REGION II
UNIVERSITY TRANSPORTATION
RESEARCH CENTER

PROGRAM PROGRESS PERFORMANCE REPORT

REGION II
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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
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Project/Grant Period:	Start Date: September 30, 2013 End Date: September 30, 2017
Reporting Period Start Date:	October 1, 2018
Reporting Period End Date:	March 30, 2019
Report Term or Frequency:	Six months

Signature: Penny Eickemeyer

Associate Director for Research, UTRC

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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 (none**)**

Ongoing Projects
The following projects continued during the reporting period

- Accommodating Freight in Complete Streets Guidebook (CUNY)*
- An Examination of Commercial Vehicle Access to Residential Buildings in NYC (CUNY)*
- Biological Control of Invasive Phragmites australis, Ph 2 (Cornell)
- Connected, Autonomous, and Shared Vehicle Impacts study (CUNY)
- Crowdshipping: 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 control (NYU Tandon School of Engineering)*
- Development of Software for Analysis of Traffic Signal Support Structures (RPI)
- Drone/Unmanned Aircraft System Regulation and Policies in New Jersey
- Investigation of the Best Practices for the Reduction, Reuse, and Recycling of Vehicle Wash Water for NYSDOT - Stony Brook
- Investigation of Boundary Pressures and Internal Stresses in Geofoam Blocks (Syracuse)
- (UTRC funded portion is complete)
- NJDOT Traveler Info Application-Route 1 and Route 18 Corridors (SUNY at Albany)
- Virtual Transportation Management Strategies Demonstration (CUNY)

*Draft final report completed

Completed Projects

The following projects were completed during this reporting period:

- Accelerated Aging of Asphalt by UV-Oxidation (Manhattan College)
- Calibration / Development of Safety Performance Functions for New Jersey (NYU Tandon School of Engineering
- Dynamic Bus Routing Problem for Evacuation (SUNY Buffalo)
- Securing Inter-Vehicular Networks with Time and Driver Identity Considerations (NYIT)
- LED Roadway Lighting Benefits and Costs Collaboration (RPI) (UTRC-funded portion)

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

NYSDOT-Sponsored

- **Phase 2 Biological Control of Invasive *Phragmites australis***
  The growth and expansion of Phragmites australis interferes with NYSDOT's Landscape Stewardship Policy to promote biodiversity. Current practices to control Phragmites australis include the application of herbicides followed by burning or mechanical removal of dead stalks. Success of eradication using herbicides has only been achieved for small infestations covering less than 1 acre. For larger areas, eradication has not been successful; plants re-grow and require re-treatment with herbicide application at a 3-5 year rotation.
  This project is underway to develop a cost effective and environmentally safe biological control for invasive *Phragmites australis*.

  Progress this period included continued data analysis regarding survival and growth of native and introduced *Phragmites* genotypes obtained from populations in NY, WI and IN to support development of demographic models. It also included the harvesting and dissection of *Phragmites* samples for spatial analyses of the insect community.

  Another goal of this project is to mitigate negative impacts that *P. australis* could have on native bird species. Therefore, work continued on preliminary bioacoustics monitoring of bird sounds within native and introduced *P. australis.* Machine learning will be used to process the recordings to determine what species are utilizing habitats within *P. Australis*..

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- **Development of Software for Analysis of Traffic Signal Support Structures**
  The objective of this project is to develop a computer program to perform load and stress analyses of existing and proposed span wire and mast arm traffic signal installations. Beta testing of the software has been undertaken and comments were addressed during the reporting period. Verification studies to ensure that the software provides accurate results for each of the six structural configurations considered by the software. The verifications include hand/spreadsheet computations to verify the output from the software.

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 team hosted a second brainstorming event "Reinventing Mobility in Upstate New York State" at the NY Upstate APA Conference on October 5, 2018 at Ithaca, NY. List of organizations represented included, City of Ithaca, Tompkins County Area Transit (TCAT), ITCTC, NY Department of Public Works, Tompkins County Planning, Ithaca Carshare, Ithaca Bikeshare, Taitem Engineering, Cornell University,

- **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.

  Seven test locations were selected based on the integration with recommended technologies and the cost of equipment. Miovision and Live Traffic Data are the two partners that will be providing the hardware for the selected intersections. The project team has issued the purchase orders to both vendors for the procurement of the selected hardware. The City of Mt. Vernon has received all devices. Miovision has successfully installed its devices at four intersections. The devices will be configured for the intersections before data are to be collected for the existing conditions. Miovision will perform A training for the platform and data. Live Traffic Data (LTD) will install devices as well at three intersections. Upon installation, devices will be calibrated and integrated for data capture.

NJDOT Sponsored

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

  Motor vehicle crashes have always been a leading safety issue for our highways. To provide data regarding crashes, the Highway Safety Manual the Highway Safety Manual (HSM) was published in 2010 by the American Association of State and Highway Transportation Officials (AASHTO), providing a comprehensive approach and a set of analytical tools and methods for the integration of safety into highway planning, design, operations and maintenance.

  Because the SPFs provided in the Highway Safety Manual are developed using data from other states, they often cannot be transferred directly to other locations and times. The HSM-based predictive model often needs to be calibrated to capture local state or geographic conditions. Also, accident frequencies for similar facility types can also vary from one jurisdiction to another, since their locations differ in climate, driver population and characteristics, accident reporting threshold, accident reporting practices and other contributing factors. It is therefore important to take strategies to let the SPFs better accommodate local date. This study is undertaken to develop those strategies for New Jersey. Therefore, the main objective of this study is to either calibrate the SPFs provided in the HSM using New Jersey data or develop new New Jersey-specific SPFs for at least twenty different facility types.

  During this reporting period, the researchers compiled all of the available databases. The calibration of SPFs for rural two lane intersections and segments, multilane intersections and urban intersections and the development of SPFs for rural and urban intersections were completed.

- **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 (bus/train) 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 GeoTalkerTM 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.

  Significant work progressed during this reporting period including data discovery, developing specifications based on Best Practices, data processing of parking data from existing software data bases (Parkwhiz and Parkmobile) and from the Rutgers shuttle data (Nextbus).The project team identified all of the data elements from each of the parking and transit APIs for inclusion in the travel app.

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

  Inspection of transportation infrastructures, such as bridges, high mast poles, railroad tracks, etc., is carried out visually and is significantly affected by the access to these infrastructures and traffic

control requirements. Unmanned aircraft systems (UAS), commonly called drones or Unmanned Aerial Vehicles (UAVs), operate under remote control without any pilot onboard. Their operation relies mostly through real-time control by humans. Efforts have been ongoing for applying use of UAS in numerous operations including potential for improving the reliability and speed of inspections of bridges, railroad tracks, construction projects, etc. Besides inspection of infrastructures, UAS can also be used for many applications related to infrastructure management.

For this study, The New Jersey Department of Transportation (NJDOT) listed 38 such areas where UASs could improve efficiency of agency activities such as carrying out infrastructure inspection, management and operations. Currently, there is guidance for developing operational programs specific to small, unmanned aircraft, associated, with system equipment and operation, but it does not provide a legal interpretation of the regulations. Therefore, the purpose of this study is to 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.

b) Education and workforce development

During this period, UTRC accomplished the following:

NYMTC/UTRC September 11th Memorial Program Academic Initiative:

- The New York Metropolitan Transportation Council (NYMTC) established the September 11th Memorial Program for Regional Transportation Planning to honor the memory of Ignatius Adanga, Charles Lesperance, and See Wong Shum, the three employees it lost during the attack on the World Trade Center. The program was established to educate and motivate people interested in transportation technology and planning and to encourage innovations in planning activities throughout the NYMTC region. The Program's Academic Initiative is designed to foster the academic and professional development of students by providing them with opportunities to participate in innovative research and planning projects. It is administered by the University Transportation Research Center (UTRC).

  Two students began their internships during this reporting period and are continuing their effort under this program. The students are Amirhossein Baghestani, a Ph.D. candidate at the Grove School of Engineering at the City College of New York and Nury-Martinez Gutiérrez, a Master of Science candidate in Sustainability in the Urban Environment at the City College of New York.

  Amirhossein's topic is *Sensitivity Analysis of New York Best Practice Model (BPM) Highway Attributes.* The BPM is used to conduct federally-required Transportation Conformity Determinations and Regional Emissions Analyses. It is also used to assess the impact of transportation projects in the Regional Transportation Plan and the Transportation Improvement Program on

performance measures such as travel time, vehicle speed, and congestion. Amir will survey transportation project attributes that have been coded into the NYBPM and then will help evaluate and classify them by priority. He will also assist with model runs that will measure the impact of changing certain attributes on model outcomes and will evaluate the results and develop guidelines for project coding.

Nury's topic is *Community Planning Initiatives* to develop enhanced outreach and planning linkages with communities of concern throughout NYMTC's planning area, as defined in NYMTC's Title VI program. It will include grassroots outreach to local communities regarding key developments for the MPO; collaborating with municipal government officials, community-based organizations, advocates and other interested stakeholders; as well scheduling and executing community workshop meetings to identify planning issues and gather suggestions for improved outreach.

c) Technology transfer

Events that took place during this period included:

- **6th Symposium on Connected and Autonomous Vehicles**

  Hosted at NYU Tandon School of Engineering in Conjunction with UTRC, NYCDOT and ITS-NY. The event included several panel sessions over a two-day period. UTRC Director, Camille Kamga, moderated the panel on USDOT Connected Vehicle Pilot Tests & in-depth look at NYC Pilot

- **2019 Transportation Research Board Annual Meeting**

  UTRC researchers participated and contributed to technical sessions and meetings at the 98th Annual Meeting of TRB held on January 2019 at Washington, D.C.

- **20th Annual NJDOT Research Showcase**
  UTRC participated at the 20th Annual NJDOT Research Showcase held on October 17, 2018. The 20th Annual NJDOT Research Showcase was an opportunity for the New Jersey transportation community to learn about the broad scope of academic research initiatives underway and share technology transfer activities being conducted by institutions of higher education partners and their associates. The annual event serves as a showcase to present the ongoing initiatives and benefits of the NJDOT Research program.

- **Workshop on Reinventing Mobility in New York State**
  This workshop was organized by UTRC, The National Renewable Energy Laboratory (NREL) – with inputs from researchers and practitioners in upstate New York – and in partnership with the New York State Energy Research and Development Authority (NYSERDA) and New York State Department of Transportation (NYSDOT). The workshop was held on October 5, 2018 at Ithaca, NY and focused on Exploring the Long-Term Impacts of Shared, Connected, E-Mobility Inclusive of Automated Service Transitions in New York State.

Publications

None

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:

Approximately 70% of the studies funded under this grant have been completed to date with final reports submitted.

D. Plans for next reporting period:

Final Reports to be submitted

2. PRODUCTS

Final reports, press releases, research briefs

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, NYSDOT, 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	Research		
Binghamton		Binghamton, NY	Faculty-initiated-1(28)	Emerging 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 Invest		
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)	Emerging 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)	Emerging 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
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						
Partner	**Projects**					
USC/Volvo						
Clarkson	Alkali Silica Reaction (ASR) in Cement Free Alkali Activated					
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 Transportatio n 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	
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 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 -
CCNY Continued	Accommodating Freight in Complete Streets Guidebook	Potential Hydrodynamic Loads on Coastal Bridges in the Greater New York 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		

The College of Staten Island	Regional Financing Options Study	Utilizing Digital Exhaust from Smartphone Applications for Transportation Planning, Continuous Measurement and Market Analysis				
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	Approach to Blast resistant Design of Aging Transportation Structures with Little or No Stand - Off Distance	The Spatial Effect of Socio-Economic Demographics on Transp. Ridership: A case study in New York	
NJIT	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		
NYIT	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			

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 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	
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	LED Roadway Lighting Benefits and Costs Collaboration
RIT	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			

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	Mitigation of Transportation Induced Vibration using Seismic Metamaterials
	Urban Travel Time Variability: Spatio-Temporal Analysis for New York City					
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	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

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	Techniques of Efficient Detection of Rapid Weather Changes and Analysis of their Impacts on a Highway Network			
Binghamton	Disaster Relief Vehicle Routing Under Uncertainty	Adaptive Evacuation Transportation Planning Under Uncertainty				
New Paltz	Simulation of Automated Vehicles Drive Cycles					
Syracuse University	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 Geofoam Blocks			

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	Activity-Based Approach for the Design of Sustainable Area and Cordon Pricing Schemes			
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	Incorporating Probe Vehicle Data to Analyze Evacuation Route Resiliency			
Agencies:						
NYSDOT	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			
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	Virtual Transportation Management Strategies Demonstration	Smart and Sustainable AV Energy Impacts	

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 Bus Time Data		
NJDOT	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
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

Several delayed final reports.

6. SPECIAL REPORTING REQUIREMENTS

Nothing to report