



REGION II
New York., New Jersey,
Puerto Rico, Virgin Islands

Marshak Hall Room 910
The City College of NY
New York, NY 10031

Tel: 212-650-8050
Fax: 212-650-8374
Website: www.utrc2.org

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

Program Director: Camille Kamga, Ph.D, Director UTRC, Assistant Professor of
Civil Engineering, The City College of New York, ckamga@utrc2.org, 212-650-8087

Submitting Official: Penny Eickemeyer, peickemeyer@utrc2.org, 212-650-8074

Submission Date: November 9, 2015

DUNS: 064932676

EIN: 13-1988190

Recipient Identifying Number or Account Number: 49198-26

Project/Grant Period: Start Date: September 30, 2013 End Date: September 30, 2017
Reporting Period Start Date: April 1, 2015

Reporting Period End Date: September 30, 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

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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

Continuing Research Projects

- 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)
- A Probability-Based Approach for Assessment of Roadway Safety Hardware (Manhattan College)

- Analysis of Curved Weathering Steel Box Girder Bridges in Fire (Manhattan College)
- Analysis of Energy Efficient Highway Lighting Retrofits (RPI/NYS DOT)
- Analyzing Willingness to Improve the Resiliency of New York City's Transportation System (Cornell)
- Assessing NJ Transit's Mobile App for Users' Receptiveness (CCNY/NJ DOT)
- Building a Sense of Place in an Information Era: Accessibility, Connectivity and Travel (RIT)
- Characterization and Modeling of Photon Absorption in Asphalt Materials (Columbia, Manhattan College)
- 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)
- Computational Synthesis of High-Performance Non-Pneumatic Tires (Stonybrook University)
- 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)
- 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)
- Disaster Relief Vehicle Routing Under Uncertainty (Binghamton University)
- Effective and Equitable Supply of Gasoline to Impacted Areas in the Aftermath of a Natural Disaster (Buffalo)
- Efficacy of the Bacteria Encapsulation Concrete Self-Healing Method in a Harsh Environment (Manhattan College)
- Hosting, maintenance and support for NYMTC PIMS (NJIT) of NYS Infrastructure Assets (Cornell)
- Environmental Impacts of Oil and Gas Brine Applications for Dust and Ice Control in New York (Manhattan College)
- 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)
- Hunts Point Terminal Market: The Feasibility of Waterborne Transportation (SUNY Maritime, CCNY/ NYSERDA)
- Impact of Polymer Modification on Mechanical and Viscoelastic Properties of Binders (Rowan)
- Induced Emissions and Energy Use in Transportation: Use of Social Media Feeds as an IM Support Tool (CCNY, StonyBrook University/ NYSERDA)
- Innovative Techniques for Maintenance, Repair and Reconstruction (MRR) of Asphalt Roadways (Syracuse University)
- Innovative Travel Data Collection - Planning for the Next Two Decades (University at Albany/ NYMTC)
- Intelligent Wireless Charging for Electric Buses in Smart City (Columbia)
- 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)
- Market Potential For Battery Electric Vehicles Based On Multi-Day Activity-Travel Patterns (University at Buffalo)
- Monitoring Infiltration Capacity of Different Types of Permeable Pavement (Manhattan College)
- Nano-modified geopolymers for concrete infrastructure rehabilitation (StonyBrook University)
- Optimizing Work Zone Lighting (RPI/NJDOT)
- Public Transit and Mandatory Evacuations Prior to Extreme Weather Events in New York City (NYU)
- PPS-AQ and PPS-CMP hosting, maintenance, backup and technical support (Cornell/NYMTC)
- Regional Financing Options Study (CUNY,CSI/NYMTC)
- Risk analysis of autonomous vehicles in mixed traffic streams (Rowan)
- Secure and Private Sensing for Driver Authentication and Transportation Safety (NYIT)
- Self-Heated Pavements (StonyBrook University)
- Smart Bus System under Connected Vehicles Environment (NJIT)
- Spectral Based Controllability-preserving Pedestrian Evacuation Network Synthesis Using Multilayered Estimation Models in Real-time (SUNY Maritime)
- Technical Support for Use of National Performance Management Research Data Set (SUNY at Albany/NYS DOT)
- Traffic Prediction Using Wireless Cellular Networks (NYIT)
- Transportation Infrastructure Robustness: Analysis and Measurement (CCNY)
- Understanding Transit Finance: An Analysis of Transit Funding Around the World (Columbia)

- Using Mobile Computers to Automate the Change Order Decision Making Process and Improve Total Time and Cost Predictions on Highway Construction Projects (UPR)
- Worker Safety Issues of WiFi Devices (TCNJ/NJDOT)

Projects continuing during this reporting period: Status of ongoing research

Projects from the 2014-15 grant continued and several final reports were submitted. Execution of subcontracts for projects funded under the 2015-16 grant are continuing at this time. However, work has begun on several projects.

2014-15:

Final Reports submitted:

- Characterization and Modeling of Photon Absorption in Asphalt Materials for Improved Accuracy (Columbia)
- Evaluating the Role of Private Investment in Life Cycle Management of New York State's Infrastructure Assets (Cornell)
- Analysis of Energy Efficient Highway Lighting Retrofits(RPI)
- Impact of Polymer Modification on Mechanical and Viscoelastic Properties of Binders and Hot Mix Asphalt (Rowan)

Examples of Activity this period:

Agency-sponsored

- **Drainage Identification Analysis and Mapping, Phase 2 (NJIT)**
Work continued on software enhancements for NJDOT's Drainage Identification, Analysis and Mapping System (DIAMS) Project. This is a computerized database that captures and stores relevant information associated with all on-ground and under-ground hydraulic structures belonging to NJDOT.
- **CIDNY- Coordinated Intelligent Transportation Systems Deployment in New York City** (FHWA-sponsored) (CCNY, NYU) – five projects-see above. The kick-off meeting and project scoping are complete. The first quarterly progress meeting was held on October 2, 2015.
- **Assessing NJ Transit's Mobile App for Users' Receptiveness** (CCNY/NJDOT)
A literature review has been conducted. Future work includes a scan of Transit Smartphone Applications with Geotargeting and designing the survey questionnaire.

UTRC-sponsored:

Emergency Management/evacuation research

- **Developing a Macroscopic Decision Making Tool for Emergency Evacuation Planning**

Discussions were held with the NYC Office of Emergency Management to discuss project progress and seek feedback. Data collection has begun.

- **Public Transit and Mandatory Evacuations Prior to Extreme Weather Events in NYC**

This project is to evaluate public transit services in areas considered to be at high risk for flooding in New York City and to provide a tool that can help transportation planners and city officials improve these services during evacuations. The research will also look at the characteristics of public transit in Zone 1 evacuation areas in relation to the socioeconomic characteristics of the communities that live there.

- **Effective and Equitable Supply of Gasoline to Impacted Areas in the Aftermath of a Natural Disaster-UB**

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

A survey was designed to explore if New Yorkers are willing to financially support investment to make the transportation system more resilient to extreme weather. The data was collected in the spring of 2015 using an online panel of 1,954 adult respondents living in the New York City metropolitan area. A second sample was collected during this current quarter, targeted at people living in New York State as well as the neighboring States affected by Sandy: Connecticut, New Jersey, and Pennsylvania.

Materials/structures research

- **Alkali Silica Reaction (ASR) in Cement Free Alkali Activated Sustainable Concrete (Clarkson)**

- **Innovative Techniques for Maintenance, Repair, and Reconstruction (MRR) of Asphalt Roadways(Syracuse)**

- **Self-heated Pavements**

(SUNY Stony Brook) The technique being proposed in this research relies on burying small diameter pipes in the *aggregate base layer*, i.e. underneath the asphalt layer. These pavement loops are connected to geothermal ground loops installed vertically or horizontally along the sides of the highway via circulation pumps. The pumps circulate a geothermal fluid between the pavement and ground loops to exchange the geothermal energy. Finally, a solar system operates the circulation pumps.

The research team has successfully determined the optimum pavement loop geometry for acceptable structural performance. The planned activity for the next quarter is to determine the optimum pavement loop geometry for acceptable thermal performance

Technology Research:

- **Evaluating the Impacts of Real-Time Information on Subway Ridership in New York City(CCNy)**

Observations related to arrival and countdown locks are underway. This involves analysis of the relationship between using apps with countdown clock information and passengers' arrival time.

- **Building a Sense of Place in an Information Era: Accessibility, Connectivity and Travel (RIT)**

This research examines the relationships among: (i) sense of place; (ii) non-motorized sustainable travel choices and accessibility; and (iii) adoption and use of mobile information and communication technologies (ICT). IRB approval has been received, an intercept survey and an environment audit plan have been designed.

- **Using Mobile Computers to Automate the Change Order Prediction Cost for Highway Construction Projects (UPR)**

The mobile app developed originally under the UTRC project, *Automating the Reporting and Progress Monitoring Process using Mobile Computers for Highway Construction Projects* was designed to assist with the quality control of highway construction and the app is now undergoing enhancements for increased control. The new UTRC project listed here will provide an extension to the application by automating the prediction of the project cost by the implementation of change orders and extra work in highway construction projects.

An extensive literature review has begun to provide researchers an adequate background of the topic. Also, data regarding the current practices held by the local DOT has been collected.

- **Traffic Prediction using Wireless Cellular Networks (NYIT)**

In this project, freeway traffic will be identified and modeled using data obtained from existing wireless cellular networks. Two tasks were completed to provide cellular data log files and their processing. Development of a mathematical traffic model using analyzed data is ongoing.

Economic Impacts:

- **Do Consumer Expenditures Affect the Demand for Driving?(Cornell)**

Researchers have collected national data, available back to 1936 and back to 1980 at the state level. They are also looking at data from survey of consumer finances back to 1955.

- **Freight Costs at the Curbside (CCNY, RPI)**

A literature review of innovative commercial parking regulation strategies has been undertaken. A citywide analysis to develop a distribution of expected parking fine costs for low and high violation areas in New York City is also underway; this analysis is using observed fine costs from the NYC Department of Finance's parking regulation database as well as freight demand estimated using RPI's FTG software. Researchers at RPI have completed model specification and estimation for the prospect-theory based parking behavior model. The code has been prepared and tested; model validation is ongoing.

b) Education and workforce development

During this period, UTRC accomplished the following:

- *NYMTC/UTRC September 11th Memorial Program Academic Initiative:*
 - Final presentations were given by the two 2014-15 interns on September 17, 2015. The two new, 2015-16 interns began their internships:
 - Di Liu (NYU)-internship at NYMTC office to develop an action plan to link environmental and transportation planning
 - Sabihehal Faghieh (CCNY)-internship at NYMTC office for analysis of the challenges of conducting surveys for activity-based travel demand models

- *Advanced Institute for Transportation Education (AITE):*
 - Five internships are underway for 2015-16

c) Technology transfer

- *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 included:

Date	Topic	PI(s)	Institution(s)
June 22, 2015	Integration of Bus Stop Count Data with Census Data for Improving Bus Services and Efficiency	Catherine Lawson	University at Albany, SUNY
July 14, 2015	Smartphone-Based Teen Driver Support System: Results from a 300 teen driver field operational test	Max Donath	Roadway Safety Institute, University of Minnesota
July 23, 2015	Workzone Operations, Planning and Safety: The road from research to implementation	Kaan Ozbay	New York University

October 8, 2015	Applications on Unmanned Aircraft Systems (UAS) for transportation operations	Lawrence H. Brinker, Esq	Executive Director & General Counsel at Northeast UAS Airspace Integration Research Alliance
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- UTRC, in collaboration with New York State Department of Transportation organized the **2015 AASHTO Subcommittee on Bridges & Structures Annual Meeting** that was held from April 19-24 at the Saratoga Hilton, NY. The conference was well attended by 500 people across the nation including state DOT employees and consultants. The Annual AASHTO Subcommittee on Bridges and Structures (SCOBS) working meeting is a 4-day event comprised of two days of technical committee meetings and two days of general session.
- UTRC, in collaboration with Regional Plan Association organized a conference on **Investing in an accessible New York: A Conference on Public Transportation and New York's Future** that was held May 8th, 2015 at the New York Institute of Technology. The event, convened by the nation's transportation leaders, discussed 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. May 8, 2015
- Gregory D. Winfree, Assistant Secretary of Research and Technology (USDOT) visited UTRC on May 15th 2015. During his visit to UTRC, Mr. Winfree met with UTRC faculty from its consortium universities, staff, and local transportation agencies officials.
- **The Future Of The Taxi Medallion System & For-Hire Services In A Disruptive Technology World**
UTRC hosted a half-day summit on June 23, 2015 at SUNY Global Center to discuss facts and opinions from a wide variety of stakeholders, policy-makers, and academics on the current state of the NYC taxicab medallion industry, including the valuation of medallions in NYC and beyond. Also, the manner by which the for-hire vehicle industry (liveries, black cars and limousines) are coping with smartphone technology disruption was discussed. Finally, a primer or review of how NYC's handling of smartphone app regulation fares against the rest of the country was discussed, including the release of a seminal report on criminal background check best practices conducted by professors at the UTRC and John Jay College of Criminal Justice. The Keynote Speaker was Hon. Michael Balboni, Former Deputy Secretary for Public Safety for New York State, Former New York State Senator and Chair of the New York State Senate Committee on Veterans, Homeland Security and Military Affairs.
- UTRC co-sponsored **An International Symposium On Public Private Partnership (P3)** with Cornell University on September 15th and 16th, the Cornell University Program in Infrastructure Policy, or CPIP, hosted the 4th Annual International Symposium on Public Private Partnerships in New York

City. The Symposium brought together twenty world-renowned scholars of public-private partnerships from around the world under the theme of “Public Perceptions of Public-Private Partnerships.” Scholars from Copenhagen, Lisbon, Milan, Canada and many other countries attended. Fourteen academic papers were presented on important policy issues such as, “Why do countries differ in terms of government support for public-private partnerships; Explaining variations in PPP support in twenty European countries; and Measurement Matters: Improving Infrastructure P3 Comparative Evaluation.” Points emerging from the meetings include the need for more comprehensive benefit-cost analysis of projects to supplement standard value-for-money analysis, the importance of properly assessing the public sector’s cost-of-capital, and the need to engage the public early in the project development stage.

- **UTRC sponsored a freight workshop in New York City**, organized by Rensselaer Polytechnic Institute September 16, 2015 at New York Institute of Technology. A workshop titled “Improving Freight Systems in Metropolitan Areas: From New York City to Across the Globe” was held. The purpose of the workshop was to bring the public and private sectors and researchers together to discuss and share ideas on strategies to improve freight activity in metropolitan areas. This workshop was hosted by Rensselaer Polytechnic Institute (RPI) and the New York Institute of Technology (NYIT) and was jointly sponsored by the VREF Center of Excellence for Sustainable Freight Systems (CoE-SUFS) and the University Transportation Research Center (UTRC).
- **UTRC co-organized the 28th international association of transportation regulators (IATR) 2015 annual meeting**, September 27- 30, 2015 in Montreal, Canada. UTRC staff actively participated in the organization and planning of the 2015 IATR annual conference, held from September 27-30, 2015 in Montreal, Canada. The conference was very well attended by international regulators and presenters, who shared their best state/city practices with attendees. The Former NYS Governor, Hon. David Paterson was the keynote speaker at the Tuesday Luncheon. The governor’s keynote speech along with speakers’ presentations and conference proceedings will be available to IATR members on the IATR website.
- A **Visiting Scholar Seminar** with Dr. Susan Shaheen University of California, Berkeley took place on October 9, 2015 on the topic of *Innovation and Disruption in Urban Mobility*. Professor Shaheen spoke on the trends, recent developments, and social and environmental impacts of new services such as carsharing, bikesharing, ridesharing, and ridesourcing (e.g., UberX, Lyft, and Sidecar). She also discussed the current policy framework and how it is evolving to address these services. Visit <http://www.utrc2.org/events/innovation-disruption-urban-mobility> for video of this presentation.
- **NYSDOT Peer Exchange**
UTRC facilitated a two-day peer exchange on October 23 and 24, 2015 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. Participants included :

Team Members:

- Robert Sack, Director, Office of Technical Services, NYSDOT
- Gary Frederick, Director, Transportation Research and Development Bureau, NYSDOT
- Marty Neveu, Director, Statewide Planning Bureau, NYSDOT
- Deborah Mooney, Head, Policy and Planning Division, Research and Policy Studies Section, NYSDOT
- Curtis T. Bradley, Transportation Program Planner, Research Section, Massachusetts Department of Transportation (MassDOT)
- Camille Crichton-Summers, Manager, Bureau of Research, New Jersey Department of Transportation (NJDOT)
- Timothy Klein, Senior Policy Advisor, Office of the Assistant Secretary for Research and Technology, U.S. Department of Transportation (OST-R, USDOT)
- Valeriya Remezova, Planning and Environmental Team Leader, FHWA-New York State Division (FHWA)
- Joseph D. Tario, Senior Project Manager, New York Energy Research and Development Authority (NYSERDA)
- Lisa A. Tarson, Section Manager, Research Program management, Pennsylvania Department of Transportation (PennDOT)

Others:

- Nadia Aslam, Assistant Director, Technology Transfer and Outreach, University Transportation Research Center (UTRC)
- Beth Brown, Policy and Planning Division, Research and Policy Studies Section, NYSDOT
- Matthew Hannon, Policy and Planning Division, Research and Policy Studies Section, NYSDOT
- Camille Kamga, Director, University Transportation Research Center (UTRC)
- Jane Minotti, Sr. Librarian, Transportation Research and Development Bureau, NYSDOT

- Publications

- *Newsletter publications, "Research News," released Spring 2015 and Fall 2015*

- 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 11th Memorial Program to select current students to serve in internship positions in regional and local agencies to enhance their educational experience.

- NYSAMPO

UTRC is continuing to develop additional courses, per NYSAMPO's needs for training of staff from MPOs throughout New York State.

C. Dissemination of results:

- Quarterly Reports on project progress
- Four completed final reports (see page 5 above)
- An abstract on the project, *Impact of Polymer Modification on Mechanical and Viscoelastic Properties of Binders and Hot Mix Asphalt* (Rowan), was submitted to the Eurasphalt and Eurobitume Conference (eecongress2016.org).
- A paper was submitted on the *Innovative Techniques for Maintenance, Repair, and Reconstruction (MRR) of Asphalt Roadways* project (Syracuse) to the 2016 Geo-Chicago conference
- Papers were submitted by several PIs to be considered for presentation and publication at TRB's 95th Annual Meeting in January 2016.
- A paper was submitted for publication to the Journal of the American Planning Association regarding the *Do Consumer Expenditures Affect the Demand for Driving?*(Cornell) Project
- VREF papers: Alison, Jean-Paul

D. Plans for next reporting period:

• Technology Summit

After two successful conferences, UTRC will continue hosting the tech summit. The 3rd Annual Transport Tech Summit will take place on November 20, 2015 at the New York Institute of Technology. This unique summit will bring together leading experts, academics, practitioners, industry stakeholders and advocates to discuss the rapidly changing and expanding world of transportation technology innovative solutions and public policy-making implications. Presenters will explore cutting-edge intelligent transportation systems, big data aggregation, and innovative transportation technology solutions to promote efficiency, safety, security and sustainability goals, as well as the impact on broader inter-modal and multi-modal transportation considerations. Future and forward thinking innovative concepts are encouraged, and the pragmatic political reality of various movements (such as climate change/ environmental policies and safety initiatives for reduced traffic fatalities), would be analyzed to ascertain whether society is ready to keep pace with the implementation of such technology.

• Connected Vehicles Conference

The Fourth Symposium on Connected and Autonomous Vehicles, *Innovative Applied Research and Deployment Opportunities*, will take place in Albany, NY on December 2 and 3 at the SUNY College of Nanoscale Science and Engineering (CNSE) (December 2) and the Smart Cities Technology Innovation Center (December 3). This year's conference will be organized in close collaboration and with sponsorship from the New York State Department of Transportation (NYSDOT) in partnership with NYU, RPI, SUNY Polytechnic, and Transformation Informatics-UB. The objectives of this event is to highlight new pilot deployment projects, applied research, and new partnerships with government and industry. Plans are currently underway for the event, and invitations are expected to be extended to automotive industry partners such as Volvo, BMW and Mercedes to discuss new technology in vehicles. Presentations on the status of the Capital Region CV Pilot Deployment as well as presentations from proposed pilots recently awarded (NYCDOT, Wyoming, Tampa) funding under the new USDOT grant will be given.

Two workshops are planned for December 3. The first titled, *Transportation Operating Agency Deployment Opportunities*, will be led by an academic to engage public sectors/industries to understand needs and benefits. The objective is to lay the ground for partnerships on future projects. Another workshop is expected on the status of CV/AV standards.

- **Ecodriving Technology**

UTRC, in partnership with NYSEDA and NYSDOT, will sponsor an event in April 2016, *Implementing Ecodriving in New York State: Opportunities and Challenges* in order to educate governmental leaders and policy makers on how to bring this to New York State. Presentations are expected to highlight other successful ecodriving programs both in the US and internationally.

2. PRODUCTS

None at this time.

3. Participants and Collaborating Organizations						
Partner (University)	Agency Sponsor	Location	Project(s) (# funded)	Contribution	Other Collaborators	Role
Clarkson	N/A	Potsdam, NY	Faculty initiated -1	Research		
Cornell	N/A	Ithaca, NY	Faculty-initiated -3	Research		research
Cornell	NYMTC	Ithaca, NY	Agency-initiated-1	Technical support		
Columbia	N/A	New York, NY	Faculty-initiated -3	Research		Research
CUNY:						
CCNY	N/A	New York, NY	Fac. Init./emerging.scholar-5	Research		
CCNY	N/A		Faculty-initiated-1	research	RPI	research
CCNY	NJDOT	New York, NY	Agency initiated-1	research		
CCNY	NYSERDA		Agency-initiated-2	research	SUNY StonyBrook, SUNY Maritime	research
CCNY	NYSERDA		Agency-initiated	tech transfer		
CCNY	NYCDOT/NYS DOT	New York, NY	Agency-initiated-5	CIDNY research	StonyBrook/,NYU	
CSI/CUNY	NYMTC	New York	Agency-Initiated-1	research		
Manhattan College	N/A	Bronx, NY	Faculty-initiated-7	research	Columbia (1)	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-3	research		
NYU		New York	1	Tech Transfer		
NYU	NYCDOT, NYSDOT	New York, NY	Agency initiated-3	Research, CIDNY	CCNY(1), UB(1)	research
RIT	N/A	Rochester, NY	Faculty-initiated-1			
Rowan University		Glassboro, NJ	Faculty initiated-2	research		
RPI	NYSDOT NJDOT	Troy, NY	Faculty-initiated-2, agency-2	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		
Stonybrook	NYSERDA	Stonybrook, NY	Agency-Initiated-2	research	CCNY	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				

3. Participants and Collaborating Organizations						
Partner (University)	Agency Sponsor	Location (see attached)	Project(s) (# funded)	Contribution	Other Collaborators	Role
Syracuse		Syracuse, NY	Faculty -initiated-1	research		
The College of New Jersey	NJDOT	Trenton, NJ	Agency-initiated-1	research		
The College of New Jersey		Trenton,NJ	Faculty-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		
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		
SUNY Buffalo	12 Capen Hall	Buffalo, NY 14260
SUNY New Paltz		
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

<u>Partner</u>	<u>Projects</u>						
USC/Volvo							
Clarkson	Alkali Silica Reaction (ASR) in Cement Free Alkali Activated Sustainable Concrete						
Columbia	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				
Cornell	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				
CCNY	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	
CCNY Continued	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	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	Feasibility of Lane Closures Using Probe Data	
The College of Staten Island	Regional Financing Options Study						

<u>Partner</u>	<u>Projects</u>						
Manhattan College	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	Monitoring Infiltration Capacity of Different Types of Permeable Pavement	Analysis of Curved Weathering Steel Box Girder Bridges in Fire	Environmental Impacts of Oil and Gas Brine	Applications for Dust and Ice Control in New York
Manhattan College	Concrete Self-Healing Method in a Harsh Environment						
NJIT	Hosting, maintenance and support for NYMTC PIMS	Feasibility of Lane Closures Using Probe Data	Smart Bus System under Connected Vehicles				

<u>Partner</u>	<u>Projects</u>					
NYIT	Traffic Prediction using Wireless Cellular Networks	Secure and Private Sensing for Driver Authentication and Transportation Safety				
NYU (includes NYU/Poly)	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	

NYU (Continued)	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			
RPI	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	
RIT	Building a Sense of Place in an Information Era: Accessibility, Connectivity and Travel					
Rowen	Impact of Polymer Modification on Mechanical and Viscoelastic Properties of Binders	Risk analysis of autonomous vehicles in mixed traffic streams				
SUNY:						
StonyBrook	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	
Buffalo	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			

Maritime	Hunts Point Terminal Market: The Feasibility of Waterborne Transportation	Spectral Based Controllability-preserving Pedestrian Evacuation Network Synthesis Using Multilayered Estimation Models in Real-time				
Albany	Innovative Travel Data Collection - Planning for the Next Two Decades	Technical Support for Use of National Performance Management Research Data Set				
Binghamton	Disaster Relief Vehicle Routing Under Uncertainty					
<u>Partner</u>	<u>Projects</u>					
New Paltz						
Syracuse University	Innovative Techniques for Maintenance, Repair and Reconstruction (MRR) of Asphalt Roadways					
University of Puerto Rico	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				
The College of New Jersey	Worker Safety Issues of WIFI Devices	Improving Cross-Frame Design to Reduce the Effects of Skew in Steel I-Girder				

Projects by Partner						
<u>Partner</u>	<u>Projects</u>					
Agencies:						

NYSDOT	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			
NYSERDA	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			
NYCDOT	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		
NJDOT	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		

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