



UNIVERSITY OF
MARYLAND

National Transportation Center



Annual Performance Indicators Report for University Transportation Centers



October 1, 2014 to September 30, 2015

Submitted by
National Transportation Center @ Maryland

October 30, 2015

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



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
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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: October 30, 2015
Reporting Period Start Date: October 1, 2014
Reporting Period End Date: September 30, 2015
Report Frequency: Annual Performance Indicators

Signature of Submitting Official



2. PROGRAM-WIDE INDICATORS

UTC Name	National Transportation Center @ Maryland
Universities	Lead University: <ul style="list-style-type: none"> • University of Maryland, College Park (UMD) Consortium Member Universities: <ul style="list-style-type: none"> • Arizona State University (ASU) • Louisiana State University (LSU) • Morgan State University (MSU) • North Carolina State University (NCSU) • Old Dominion University (ODU) and the • University of New Orleans (UNO)
Grant #	DTRT13-G-UTC30
Reporting Period	October 1, 2014 – September 30, 2015

Performance Indicators	Total	UMD	ASU	LSU	MSU	NCSU	ODU	UNO
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								
Undergraduate courses	26	3	11	2	4	3	1	2
Graduate courses	36	9	16	1	1	6	3	0
2. Number of students participating in transportation research projects funded by this grant								
Undergraduate students	11	1	4	3	0	3	0	0
Graduate students	33	3	12	4	2	6	3	3
3. Number of transportation-related advanced degree programs that utilize grant funds to support graduate students								
Masters level programs	17	0	8	1	4	2	0	2
Doctoral level programs	17	7	4	1	1	1	2	1
4. Number of students supported by this grant								
Undergraduate students	17	12	2	3	0	2	0	0



Masters students	20	3	8	2	4	2	0	1
Doctoral students	32	14	4	2	4	4	2	2
5. Number of students supported by this grant who received degrees								
Undergraduate degrees	3	0	2	0	0	1	0	0
Masters degrees	7	4	2	0	0	0	0	1
Doctoral degrees	5	2	0	0	1	1	1	0
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								
Number of applied research projects	22	4	4	0	2	9	0	3
Dollar value of applied research projects	\$1,813,245	\$712,232	\$129,000	0	\$163,528	\$714,782	0	\$93,803
Number of advanced research projects	15	5	5	2	1	0	2	0
Dollar value of advanced research projects	\$1,480,689	\$760,000	\$143,000	\$228,500	227,189	0	\$122,000	0



3. UTC-SPECIFIC INDICATORS

3.A. UNIVERSITY OF MARYLAND AT COLLEGE PARK

Category	Metric	Description of indicator
1. Research Capability	<ul style="list-style-type: none"> •Number of refereed journal publications (17, 1 in preparation) •Number of conference papers presented (16) •Number of technical research reports published (6) 	<p>Result articles published in international journals of International Journal of Shipping and Logistics, Journal Transportation Planning and Technology, Transportation Research Part E, Journal of Revenue Pricing and Management, IEEE Transactions on ITS, Transportation Research Record; Transportation Research Part C.</p> <p>Research results presented in TRB Annual Meeting, Washington DC, January 2014, 2015, 2016; U.S. Engineering Project Organization Conference 2015;2014 CRIOCM; INFORMS San Francisco 2014, International Conference on Intermodal Integrated Transport 2015,</p>
2. Leadership	<ul style="list-style-type: none"> •Number of outreach activities (4) 	<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>Summer School on Dynamic Discrete Choice Models: Econometric models and Operations Research methods, June 2015.</p> <p>DTA Seminar hosted at UMD on July 2015.</p> <p>Workshop on Broader Economic Benefits of Multimodal Projects</p>
3. Education and Workforce Development	<ul style="list-style-type: none"> •Number of graduate students enrolled in the transportation education programs (over 40) •Number of faculty in transportation areas (8) •Number of transportation-related courses offered at various levels (7) •Number of professional development events (seminars, symposia, short courses, workshops, etc.) conducted for practicing professionals and total participants (over 10) •Number of courses developed oversea (1) •Number of professionals training (over 40) 	<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>UMD Students spent time in Canada for the Dynamic Discrete Choice Models Summer School.</p> <p>Assisted in training some 40 freight professionals on the basic principles of freight management and analysis.</p>



		<p>Undergraduate Summer Research Program hosted at UMD. Summer 2015.</p> <p>DTA Seminar hosted at UMD on July 2015.</p>
<p>4. Technology Transfer</p>	<ul style="list-style-type: none"> •Number of algorithm (1) •Number of dataset (2) •Number of software (2) •Number of website (2) 	<p>Smartphone app “intelliroute” developed and shared with MD SHA</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>Geotracker deployed at MD SHA.</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>
<p>5. Collaboration</p>	<ul style="list-style-type: none"> •Number of academic, public, private, and not-for-profit organizations participating in consortium activities (3) 	<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>Wisconsin DOT</p>



3.B. ARIZONA STATE UNIVERSITY

Category	Metric	Description of indicator
1. Research Capability	<ul style="list-style-type: none"> •Number of technical research reports published (5) •Number of refereed journal publications (7) •Number of conference papers presented (6) 	<p>A series of 5 technical reports were posted to the ASU digital repository.</p> <p>7 publications submitted</p> <p>Participation in 8 conferences and workshops</p>
2. Leadership	<ul style="list-style-type: none"> •Number of articles and proceedings in refereed publications (13) •Number of presentations at academic and professional conferences (0) •Number of new technologies, procedures, products, policies, standards, design practices, and handbooks influenced by research and applied by organizations (6) 	<p>13 Journal publications (submitted)</p> <p>0 conference papers and presentations</p> <p>6 ASU report</p>
3. Education and Workforce Development	<ul style="list-style-type: none"> •Number of graduate students enrolled in the transportation education programs (over 90) •Number of faculty in transportation areas (6) •Number of transportation-related courses offered at various levels (15) •Number of professional development events (seminars, symposia, short courses, workshops, etc.) conducted for practicing professionals and total participants (over 20) 	<p>Over 90 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> <p>Over 20 seminars conducted during this reporting period.</p>
4. Technology Transfer	<ul style="list-style-type: none"> •Number of media stories referencing consortium research or other activities (2) 	<p>Efforts of transportation faculty and program are highlighted by ASU media office and associated websites.</p> <p>A website highlighting the accomplishments of the research team has been established.</p>
5. Collaboration	<ul style="list-style-type: none"> •Number of and amount of funding to research projects with participation from multiple consortium universities (9); •Number of and amount of funding to education and technology transfer projects with participation from multiple consortium universities; •Number of academic, public, private, and not-for-profit organizations participating in consortium activities; •Successful products developed from partnership agencies and entities. 	<p>Five of the 9 awarded projects are collaborative with other UTC universities and researchers.</p>



3.C. LOUISIANA STATE UNIVERSITY

Category	Metric	Description of indicator
1. Research Capability	•Number of refereed journal publications (2)	<p>Authors: Brian Wolshon and Scott Parr Title: Quantifying the effects of manual traffic control on evacuation Corridors Final Report Date submitted: Aug., 2015 Acknowledgement of federal support: Yes Status of publication: Accepted</p> <p>Authors: Scott Parr, Brian Wolshon, Pam Muray-Tuite Title: Unconventional Intersection Control Strategies for Urban Evacuation Journal: Transportation Research Record Date submitted: Aug., 2015 Acknowledgement of federal support: Yes Status of publication: Under Review</p>
2. Leadership	N/A	N/A
3. Education and Workforce Development	•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 (3)	<p>There are 2 graduate faculty members supported by this grant. There were 2 course taught by these professors which incorporated the research results within their classes. There was 3 outreach activity supported by the research funds:</p> <ol style="list-style-type: none"> 1. Recruiting into Engineering High Achieving Multi-Cultural Students (REHAMS) - June 16, 2015 2. eXploration Camp Inspiring Tomorrow's Engineers (XCITE), for girls - July 16, 2015 3. LSU Math Circle summer enrichment program – June 8, 16, 23, 2015
4. Technology Transfer	•Number of media stories referencing consortium research or other activities (4)	<p>Over the past six months several presentations were given as part of international travel based on research efforts supported by the Center. These included the following:</p> <ol style="list-style-type: none"> 1. “Evacuation and Resilience Practice and Research,” PRIMO 2015 - The Rising Pacific: Currents of Change and Solutions for Resilience, Pacific Risk Management Ohana (PRiMO), Honolulu, HI, March 2015. 2. ANT Session S-1, “Agent Systems, Intelligent Computing and Applications,” 6th International Conference on Ambient Systems, Networks and Technologies (ANT-2015), the 5th International Conference on Sustainable Energy Information Technology, London, England, June 2015.



		<p>3. "Evacuation Research, Planning, and Lessons Learned from Hurricanes in the United States," Department of Civil and Environmental, Engineering, University of New South Wales, Sydney, Australia, April 2015.</p> <p>4. "Evacuation and Resilience Practice and Research in the United States," Department of Civil, Environmental, and Mining Engineering, Monash University, Melbourne, Australia, April 2015.</p>
<p>5. Collaboration</p>	<p>•Number of and amount of funding to research projects with participation from multiple consortium universities (1);</p>	<p>1 active project is being conducted with North Carolina State for a budget amount of \$56,968</p>



3.D. MORGAN STATE UNIVERSITY

Category	Metric	Description of indicator
1. Research Capability	•Number of refereed journal publications (10)	Approximately 10 articles in refereed publications
2. Leadership	N/A	NA
3. Education and Workforce Development	<ul style="list-style-type: none"> •Number of graduate students enrolled in the transportation education programs (119) •Number of faculty in transportation areas (25) •Number of transportation-related courses offered at various levels (184) 	184 courses graduate and undergraduate 119 graduate students enrolled in transportation education programs 283 undergraduates enrolled in transportation education programs 25 faculty in transportation education programs
4. Technology Transfer	•Number of media stories referencing consortium research or other activities (2)	2 media stories referencing education programs
5. Collaboration	•Number of and amount of funding to research projects with participation from multiple consortium universities (3) ;	3 research projects with participation from multiple consortium universities



3.E. NORTH CAROLINA STATE UNIVERSITY

Category	Metric	Description of indicator
1. Research Capability	<ul style="list-style-type: none"> •Number of technical research reports published (8) •Number of new technologies, procedures/policies, and standards/design practices influenced by research and applied by organizations (0) •Number of refereed journal publications (20) •Number of conference papers presented (10) 	All these indicators are based on the current calendar year activities, i.e. paper, reports, presentations published or presented in 2015.
2. Leadership	<ul style="list-style-type: none"> •Number of articles and proceedings in refereed publications (20) •Number of presentations at academic and professional conferences (30) •Number of new technologies, procedures, products, policies, standards, design practices, and handbooks influenced by research and applied by organizations (0) •Number of M.S. and Ph.D. graduates in transportation systems (27) •Number and type of notable national and regional awards (1) 	<p>All these indicators are based on the current calendar year activities, i.e. paper, reports, presentations published or presented in 2015.</p> <p>Best Paper Award by the TRB Roundabout Committee:</p> <p>A Simplified Method for Comparing Emissions at Roundabouts and Signalized Intersections by: Katy Salamati, Nagui M. Rouphail, H. Christopher Frey, Bin Liu and Bastian J. Schroeder</p>
3. Education and Workforce Development	<ul style="list-style-type: none"> •Number of graduate students enrolled in the transportation education programs (27) •Number of faculty in transportation areas (7) •Number of transportation-related courses offered at various levels (18) •Number of outreach activities conducted for K-12 students and total participants (2) •Number of other outreach activities for attracting new entrants (2) •Number of professional development events (seminars, symposia, short courses, workshops, etc.) conducted for practicing professionals and total participants (7) 	All these indicators are based on the current calendar year activities, i.e. paper, reports, presentations published or presented in 2015.
4. Technology Transfer	<ul style="list-style-type: none"> •Number of technical research reports published by the consortium (5) •Number of recipients of consortium publications (0) •Number of visits to consortium websites and social media sites •Number of new technologies, procedures, policies, etc., applied by organizations •Number of media stories referencing consortium research or other activities (2) 	All these indicators are based on the current calendar year activities, i.e. paper, reports, presentations published or presented in 2015.
5. Collaboration	<ul style="list-style-type: none"> •Number of and amount of funding to research projects with participation from multiple consortium universities (4, \$409,000) •Number of and amount of funding to education 	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 2015.



	<p>and technology transfer projects with participation from multiple consortium universities (0)</p> <ul style="list-style-type: none">•Number of academic, public, private, and not-for-profit organizations participating in consortium activities (0)•Successful products developed from partnership agencies and entities (0)	
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3.F. OLD DOMINION UNIVERSITY

Category	Metric	Description of indicator
1. Research Capability	<ul style="list-style-type: none"> •Number of technical research reports published: (2) •Number of refereed journal publications: (2) •Number of conference papers presented: (5) (3 are submitted) 	<p>Journal Papers: Collins, A. J., E. Frydenlund, R. M. Robinson and M. Cetin (2015). "Exploring a Toll Auction Mechanism Enabled By Vehicle-To-Infrastructure Technology." Transportation Research Record: Journal of the Transportation Research Board, in press (accepted February 2015). ISSN: 0361-1981</p> <p>A.P. Nichols and M. Cetin "Evaluation of Differential Calibration Accuracy between WIM Stations Using Reidentified Vehicles," Accepted for publication in Transportation Research Record, 2015.</p> <p>Conference papers: 2 presented at the 2015 TRB Annual meeting 3 submitted to the 2016 TRB Annual meeting</p>
2. Leadership	<ul style="list-style-type: none"> •Number of articles and proceedings in refereed publications: (2) •Number of presentations at academic and professional conferences: (5) (same as above) •Number of M.S. and Ph.D. graduates in transportation: (1) PhD and (1) M.S. 	The same as above.
3. Education and Workforce Development	<ul style="list-style-type: none"> •Number of graduate students enrolled in the transportation education programs (3) •Number of faculty in transportation areas (3) •Number of transportation-related courses offered at various levels (4) 	<p>Graduate Students: Gulsevi Basar, Erika Frydenlund, Olcay Sahin</p> <p>Faculty: Mecit Cetin Mike Robinson Andrew Collins</p> <p>Courses: CEE 470/570- Transportation Fundamentals MSIM895-Agent-based Modeling and Simulation CEE 771/871: Transportation Operations II CEE-775/875 Computational Methods for Transportation Systems</p>
4. Technology Transfer	N/A	N/A
5. Collaboration	Work underway for collaborative projects.	In year II projects, ODU to collaborate with UMD and NCSU.



3.G. UNIVERSITY OF NEW ORLEANS

Category	Metric	Description of indicator
1. Research Capability	<ul style="list-style-type: none"> •Number of refereed journal publications (2) •Number of conference papers presented (7) 	<p>Journal Publications:</p> <ul style="list-style-type: none"> -Jeremy Plant and Bethany Stich, "ASPA's Section on Transportation Policy and Administration: A Look Back" Public Works Management & Policy, Volume 19. Issue 4, October 2014. -Stich, Bethany and Kyle Griffith, "Ending Transportation Neglect in America" Public Works Management & Policy, Volume 19. Issue 4, October 2014. <p>Presentations:</p> <ul style="list-style-type: none"> -Bethany Stich, (2015) "Trends in Transportation - Truck, Rail, Barge & Ocean Vessel" Critical Commodities Conference. New Orleans, LA, April 8. (Invited) -Bethany Stich, (2015) "Future Maritime Workforce Building." Greater New Orleans Inc. Future Building Workshop. Port of New Orleans, March 27. (Invited) -Bethany Stich, (2015) "The Gulf Coast Megaregion: In Search of a New Scale to Understand Freight Transportation & Economic Development." 5 -American Society for Public Administration, Chicago, IL, March 6-10. -Bethany Stich, (2015) "Understanding Freight Based Economic Development Transportation Planning." Arizona State University Transportation Engineering Seminar, February 5-7. (Invited). -Bethany Stich, (2015) "Intermodal Transportation Disruption and Reroute Simulation: Lessons Learned for Freight Planning." Universidade Federal de Minas Gerais. Inteligencia Geografica Aplicada Ao Planejamento de Transportes. November 25-28. (Invited). -Renne, John and Bethany Stich, (2014), Transportation Research at UNO, University of Arkansas, Fayetteville, AR, November 7.
2. Leadership	<ul style="list-style-type: none"> •Number of articles and proceedings in refereed publications (2) •Number of presentations at academic and professional conferences (7) •Number of M.S. and Ph.D. graduates in transportation (1) •Number and type of notable national and regional awards (3) 	<p>Journal Publications:</p> <ul style="list-style-type: none"> -Jeremy Plant and Bethany Stich, "ASPA's Section on Transportation Policy and Administration: A Look Back" Public Works Management & Policy, Volume 19. Issue 4, October 2014. -Stich, Bethany and Kyle Griffith, "Ending Transportation Neglect in America" Public Works Management & Policy, Volume 19. Issue 4, October 2014. <p>Presentations:</p> <ul style="list-style-type: none"> -Bethany Stich, (2015) "Trends in Transportation - Truck, Rail, Barge & Ocean Vessel" Critical Commodities Conference. New Orleans, LA, April 8. (Invited) -Bethany Stich, (2015) "Future Maritime Workforce



		<p>Building.” Greater New Orleans Inc. Future Building Workshop. Port of New Orleans, March 27. (Invited)</p> <p>-Bethany Stich, (2015) “The Gulf Coast Megaregion: In Search of a New Scale to Understand Freight Transportation & Economic Development.”</p> <p>5</p> <p>-American Society for Public Administration, Chicago, IL, March 6-10.</p> <p>-Bethany Stich, (2015) “Understanding Freight Based Economic Development Transportation Planning.” Arizona State University Transportation Engineering Seminar, February 5-7. (Invited).</p> <p>-Bethany Stich, (2015) “Intermodal Transportation Disruption and Reroute Simulation: Lessons Learned for Freight Planning.” Universidade Federal de Minas Gerais. Inteligencia Geografica Aplicada Ao Planejamento de Transportes. November 25-28. (Invited).</p> <p>-Renne, John and Bethany Stich, (2014), Transportation Research at UNO, University of Arkansas, Fayetteville, AR, November 7.</p> <p>Awards: 2015 University of New Orleans Latin American Studies Summer Travel Grant Recipient; 2015 USDOT, Dwight D. Eisenhower Graduate Fellowship; RIDE New Orleans Award.</p>
<p>3. Education and Workforce Development</p>	<ul style="list-style-type: none"> •Number of faculty in transportation areas (3) •Number of transportation-related courses offered at various levels (8) •Number of outreach activities conducted for K-12 students and total participants (5 activities with 250 participants). •Number of other outreach activities for attracting new entrants (51) •Number of professional development events (seminars, symposia, short courses, workshops, etc.) conducted for practicing professionals and total participants (7 events, 285 participants) •Number of graduate students enrolled in the transportation education programs (87) 	<p>Outreach: Career Presentations classes at New Orleans Charter Science and Mathematics High School (SciHigh); “Who Works the Rivers”.</p> <p>Other outreach: Maritime Workforce Summit (1); Critical Commodities Conference (1); Louisiana Center for Women in Government and Business conference (1), girl’s leadership academy (1), advisory board activities (8) ; Women’s Transportation Seminar Steering (2); World Trade Center Transportation Committee Maritime Day (1) ; World Trade Center Transportation Committee (9) RPC Freight Round Table (3); Traffic & Transportation Club (6); Propeller Club of the U.S. Port of New Orleans (1); IFFCBANO (10); 2015 International Trade Symposium (1); Ports Association of Louisiana conference (1); Port Safety Committee (3); Voices for Transportation Choices (1); Export Forum with GNO., Inc. (1); Port of New Orleans State of the Port (1); Port of New Orleans Outreach Working Group (1); 2015 Freight Systems & Marine Committee conference (1)</p> <p>Professional Development: Maritime Workforce Summit (1); Lunch & Learn Speaker Series (6)</p>



4. Technology Transfer	<ul style="list-style-type: none"> •Number of media stories referencing consortium research or other activities (20) 	<p>Few examples of media stories:</p> <p>http://www.marinelink.com/news/workforce-maritime-annual378543.aspx</p> <p>http://www.nola.com/education/index.ssf/2015/01/board_approves_new_master_of_s.html#incart_river</p> <p>https://youtu.be/FWInkY8xv1s</p>
5. Collaboration	<ul style="list-style-type: none"> •Number of and amount of funding to research projects with participation from multiple consortium universities (2) •Number of academic, public, private, and not-for-profit organizations participating in consortium activities. (3) 	<p>Projects: UNO / LSU: \$115,000; UNO / ASU: \$60,655</p> <p>Participants in consortium activities: Port of New Orleans; International Freight Forwarders & Customs Brokers Assn. of New Orleans; World Trade Center Transportation Committee Products: K-12 Curriculum for Port of New Orleans</p>

