-table form travelers, and abutment work

LiveMove is the student group at UO. A major activity of that group is to sponsor a speaker series for both students and the community. For example, the group sponsored Robert Sadowsky, Executive Director of the Bicycle Transportation Alliance to speak in

the fall. The group also launched an innovative program called "Commuting Companions" to help students, staff, and faculty on campus try out alternatives to driving to campus, such as bicycling (http://www.youtube.com/watch?v=EPlkgLbZqtY) and a walking school bus program at a local elementary school.

- **Sponsor a student conference.**
  No activity during this reporting period. We plan to hold this conference in late 2013. Note that the Region X Student Conference discussed above is officially an activity of OTREC under the previous UTC grant.

- **Educate professionals.**
  The scoring criteria for the projects received via the RFP process included an assessment of the technology transfer plan proposed by the PI. Other professional development activities over the past six months are reported under the prior UTC grant (OTREC).

Technology Transfer

- **Move research into practice.**
  One of the selected projects is a technology transfer project: Making Streets into Complete Streets: An Evidence Based Design Manual. This project draws upon research from previous OTREC projects, as well as other research. In addition, to ensure that technology transfer is not an afterthought, we included at least one practitioner as a peer reviewer for each proposal and all proposals were required to include a technology transfer plan. Now that the projects are underway, our Communications Director meets with each PI to develop a communications/technology transfer plan. Furthermore, PIs must find the 100% matching funds for their proposal. This often involves support from an external partner who will be one end-user for the research.

- **Inform researchers.**
  The technology transfer section of each proposal includes ideas from the PI on how they will share results with other researchers.

- **Use innovative technologies to communicate research results.**
  We continue to work on our website architecture and a new content management system for NITC that works with the OTREC site. While we do not have any NITC research results to share yet, we continue to sponsor a weekly transportation seminar that is webcast and archived.

Collaboration

- **Collaborating within our consortium.**
  The Executive Committee of NITC met monthly via conference calls during the

reporting period and in person at the Advisory Board meeting. Two of the selected projects involve collaboration between PIs at two or more of our universities.

- **External collaboration.**
  During this period, NITC appointed its Advisory Board was appointed, with the following members:

  Michael Baltes, Federal Transit Administration
  Jason Bittner, CUTR, University of South Florida
  Robert Burchfield, City of Portland
  James Christian, FHWA (ex-officio)
  Tyler Deke, Bend MPO
  John Frece, US EPA
  Matthew Hardy, AASHTO
  Susan Herbel, Cambridge Systematics
  Michael Hoglund, Portland Metro
  Craig Honeyman, League of Oregon Cities
  Robin Hutcheson, Salt Lake City
  Cameron Kergaye, Utah DOT
  Wayne Kittelson, Kittelson & Associates
  Ted Knowlton, Wasatch Front Regional Council
  Alan Lehto, TriMet
  Jana Lynott, AARP
  Cathy Nelson, Oregon DOT
  Leni Oman, Washington State DOT
  Lynn Peterson, Office of Oregon Gov. John Kitzhaber
  Sandra Rosenbloom, Urban Institute
  Gabe Rousseau, FHWA (ex-officio)
  Brian Saelens, Seattle Childrens' Hospital
  Tom Schwetz, Lane Transit District
  Ted Trepanier, INRIX
  Yinhai Wang, PacTrans, University of Washington
  Johanna Zmud, RAND

  The first meeting was held November 28, 2012 and focused on (1) NITC's current activities; (2) developing future funding priorities; (3) the role of livability in transportation research; and (4) connecting research to end-users. All but three of the board members attended, either in person or electronically.

- How have the results been disseminated?

Nothing to Report. NITC projects started in August/September of this reporting period.

What do you plan to do during the next reporting period to accomplish the goals?

Expected highlights for the next quarterly reporting period include:

- Initiate the Pooled Fund process.
- Develop communications/technology transfer plans for NITC-funded projects.
- Preliminary research findings from some projects.

2. PRODUCTS: What has the program produced?

Publications, conference papers, and presentations

- Two peer-reviewed journal articles.
- Two presentations.

Website(s) or other Internet site(s)

The NITC website is located here: http://otrec.us/NITC.

Technologies or techniques

In the Application of Interactive Video Sensing and Management for Pedestrian and Bicycle Safety Studies project, the first version of video sensing for counting pedestrians has been developed. The results have been submitted for publication.

Inventions, patent applications, and/or licenses

Nothing to report for this period.

Other products

Nothing to report for this period.

3. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS: Who has been involved?

What organizations have been involved as partners?

The members of the consortium include Portland State University, University of Oregon, Oregon Institute of Technology, and University of Utah. Each NITC-funded project is required to have 100% match. The organizations providing match appear in Table 1

Table 1: Partner Organizations

Match Partner	Type	Financial Support	In-Kind Support	Facilities	Collaborative Research	Personnel Exchanges
Bike Belong	Non-profit/Foundation	X				
City of Austin, TX	Local government		X			
City of Portland	Local government		X		X	
Conscious Commuter	Private industry		X			
Drive Oregon	Non-profit/Foundation	X				
Intel	Private industry		X			
KersTech Vehicle Systems	Private industry		X			
Metro	Regional government		X		X	
Mountainlands Association of Governments	Regional government		X		X	
Oregon Department of Transportation	State DOT	X	X		X	X
Oregon Institute of Technology	University		X			
Oregon Leadership in Sustainability (UO)	University	X				
Portland State University	University	X	X			
Robert Wood Johnson Foundation	Non-profit/Foundation		X			
Rowell Brokaw Architects	Private industry	X	X		X	
Salt Lake County	Local government	X				
SFMTA | Municipal Transportation Agency	Local government		X			
Sustainable Cities Initiative (UO)	University	X				
TriMet	Transit agency	X	X		X	
University of Minnesota	University	X				
University of North Carolina, Chapel Hill	University		X			
University of Oregon (UO)	University	X	X			
University of Utah	University	X	X			
Utah Transit Authority	Transit agency	X	X		X	
Wasatch Front Regional Council	Regional government	X				

Have other collaborators or contacts been involved?

During the RFP process, NITC staff and Executive Committee members met with over a dozen public agencies to explain our RFP process and solicit research ideas, including the Oregon and Utah Departments of Transportation, FHWA, cities of Portland and Salt Lake City, MPOs in Oregon and Utah, TriMet, and the Utah Transit Authority. NITC also worked closely with financial and research staff on each campus to establish new agreements and

processes for collaboration.

4. IMPACT: What is the impact of the program? How has it contributed to transportation education, research, and technology transfer?

What is the impact on the development of the principal discipline(s) of the program?

The University of Oregon added a new graduate level course, Sustainable Transportation, this winter. During this reporting period, the course was developed, reviewed by three peers at San Jose State University, University of California at Berkeley, and University of Utah, and revised based on the reviews. The course began January 7th, 2013 with 20 graduate students enrolled.

What is the impact on other disciplines?

Ten of our projects involve researchers from multiple disciplines. Examples of disciplines include chemistry, behavioral economics, mechanical engineering, and computer systems engineering. The newly-formed student group at the University of Utah includes student from multiple disciplines, including engineering, planning, and geography. The existing PSU, UO, OIT student groups also draw upon multiple disciplines.

What is the impact on the development of transportation workforce development?

Nothing to Report for this period.

What is the impact on physical, institutional, and information resources at the university or other partner institutions?

Nothing to Report for this period.

What is the impact on technology transfer?

Nothing to Report for this period. We have implemented a system on our website to track who downloads our reports and survey those users regarding the usefulness and impacts of the research on their work.

What is the impact on society beyond science and technology?

Nothing to Report for this period.

5. CHANGES/PROBLEMS

Changes in approach and reasons for change

Nothing to Report for this period.

Actual or anticipated problems or delays and actions or plans to resolve them

Nothing to Report for this period.

Changes that have a significant impact on expenditures

Nothing to Report for this period.

Significant changes in use or care of human subjects, vertebrate animals, and/or biohazards

Nothing to Report for this period.

Change of primary performance site location from that originally proposed

Nothing to Report for this period.

Additional information regarding Products and Impacts

Nothing to Report for this period.