



REGION II  
UNIVERSITY TRANSPORTATION  
RESEARCH CENTER

# PROGRAM PROGRESS PERFORMANCE REPORT

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](http://www.utrc2.org)

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

<b>Federal Grant #</b>	DTRT13-G-UTC32
<b>Project Title:</b>	University Transportation Research Center – Region 2
<b>Name of Grant:</b>	University Transportation Center
<b>Program Director:</b>	Camille Kamga, Ph.D., Director UTRC, Assistant Professor of Civil Engineering, The City College of New York, <a href="mailto:ckamga@utrc2.org">ckamga@utrc2.org</a> , 212-650-8087
<b>Submitting Official:</b>	Penny Eickemeyer, <a href="mailto:peickemeyer@utrc2.org">peickemeyer@utrc2.org</a> , 212-650-8074
<b>Submission Date:</b>	May 25, 2018
<b>DUNS:</b>	064932676
<b>EIN:</b>	13-1988190 Recipient Identifying Number or Account Number: 49198-26
<b>Project/Grant Period:</b>	Start Date: September 30, 2013 End Date: September 30, 2017
<b>Reporting Period Start Date:</b>	October 1, 2017
<b>Reporting Period End Date:</b>	March 31, 2018
<b>Report Term or Frequency:</b>	Six months

Signature:

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, 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

##### New Projects

There were no new projects during this reporting period.

##### Ongoing Projects

The following projects continued during the reporting period

• Accelerated Aging of Asphalt by UV-Oxidation (Manhattan College)
• Accomodating Freight in Complete Streets Guidebook - CCNY
• Adaptive Evacuation Transportation Planning Under Uncertainty (SUNY Binghamton)
• 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 NYC (CCNY)
• Approach to Blast Resistant Design of Aging Transportation Structures with Little or No Stand-Off Distance (Manhattan College)
• Calibration / Development of Safety Performance Functions for New Jersey
• CMAQ Performance Plan
• Connected, Autonomous, and Shared Vehicle Impacts Study
• Crowdsipping: Evaluating its Impacts on Travel Behavior (CUNY)
• Deaf and Hard- of- Hearing Drivers: Making the Highways Safer for Everyone(RIT)
• Development of a new connected eco-driving system at signalized intersections with adaptive signal (Polytechnic Institute of NYU)
• Development of Software for Analysis of Traffic Signal Support Structures(RPI)
• Drone/Unmanned Aircraft System Regulation and Policies in New Jersey

• Dynamic Bus Routing Problem for Evacuation (SUNY Buffalo)
• Incorporating Probe Vehicle Data to Analyze Evacuation Route Resiliency (TCNJ)
• Improve Congestion Performance Measures via Conflating Private & Public Information Sources (NJIT)
• Investigating Public Opinions towards Emerging Transportation Technologies and Service Forms (RPI)
• Investigation of Boundary Pressures and Internal Stresses in Geofoam Blocks (Syracuse)
• LED Roadway Lighting Benefits and Costs Collaboration
• Mitigation of Transportation Induced Vibration Using Seismic Metamaterials (SUNY Stony Brook)
• Mobile Bridge Scour Monitoring Using Autonomous Underwater Vehicle (Manhattan College)
• NJDOT Traveler Info Application- Route 1 and Route 18 Corridors
• Portable and Integrated Multi-Sensor System for Data-Driven Performance Evaluation of Urban Transportation Networks (NYU)
• Potential Hydrodynamic Loads on Coastal Bridges in the Greater New York Area due to Extreme Storm Surge and Wave( CUNY)
• Securing Inter-Vehicular Networks with Time and Driver Identity Considerations (NYIT)
• Spectral Based Controllability-preserving Pedestrian Evacuation Network Synthesis Using Multilayered Estimation Models in Real-time (SUNY Maritime)
• Utilizing Digital Exhaust from Smartphone Applications for Transportation Planning, Continuous Measurement and Market Analysis (CUNY)
• Virtual Transportation Management Strategies Demonstration (CUNY)

## Completed Projects

The following projects were completed during this reporting period:

• Activity- Based Approach for the Design of Sustainable Area Cordon Pricing Schemes (UPR)
• Computational Synthesis of High Performance Non-Pneumatic Tires (SUNY StonyBrook)
• Development of a New, Effective and Low-cost Media for Sustainable Management of Polluted Road Stormwater in Highly Urbanized Areas: Wood Mulch Coated with Aluminum- and Iron-Based Water Treatment Residuals (Manhattan College)
• Effects of Foreign Participation in U.S. High Speed Rail Projects (CUNY)
• Evaluating the Impacts of Real-Time Information on Subway Ridership in New York City (CUNY)
• Impact of Optimization Strategy and Adoption Rate of V2X Technology on Environmental Impact, (RIT)
• Incorporating Probe Vehicle Data To Analyze Evacuation Route Resiliency (TCNJ)
• Inferring High-Resolution Individual's Activity and Trip Purposes with the Fusion of Social Media, Land Use and Connected Vehicle Trajectories (SUNY Buffalo)
• Managing the Daily Operations of a Bike Sharing System Using Mobile Stations (SUNY Buffalo)
• NYMTC Regional Financing Study (CUNY, CSI)
• Recommendations for Improving Fire Performance of Steel Bridge Girders (Manhattan College)
• Simulation of Automated Vehicles' Drive Cycles (SUNY New Paltz)
• The Spatial Effect of Socio-Economic Demographics on Transit Ridership: A Case Study for New York (Cornell)

- Techniques for Efficient Detection of Rapid Weather Change and Analysis of their Impacts on a Highway Network (SUNY Albany)
- Transportation Infrastructure Robustness: Joint Engineering and Economic Analysis (CUNY)
- Urban Travel Time Variability in New York City: A Spatio-Temporal Analysis within congestion pricing context (SUNY StonyBrook)
- Understanding Transit Finance: An Analysis of Transit Funding Around the World (Columbia)
- Using visual information to determine the subjective valuation of public space for transportation: application to subway crowding costs in NYC (Cornell)

### **Examples of Activity this period**

The following are examples of project progress during the reporting period.

#### **NYSDOT-Sponsored**

- **LED Roadway Lighting Benefits and Costs Collaboration**

The objective of this project is to validate and understand issues related to the design, installation and performance of light emitting diode (LED) roadway lighting and use this information to help inform practical tariff mechanisms in New York State. The New York State Department of Transportation (NYSDOT) has identified Central Avenue (NYS Route 5), in the Town and Village of Colonie in Albany County, NY as a location where there have been concerns about pedestrian safety (CDTC). During the reporting period, an MOU was signed with all parties involved in anticipation of removing old lighting and replacing LED roadway lighting to begin evaluation of performance.

#### **NYMTC-Sponsored**

- **Congestion Management Mitigation Air Quality Performance Plan Phase 1**

The project team will work with the PFAC Operating Procedures Working Group, which will guide the development of the plan, and act as the steering committee for this project. A workshop is being organized next period regarding how other MPOs of similar size manage the performance of their CMAQ programs. NYMTC will use this information to incorporate into their program.

#### **NYSERDA Sponsored**

- **Connected, Autonomous, and Shared Vehicle Impacts Study**

Connected and automated vehicles (CAVs) and shared mobility transitions are increasingly recognized as having potential to transform energy consumption and mobility dynamics through mechanisms such as improved efficiency, better routing, and lower traffic congestion, and by enabling advanced technologies. This project aims to assess the impacts of self-driving vehicles within and across the state of New York, with emphasis on synergies between automated, shared and electric vehicle transportation transformations. The output will be a final report that summarizes the project activities, findings and results.

The kickoff meeting was held on February 21, 2018. The subaward agreement between RFCUNY and NREL is being negotiated. Work progressed in preparation of a brainstorming event to be held May 11, 2018.

- **Virtual Transportation Management Strategies Demonstration**

The project aims to demonstrate a Virtual Transportation Management (VTM) strategy for the City of Mount Vernon, NY. This will include the demonstration of underutilized strategies and policies related to advanced traffic management and integrated corridor management by deploying wireless communication technologies, dynamic video detection and monitoring units, and a cloud-based

ATMS solution. The output will be a final report that summarizes the project activities, findings and results.

The project team conducted a preliminary assessment of corridors of the City of Mt. Vernon to identify locations for the test. The field visit took place on March 28, 2018 to collect additional information and to confirm preliminary assessments. The proposed test locations will be reviewed based on the integration with recommended technologies and the cost of equipment

### **NJDOT Sponsored**

- **Calibration / Development of Safety Performance Functions for New Jersey**

The main objective of this research project is to either calibrate the Safety Performance Functions (SPFs) provided in the Highway Safety Manual (HSM) using New Jersey (NJ) data or develop new NJ-specific SPFs for at least twenty different facility types. Various tasks need to be completed to achieve the main project objective, which is “to either calibrate the SPFs provided in the HSM using New Jersey (NJ) data or develop new NJ-specific SPFs”.

The research team has compiled and reviewed all the available literature on safety performance functions (SPF). The primary focus was the DOT projects on calibration/development of SPFs. A draft literature review document has been prepared. Some findings included that data extraction is a key step in achieving study objectives. Literature that was reviewed was characterized as 1) calibration, 2) development and 3) calibration and development.

In addition, the research team conducted one-to-one interviews with several researchers who conducted state DOT research projects on SPF calibration/development. In addition, A technical memorandum that discusses the analysis approach, supports and defines the project tasks and presents a clear definition on the research scope was prepared.

- **NJDOT Traveler Info Application- Route 1 and Route 18 Corridors**

The New Jersey Department of Transportation (NJDOT) seeks to develop a hands-free Mobile Application (app) platform to aid travelers by offering travel information that utilizes the data it currently collects from its real-time transportation information systems and includes additional travel related information such as transit and shuttle schedules and availability of parking. Dr. Catherine T. Lawson and her team at the Albany Visualization and Informatics Lab (AVAIL), in partnership with Information Logistics (ILOG), are developing a Mobile Application platform that builds upon ILOG’s GeoTalker™ Platform, by integrating travel time and delay related information from the NJ DOT central data fusion engine, parking information from various sources, transit/shuttle schedule information in real time from NJ TRANSIT and MTA, and utilizes the commercially available real-time routing technology of Google Maps.

The project completed the Data Discovery portion of this project. A memo on Task 1 will be delivered for the Q1-2018 in-person meeting. The team finalized the specifications and best practices. The project team began processing the parking data from Parkwhiz and Parkmobile, as well as the Nextbus (Rutgers shuttle) data into databases. The project team also continued to process the real-time bus and train data. The team completed initial development of an alpha real-time transit (Bus/train) information

- **Drone/Unmanned Aircraft System Regulation and Policies in New Jersey**

AA Advisory Circular 107-2 provides guidance on the regulation of UAS in the NAS, however, AC 107-2 does not provide, nor is it intended to provide, a legal interpretation of the regulations. Rather, this advisory is provided as best practice methods for developing operational programs scaled to

specific small unmanned aircraft (UA), associated system equipment, and operations in combination with agency's operational details and local laws in New Jersey. Some of the laws local impacting the implementation of these guidance in New Jersey are privacy laws and motor vehicle laws.

The research team will conduct an extensive review of the literature. This literature review will focus on several aspects including: UAS Operations, applicable NJ State/Local laws, UAS Regulations, Risk Management and Safety Procedures, review of current NJDOT Aeronautical policies and regulations, and survey of public airports.

Deliverables submitted during this reporting period include a review of current NJDOT aeronautical Policies and Regulations, a survey of public airports and the literature search.

### **UTRC-Sponsored:**

All of the on-going UTRC faculty-initiated projects are nearing completion. Most are in the final report process at this time.

#### **b) Education and workforce development**

During this period, UTRC accomplished the following:

#### **NYMTC/UTRC September 11th Memorial Program Academic Initiative:**

- NYMTC has included \$50,000 in the UPWP to fund two interns during the 2018-19 academic year. Application materials have been posted and are due by June 12, 2018.
- 2017-18 interns have continued with their projects. They will make their final presentations in September 2018.

#### **c) Technology transfer**

Events that took place during this period included:

- **October 13, 2017 : Getting Back on Track: The New York Transit Crisis**  
This forum explored the nature and causes of the current mass transit crisis, and focused on solutions that will enable New York to sustain itself as a world-class city. During the course of two panels, speakers offered strategies to modernize and maintain the City's transit systems, with responses from local elected leaders on the crisis and policies to remedy it.
- **February 27, 2018: NYMTC Annual Meeting**  
UTRC organized this event held at the City College of New York. The keynote speaker was Kathryn S. Wylde, President and CEO, The Partnership for New York City. Her topic was "Transit, Traffic, and Taxes" – New Challenges for the NYC Metro Region. The presentation focused on how the transportation priorities of the region need to be addressed through more creative, nontraditional means.
- **March 27, 2018: NYMTC Brown Bag Discussion**  
This presentation was given by Matthew Daus, former NYC Taxi & Limousine Commissioner/Chair, transportation technology lawyer, distinguished Lecturer at CUNY/CCNY's Transportation Center and President of the International Association of Transportation Regulators. His talk, "Big Data, Autonomous Mobility, and the Law," discussed evolving laws and regulations impacting transportation data and privacy, including access to data (TNCs, taxis, paratransit, airports) by the public, government, academia and competing private company interests.

Events that are scheduled during the next period include:

- **April 17, 2018: 2018 Transaction Conference**  
This conference will feature 70 workshop sessions specializing in bus, rail, roads, bridges, goods movement, pedestrian/bicycle, paratransit, community transportation, ports and more.
- This workshop will include presentations and a panel discussion with New Jersey experts on autonomous vehicles, from universities, transit and regulators. Topics include: State of the art – Where we are and what’s coming in autonomous vehicles, Transit – Disrupting an industry and saving lives, regulatory matters, and Why NJ needs places to test autonomous driving. Camille Kanga from UTRC will moderate and Matthew Daus from UTRC will speak, along with Alain Kornhauser from Princeton University and Jerome Lutin, formerly of NJIT.
- **April 27, 2018: Car Free Day – Steps & Strides Towards a Sustainable Future**  
UTRC will host an academic forum to highlight the different ways the city can use its streets. Please join us for this forum in support of Car Free Day!

## Publications

### Newsletter

The winter 2018 newsletter was released during this reporting period. <http://www.utrc2.org/Newsletter>

### Annual Report

UTRC released the 2017 annual report featuring center’s activities from January 2017 through December 2017. <http://www.utrc2.org/about-utrc/annual-report>

## 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.

### C. Dissemination of Results:

A compendium, listing every session that included a UTRC faculty member, was published prior to the TRB 2018 annual meeting. UTRC faculty were involved in over 70 sessions.

[TRB Compendium 2018](#)

UTRC released the video briefing of the completed NYSERDA/NYS DOT sponsored project; *Reducing Incident-Induced Emissions and Energy Use in Transportation: Use of Social Media Feeds as an Incident Management Support Tool*. <https://vimeo.com/261381990>

### D. Plans for next reporting period:

- Video clips on completed projects are expected to be posted during the next reporting period.

## 2. PRODUCTS

Final reports, conference presentations, conference papers.



### 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(27),	Research		
Cornell	N/A	Ithaca, NY	Faculty- initiated -2 (26) complete, 1 (27)	Research		Research
Cornell	NYMTC	Ithaca, NY	Agency-initiated-1(26)	Technical support		
Cornell	N/A	Ithaca, NY	Agency-initiated-1(28)	Research		
Columbia	N/A	New York, NY	Faculty-initiated 1 (27) 1 (26)	Research	Manhattan	Research
CUNY:						
CCNY	N/A	New York, NY	Faculty-initiated 1(28)	Emerging scholar		
CCNY	N/A		Faculty-initiated-3(27) 1(28) 2(26) complete,	Research	RPI	Research
CCNY	NJDOT	New York, NY	Agency initiated-2	Research		
CCNY	NYSERDA		Agency-initiated -3 (26), 1 (28)	Research	SUNY Stonybrook	Research
CCNY	NYSERDA		Agency-initiated (complete)	tech transfer		
CCNY	NYSDOT/NYSERDA		Agency-initiated	Research	StonyBrook, Maritime	Research, CIDNY
CCNY	NYMTC	New York	Agency	Tech support		
CSI/CUNY	NYMTC	New York	Agency-Initiated-1(27)	Research		
CSI/CUNY	N/A	New York	Faculty-initiated-(28)	Research		

John Jay College	N/A	New York	Faculty-initiated-(28)	Research		
CUNY SPS	NYSAMPO		Agency-initiated	Workforce development		
Manhattan College	N/A	Bronx, NY	Faculty-initiated 3 (26), 1(28)	Research		
Manhattan College	N/A	Bronx, NY	Faculty-initiated-4(28)	Emerging investigator		
NJIT	NYMTC	New York	Agency	Tech-Support		
NJIT	N/A	Newark, NJ	Faculty-initiated 1(27), 1 (28)	Research		
NJIT	NJDOT	Newark NJ	Agency initiated-1(26)	Research		
NYIT	N/A	New York, NY	Faculty-initiated- 1 (26). 1(28)	Research		
NYU	N/A	New York, NY	Faculty- initiated 1-(27) 1 (26)	Research		
NYU		New York	1(27), 1 (28)	Ed/Tech		
NYU/Tandon Sch. Engr.	NYCDOT, NYS DOT, NJDOT	New York, NY	Agency initiated-5	Research, CIDNY	CCNY(1), UB(1)	Research
NYU/Tandon Sch. Engr	N/A	New York, NY	Faculty-initiated (28) 1(26)	Research		
RIT	N/A	Rochester, NY	Faculty-initiated-1 1(28)			
RIT	N/A	Rochester, NY	Fac. initiated. (2) -28	Emerging Invest.		
RIT	N/A	Rochester, NY	Fac. Initiated-1(27)	Edu/Tech		
Rowan University	N/A	Glassboro, NJ	Faculty initiated-, 1 (27), 1 (28) 1 (26)	Research		
Rowan University	N/A	Glassboro, NJ	Faculty-initiated	Ed-tech		

RPI	NYSDOT, NJDOT	Troy, NY	Agency-initiated 2(27),	Research		
RPI	N/A	Troy, NY	Faculty- initiated- 1(27), 1 (28) 1(26)	Research		
SUNY:						
Albany	NYMTC NYSDOT	Albany, NY	Agency-initiated-3	Research/ technical support		
Buffalo		Buffalo, NY	Faculty-initiated- 1(27)	Research		
Buffalo		Buffalo, NY	Faculty-initiated 1(27)-2 (28)	Emerging invest		
Buffalo		Buffalo, NY	Fac. Initiated - 2 (28), 1(26)	Educ/tech trans		
Buffalo	NYSDOT/NYCDOT		Agency-initiated 1 (26)			NYU
Binghamton		Binghamton, NY	Faculty-initiated-1	Rresearch		
Binghamton		Binghamton, NY	Faculty-initiated-1(28)	Emerg invest		
New Paltz		New Paltz, NY	Faculty-initiated- 1(complete)	Research		
New Paltz	N/A	New Paltz, NY	Faculty-initiated-1(28)	Emerging invest.		
Stonybrook	N/A	Stonybrook, NY	Faculty-initiated- 1 (27), 1-(28)	Research		
Stonybrook	NYSDOT/NYCDOT	Stonybrook, NY	CIDNY 2 (26)	Research		
Stonybrook	N/A	Stonybrook, NY	Faculty-initiated(28)-1	Emerging Inves.		
Maritime	NYSERDA	Throggs Neck, NY	Agency-initiated-2(26)	Research	CCNY	Research
Maritime	N/A	Throggs Neck, NY	Faculty-initiated-1	Research		
Syracuse	N/A	Syracuse, NY	Faculty -initiated-), 1 (28)	Research		

Syracuse	N/A	Syracuse, NY	1(28)	Ed/tech		
The College of New Jersey	NJDOT	Trenton, NJ	Agency- initiated -1(27)	Research		
The College of New Jersey	N/A	Trenton, NJ	1(28)	Emerg invest.		
University of Puerto Rico	N/A	Mayaguez PR	Faculty-initiated- 1 (27), 1 (26)	Research		
UPR	N/A	Mayaguez, PR	Faculty initiated 1 (28)	Emerg invest		

**Agency Partners:**

NYSERDA		Albany, NY				
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						
NYSAMPO						

## Partners and Location

Partner	Street	City, State, Zip
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 Parkway East	Binghamton, NY 13902
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
<b>Agencies:</b>		
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>Partner</b>	<b>Projects</b>					
USC/Volvo						
<b>Clarkson</b>	Alkali Silica Reaction (ASR) in Cement Free Alkali Activated					
<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	Phase 2 Biological Control of Invasive Phragmites australis	Using visual information to determine the subjective valuation of public space for transportation: application to subway crowding costs in NYC	
<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	Potential Hydrodynamic Loads on Coastal Bridges in the Greater New York Area due to Extreme Storm Surge and Wave -
<b>CCNY Continued</b>	Accommodating Freight in Complete Streets Guidebook	Potential Hydrodynamic Loads on Coastal Bridges in the Greater New Oyrk Area due to Extreme Storm Surge and Wave	Crowdshipping: Evaluating its Impacts on Travel Behavior-	Activity-Based Approach for the Design of Sustainable Area and Cordon Pricing Schemes	Utilizing Digital Exhaust from Smartphone Applications for Transportation Planning, Continuous Measurement and Market Analysis	NYC Connected Vehicle Deployment Project
	Online Learning Program for Staff of New York State's Metropolitan Planning Organizations	Drone/UnManned Aircraft (UAS) System Regulations and Policies for Use in New Jersey	Virtual Transportation Management Strategies Demonstration	Making Transportation Smart and Sustainable-AV Energy Impacts		

<b>The College of Staten Island</b>	Regional Financing Options Study	Utilizing Digital Exhaust from Smartphone Applications for Transportation Planning, Continuous Measurement and Market Analysis				
<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	Approach to Blast resistant Design of Aging Transportation Structures with Little or No Stand - Off Distance	The Spatial Effect of Socio-Economic Demographics on Transit Ridership: A case study in New York	
<b>NJIT</b>	Hosting, maintenance and support for NYMTC PIMS	Feasibility of Lane Closures Using Probe Data	Smart Bus System under Connected Vehicles Environment	Improve Congestion Performance Measures via Conflating Private and Public Information Sources		
<b>NYIT</b>	Traffic Prediction using Wireless Cellular Network	Secure and Private Sensing for Driver Authentication and Transportation Safety	Securing Inter-Vehicular Networks with Time and Driver Identity Considerations			



<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 NYC	
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	Portable and Integrated Multi-Sensor System for DataDriven Performance Evaluation of Urban Transportation Networks -CUSP	Calibration/Development of Safety Performance Function for NJ	
<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	LED Roadway Lighting Benefits and Costs Collaboration
<b>RIT</b>	Building a Sense of Place in an Information Era: Accessibility, Connectivity and Travel	The Effect of Optimization Strategy and Adoption Rate on V2X Technology Environmental Impact	The Socialization of Travel: The Effects of Traveler Social Networks on Resiliency in Traffic Networks			

<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	Mitigation of Transportation Induced Vibration using Seismic Metamaterials
	Urban Travel Time Variability: Spatio-Temporal Analysis for New York City					
<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	Dynamic Bus Routing Problem for Evacuation,	Educating binational transportation networks, freight movements, and economic impacts	Managing the Daily Operations of Bike Sharing System Using Mobile Stations

<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	Techniques of Efficient Detection of Rapid Weather Changes and Analysis of their Impacts on a Highway Network			
<b>Binghamton</b>	Disaster Relief Vehicle Routing Under Uncertainty	Adaptive Evacuation Transportation Planning Under Uncertainty				
<b>New Paltz</b>	Simulation of Automated Vehicles Drive Cycles					
<b>Syracuse University</b>	Innovative Techniques for Maintenance, Repair and Reconstruction (MRR) of Asphalt Roadways	A Workshop on Implementation of Asset Management Principles for Local Street Network	Investigation of Boundary Pressures and Internal Stresses in Geofam Blocks			

<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	Activity-Based Approach for the Design of Sustainable Area and Cordon Pricing Schemes			
<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	Incorporating Probe Vehicle Data to Analyze Evacuation Route Resiliency			
<b>Agencies:</b>						
<b>NYSDOT</b>	Analysis of Energy Efficient Highway Lighting Retrofits	Technical Support for Use of National Performance Management Research Data Set	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	Virtual Transportation Management Strategies Demonstration	Smart and Sustainable AV Energy Impacts	

<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 Bus Time Data		
<b>NJDOT</b>	Assessing NJ Transit's Mobile App for Users' Receptiveness	Optimizing Work Zone Lighting	Worker Safety Issues of WIFI Devices	Drone/Unmanned Aircraft System Regulations & Policies for Use in NJ	Traveler Information Application for RT 1 and 18 Corridor	Calibration/ Development of Safety Performance in NJ
<b>NYMTC</b>	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