

**REGION II**  
**UNIVERSITY TRANSPORTATION RESEARCH CENTER**



**Program Progress Performance Report by the University Transportation Research Center, Region 2**  
**Submitted to RITA**

Federal Grant # DTRT12-G-UTC02

Project Title: University Transportation Research Center – Region 2

Name of Grant: University Transportation Center

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Project/Grant Period: Start Date: January 1, 2012 End Date: December 31, 2013

Reporting Period End Date: June 30, 2013

Report Term or Frequency: six months

Signature\_\_\_\_\_

Penny Eickemeyer, Associate Director for Research, UTRC

This report will cover UTRC's three mission areas: Research, Technology Transfer, and Education for activities that occurred under the Grant# DTRT12-G-UTC02 during this reporting period.

## 1. Accomplishments

### A. Goals and objectives:

- a. Research: To support the USDOT Strategic Goals and to advance the state of practice in planning and management of regional transportation systems; the research program consists of both agency-initiated and faculty-initiated studies
- b. Education and workforce development: To improve the knowledge base and approach to problem solving of the region's transportation workforce
- c. Technology transfer: To increase the awareness and level of information concerning transportation issues facing Region 2 to the education, research and practicing community ; disseminate project reports, studies, analysis, and use of tools to the community; and provide unbiased information and testimony to decision-makers concerning regional transportation issues consistent with the UTRC theme.

### B. Accomplishments under these goals:

#### a. Research

During this period, the following projects have been initiated:

- Laser Scanning Aggregates for Real Time Property Identification (NJDOT/Rutgers)
- Integration of Bus Stop Count Data with Census Data for Improvement of Bus Service (NJDOT/University of Buffalo).

On-going research this period includes:

- IIMS Staten Island Web and Smartphone Development, Deployment and Evaluation –SUNY Buffalo, NYU/Poly
- Road Weather Information System (RWIS) Statewide Implementation Plan –NJIT
- Adaptive Traffic Signal Control System (ACS-Lite) for Wolf Road –RPI
- Landfill Closure with Dredged Materials Desktop Analysis Multiple Sources Development -Rutgers
- Offshore Wind Development (OSW) Research –Rutgers
- Freight-Tricycle Operations in New York City (NYSERDA funded)-CCNY
- Assistance for NYMTC with Tasks for New Major Projects-NYU
- Support for NYMTC for CMAQ Application and Documentation –CCNY
- Impact Analysis of Recreational Transit Services on Local Community Economic Development, Employment and Spending
- Leveraging Brightness from Transportation Lighting Systems through Light Source Color: Implications for Energy Use and Safety for Traffic and Pedestrians
- Data collection and econometric analysis of the demand for nonmotorized transportation

- Speed and Design Consistency of Combined Horizontal and Vertical Alignments in Two-Lane Rural Roads
- Air Quality Impact of Traffic Congestion in Midtown Manhattan
- Energy Savings from Transit Passes: An Evaluation of the University at Buffalo NFTA Transit Pass Program for Students, Faculty, and Staff
- Analysis of Environmental, Economic, and Infrastructure Impacts of Transportation Activities Associated with High Volume Horizontal Fracturing Operations in the Marcellus Shale Formation Using the Geospatial Intermodal Freight Transport (GIFT) Model
- Optimum Fund Allocation to Rehabilitate Transportation Infrastructure
- Determine Viscoelastic Mechanical Properties of Warm Mix Asphalt (WMA)-Reclaimed Asphalt Pavement (RAP) Mixes under High Stresses in Airfield Flexible Pavements and Its Impact on Design Life.
- Use of Web-Based Rider Input for Transit Management in the New York City Region
- Investigation of the Carrs Creek Geofoam Project-see second report
- Metrics and Performance Response Functions for Assessment of Resilience of Urban Infrastructure System
- Planning level assessment of greenhouse gas emissions for alternative transportation construction projects
- Modeling Disaster Operations from an Interdisciplinary Perspective in the New York-New Jersey Area
- Energy Efficient and Environmental Friendly Cement Free Concrete (CFC) for Pavement and Bridge Deck Application
- Automating the Reporting and Progress Monitoring Process using Mobile Computers for Highway Construction Projects
- The Role of Social Media in Improving the Safety and Efficiency of Traffic Operations during Non-Routine Events such as Incidents and Planned Special Events
- A GIS-based Performance Measurement System for Assessing Transportation Sustainability and Community Livability
- Robotic Inspection of Bridges Using Impact-Echo Technology
- Empowering Individuals to Make Environmentally Sustainable and Healthy Transportation Choices in Mega-Cities through a Smartphone App
- Promoting Transportation Flexibility in Extreme Events through Multi-Modal Connectivity
- On-Road Energy Harvesting for Traffic Monitoring
- Financing high speed rail in the U.S. and France: the evolution of public-private partnerships
- The Effects of Public-Private Partnerships on Traffic Safety: Evidence From Mexico
- Street Standards as Parking Policy: Identifying Residents' Willingness to Pay
- Real-time Dynamic Pricing for Bicycle Sharing Programs
- Developing self-cleaning and air purifying transportation infrastructure components to minimize environmental impact of transportation

- National Aviation Security to Cyber-terrorism: An Integrated Framework to Quantify the Economic Impacts of Cyber-terrorist Behavior
- Subsurface Imaging of Corrosion in Painted Steel Bridges
- Effectiveness Based Pavement Preservation Selection Based on Statistical Analysis of Long- Term Payment Performance Data
- Lessons from Hurricane Sandy for Port Resilience

The above-listed projects progressed nicely during this reporting period. Most literature searches were completed and significant progress has been made in data collection and fieldwork.

UTRC also issued two major requests for proposals during this period: Coordinated Intelligent Transportation Systems Deployment In New York City (CIDNY) and a request for pre-proposals for faculty-initiated projects during the 2013-14 year. CIDNY, sponsored by New York City Department of Transportation and New York State Department of Transportation, is expected to have duration of three years, estimated at \$500,000 per year. The current proposal is just for one year, 2013-14, and calls for several different task assignments including development of a multi-agency, multi-modal construction management tool, data collection of vehicular movement, development of an introductory course on Traffic Incident Management (TIM) response for transportation operators, strategic intelligent transportation systems (ITS) deployment plan for New York City, research on pedestrians and cyclists safety using ITS technology in New York City, and development of a data storage and access platform for MTA BusTime data. These proposals are due by July 31, 2013.

The UTRC pre-proposal RFP is calling for faculty-initiated proposals in the categories of research, education, workforce development, and technology transfer. This year, UTRC will be seeking proposals in a two part process including pre-proposal and final proposal phases. Pre-proposals will be reviewed and for those accepted, applicants will be invited to submit a full proposal, which will also undergo review. Pre-proposals are due on August 3, 2013 and final awards are expected to be granted in the fall of 2013.

As part of our partnership with regional agencies, UTRC held two in-person progress reporting meetings during this period (January 25, 2013, May 10, 2013) at the New York State Department of Transportation for projects under their sponsorship. During these meetings principal investigators (PIs) gave presentations to NYSDOT project managers and invited working group members, UTRC staff, and NYSDOT State Planning Research (SPR) staff. We also continued with in-person quarterly reporting at the New Jersey Department of Transportation for NJDOT project managers. In addition, to assure for the best outcome, PIs and agency project managers meet and/or talk about ongoing work throughout the duration of the research. UTRC also requires written quarterly progress reports on both agency-initiated and faculty-initiated UTRC-funded projects. During this reporting period, these were requested for work completed through March 31, 2013 and June 30, 2013.

As examples of project progress, excerpts from these written reports on several projects are provided below. They are categorized by UTRC focus area.

### **-Enhancing understanding of the economic impacts of transportation investment**

#### *The Politics of Infrastructure Investment Decision-Making:*

The researchers completed data collection for 60 projects in the U.S. with about 60 variables on each. Based on literature and their personal observations, they developed several models to be empirically tested. At this point,

they have analyzed data, completed linear regression analysis, and are undertaking structural equation modeling.

**-Practices, partnerships, and mechanisms for financing transportation systems:**

*Financing high speed rail in the US and France Project:*

Reports, documents and books from the planning processes for high speed rail in Texas, Florida, and California were reviewed, as was information that had been collected previously on HSR financing in France. Interviews with public officials and rail advocates in California were conducted to collect historical and contemporary documents that were not available on websites. The PI organized a panel of transportation historians and social scientists at the Business History Annual Conference in Columbus, Ohio, and as a participant, presented an original paper on the development of high speed on French and U.S. railways, which was based on research conducted earlier with UTRC funding.

**-Promoting freight productivity, efficiency, and sustainability through multi-modal policy, planning, and logistics:**

*Freight-Tricycles in New York City:*

Performed by a CCNY research team and sponsored by NYSEDA/NYS DOT with a UTRC match, this feasibility study is being undertaken to demonstrate the quantifiable benefits of using freight-tricycles versus motorized vehicles for urban freight delivery in Manhattan. Project field work began during this reporting period with the collection of GPS data from the trikes of two participating partners in the project, City Harvest and City Bakery. Data analysis was also completed. A local grocer, Quinciple, has joined the project as well. Plans were begun for warm weather temperature testing of a sampling of delivery products.

**-System modernization through implementation of advanced and information technologies:**

*Use of Web-Based Rider Input for Transit Management in the New York City Region:*

This research will result in policy guidelines for web-based rider input. The results will be conveyed in a report that will be posted and circulated online and shared with public agency leaders. Work so far has included researching and analyzing current practices and standards, developing the background for the report and determining the appropriate case studies.

*Road Weather Implementation System (RWIS) in New York State:*

The team has developed a comprehensive survey, which was sent to four state DOTs (Indiana, Minnesota, North Dakota and South Dakota DOTs) to investigate their best practices in the use of RWIS to support the Maintenance Decision Support System (MDSS).

In this period, the team continued with the meteorological analysis by considering other variables (e.g., snow cover, mean and standard deviation of land surface temperature) and calculating the number of temperature transition weeks (i.e., transition from below freezing to above freezing and reverse), which will be used to characterize the climate conditions for NYS during wintertime to classify NYS into different climate zones and micro-zones.

**-Planning, monitoring, and implementation of communications and other technologies to understand and improve multi-modal transportation safety:**

*Data Driven Performance Measures for Effective Management of Complex Transportation Networks:*

Travel time is a fundamental element to derive a number of performance measures. The research team has developed the improved algorithm for travel time estimation using toll transaction data. They also completed the examination of performance measures on travel time reliability and developed a case study on secondary crashes.

*Speed and Design Consistency of Combined Horizontal and Vertical Alignments in Two-Lane Rural Roads:*  
The objective of this investigation is to study the influence in safety and operating speeds when a horizontal curve is combined with a vertical curve on two lane roads in Puerto Rico. Thorough progress reports have been submitted that include reporting of collected data. At the present moment, speed data has been collected on seven of the eleven highway segments and over 50% of the fieldwork (data collection process) has been completed. Descriptive statistics have been computed for all data collected.

*Planning Level Assessment of Greenhouse Gas Emissions for Alternate Construction Projects:*  
Currently the Greenhouse Gas Assessment Spreadsheet for Alternative Capital Projects (GASCAP) model provides project specific estimates; our goal with this work is to apply the GASCAP tool to a wider range of alternative transportation construction projects to provide policy-makers with estimates that can inform higher-level decision-making. To date, significant research into assessing how to link the usage of a road to its deterioration and consequent GHG emissions has been conducted. While good information has been obtained that links the International Roughness Index (IRI) to GHG emissions for different vehicle types, we are still working to determine feasible methods of linking usage to IRI values.

### **Infrastructure design, monitoring, inspection, and management to ensure a State of Good Repair:**

*Investigation of the Carrs Creek Geofoam Project:*  
This proposal is for detailed study of geofoam failure (excessive soil sediments developed in the geofoam used in construction of culverts at Carrs Creek in Delaware County) through selected laboratory tests, computer modeling and simulation to provide a better understanding of the main causes and mechanisms that contributed to the failure. Computer modeling and simulation has begun and testing is expected to be complete in Q3 and progress with interpretation and application of results will follow. During this reporting period, the research team submitted an abstract to ASCE GeoShanghai 2014 and plans to submit a paper to TRB.

*Optimum Fund Allocations to Rehabilitate Transportation Infrastructure:*  
Based on the pavement deterioration model developing in this research, a model for minimizing the required budget over a certain time span (e.g., 5 or 10 years) by optimizing the pavement maintenance and rehabilitation schedules will be developed. The developed model will be implemented to perform budget planning for NJDOT based on the pavement condition data from NJPMS 2012. During the period through June 30, 2013, data collection and analysis has been completed while model development is ongoing. The data sources of Long Term Pavement Performance (LTPP) and New Jersey Pavement Management System (PMS2012) were used. From the LTPP, the pavement roughness data and the relevant structural and weather data of most major highways distributed throughout the US were extracted and processed. A roughness progression model for asphalt pavement was developed based on the LTPP data and one paper describing the research results have been submitted to Journal of Transportation Engineering for possible publication. Currently a model for optimizing network-level road pavement maintenance and rehabilitation scheduling subject to performance and budget constraints is under development. The pavement condition data from NJPMS 2012 will be used for the model implementation.

## **-Promoting livable and sustainable communities through quality of life improvements and diverse transportation development**

### *A GIS-based Performance Measurement System for Assessing Transportation Sustainability and Community Livability:*

The research team has conducted a comprehensive literature review on the existing transportation sustainability and livability research and performance measures (PMs) suggested or used by others. Based on the review results, we developed a list of PMs that can be used to assess sustainability and livability principles and practices. These PMs are grouped by evaluation criteria (e.g., sustainability and livability) and decision-making purpose (e.g., transportation planning, and land use planning). For each PM, we provided the definition, the input data, the calculation formulation if any, and the potential application areas. The research team has also collected land use, remote sensing and transportation data sets and selected the study case (Buffalo, NY).

### *Empowering Individuals to make Environmentally Sustainable and Healthy Transportation Choices in Mega-Cities through a Smart Phone App:*

This research will conduct a randomized, controlled trial to assess impacts of a behavioral nudge, e.g., a new smartphone app, tentatively named iTransit, on the perception of commute-related energy use and expenditure. The existing smartphone app developed at Hunter College has the ability to detect travel modes using GPS tracking on a remote GIS server. It will be expanded to have the ability to report carbon avoidance and calories burned associated with each trip segment and travel mode. The survey instruments were finalized and the received IRB approval in preparation for the randomized controlled trial that began in April. The team has begun to recruit study subjects.

## **-Securing transportation systems and improving planning for and response to extreme events**

### *Lessons Learned from Hurricane Sandy for Port Resilience:*

Lessons learned by the public and private stakeholders in the port and associated supply chain transportation services could assist in more quickly returning the port to full service following future disruptions. This project will review the existing design codes and identify through structured stakeholder interviews the circumstances that led to the port's storm related impacts and subsequent closure for a week. A review of the recent literature on port and supply chain disruptions is underway to collect primary information on extreme events and their effects on networked infrastructure and maritime enterprise including related literature on port security and emergency management during major disruptive events.

Interviews have been conducted with representatives of the Port Authority headquarters and terminal facility offices, the US Coast Guard, the Sandy Hook Pilots and NJ Petroleum Council. Additional interviews are anticipated to gather additional information and perspectives on the hurricanes impact

b. Education and workforce development - During this period, UTRC accomplished the following:

- NYMTC/UTRC September 11<sup>th</sup> Memorial Program Academic Initiative – Four interns from 2012-13 year continued working. Preliminary meetings were held with all four students in May and June to discuss preparation for their final presentations that they will give on September 18, 2013 at the New York Metropolitan Transportation Council.

- The NYMTC September 11<sup>th</sup> Memorial Program selection committee convened on June 10, 2013 and selected two 2013-14 candidates who will begin their internships in the fall of 2013. These students are from Columbia University and Hunter College, CUNY
  - AITE-  
UTRC received applications from 12 agency candidates and 11 university candidates. Awards were given to five of the agency candidates and seven of the university candidates for the 2013-14 academic year
- c. Technology Transfer
- The following events were held during this reporting period.
    - Railroads as Change Agents, a visiting scholar seminar with Frank N. Wilner, March 15, 2013
    - Bikes and the Waterfront: Past, Present, and Future, a conference sponsored by UTRC and the Brooklyn Waterfront Research Center, March 22, 2013
    - Move NY Faster, Smarter Fairer, a visiting scholar seminar with Sam Schwartz of Sam Schwartz engineering, March 28, 2013
    - The 2<sup>nd</sup> Connected and Self-driven Vehicles Symposium, sponsored by UTRC, Rutgers University, the University of Buffalo, and Princeton University, June 17 and 18, 2013 at Rutgers University
    - New York City Mayoral Transportation Forum, a forum featuring most of the candidates for Mayor of New York, attracting an audience of about 300 and resulting in several news articles and reports by the local media, sponsored by UTRC, June 19, 2013
  - Newsletter Publications were released during the reporting period in the winter and spring of 2013.
  - Planning efforts began during this reporting period for an upcoming conference on Last Mile Freight Delivery: Use of Cleaner Mobility Vehicles, scheduled for October 4, 2013 in collaboration with the New York State Energy Research and Development Authority, the New York State Department of Transportation, and The Institute of Mechanical Engineering (IDMEC-IST)/ Instituto Superior Técnico (IST) in Lisbon.

### C. Opportunities for Training and Development

Our seminars and workshops are designed to educate the transportation community on current issues in policy and best practices as well as foster meaningful discussion on these topics. We also provide funding to the September 11<sup>th</sup> Memorial Program to select current students to serve in internship positions in regional and local agencies to enhance their educational experience. The eighth year of this program will begin in September with two additional interns from Columbia University and the City University of New York. We also fund the AITE program to offer undergraduate and graduate scholarships to talented students to pursue either a traditional civil engineering degree leading to a graduate transportation program or an undergraduate program in a related field (e.g., planning, public administration) tailored to transportation. The graduate scholarships attract both bright students finishing up bachelor degrees and working transportation professionals who want to expand their transportation expertise. As noted above 12 awards (7 university, 5 agency) have been granted for the upcoming academic year.

### D. Dissemination of results:

Winter and Spring 2013 Newsletters



E. Plans for next reporting period: We will continue with all of our programs and research and hold the Last Mile Freight conference discussed above. We are also planning to implement short video clips of PIs discussing completed research projects.

## 2. Products

Products this period have included newsletters, release of the 2012 annual report, press releases announcing final reports that were submitted during the quarter (on projects from prior grants) and a paper, *Financing high speed rail in the United States and France: The evolution of public-private partnerships*, Cohen, James, Kamga, Camille, Research in Transportation Business and Management, 2012.

<b>3. Participants and Collaborating Organizations</b>						
<b>Partner (University)</b>	<b>Agency Sponsor</b>	<b>Location</b> (see attached)	<b>Project(s) (# funded)</b>	<b>Contribution</b>	<b>Other Collaborators</b>	<b>Role</b>
Clarkson	N/A	Potsdam, NY	Faculty- initiated (1)	research		
Cornell	N/A	Ithaca, NY	Faculty- initiated (1)	research		
CUNY: Queens College	N/A	Flushing, NY	Faculty- initiated (1)	research		
John Jay	N/A	New York, NY	Faculty- initiated (1)	research		
CCNY	NYSERDA	New York, NY		research	Revolution Rickshaws, NYCDOT	coordinates participants, advisor
CUNY Graduate Center NYC Labor Information Service	N/A	New York, NY	Faculty- initiated (1)			
NJIT	N/A	Newark, NJ	Faculty Initiated (2)	research		
NJIT	NYSDOT		Agency Initiated (1)	research		
NYU	N/A	New York, NY	Faculty Initiated (2)	research		
NYU/Poly	N/A	Brooklyn, NY	faculty initiated (2)	research		
RIT	N/A	Rochester, NY	Faculty- initiated (1)	research		

Rowan University		Glassboro, NJ	Faculty-initiated (1)	research		
RPI	N/A	Troy, NY	faculty initiated (3)	research		
RPI	NYSDOT		Agency Initiated (1)	research	NYSDOT Siemens, Sensys,	technology/devices
Rutgers	N/A	New Brunswick, NJ	Faculty-initiated (1)	research		
Rutgers	NJDOT		Agency-Initiated (3)		For Landfill Closure: Birdsall and the Richard Stockton College Coastal Research Center,	
SUNY:						
Buffalo		Buffalo, NY	faculty Initiated (3)	research		
Buffalo	NYSDOT		Agency Initiated (1)	research	NYU/Poly, General Dynamics Information Technology	research, technology
Stonybrook	N/A	Stonybrook, NY	faculty Initiated (1)	research		
Maritime	N/A	Throggs Neck, NY	faculty Initiated (1)	research	Halcrow, Douglas Westwook, CWS and Kaan Ozbay (Rutgers)	

Stevens Institute of Technology	N/A	Hoboken, NJ	Faculty-initiated (1)	research	
Syracuse		Syracuse, NY	Faculty-initiated(1)	research	
University of Puerto Rico	N/A	Mayaguez PR	faculty initiated(4)	Research	
Agency Partners:					
NYSERDA				Research sponsor	CCNY
NYMTC		New York, NY		education (Sept. 11th Memorial Program)	UTRC
NYMTC		New York, NY		sponsor	UTRC
NYSDOT		Albany, NY		research	UTRC
NJDOT		Ewing, NJ		Research sponsor, tech transfer	UTRC
NYCDOT		New York, NY		Advisor	UTRC
Port Authority of NY and NJ		New York, NY		General sponsor collaboration	UTRC
ITS-New York				education, tech transfer	UTRC

**Partner addresses**

<b><u>Partner</u></b>	<b><u>Street</u></b>	<b><u>City, State, Zip</u></b>
Clarkson	8 Clarkson Avenue	Potsdam, NY 13699
Cornell	Cornell University	Ithaca, NY 14853
CCNY	160 Convent Avenue	New York, NY 10031
John Jay College	524 W. 59th Street	New York, NY 10019
Queens College	65-30 Kissena Blvd	Flushing New York 11367
CUNY Graduate Center	365 5th Avenue	New York, NY 10016
NJIT	323 Martin Luther King Blvd	Newark, NJ 07103
NYU	726 Broadway #350	New York, NY 10003
NYU/POLY	6 Metrotech Center	Brooklyn, NY 11201
RPI	110 8th Street	Troy, NY 12180
RIT	One Lomb Memorial Dr	Rochester, NY 14623
Rowen	201 Mullica Hill Rd	Glassboro, NJ 08028
Rutgers	57 US HWY 1	New Brunswick, NJ 08901
SUNY Buffalo	12 Capen Hall	Buffalo, NY 14260
Stonybrook	100 Nicolls Rd	Stonybrook, NY 11794
Maritime	6 Pennyfield Avenue	Throggs Neck, NY 10465
Stevens Institute of Technology	9th Street	Hoboken, NJ 07030
Syracuse University	303 University Pl #335	Syracuse, NY 13244
University of Puerto Rico Agencies:	Puerto Rico, 65	Mayaguez 00860
NYSDOT	50 Wolf Road	Albany, New York 12205
NYSERDA	17 Columbia Circle	Albany, New York 12203-6399
NYMTC	199 Water Street	New York, New York 10038
NYCDOT	55 Water Street	New York, New York 10041
NJDOT	1035 Parkway Avenue	Trenton, NJ 08625
NYCDOT	55 Water Street	New York, NY

PANYNJ  
ITS-NY  
NYCT

225 Park Avenue South  
14 Loveland Court  
2 Broadway

New York, NY 10003  
Cranbury, NJ 08512  
New York, NY 10004

## Projects by Partner

### Partner

### Projects

**Clarkson**

Energy Efficient and  
Environmentally

**Cornell**

Friendly Concrete

The Effects of Public-  
Private Partnerships  
on Traffic Safety:

Evidence From

Mexico

**CCNY**

Robotic Inspection of  
Bridges

Freight-Tricycle  
Operations

Assistance to  
NYMTC with  
Financial  
Planning

Support for  
NYMTC for  
CMAQ  
Application and  
Documentation

**John Jay College**

Financing high speed  
rail in the U.S. and  
France: the evolution  
of public-private  
partnerships

**Queens College**

Empowering  
Individuals to Make  
Environmentally  
Sustainable and  
Healthy

	Transportation Choices in Mega- Cities through a Smartphone App		
<b>CUNY Graduate Center</b>	Major Workforce Challenges		
<b>NJIT</b>	Optimum Fund Allocation- Transportation Infrastructure	Metrics and Performance Response Functions for Assessment and Resilience of Urban Infrastructure Systems	
<b>NYU</b>	Use of Web-based Rider Input	Promoting Transportation Flexibility in Extreme Events	<i>Street Standards as Parking Policy: Identifying Residents' Willingness to Pay</i>
<b>NYU/POLY</b>	Air Quality Impact of Traffic Congestion in Midtown Manhattan	Subsurface Imaging of Corrosion in Painted Steel Bridges	
<b>RPI</b>	Leveraging Brightness from Transportation Lighting Systems	The Role of Social Media in Improving the Safety and Efficiency of	A GIS-based Performance Measurement System

Traffic Operations

<b>RIT</b>	Analysis of Environmental, Economic and Infrastructure Impacts of Transportation Activities-High Volume Fracturing Operations-Marcellus Shale Formation					
<b>Rowen</b>	Visoelastic Mechanical Properties of WMA					
<b><u>Partner</u> Rutgers</b>	<b><u>Projects</u></b>					
	Planning Level Assessment of Greenhouse Gas Emissions	Modeling Disaster Operations	Effectiveness Based Pavement Preservation Selection Based on Statistical Analysis of Long-Term Payment Performance Data	Impact Analysis of Recreational Transit Services on Local Community Economic Development, Employment and Spending	Impact Analysis of Recreational Transit Services on Local Community Economic Development, Employment and Spending	Landfill Closure With Dredged Materials
<b>SUNY: Buffalo</b>	Energy Savings from Transit Passes	Real-time Dynamic Pricing for Bicycle Sharing Programs	National Aviation Security to Cyber-terrorism: An Integrated Framework to Quantify the Economic Impacts			



of Cyber-terrorist  
Behavior

**Stonybrook**

Developing self-cleaning and air purifying transportation infrastructure components to minimize environmental impact of transportation

**Maritime**

Off-Shore Wind Development

**Stevens Institute of Technology**

Lessons from Hurricane Sandy for Port Resilience

**Syracuse University**

Investigation of the Carrs Creek Geofoam Project

**University of Puerto Rico**

Improving Transportation Education

Data Collection and Econometric Analysis

Speed and Design Consistency

Automating the Reporting and Progress Monitoring...for Highway Construction Projects

**Agencies:**

<b>NYSDOT</b>	IIMS Staten Island Web and Smartphone Development, Deployment and Evaluation	Road Weather Information System (RWIS) Statewide Implementation Plan	ACS-Lite for Wolf Road
<b>NYSERDA</b>	Freight-Tricycle Operations		
<b>NYCDOT</b>	Freight-Tricycle Operations		
<b>NJDOT</b>	Impact Analysis of Recreational Transit Services on Local Community Economic Development, Employment and Spending	Landfill Closure With Dredged Materials	Off-Shore Wind Development
<b>NYMTC</b>	Tasks for New Major Projects	NYMTC Assistance with Financial Planning	Support for NYMTC for CMAQ Application and Documentation

#### **4. Impact**

UTRC programs impact the transportation community in several ways. Through seminars, workshops, and conferences, information is disseminated and interdisciplinary discussions are fostered; which enable transportation professionals to gain knowledge and varying perspectives on issues. This, in turn, helps practitioners to implement policies that bring about efficient and effective solutions to meet local, regional, and national transportation needs. UTRC programs also have an impact on preparing the next generation of transportation professionals through internships and classroom- based instruction. Likewise, dissemination of research findings helps to foster collaboration between academic researchers and practitioners, which assists practitioners in implementing innovative solutions that meet their specific needs.

Impacts are expected from our new research projects as work continues.

#### **5. Changes/problems**

Nothing to report

#### **6. Special reporting requirements**

Nothing to report