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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Report Term:	Semi-annual
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 second round of NITC funds were awarded. A total of 25 proposals were submitted by the September 17, 2013 deadline, requesting $2,252,661. Of those, 22 proposals were for research, two for education, and one 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 November 22, 2012 and selected 10 projects, totaling $900,000. The projects are listed below, with the principal investigator and university noted:

  - National Study of BRT Development Outcomes: Arthur Nelson and Joanna Ganning, University of Utah
  - Crowdsourcing the Collection of Transportation Behavior Data: Christopher Bone, Ken Kato and Marc Schlossberg, University of Oregon
  - Measuring the Impacts of Social Media on Advancing Public Transit: Jenny Liu, Portland State University and Xuegang (Jeff) Ban, Rensselaer Polytechnic Institute
  - Connecting People to Places: Spaciotemporal Analysis of Transit Supply Using Travel-Time Cubes: Steven Farber, UU
  - Understanding Types of Cyclists Nationally: Jennifer Dill and Nathan McNeil, PSU
  - Development of a Pedestrian Demand Estimation Tool: Kelly Clifton, PSU
  - Investigations in Transportation: William Becker and Melissa Dubois, PSU
  - Agent-Based Model Simulating Pedestrian Behavioral Response to Environmental Structural Changes: Amy Lobben and Christopher Bone, UO
  - Is HUD Affordable Housing Really Affordable?: Reid Ewing, UU
  - Washington State Pedestrian and Bicycle Miles Traveled Project: Krista Nordback, PSU

NITC and PSU staff worked with each campus to execute task orders to start each project January 1st, 2014, including approving budgets and documenting match sources.

The first round of NITC funds were awarded in the fall of 2012. Each of the 19 projects selected through the competitive, peer-review process is between 12 and 18 months in duration. One of those projects has been delayed because the principal investigator left the university. PIs are reporting progress through an on-line system. The 18 active projects started in the fall of 2012 and are, on average, 63% complete as of December 30, 2013.

We also awarded $59,908 for our Small Starts Program. These projects are awarded for preliminary research and help PIs further develop their research idea so they can be more competitive in the future NITC RFPs.

- Exploring Racial Bias in Drivers' Behavior at Pedestrian Crossings: Kimberly Khan, PSU
- Inclusive planning to evaluate improved non-emergency medical transportation services for patients with End Stage Renal Disease: Jenny Liu, PSU
- Characterization of Li-air batteries with optimized electrolytes as an option to increase Electrical Vehicle range, Claudia Torres Garibay, Oregon Tech
- Mobility versus Accessibility: Applications for Shrinking Cities: Joanna Ganning, UU
- Methods to Increase Fuel Efficiency in Post-Production Automobiles: Hope Cosair, Oregon Tech
- Street Portals: Urban User Interface 'Test Bed' Prototype for Bike Share: Jason Germany, UO

- **Transportation for Livable Communities Pooled-fund research.**
  Research concepts were requested and three concepts were received on September 17, 2013 from agency partners from around Oregon and Utah. The Executive Committee selected the Online Non-Motorized Traffic Data Archive research problem submitted by the Oregon Modeling Steering Committee. NITC staff met with stakeholders such as Oregon Department of Transportation, various Oregon MPOs and cities and the City of Boulder, Colorado to discuss a fundraising strategy and to develop a draft RFP**.**

  NITC received commitments for funding from City of Boulder CO, Oregon Department of Transportation, City of Bend OR, Bend OR MPO, City of Eugene OR, Austin, TX and Federal Highway Administration. We have $175,000 available for the project half of which is a contribution from the partners.

  We released the RFP in December and received statements of interest from 3 different university research teams. We are expecting a maximum of 3 proposals for review. Proposals are due at the end of the month on Jan. 31. The technical advisory committee is currently being developed and will determine the winning team in February 2014.

- **Transportation Data for Livable Communities.**
  Six project selected in the second round of NITC funding focus on data:

- Crowdsourcing the Collection of Transportation Behavior Data: Christopher Bone, Ken Kato and Marc Schlossberg, University of Oregon
- Measuring the Impacts of Social Media on Advancing Public Transit: Jenny Liu, Portland State University and Xuegang (Jeff) Ban, Rensselaer Polytechnic Institute
- Connecting People to Places: Spaciotemporal Analysis of Transit Supply Using Travel-Time Cubes: Steven Farber, UU
- Development of a Pedestrian Demand Estimation Tool: Kelly Clifton, PSU
- Agent-Based Model Simulating Pedestrian Behavioral Response to Environmental Structural Changes: Amy Lobben and Christopher Bone, UO
- Washington State Pedestrian and Bicycle Miles Traveled Project: Krista Nordback, PSU

Two projects selected in the first round of NITC funding 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.

In addition, with match funding, we hired a post-doctoral researcher (Dr. Krista Nordback) whose work focuses on non-motorized data. Dr. Nordback then received funding for two of three phases from the Washington Department of Transportation to develop a method to estimate bicycle and pedestrian miles traveled in the state of Washington. She then received funding from NITC round 2 to complete the third phase of this project

Engaging Citizen Leaders. We funded one proposal in the first round for this program through the RFP process: Transportation Leadership Education . This is the project that has been delayed due to the PI leaving the university. We have found a new PI for the project, which will now begin January 2014. This project will develop a case study and national model of the Portland Bureau of Transportation's Traffic and Transportation Class. Over 1,000 citizens have taken this 10-week course to learn how to engage in transportation issues in their community. Congressman Blumenauer has expressed interest in implementing the national model once it has been completed.

- Our programmatic scoring criteria gave higher points to projects that actively engaged external partners and addressed equity and diversity issues. Partly as a result, one project from our second round focus on equity: Is HUD Affordable Housing Really Affordable?

- Three of our round one 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 is helping to shape a new TRB training initiative headed by the recently-formed Task Force ABG05T, Ahead of the Curve: Mastering the Management of Transportation Research. The mission of the Task Force is to develop a TRB training program that enhances the knowledge, skills, and abilities of those who manage transportation research programs and innovation activities.

- NITC staff are active in the AASHTO-RAC liaison group and attended the AASHTO RAC annual meeting in Baton Rouge, LA, in 2013.

- **Serve on national committees and panels.**
  Faculty members and students at the four NITC member campuses currently serve on 32 TRB committees/task forces and eight NCHRP/SHRP2/NCFRP panels.

- **Respond to needs of practitioners and policymakers.**
  NITC was involved with sponsored two trainings through the Initiative for Bicycle and Pedestrian innovation. NITC researchers taught classes at both the three-day faculty training and the five-day Comprehensive Bicycle Planning and Engineering course.

  The five-day Comprehensive Bicycle Planning and Engineering course held August 26-30 hosted 30 practitioners and policymakers from across the United States and Canada. This course covered the fundamentals of bikeway planning and design through an intensive week of interactive classroom and field experience.

  We have also surveyed participants of our professional development events to determine how best to serve their needs through our future trainings.

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. Examples during this reporting period include the following:

  Graduate students in PSU's Planning Methods course partnered with the City of Portland to help plan bike facilities for a new corridor. 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 were provided to the City for their use. In the Pedestrian and Bicycle Planning Laboratory course, students partnered with public agencies and private employers on projects, including bikesharing for an employment campus.

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

  During the last two reporting periods, we solicited applications and awarded funding to support **undergraduate students in research projects**. Thus we added four undergraduate students to research projects.

  During the last reporting period we solicited and awarded four **dissertation fellowships**:
  Susan Petheram, a Ph.D. candidate in the Metropolitan Planning, Policy, & Design program at the University of Utah. Petheram's research focuses on the integration of transportation and land use, and on building healthy communities through transit access. Her dissertation research involves evaluating some of the effects of the light rail system in Salt Lake County.
  Calvin Tribby, a Ph.D. candidate in the Geography Department at the University of Utah. His research focuses primarily on active transportation. While examining the influences of the built environment on people's travel mode choices, he also takes a look at the social context and perceptions revolving around active transportation modes.
  Gail Meakins, Ph.D. candidate in the Metropolitan Planning, Policy, & Design program at the University of Utah. Meakins' research focuses on the relationship between where we live and the level of physical health we enjoy
  Sirisha Kothuri, Ph.D. candidate in Civil and Environmental Engineering at Portland State University. Kothuri's research focuses on pedestrian signal timing.

  We issued an RFP for another round of dissertation funds. The applications are due January 31, 2014. Awards will be made in the next reporting period.

  Student groups were active on each campus. Most notably, at the University of Utah, an interdisciplinary group formed as a result of NITC called Point B, the University of Utah Student Transportation Group. The group has 37 members and continues to grow. The group has sponsored networking events with the local Women in Transportation Seminar chapter and provides scholarships to students working on livable community research.

  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.

University of Oregon, Oregon Tech and Portland State University students participated in the Traffic Bowl on November 21, 2013. The event is a competition sponsored by the local ITE chapter.

The student group at OIT is also the ITE student chapter. The student group focuses on workforce development. One example of their events include a visit to Portland, Oregon. Students met with staff at two transportation consulting firms, Portland Bureau of Transportation and the Oregon Department of Transportation.

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 Ralph Buehler Presents on Sustainable Transportation and Elly Blue and April Streeter: History of Women on Bicycles. 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. LiveMove has received press for their 13th Avenue Downtown-Campus Corridor Concept Plan. LiveMove's proposal for a two-way cycletrack on the commercial corridor is being considered by the City of Eugene and has received a pledge of $150,000 for construction from a local citizen.

- **Sponsor a student conference.**
  We participated in the Region X Student Conference at the University of Washington on October 19th, 2013.

- **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. Over 25 practitioners scored NITC round 2 proposals. This process resulted in a stronger understanding of NITC's work and research priorities to transportation professions.

  NITC researchers educated 15 faculty members during the faculty workshop held between July 24-26, 2013 and 30 professionals during the five-day Comprehensive Bicycle Planning and Engineering course held August 26-30. These courses are discussed in detail in the "Leadership: Respond to needs of practitioners and policymakers" section.

  NITC has developed a 2014 professional development schedule with over 7 events and 13 days of training. As of January 27th, over 80 people are signed up to participate in our first webinar, We Are Traffic: Creating Robust Bicycle and Pedestrian Count Programs lead by NITC researcher Dr. Nordback.

The Oregon Transportation Summit was held on September 16th, 2013 at Portland State University. The event hosted 325 practioners, policy makers, students and researchers. The goal of the Summit is to advance the educate professionals on the state of research and to facilitate a conversation between practioners and researchers to shape future research agendas.

Each Friday during the quarter, Portland State University holds a Friday Transportation Seminar that is open to the public. We do a live webcast of the event. The fall seminar had 310 in-person and 237 webcast attendees over the 10 events. 134 of these webcasts attendees were professionals.

Technology Transfer

- **Move research into practice.**
  One of our current 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. During this reporting period, we designed a new database management system that will streamline the process for proposal submission, reviews, awards, progress reports and final report submission. The system will launch in January of 2014.

Collaboration

- **Collaborating within our consortium.**
  The Executive Committee of NITC met bi-monthly via conference calls during the reporting period and in person at the November 2013 Executive Committee meeting in Eugene, OR. One of the selected projects in round two involve collaboration between PIs at two or more of our universities.

External collaboration.
The following are members of the NITC Advisory Board:

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

- How have the results been disseminated?

The NITC communications director works with each of the PIs to create a plan on reporting dissemination. As of the end of this reporting period, projects from the first round of funding are 63% complete. Projects that are completed are going through a peer review process. Final reports and associated materials are made available on the PI page and final report page of the OTREC website.

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

Expected highlights for the next quarterly reporting period include:

- Award of the third round of funding

- Award of the pooled-funds project
- Completion and final reports from the first round of NITC funding
- Host Challenge Activity at WTS Transportation You summit in Washington, DC

2. PRODUCTS: What has the program produced?

Publications, conference papers, and presentations

Researchers from the first round of NITC projects made 27 presentations about those projects at conferences and events over the last year.

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

Doctoral student Alex Bigazzi has developed the Portland ACE. This is an innovative sensor system developed to measure bicyclists' on-road travel, physiology, and environmental data. Bigazzi is working with PSU's intellectual property staff on dissemination of this system.

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
Bend, OR MPO	Regional government	X				
Bike Belong	Non-profit/Foundation	X				
City of Austin, TX	Local government		X			
City of Bend, OR	Local government	X				
City of Boulder, CO	Local government	X				
City of Portland, OR	Local government		X		X	
City of Salem, OR	Local government	X				
Conscious Commuter	Private industry		X			
Drive Oregon	Non-profit/Foundation	X				
ESRI, Inc	Private industry		X			
Federal Highway Administration	Federal government	X				
Intel	Private industry		X			
KersTech Vehicle Systems	Private industry		X			
Lane County MPO	Regional government	X				
Lane Transit District	Transit agency	X				
Metro	Regional government	X	X		X	
Mountainlands Association of Governments	Regional government		X		X	
National Association of Realtors	Non-profit/Foundation	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			
Provo City	Local government	X				
Regional Transportation Commission of Southern Nevada	Regional government	X				
Regional Transportation Commission of Washoe County	Regional government	X				
Robert Wood Johnson Foundation	Non-profit/Foundation		X			
Transportation for America	Non-profit/Foundation	X				
Rensselaer Polytechnic Institute	University		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				

Match Partner	Type	Financial Support	In-Kind Support	Facilities	Collaborative Research	Personnel Exchanges
Toole Design	Private industry		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				
Washington Department of Transportation	State DOT	X				
Washington Metropolitan Area Transit Authority	Transit agency	X				

Have other collaborators or contacts been involved?

During the Pooled-Fund RFP process, NITC staff communicated and collaborated with numerous agency representatives across the country regarding data management issues and needs. These agency representatives include the Minnesota and Colorado departments of Transportation, Boulder County, and City of Seattle.

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?

Ten of our projects involve researchers from multiple disciplines. Examples of disciplines include chemistry, behavioral economics, mechanical engineering, and computer systems engineering. The student groups at all four campuses involve students from multiple disciplines, promoting the multi-disciplinary nature of transportation. .

The faculty training held July 24-26, 2013 was aimed at faculty members teaching transportation courses within an accredited planning or engineering program at the university level. The workshop had 15 attendees from universities across the United States and included curriculum, guidebooks, and field trips to gain first-hand knowledge of bicycle and pedestrian facilities in Portland, Oregon.

The University of Oregon program, Oregon Leadership in Sustainability (OLIS), developed a Transportation Sustainability Class. A core curriculum on sustainable transportation was

developed. The course emphasized applied interdisciplinary transportation solutions that future community leaders in the sustainability field will need to know to be successful. The pilot class was taught during the Fall 2013 term and will continue to be part of the core curriculum of the OLIS program and will be offered yearly.

The Sustainable City Year Program (SCYP) links the students of the University of Oregon with an Oregon city, county, special district, or partnership of governments for an entire academic year. Each year, a partner city receives assistance with their sustainability goals through the work of student classes across the University. In a typical year, 400+ students from 10-12 disciplines across 20-30 classes might work on 15-20 partner-directed projects, devoting 40,000+ hours of work to helping a local entity transition to a more sustainable future. The SYCP hosts an annual replication workshop aimed at university and community representatives interested in developing a similar program at their university Past attendees of the workshop have developed similar programs at their universities that focus on applied learning of sustainability across disciplines. At the University of Oregon, SCY worked with the City of Medford, Oregon in eight courses during the fall of 2013. For example, a geography course helped the City of Medford develop a downtown wayfinding program. A law course studied Medford's open space program.

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

Over last twelve months across the four NITC campuses:

- 1,164 undergraduate and 647 graduate students were enrolled in transportation related courses.
- 154 students were involved in student groups
- 70 students have received awards and scholarships
- 56 students have attended conferences
- 53 have received transportation related internships
- 27 students have been involved in NITC research projects

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?

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.