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# PROGRAM PROGRESS PERFORMANCE REPORT

*Submitted to the Office of the Assistant Secretary for Research  
and Technology*

Federal Grant # DTRT13-G-UTC32

Project Title: University Transportation Research Center – Region 2

Name of Grant: University Transportation Center

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Reporting Period Start Date: October 1, 2014

Reporting Period End Date: March 31, 2015

Report Term or Frequency: six months

Signature  \_\_\_\_\_

Penny Eickemeyer, Associate Director for Research, UTRC

## CONSORTIUM MEMBERS

City University of New York, Clarkson University, Columbia University, Cornell University, Hofstra University, Manhattan College, New Jersey Institute of Technology, New York Institute of Technology, New York University, Polytechnic Institute of NYU, Rochester Institute of Technology, Rowan University, Rensselaer Polytechnic Institute, Rutgers University\*, State University of New York, Stevens Institute of Technology, Syracuse University, The College of New Jersey, University of Puerto Rico

\*Member under SAFETEA-LU Legislation

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This report will cover UTRC's three mission areas: Research, Technology Transfer, and Education for activities that occurred under the Grant# DTRT13-G-UTC32 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

*Projects initiated during this reporting period:*

- Analysis of Energy Efficient Highway Lighting Retrofits (RPI/NYS DOT)
- Assessing NJ Transit's Mobile App for Users' Receptiveness (CCNY/NJ DOT)
- CIDNY Task 2 - Develop a multi-agency/multi modal construction management tool (Polytechnic Institute of NYU, CCNY)
- CIDNY Task 5 - Develop a Comprehensive Guide to Signal Timing, New Detection and Advanced Signal (Polytechnic Institute of NYU, University at Buffalo)

- CIDNY Task 6 - Strategic ITS Deployment Plan for New York City (CCNY, Stonybrook University)
- CIDNY Task 7 - Research on Pedestrians and Cyclists Safety Using ITS Technology in NYC (Polytechnic Institute of NYU )
- CIDNY Task 8 - Develop Data Storage and Access Platform for MTA Bus Time Data (Polytechnic Institute of NYU)
- Hunts Point Terminal Market: The Feasibility of Waterborne Transportation (SUNY Maritime, CCNY/ NYSERDA)
- Induced Emissions and Energy Use in Transportation: Use of Social Media Feeds as an IM Support Tool (CCNY, Stonybrook University/ NYSERDA)
- Innovative Travel Data Collection - Planning for the Next Two Decades (University at Albany/ NYMTC)
- Optimizing Work Zone Lighting (RPI/NJDOT)
- PPS-AQ and PPS-CMP hosting, maintenance, backup and technical support (Cornell/NYMTC)
- Regional Financing Options Study (CUNY,CSI/NYMTC)
- Technical Support for Use of National Performance Management Research Data Set (SUNY at Albany/NYS DOT)
- Worker Safety Issues of Wi-Fi Devices (TCNJ/NJDOT)

*Selected During this period:*

UTRC issued an RFP on October 1, 2015 calling for new initiatives from our faculty in several categories: faculty initiated, emerging scholars, education and technology transfer, and cluster group research. Seventy three proposals were received and 29 were selected (17 faculty initiated, eight emerging scholars, three education and technology transfer, and one cluster group) after peer review and the assignment of quantitative ratings by the external reviewers. The selected projects are listed below. These projects are now entering the contract phase with RFCUNY.

*Faculty-initiated Research Initiatives*

- Alkali Silica Reaction (ASR) in Cement Free Alkali Activated Sustainable Concrete (Clarkson)
- An Agent-Based Disaster Response Inference Model for Assessment of Transportation Risk under Extreme Events (CCNY)
- An Examination of Commercial Vehicle Access to Residential Buildings in New York City (CCNY)
- Building a Sense of Place in an Information Era: Accessibility, Connectivity and Travel (RIT)
- Developing A Macroscopic Decision Making Tool For Emergency Evacuation Planning (RPI)

- Development of a New, Effective and Low-cost Media for Sustainable Management of Polluted Road Storm-water in Highly Urbanized Areas (Manhattan College)
- Do Consumer Expenditures Affect Demand for Driving (Cornell)
- Innovative Techniques for Maintenance, Repair and Reconstruction (MRR) of Asphalt Roadways (Syracuse University)
- Intelligent Wireless Charging for Electric Buses in Smart City (Columbia)
- Market Potential For Battery Electric Vehicles Based On Multi-Day Activity-Travel Patterns (University at Buffalo)
- Public Transit and Mandatory Evacuations Prior to Extreme Weather Events in New York City (NYU)
- Risk analysis of autonomous vehicles in mixed traffic streams (Rowan)
- Secure and Private Sensing for Driver Authentication and Transportation Safety (NYIT)
- Self-Heated Pavements (Stony Brook University)
- Smart Bus System under Connected Vehicles Environment (NJIT)
- Transportation Infrastructure Robustness: Analysis and Measurement (CCNY)
- Using Mobile Computers to Automate the Change Order Decision Making Process and Improve Total Time and Cost Predictions on Highway Construction Projects (UPR)

*Emerging Scholar Category*

- A Probability-Based Approach for Assessment of Roadway Safety Hardware (Manhattan College)
- Computational Synthesis of High-Performance Non-Pneumatic Tires (Stony Brook University)
- Disaster Relief Vehicle Routing Under Uncertainty (Binghamton University)
- Evaluating the Impacts of Real-Time Information on Subway Ridership in New York City (CCNY)
- Heterogeneous Regional Traffic Signal Control (SUNY at Buffalo)
- Improving Cross-Frame Design to Reduce the Effects of Skew in Steel I-Girder (TCNJ)
- Nano-modified geopolymers for concrete infrastructure rehabilitation (Stony Brook University)
- Spectral Based Controllability-preserving Pedestrian Evacuation Network Synthesis Using Multilayered Estimation Models in Real-time (SUNY Maritime)

*(See Education / Technology Transfer below for newly selected technology transfer projects)*

*Projects continuing during this reporting period:*

- Analysis of Curved Weathering Steel Box Girder Bridges in Fire (Manhattan College)
- Analyzing Willingness to Improve the Resiliency of New York City's Transportation System (Cornell)
- Characterization and Modeling of Photon Absorption in Asphalt Materials (Columbia, Manhattan College)
- Developing Generalized Linear Mixed Models For The Strategic Highway Safety Planning Process (UPR)
- Development of a new connected eco-driving system at signalized intersections with adaptive signal (Polytechnic Institute of NYU)
- Efficacy of the Bacteria Encapsulation Concrete Self-Healing Method in a Harsh Environment (Manhattan College)
- Environmental Impacts of Oil and Gas Brine Applications for Dust and Ice Control in New York (Manhattan College)
- Hosting, maintenance and support for NYMTC PIMS (NJIT) of NYS Infrastructure Assets (Cornell)
- Impact of Polymer Modification on Mechanical and Viscoelastic Properties of Binders (Rowan)
- Investigating Temporal Effects on Truck Accident Occurrence and Severity Level in NYC (RPI)
- Measuring Parking Intrusion in New York City Neighborhoods using Parking Tickets and Vehicle Plate Registration Data (NYU)
- Monitoring Infiltration Capacity of Different Types of Permeable Pavement (Manhattan College)
- Traffic Prediction Using Wireless Cellular Networks (NYIT)
- Understanding Transit Finance: An Analysis of Transit Funding Around the World (Columbia)

*Status of ongoing research*

*Examples of Activity this period:*

- Monitoring Infiltration Capacity of Different Types of Permeable Pavement (Manhattan College)

Status

- The monitoring of infiltration rates began in December, but the weather did not permit this in January and February. Both students resigned from the project in March and a search for new students has begun.

Plans

- The PI will hire new students and resume taking monthly infiltration rates for a period of one year.

- Analysis of Curved Weathering Steel Box Girder Bridges in Fire (Manhattan College)

Status

The following activities have begun:

- Analysis of the structural and thermal finite element models of the straight box girder configuration
- Considered the effects of fire location and placement along the structure, by studying the behavior of two different fire locations.
- Performed hand calculations for web shear capacity of straight box girder at elevated temperatures and compared to behavior in finite element model
- Started generation of the 3-D Abaqus model for a curved, 3-span weathering steel box girder

Plans

- Begin preliminary modeling on a curved 3-span box girder configuration
- Finalize the analysis of the straight box girder model

- Environmental Impacts of Oil and Gas Brine Applications for Dust and Ice Control in New York (Manhattan College)

Status

- Characterization of the brine has been completed for the physical characterization of the brine and the major anion chemical characterization of the brine.
- Determination of percent solids of soil
- Preparation for acid digestion of soil

Milestones

- A full project summary with results to date has been prepared

Plans

- The acid digestion of soil will be completed in the next two weeks followed by the leaching studies
- Other: One student has elected to continue working on this project as an independent study for 3 credits. Two undergraduate students continue to work 5-10 hours a week on this project during the semester, for a total of 3 students contributing to this project from January 2015 to present (March 30, 2015).

- Efficacy of the Bacteria Encapsulation Concrete Self-Healing Method in a Harsh Environment (Manhattan College)

Status

Task 2:

- The following steps have been accomplished
- Culturing the bacteria
- Mixing self-healing concrete

- Inducing cracks after 28 days of curing
- Samples are being exposed to the saltwater wet-dry condition and the crack widths are being monitored weekly under a microscope

#### Task 3

- Culturing the bacteria
- Mixing self-healing concrete

#### Milestones

- An extended abstract was submitted to the Fifth International Conference on Self-Healing Materials

#### Plans

- Expect to finish Task 2 experiments in late May 2015
- A master's thesis will be produced from this work by the end of the project

- Effective and Equitable Supply of Gasoline to Impacted Areas in the Aftermath of a Natural Disaster (University at Buffalo)

#### Status

- Coding of the algorithms (both exact and heuristic)

#### Milestones

- A conference paper entitled "Effective and Equitable Supply of Gasoline to Impacted Areas in the Aftermath of a Natural Disaster" has been accepted for publication in the proceedings of the Sixth International Workshop on Freight Transportation and Logistics, June 1-5 2015, Ajaccio, Corsica, France

#### Plans

- The PI will be traveling to this conference to present a talk. The conference has a special issue of the journal Transportation Science associated with it, and the plan is to submit the completed paper to this special issue, likely by end June 2015

- Analysis of Energy Efficient Highway Lighting Retrofits (RPI/NYS DOT)

#### Status

- Field measurements along Central Avenue in \_\_\_\_\_ completed. Baseline models developed and models for lighting alternatives are being completed. Preliminary cost estimations are being completed.

#### Plans

- Results will be shared with NYSDOT staff and localities where roadways are located.
- Development of a Connected Eco-Driving Technology at Signalized Intersections with Adaptive Signal Control

#### Status

- A thorough literature search on adaptive control has been undertaken



- One of the students involved in this project is learning the AIMSUN microsimulation model that will be used for testing the methodologies that will be developed

Plans

- We are continuing work on developing the methodology to synthesize the large amounts of data “big data” available in a way that will be useful for predicting the signal head status of downstream intersections
- Impact of Polymer Modification on Mechanical and Viscoelastic Properties of Binders and Hot Mix Asphalt (Rowan)

Status

The research team has collected three cross-linking agents and is currently in the process of blending polymers, virgin binders, and cross-linking agents at different cross-linking dosage rates.

- The research team has also completed the mixing process for mixing all cross-linking agents with the selected binder and polymers.
- The project is currently in the stage of finalizing laboratory testing and analyzing results.

Milestones

- Completed mixing virgin binder, polymer, and cross-linking agents
- Testing is 75% complete
- Analysis of preliminary testing results is underway

Plans

- Complete laboratory binder testing according to testing matrix
- Start analyzing and documenting testing results
- Start the process of writing a TRB paper on results

- Freight Costs at the Curbside (CCNY)

Status

- A literature review of curb regulation policies and technologies has been conducted (although may be updated as the project continues)
- GIS-based analysis of existing parking violations is underway to 1) characterize existing parking conditions and 2) identify specific problem areas
- A draft survey has also been developed for implementation

Milestones

The draft survey was completed

Plans

- Meet with NYCDOT to develop and implement a survey distribution strategy

- Analyzing Willingness to Improve the Resiliency of New York City's Transportation System (Cornell)

Status

- A Qualtrics sample of 1,500 adults living in the NYC Metropolitan area

Milestones

- Preliminary Design of the Discrete Choice Experiment finalized (using an efficient statistical design)

Plans

- Pretest, preliminary analysis of the collected data, final data collection.

- Characterization and Modeling of Photon Absorption in Asphalt Materials (Columbia, Manhattan College)

Status

- Researched the principles of nuclear gauge
- Performed literature review about the effect of moisture on density reading
- According to the theory of interaction between photon and matter, developed a single 1-D simulation model with consideration of the different attenuation coefficient between hydrogen and other atoms

Plans

- Will consider some other effects that would affect the density reading
- Improve the model by adding terms with respect to each effect
- Will test the density of different materials with varied moisture using two nuclear gauges with different sources to check the validation and accuracy of our model

b) Education and workforce development

During this period, UTRC accomplished the following:

- *NYMTC/UTRC September 11<sup>th</sup> Memorial Program Academic Initiative:*
  - The two interns participating in the 2014-15 program continued to work on their respective internships at NYMTC and NYCDOT
  - NYMTC's member agencies approved funding of two additional interns for the 2015-16 academic year. UTRC will begin to initiate the application process and make the selections during the next reporting period.
- *Advanced Institute for Transportation Education (AITE):*
  - The five students (see October 30, 2014 PPPR) have begun their internships.

- *Development of Management Training for NYSAMPO*
  - The CUNY School of Professional Services has developed the first course, *Digital Communications: Writing for Electronic Media Course*, and the registration process has begun. The course site will be opened and the course delivered during the next PPPR reporting period.

c) Technology transfer

- *New Projects selected as part of the competitive proposal process*
  - A Transportation Innovation Series (NYIT)
  - Emerging Leaders in Transportation (NYU)
  - Developing GIS-T in the Geography Curriculum (Hunter College)
  - Drinking and Driving Interruption and Prevention Research Cluster Team: A Multidisciplinary Research to Solve a Critical Transportation Safety Problem (University at Buffalo)

*Continuing Projects*

- Addressing the Four Leading Factors of Accidents of Young Drivers in Region II using a New Driver Feedback System (University at Buffalo)

*The following events were held during this reporting period.*

- *NJDOT Technology Transfer Presentations*  
NJDOT Technology Transfer presentations continued. Presentations made by UTRC faculty at NJDOT headquarters during this reporting period include:

Date	Topic	PI(s)	Institution(s)
October 17, 2014	Investigation of the Carrs Creek Geofoam Project	Dr. Dawit Negussey	Syracuse University
November 14, 2014	Road Traffic Congestion: An Examination of the Causes, Consequences, and Possible Congestion Relief Strategies	Dr. Jon Falcocchio	Polytechnic Institute of NYU

December 11, 2014	Smart Driving Cars - Where are we -Where we'd like them to be in NJ	Dr. Alain Kornhauser	Princeton University
December 15, 2014	Warning Lights For Maximizing Worker Safety	John Bullough	RPI

- *Connected Vehicles Conference*

As discussed in the previous PPPR, UTRC co-sponsored the *Third Symposium on Connected and Autonomous Vehicles: Smart City Market Alignment for Roadway Technologies Symposium* at the SUNY College of Nanoscale Science and Engineering (CNSE) in Albany, NY on November 5, 2014. A panel of key participants also met on November 6, 2014 to begin the organization of the New York State Connected and Autonomous Vehicle Consortium. This consortium will lead the development and deployment of connected, autonomous and automated vehicles in New York State by identifying test bed opportunities and applications through the coordination and cooperation of government, industry and academia. As part of this consortium effort, UTRC partnered with NYSDOT to submit a proposal in response to the USDOT Broad Agency Announcement for the Connected Vehicle Pilot Deployment Program on March 27, 2015. (see below).

Keynote speakers on November 5 included Joan McDonald, Commissioner of the New York State Department of Transportation and Helder Antunes, Senior Vice President for Cisco's Technology Group.

- *Ground Transportation Technology Symposium: Big Data and Innovative Solutions for Safe, Efficient and Sustainable Mobility*

On November 19, 2014, UTRC hosted a Technology Symposium on Ground Transportation and Data at one of UTRC's new consortium schools, the New York Institute of Technology in Manhattan. Topics such as vehicle technology, big data and sustainable technology were covered.

- *Connected Urban Mobility*

UTRC invited Larry Yermack, Strategic Advisor to Cubic Transportation Systems to present on this topic on December 16, 2014.

The presentation was followed by a panel discussion with the following panelists:

**Matthew Daus**, Distinguished Lecturer, CUNY and **Candace**

**Brakewood**, Assistant Professor, The Department of Civil Engineering, the City College of New York, CUNY

**Richard Hanley**, moderator. Professor of English, The New York City College of Technology, CUNY

- *AASHTO Annual Bridge Meeting*  
UTRC organized the 2015 AASHTO Subcommittee on Bridges & Structures (SCOBS) Annual Meeting that was held April 19-24 at the Saratoga Hilton, NY. This is a working meeting comprised of two days of technical committee meetings and two days of general sessions. The conference website is: [www.bridgemeeting2015.org](http://www.bridgemeeting2015.org)
- Proposals Submitted
  - *NYS DOT/UTRC Submission to USDOT Broad Agency Announcement on the Connected Vehicle Pilot Deployment Program*  
UTRC and NYS DOT worked closely together to submit a proposal in response to this federal announcement on March 27, 2015. Several members of the newly-formed NYS Consortium on Connected Vehicles, including consortium faculty, state transportation professionals and industry partners participated to prepare this submission. The proposal requested funding to deploy pilot projects for connected vehicle technology along two connected “Smart” corridors in the Capital Region (Albany). These included demonstrations involving public and private fleets, smart phone, satellite, 5.9 DSRC; installation of 22 RSUs (Remote Switching Units), instrumentation of approximately 100 plow trucks and maintenance vehicles and 50 busses, as well as pedestrian detection and warning systems at two intersections.
- Publications
  - *Newsletter publications, “Research News,” released*  
Fall 2014, <http://www.utrc2.org/sites/default/files/2014Fall-Newsletter.pdf>
  - The Annual report for 2014  
UTRC released its 2014 Annual Report in February 2015 highlighting the center’s education and training, technology transfer, and research activities from January 1, 2014 to December 31, 2014. The digital annual report with a friendly user interface is available for download at: <http://utrc2.org/about-utrc/annual-report>

d) 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.

**C. Dissemination of results:**

- Quarterly Reports on project progress
- Extended abstract For *Efficacy of the Bacteria Encapsulation Concrete Self-Healing Method in a Harsh Environment* to Fifth International Conference on Self-Healing Materials
- A conference paper entitled “Effective and Equitable Supply of Gasoline to Impacted Areas in the Aftermath of a Natural Disaster” has been accepted for publication in the proceedings of the Sixth International Workshop on Freight Transportation and Logistics, June 1-5 2015, Ajaccio, Corsica, France.

**D. Plans for next reporting period:**

- Investing in an accessible New York: A Conference on Public Transportation and New York’s Future, May 8, 2015  
UTRC, in collaboration with Regional Plan Association, is organizing a conference on Investing in an accessible New York: A Conference on Public Transportation and New York’s Future that will be held from May 8th, 2015 at the New York Institute of Technology. The event, convened by the nation's transportation leaders, aims to discuss how New York City's transit network has shaped the city we know today and the role that transit investments will play in New York's future.
- Visit by OST-R  
Gregory D. Winfree, Assistant Secretary of Research and Technology (USDOT) will visit UTRC on May 15<sup>th</sup> 2015. During his visit to UTRC, Mr. Winfree will meet with UTRC faculty from the consortium universities, staff, and local transportation agencies officials.
- Ecodriving Technology  
UTRC, in partnership with NYSERDA and NYSDOT, will sponsor an event in the fall 2015 titled, *Implementing Ecodriving in New York State*:

*Opportunities and Challenges.* The focus will be on both behavioral changes as well as how to encourage less driving.

- **NYSDOT Peer Exchange**  
NYSDOT is contracting with UTRC to arrange, conduct, document and facilitate a two-day peer exchange on September 23 and 24 to examine and evaluate the research, development and technology transfer (RD&T) management process and program with that of other State departments of transportation (DOTs) research programs. Such peer exchanges are required by federal regulation, of all State DOTs receiving state planning and research funding (SPR) for administering RD&T programs.
- **Fourth (NYSDOT) Symposium on Connected and Autonomous Vehicles**  
On behalf of NYSDOT, UTRC will organize the fourth symposium on this topic. Previous symposiums were held June 1, 2012, June 17 and 18, 2013, and November 5, 2014. The fourth symposium will be sponsored by NYSDOT to continue to build a synergistic partnership among stakeholders for the State's connected and autonomous vehicle program. UTRC will organize, hold, and document the proceedings of the Symposium.
- **A UTRC visiting scholar seminar featuring Dr. Susan Shaheen from The University of California, Berkeley will take place on October 9, 2015.**  
She'll present on the topic of *Innovation and Disruption in Urban Mobility*.
- **3<sup>rd</sup> Transportation Technology Symposium**  
As a continuation to the prior two technology and transportation symposiums, UTRC will organize and sponsor a symposium on this topic during the fall of 2015

## 2. PRODUCTS

Nothing to report.

3. Participants and Collaborating Organizations						
Partner (University)	Agency Sponsor	Location	Project(s) (# funded)	Contribution	Other Collaborators	Role
Clarkson	N/A	Potsdam, NY	Faculty initiated -2			
Cornell	N/A	Ithaca, NY	Faculty-initiated -3			research
Cornell	NYMTC	Ithaca, NY	Agency-initiated-1	Technical support		
Columbia	N/A	New York, NY	Faculty-initiated -1	research	Manhattan	research
Columbia	N/A		Faculty-initiated -2	research		
CUNY:						
CCNY	N/A	New York, NY	Fac. Init./emerging.scholar-5			
CCNY	N/A		Faculty-initiated-1	research	RPI	research
CCNY	NJDOT	New York, NY	Agency initiated-1	research		
CCNY	NYSERDA		Agency-initiated-1	research	SUNY Stonybrook	research
CCNY	NYSERDA		Agency-initiated	tech transfer		
CSI/CUNY	NYMTC	New York	Agency-Initiated-1	research		
Manhattan College	N/A	Bronx, NY	Faculty-initiated-5	research		
NJIT	N/A	Newark, NJ	Faculty-initiated-1	research		
NJIT	NYMTC	Newark NJ	Agency initiated-1	research		
NYIT	N/A	New York, NY	Faculty-initiated-2	research		



3. Participants and Collaborating Organizations						
Partner (University)	Agency Sponsor	Location (see attached)	Project(s) (# funded)	Contribution	Other Collaborators	Role
NYU	N/A	New York, NY	Faculty-initiated-2	research		
NYU		New York	1	Tech Transfer		
NYU/Poly	NYCDOT, NYSDOT	New York, NY	Agency initiated-4	Research, CIDNY	CCNY(1), UB(1)	research
RIT	N/A	Rochester, NY	Faculty-initiated-1			
Rowan University		Glassboro, NJ	Faculty initiated-2	research		
RPI		Troy, NY	Faculty-initiated-2	research		
RPI	NYSDOT	Troy, NY	2	research		
RPI	NJDOT	Troy, NY	1	research		
SUNY:						
Albany	NYMTC	Albany, NY	Agency-initiated-1	research		
Buffalo		Buffalo, NY	Faculty-initiated-4	research		
Binghamton		Binghamton, NY	Faculty-initiated-1	research		
New Paltz		New Paltz, NY	Faculty-initiated-1	research		
Stonybrook	N/A	Stonybrook, NY	Faculty-initiated-2	research		
Maritime	NYSERDA	Throggs Neck, NY	Agency-initiated-1	Research	CCNY	research
Maritime	N/A	Throggs Neck, NY	Faculty-initiated-1	Research		
Stevens Institute of Technology	N/A	Hoboken, NJ				

<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>
Syracuse		Syracuse, NY	Faculty -initiated-1	research		
The College of New Jersey	NJDOT	Trenton, NJ	Agency-initiated-1	research		
University of Puerto Rico	N/A	Mayaguez PR	Faculty-initiated-2	research		
Agency Partners:						
NYSERDA		Albany, New				
NYMTC		New York, NY				
NYMTC		New York, NY				
NYSDOT		Albany, NY				
NJDOT		Ewing, NJ				
NYCDOT		New York, NY				
Port Authority of NY and NJ		New York, NY				
ITS-New York						

<u>Partner</u>	<u>Street</u>	<u>City, State, Zip</u>
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
NYIT	1855 Broadway	New York, NY 10023
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
Rowan	201 Mullica Hill Rd	Glassboro, NJ 08028
SUNY Binghamton	4400 Vestal Pkwy E	Binghamton, NY 13902
SUNY Buffalo	12 Capen Hall	Buffalo, NY 14260
SUNY New Paltz	1 Hawk Dr	New Paltz, NY 12561
Stony Brook	100 Nicolls Rd	Stonybrook, NY 11794
SUNY 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	Puerto Rico, 65	Mayaguez 00860
Agencies:		
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	225 Park Avenue South	New York, NY 10003
ITS-NY	14 Loveland Court	Cranbury, NJ 08512
NYCT	2 Broadway	New York, NY 10004

**Projects by Partner**

<b><u>Partner</u></b>	<b><u>Projects</u></b>					
USC/Volvo						
<b>Clarkson</b>	Alkali Silica Reaction (ASR) in Cement Free Alkali Activated Sustainable Concrete					
<b>Columbia</b>	Characterization and Modeling of Photon Absorption in Asphalt Materials	Understanding Transit Finance: An Analysis of Transit Funding Around the World	Intelligent Wireless Charging for Electric Buses in Smart City			
<b>Cornell</b>	Evaluating the Role of Private Investment in Life Cycle Management of NYS Infrastructure Assets	Analyzing Willingness to Improve the Resiliency of New York City's Transportation System	PPS-AQ and PPS-CMP hosting, maintenance, backup and technical support			
<b>CCNY</b>	Feasibility of Lane Closures Using Probe Data	Freight Costs at the Curbside	Assessing NJ Transit's Mobile App for Users' Receptiveness	CIDNY Task 2 Develop a multi-agency/multi modal construction management tool	Task 6- Strategic ITS Deployment Plan for New York City	Transportation Infrastructure Robustness: Analysis and Measurement
<b>CCNY Continued</b>	Hunts Point Terminal Market: The Feasibility of Waterborne Transportation	Induced Emissions and Energy Use in Transportation: Use of Social Media Feeds as an IM Support Tool	An Agent-Based Disaster Response Inference Model for Assessment of Transportation Risk under Extreme Events	An Examination of Commercial Vehicle Access to Residential Buildings in New York City	Evaluating the Impacts of Real-Time Information on Subway Ridership in New York City	
<b>The College of Staten Island</b>	Regional Financing Options Study					
<b><u>Partner</u></b>	<b><u>Projects</u></b>					

<b><u>Partner</u></b>	<b><u>Projects</u></b>					
<b>Manhattan College</b>	Characterization and Modeling of Photon Absorption in Asphalt Materials	Development of a New, Effective and Low-cost Media for Sustainable Management of Polluted Road Storm-water in Highly Urbanized Areas	A Probability-Based Approach for Assessment of Roadway Safety Hardware			
<b>NJIT</b>	Hosting, maintenance and support for NYMTC PIMS	Feasibility of Lane Closures Using Probe Data	Smart Bus System under Connected Vehicles Environment			
<b>NYIT</b>	Traffic Prediction using Wireless Cellular Networks	Secure and Private Sensing for Driver Authentication and Transportation Safety				
<b>NYU (includes NYU/Poly)</b>	Development of a new connected eco-driving system at signalized intersections with adaptive signal	Measuring Parking Intrusion in New York City Neighborhoods Using Parking Tickets	CIDNY Task 2 Develop a multi-agency/multi modal construction management tool	CIDNY Task 5 - Develop a Comprehensive Guide to Signal Timing, New Detection and Advanced Signal	CIDNY Task 7 - Research on Pedestrians and Cyclists Safety Using ITS Technology in	
<b>NYU (Continued)</b>	CIDNY Task 8-Develop Data Storage and Access Platform for MTA BusTime Data	CIDNY Task 5- Develop a Comprehensive Guide to Signal Timing, New Detection and Advanced Signal	Public Transit and Mandatory Evacuations Prior to Extreme Weather Events in New York City			

<b>RPI</b>	Investigating Temporal Effects on Truck Accident Occurrence and Severity Level in NYC	Freight Costs at the Curbside	Analysis of Energy Efficient Highway Lighting Retrofits	Optimizing Work Zone Lighting	Developing A Macroscopic Decision Making Tool For Emergency Evacuation Planning	
<b>RIT</b>	Building a Sense of Place in an Information Era: Accessibility, Connectivity and Travel					
<b>Rowen</b>	Impact of Polymer Modification on Mechanical and Viscoelastic Properties of Binders	Risk analysis of autonomous vehicles in mixed traffic streams				
<b>SUNY:</b>						
<b>StonyBrook</b>	CIDNY Task 6- Strategic ITS Deployment Plan for New York City	Induced Emissions and Energy Use in Transportation: Use of Social Media Feeds as an IM Support Tool	Self-heated Pavements	Computational Synthesis of High-Performance Non-Pneumatic Tires	Nano-modified geopolymers for concrete infrastructure rehabilitation	
<b>Buffalo</b>	CIDNY Task 5- Develop a Comprehensive Guide to Signal Timing, New Detection and Advanced Signal	Market Potential For Battery Electric Vehicles Based On Multi-Day Activity-Travel Patterns	Heterogeneous Regional Traffic Signal Control			
<b>Maritime</b>	Hunts Point Terminal Market: The Feasibility of Waterborne Transportation	Spectral Based Controllability-preserving Pedestrian Evacuation Network Synthesis Using Multilayered Estimation Models in Real-time				
<b>Albany</b>	Innovative Travel Data Collection - Planning for the Next Two Decades	Technical Support for Use of National Performance Management Research Data Set				
<b>Binghamton</b>	Disaster Relief Vehicle Routing Under Uncertainty					
<b><u>Partner</u></b>	<b><u>Projects</u></b>					
<b>New Paltz</b>						

<b>Syracuse University</b>	Innovative Techniques for Maintenance, Repair and Reconstruction (MRR) of Asphalt Roadways					
<b>University of Puerto Rico</b>	Developing generalized linear mixed models for the strategic highway safety planning process	Using Mobile Computers to Automate the Change Order Decision Making Process and Improve Total Time and Cost Predictions on Highway Construction Projects				
<b>The College of New Jersey</b>	Worker Safety Issues of WIFI Devices	Improving Cross-Frame Design to Reduce the Effects of Skew in Steel I-Girder				

<b>Projects by Partner</b>						
<b>Partner</b>	<b>Projects</b>					
<b>Agencies:</b>						
<b>NYSDOT</b>	Analysis of Energy Efficient Highway Lighting Retrofits	Technical Support for Use of National Performance Management Research	CIDNY Task 2 Develop a multi-agency/multi modal construction management tool			
<b>NYSERDA</b>	Hunts Point Terminal Market: The Feasibility of Waterborne Transportation	Induced Emissions and Energy Use in Transportation: Use of Social Media Feeds as an IM Support Tool	Eco-Driving Conference			
<b>NYCDOT</b>	Task 6- Strategic ITS Deployment Plan for New York City	CIDNY Task 5 - Develop a Comprehensive Guide to Signal Timing, New Detection and Advanced Signal	CIDNY Task 7 - Research on Pedestrians and Cyclists Safety Using ITS Technology in NYC	CIDNY Task 8- Develop Data Storage and Access Platform for MTA BusTime Data		
<b>NJDOT</b>	Assessing NJ Transit's Mobile App for Users' Receptiveness	Optimizing Work Zone Lighting	Worker Safety Issues of WIFI Devices			

NYMTC	Hosting, maintenance and support for NYMTC PIMS	Innovative Travel Data Collection - Planning for the Next Two Decades	PPS-AQ and PPS-CMP hosting, maintenance, backup and technical support	Regional Financing Options Study		
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**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