



UNIVERSITY OF  
MARYLAND

**National Transportation Center**



## **Annual Performance Indicators Report for University Transportation Centers**



**October 1, 2013 to September 30, 2014**

*Submitted by*  
**National Transportation Center @ Maryland**

**September 30, 2014**

*Prepared for:*  
**Office of the Assistant Secretary for Research and Technology (OST-R)  
U.S. DEPARTMENT OF TRANSPORTATION**



**NC STATE UNIVERSITY**



**THE UNIVERSITY of  
NEW ORLEANS**

**University of Maryland (lead)  
Arizona State University  
Louisiana State University  
Morgan State University  
North Carolina State University  
Old Dominion University  
University of New Orleans**

**College Park, MD 20742  
Glendale, AZ 85306  
Baton Rouge, LA 70803  
Baltimore, MD 21251  
Raleigh, NC 27695  
Norfolk, VA 23529  
New Orleans, LA 70148**



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## 1. PROGRAM INFORMATION

### **Program Progress Performance Report for National Transportation Centers**

U.S Department of Transportation  
Office of the Assistant Secretary for Research and Technology (OST-R)  
Federal Grant Number: DTRT13-G-UTC30

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#### **Program**

National Center for Strategic Transportation Policies, Investments and Decisions  
DUNS# 79-093-4285  
EIN# 52-6002033

#### **Submitted to**

U.S Department of Transportation  
Office of the Assistant Secretary for Research and Technology

Submission Date: September 30, 2014  
Reporting Period Start Date: October 1, 2013  
Reporting Period End Date: September 30, 2014  
Report Frequency: Annual Performance Indicators

#### **Signature of Submitting Official**





## 2. PROGRAM-WIDE INDICATORS

<b>UTC Name</b>	National Transportation Center @ Maryland
<b>Universities</b>	Lead University: <ul style="list-style-type: none"> <li>University of Maryland, College Park (UMD)</li> </ul> Consortium Member Universities: <ul style="list-style-type: none"> <li>Arizona State University (ASU)</li> <li>Louisiana State University (LSU)</li> <li>Morgan State University (MSU)</li> <li>North Carolina State University (NCSU)</li> <li>Old Dominion University (ODU) and the</li> <li>University of New Orleans (UNO)</li> </ul>
<b>Grant #</b>	DTRT13-G-UTC30
<b>Reporting Period</b>	October 1, 2013 – September 30, 2014

Performance Indicators	Total	UMD	ASU	LSU	MSU	NCSU	ODU	UNO
<b>1. Number of transportation-related courses offered during the reporting period that were taught by faculty and/or teaching assistants who are associated with the UTC</b>								
Undergraduate courses	27	2	8	2	4	2	1	8
Graduate courses	29	5	10	0	1	4	3	6
<b>2. Number of students participating in transportation research projects funded by this grant</b>								
Undergraduate students	6	1	1	2	2	0	0	0
Graduate students	32	3	8	6	6	4	2	3
<b>3. Number of transportation-related advanced degree programs that utilize grant funds to support graduate students</b>								
Masters level programs	9	0	5	1	1	2	0	0
Doctoral level programs	16	7	3	1	1	1	2	1
<b>4. Number of students supported by this grant</b>								
Undergraduate students	15	12	1	2	0	0	0	0



Masters students	18	5	5	2	4	2	0	0
Doctoral students	26	10	3	4	4	2	2	1
<b>5. Number of students supported by this grant who received degrees</b>								
Undergraduate degrees	3	0	1	0	0	2	0	0
Masters degrees	6	4	1	1	0	0	0	0
Doctoral degrees	3	2	0	0	1	0	0	0
<b>6. Number and total dollar value of research projects selected for funding using UTC grant funds (Federal and/or Recipient Share) that you consider to be applied research and advanced research</b>								
Number of applied research projects	12	5	2	0	1	3	0	1
Dollar value of applied research projects	\$1,011,351	\$370,555	\$100,000	0	\$227,190	\$274,521	0	\$39,085
Number of advanced research projects	10	3	3	2	0	0	2	0
Dollar value of advanced research projects	\$597,000	\$210,000	\$150,000	\$115,000	0	0	\$122,000	0





### 3. UTC-SPECIFIC INDICATORS

#### 3.A. UNIVERSITY OF MARYLAND AT COLLEGE PARK

Category	Metric	Description of indicator
<b>1. Research Capability</b>	<ul style="list-style-type: none"> <li>•Number of refereed journal publications (<b>2 published, 2 in preparation</b>)</li> <li>•Number of conference papers presented (<b>3</b>)</li> <li>•Number of technical research reports published (<b>1</b>)</li> </ul>	<p>Result articles published in international journals of Transportation Research Part E, and Journal of Pricing and Revenue Management.</p> <p>Research results presented in IFORS Conference in Barcelona, Spain.</p> <p>Research results will be presented in INFORMS, San Francisco, November 2014.</p> <p>Research results will be presented in TRB Annual Meeting, Washington DC, January 2015.</p> <p>Findings are being incorporated into 2014 Maryland SHA Annual Mobility Report.</p>
<b>2. Leadership</b>	<ul style="list-style-type: none"> <li>•Number of outreach activities (<b>2</b>)</li> </ul>	<p>Enhancing the Impact of the Freight Academy via Academic Collaboration promoted the freight expertise of the NTC to participants from across the US.</p> <p>On Thursday, August 28, 2014, the A. James Clark School of Engineering hosted its first-ever Advanced Transportation Technologies Day event, during which nearly 40 representatives from governments, industry, academe and media attended the event. The project was introduced.</p>
<b>3. Education and Workforce Development</b>	<ul style="list-style-type: none"> <li>•Number of graduate students enrolled in the transportation education programs (<b>over 40</b>)</li> <li>•Number of faculty in transportation areas (<b>8</b>)</li> <li>•Number of transportation-related courses offered at various levels (<b>7</b>)</li> <li>•Number of professional development events (seminars, symposia, short courses, workshops, etc.) conducted for practicing professionals and total participants (<b>over 10</b>)</li> <li>•Number of courses developed oversea (<b>1</b>)</li> <li>•Number of professionals training (<b>over 40</b>)</li> </ul>	<p>Over 40 students enrolled in transportation education programs</p> <p>6 transportation faculty and 2 civil engineering faculty</p> <p>5 graduate transportation courses and 2 undergraduate transportation courses (during academic year)</p> <p>A Transportation seminar series started early this semester to engage researchers from other UTC universities and government officials</p> <p>Doctoral school – Politecnico di Torino (Italy) May 2014. Summer school on advanced discrete choice models</p> <p>Assisted in training some 40 freight professionals on the basic principles of freight management and analysis.</p>



<b>4. Technology Transfer</b>	<ul style="list-style-type: none"> <li>•Number of algorithm (1)</li> <li>•Number of dataset (2)</li> <li>•Number of software (2)</li> <li>•Number of website (2)</li> </ul>	<p>The developed travel time separation algorithm may make impacts on the existing public facility (e.g. display travel time information on the variable message sign) and other commercial services (e.g. Google Map provides travel time information) by making it possible to show travel time for HOV and other lanes separately.</p> <p>A data warehouse for hosting HOV related traffic data such as travel time, volume, ridership and etc.</p> <p>Databases on railway ticket purchase over time, and on cancel and exchange behavior.</p> <p>A software system for processing, compiling and visualizing HOV performance measures.</p> <p>Software for the calibration of dynamic discrete choice models.</p> <p>Website <a href="http://www.ntc.umd.edu">www.ntc.umd.edu</a> provides up-to-date NTC@Mayrland research/education/T2, news, events, etc.</p> <p>Website attap.umd.edu provides up-to-date field data collection and system design progress</p> <p>Public agency freight professionals from across the US gained valuable freight training and general problem solving skills from their participation at the Freight Academy.</p>
<b>5. Collaboration</b>	<ul style="list-style-type: none"> <li>•Number of academic, public, private, and not-for-profit organizations participating in consortium activities <b>(3)</b></li> </ul>	<p>Maryland State Highway Administration</p> <p>The research team is actively working with a group of scientists at the University of Montreal (Canada), Department of Operational Research.</p> <p>UMD collaborated with the I-95 Corridor Coalition and other freight industry experts that assisted in the capstone mentoring and review process.</p>



### 3.B. ARIZONA STATE UNIVERSITY

Category	Metric	Description of indicator
<b>1. Research Capability</b>	<ul style="list-style-type: none"> <li>•Number of technical research reports published <b>(6)</b></li> <li>•Number of refereed journal publications <b>(5)</b></li> <li>•Number of conference papers presented <b>(4)</b></li> </ul>	<p>A series of 6 technical reports were posted to the ASU digital repository.</p> <p>5 publications submitted</p> <p>Participation in 4 conferences and workshops</p>
<b>2. Leadership</b>	<ul style="list-style-type: none"> <li>•Number of articles and proceedings in refereed publications <b>(3)</b></li> <li>•Number of presentations at academic and professional conferences <b>(3)</b></li> <li>•Number of new technologies, procedures, products, policies, standards, design practices, and handbooks influenced by research and applied by organizations <b>(1)</b></li> </ul>	<p>3 Journal publications (submitted)</p> <p>3 conference papers and presentations</p> <p>1 ASU report</p>
<b>3. Education and Workforce Development</b>	<ul style="list-style-type: none"> <li>•Number of graduate students enrolled in the transportation education programs <b>(over 75)</b></li> <li>•Number of faculty in transportation areas <b>(6)</b></li> <li>•Number of transportation-related courses offered at various levels <b>(15)</b></li> <li>•Number of professional development events (seminars, symposia, short courses, workshops, etc.) conducted for practicing professionals and total participants <b>(1)</b></li> </ul>	<p>Over 75 students enrolled in transportation education programs</p> <p>6 transportation faculty</p> <p>15 graduate transportation courses (4 cross listed with UG) and 13 undergraduate transportation courses (during academic year)</p> <p>A Transportation seminar series started early this semester to engage researchers from other UTC universities and government officials</p>
<b>4. Technology Transfer</b>	<ul style="list-style-type: none"> <li>•Number of media stories referencing consortium research or other activities <b>(2)</b></li> </ul>	<p>A couple of media stories highlighting the transportation faculty and their effort within this consortium have been published by the ASU media office.</p> <p>Current efforts underway to establish a website that will be dedicated for the accomplishments of the research team.</p>
<b>5. Collaboration</b>	<ul style="list-style-type: none"> <li>•Number of and amount of funding to research projects with participation from multiple consortium universities;</li> <li>•Number of and amount of funding to education and technology transfer projects with participation from multiple consortium universities;</li> <li>•Number of academic, public, private, and not-for-profit organizations participating in consortium activities;</li> <li>•Successful products developed from partnership agencies and entities.</li> </ul>	<p>Dr. Xuesong Zhou of ASU has collaborated with the Institute for Transportation Research and Education (ITRE) at North Carolina State University. The associated faculty members are Drs. Christopher Frey, and Nagui M. Roupail at NCSU.</p> <p>Incorporated and tested the emission calculation module in an open-source package DTALite/NEXTA available at <a href="https://code.google.com/p/nexta/">https://code.google.com/p/nexta/</a></p> <p>Prepared a learning document about using mesoscopic traffic simulation as training material and user guides for undergraduate and graduate students</p>





		interested in this subject. The document is lesson 10, titled: Reduce Emissions and Energy Optimization, available at <a href="http://www.learning-transportation.org">www.learning-transportation.org</a>
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### 3.C. LOUISIANA STATE UNIVERSITY

Category	Metric	Description of indicator
<b>1. Research Capability</b>	•Number of refereed journal publications (1)	Osama, O., Codjoe, J., Ishak, S. (2014). Impact of time-to-collision information on driving behavior in connected vehicles environments using a driving simulator test bed. Transportation Research Record. Under review
<b>2. Leadership</b>	•Number of M.S. and Ph.D. graduates in transportation (1) •Number and type of notable national and regional awards	At this time, one student supported by these funds was awarded his Masters of Science in Civil Engineering
<b>3. Education and Workforce Development</b>	•Number of faculty in transportation areas (2) •Number of transportation-related courses offered at various levels (2) •Number of other outreach activities for attracting new entrants (1)	There are two faculty members supported by this grant.  There were two course taught by these professors which incorporated the research results within their classes.  There was one out reach activity supported by the research funds: Recruiting into Engineering High Achieving Multi-Cultural Students (REHAMS) - June 19, 2014
<b>4. Technology Transfer</b>	•Number of media stories referencing consortium research or other activities (7)	Interviewed as expert on evacuation for the first month of hurricane season! DIGBR, Baton Rouge, LA, broadcast date August XX, 2014. Also available online at: <a href="http://wgso.com/?p=37966">http://wgso.com/?p=37966</a>  Interviewed as expert on evacuation for "Is contraflow the best hurricane evacuation strategy?" WBRP, 107.3FM, Baton Rouge, LA, broadcast date August 25, 2014. (Also available online at: <a href="http://www.talk1073.com/home/news/185554-contraflow-the-best-hurricane-evacuation-strategy.html">http://www.talk1073.com/home/news/185554-contraflow-the-best-hurricane-evacuation-strategy.html</a> )  Interviewed for and quoted as expert on evacuation for, "XXXXxxxxxx" KNAU Arizona Public Radio, broadcast date: June 6, 2014. Available online at: <a href="http://knau.org/">http://knau.org/</a>  Interviewed for and quoted as expert on evacuations, "LSU researchers work to make evacuation easier this hurricane season," WVLA-TV, Channel 33, Baton Rouge, LA, broadcast date June 6, 2014. (Also available online at: <a href="http://www.nbc33tv.com/news/lsu-researchers-work-to-m">http://www.nbc33tv.com/news/lsu-researchers-work-to-m</a> )  Interviewed for and quoted as expert on evacuation for: "The Future of Evacuations in the Climate Change Era," <i>The Atlantic</i> , May 27, 2014. Available online at:



		<p><a href="http://www.citylab.com/cityfixer/2014/05/the-future-of-evacuations-in-the-climate-change-era/371584/">http://www.citylab.com/cityfixer/2014/05/the-future-of-evacuations-in-the-climate-change-era/371584/</a></p> <p>Interviewed for and quoted as expert on evacuation for: "Leadership failures left Atlanta in chaos," <i>Atlanta Journal-Constitution</i>, February 1, 2014. Available online at: <a href="http://www.myajc.com/news/news/local/leadership-failures-left-atlanta-in-chaos/nc8n8/">http://www.myajc.com/news/news/local/leadership-failures-left-atlanta-in-chaos/nc8n8/</a></p> <p>Interviewed for and quoted as expert on evacuation for: "Other cities have planned for, and survived, worse," <i>Atlanta Journal-Constitution</i>, February 1, 2014. Available online at: <a href="http://www.myajc.com/news/news/other-cities-have-planned-for-and-survived-worse/nc8kk/">http://www.myajc.com/news/news/other-cities-have-planned-for-and-survived-worse/nc8kk/</a></p>
5. Collaboration	N/A	N/A



### 3.D. MORGAN STATE UNIVERSITY

Category	Metric	Description of indicator
1. Research Capability	N/A	NA
2. Leadership	N/A	NA
3. Education and Workforce Development	N/A	Summer Transportation Institute
4. Technology Transfer	N/A	NA
5. Collaboration	N/A	NA



### 3.E. NORTH CAROLINA STATE UNIVERSITY

Category	Metric	Description of indicator
<b>1. Research Capability</b>	<ul style="list-style-type: none"> <li>•Number of technical research reports published <b>(8)</b></li> <li>•Number of refereed journal publications <b>(18)</b></li> <li>•Number of conference papers presented <b>(17)</b></li> </ul>	All these indicators are based on the current calendar year activities, i.e. paper, reports, presentations published or presented in 2014.
<b>2. Leadership</b>	<ul style="list-style-type: none"> <li>•Number of articles and proceedings in refereed publications <b>(18)</b></li> <li>•Number of presentations at academic and professional conferences <b>(17)</b></li> <li>•Number of M.S. and Ph.D. graduates in transportation systems <b>(27)</b></li> <li>•Number and type of notable national and regional awards <b>(2)</b></li> </ul>	<p>All these indicators are based on the current calendar year activities, i.e. paper, reports, presentations published or presented in 2014.</p> <p>2014 Best Paper Award by the TRB AHB40 Committee- 3<sup>rd</sup> Year in a row that NCSU student/faculty has won this prestigious award.</p> <p>SHANNON WARCHOL, a current Graduate student at NCSU won the nationally competitive 2014 Jack Leisch fellowship. This is a memorial to the outstanding professional accomplishments and contributions of Jack E. Leisch, M. ASCE to the fields of geometric design, traffic engineering and transportation planning. The fellowship is supported by the income from donations in Mr. Leisch's honor. The award consists of a certificate and a monetary payment of approximately \$5,000.</p>
<b>3. Education and Workforce Development</b>	<ul style="list-style-type: none"> <li>•Number of graduate students enrolled in the transportation education programs <b>(27)</b></li> <li>•Number of faculty in transportation areas <b>(7)</b></li> <li>•Number of transportation-related courses offered at various levels <b>(18)</b></li> <li>•Number of other outreach activities for attracting new entrants <b>(2)</b></li> <li>•Number of professional development events (seminars, symposia, short courses, workshops, etc.) conducted for practicing professionals and total participants <b>(5)</b></li> </ul>	All these indicators are based on the current calendar year activities, i.e. paper, reports, presentations published or presented in 2014.
<b>4. Technology Transfer</b>	<ul style="list-style-type: none"> <li>•Number of technical research reports published by the consortium <b>(7)</b></li> <li>•Number of new technologies, procedures, policies, etc., applied by organizations</li> <li>•Number of media stories referencing consortium research or other activities <b>(2)</b></li> </ul>	All these indicators are based on the current calendar year activities, i.e. paper, reports, presentations published or presented in 2014.
<b>5. Collaboration</b>	N/A	No collaborative proposals in year 1. All these indicators are based on the current calendar year activities, i.e. paper, reports, presentations published or presented in 2014.





### 3.F. OLD DOMINION UNIVERSITY

Category	Metric	Description of indicator
<b>1. Research Capability</b>	•Number of conference papers presented ( <b>3, two under review</b> )	<p>Nichols, A.P., Cetin, M., Chou, C.S. (2014). Enhancing a vehicle reidentification methodology based on WIM data to minimize the need for ground truth data. NATMEC: Improving Traffic Data Collection, Analysis, and Use, Chicago, IL, June 29–July 2, 2014</p> <p>Nichols, A.P., Cetin, M. (2015). Evaluation of differential calibration accuracy between WIM stations using re-identified vehicles. The 94th Transportation Research Board Annual Meeting, Washington, D.C., 15-2825. (Under review).</p> <p>Collins, A.J., Frydenlund, E., Robinson, R.M., Cetin, M. (2015). Exploring a toll auction mechanic enabled by vehicle-to-infrastructure technology. The 94th Transportation Research Board Annual Meeting, Washington, D.C., 15-2825. (Under review).</p>
<b>2. Leadership</b>	•Number of articles and proceedings in refereed publications ( <b>2, both under review</b> ) •Number of presentations at academic and professional conferences ( <b>1</b> )	The same as above.
<b>3. Education and Workforce Development</b>	•Number of graduate students enrolled in the transportation education programs ( <b>2</b> ) •Number of faculty in transportation areas ( <b>3</b> ) •Number of transportation-related courses offered at various levels ( <b>3</b> )	<p><u>Graduate Students:</u> Gulsevi Basar and Erika Frydenlund</p> <p><u>Faculty:</u> Mecit Cetin, Mike Robinson, Andrew Collins</p> <p><u>Courses:</u> CEE 470/570- Transportation Fundamentals CEE776/876 – Simulation in Transportation Networks MSIM895-Agent-based Modeling and Simulation</p>
<b>4. Technology Transfer</b>	N/A	N/A
<b>5. Collaboration</b>	Work underway for collaborative projects.	N/A



### 3.G. UNIVERSITY OF NEW ORLEANS

Category	Metric	Description of indicator
<b>1. Research Capability</b>	<ul style="list-style-type: none"> <li>•Number of new technologies, procedures/policies, and standards/design practices influenced by research and applied by organizations <b>(1)</b></li> <li>•Number of refereed journal publications <b>(3)</b></li> </ul>	<p>K-12 Curriculum is under development for utilization by the Port of New Orleans.</p> <p>Stich, B. (2014). Intermodal transportation disruption and reroute simulation framework: lesson for freight planning. Transportation Research Record, in press.</p> <p>Stich, B. Griffith, K. (2014). Federalism and transportation finance. Public Works, Management &amp; Policy. Forthcoming.</p> <p>Stich, B., Platt, J. (2014). The Evolution of the Section of Transportation Policy &amp; Administration" Forthcoming.</p>
<b>2. Leadership</b>	<ul style="list-style-type: none"> <li>•Number of presentations at academic and professional conferences <b>(6)</b></li> <li>•Number and type of notable national and regional awards <b>(1)</b></li> </ul>	<p>Traffic &amp; Transportation Club of Greater New Orleans; World Trade Center Transportation Committee(3); National Association of Counties; Innovative Technologies for a Resilient Marine Transportation System</p> <p>Graduate student Kyle Griffith won the national Pan-American Advanced Studies Institute on Sustainable Urban Freight Systems (PASI-SUFS) Fellowship</p>
<b>3. Education and Workforce Development</b>	<ul style="list-style-type: none"> <li>•Number of faculty in transportation areas <b>(3)</b></li> <li>•Number of transportation-related courses offered at various levels <b>(14)</b></li> <li>•Number of outreach activities conducted for K-12 students and total participants <b>(7 activities with 132 participants)</b>.</li> <li>•Number of other outreach activities for attracting new entrants <b>(7)</b></li> <li>•Number of professional development events (seminars, symposia, short courses, workshops, etc.) conducted for practicing professionals and total participants <b>(2 activities, 330 participants)</b></li> </ul>	<p>8 Undergraduate Courses and 6 Graduate Courses</p> <p>New Orleans Charter Science and Mathematics High School (SciHigh). Lake Area New Tech Career Day</p> <p>Women's Transportation Seminar (WTS), The Power of Connection; Louisiana Center for Women in Government and Business; Marine Industry Day; Boom without Bust Forum; Algiers Point Association/Veolia; Downtown Development District/Urban Land Institute: Forum on Residential Density</p> <p>International Transportation Economic Development Conference</p> <p>The Intersection Between Transportation, Health and Quality of Life.</p>
<b>4. Technology Transfer</b>	N/A	N/A
<b>5. Collaboration</b>	<ul style="list-style-type: none"> <li>•Number of academic, public, private, and not-for-profit organizations participating in consortium activities <b>(2)</b></li> </ul>	<p>Port of New Orleans; International Freight Forwarders &amp; Customs Brokers Association of New Orleans</p>

