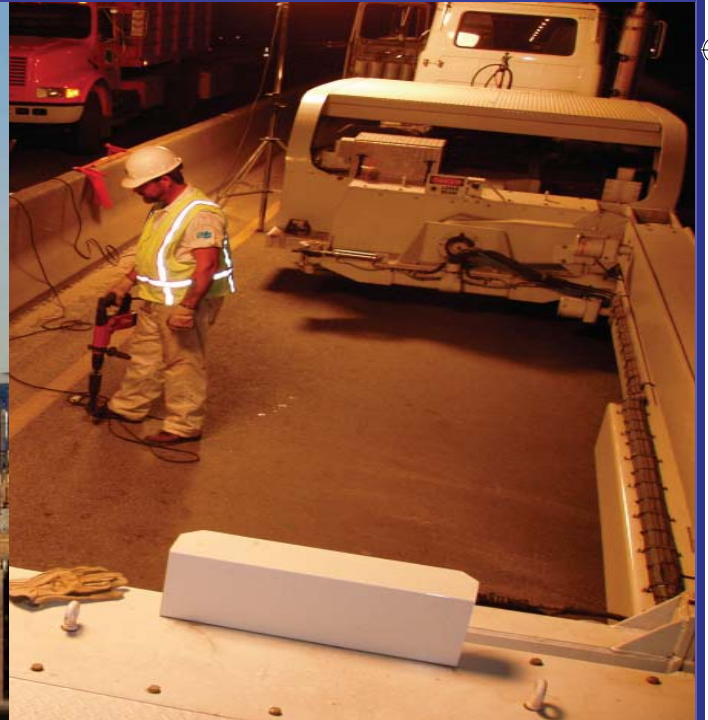
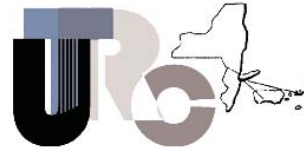




REGION 2
UNIVERSITY TRANSPORTATION RESEARCH CENTER



2005 ANNUAL REPORT



UNIVERSITY TRANSPORTATION RESEARCH CENTER - REGION 2

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REGION 2

UNIVERSITY TRANSPORTATION RESEARCH CENTER

2005 ANNUAL REPORT

PLANNING AND MANAGEMENT OF
REGIONAL TRANSPORTATION SYSTEMS

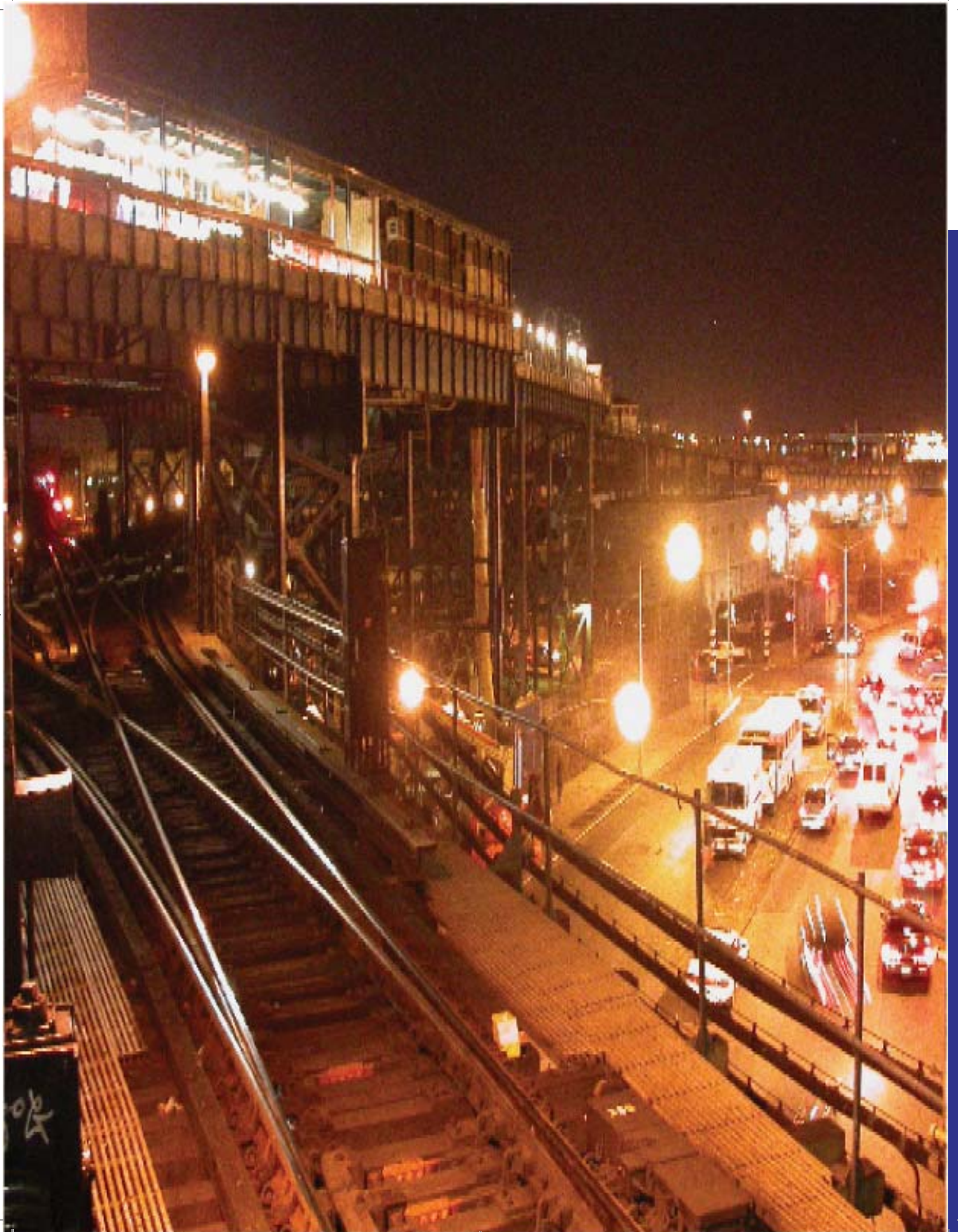
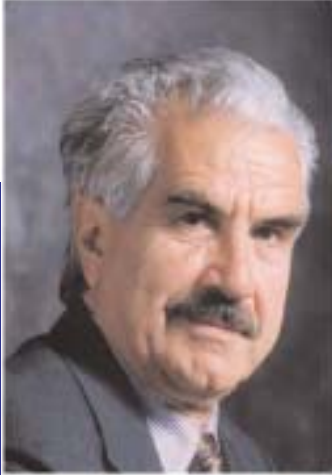


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CHAIRMAN'S MESSAGE

JOHN FALCOCCHIO



This report is based on our many achievements. This annual Report details the progress made by UTRC in the past year. As a consortium of twelve major Academic Institutions, UTRC draws upon a broad set of disciplines and professional experience. To the more traditional engineering disciplines, UTRC adds management, public policy, psychology and behavior, political science, GIS, planning, architecture and urban design. This is in response to the need for greater coordination and integration of resources to improve traveler and goods mobility in our region, and to address the emerging issues of transportation security and emergency management.

Over the past fifteen years, UTRC has served Region 2 in strong and positive ways. These are seen in the tremendous variety of projects done for a number of sponsors - a market study for a proposed new regional ferry, commuter stress, mode choice for new freight models, and the development of models to better mitigate the congestion impacts of non-recurring delays in the region's highways. The strength of UTRC is seen through the professionals it trains. The many students, taking courses or programs in these disciplines, enter into or are promoted upwards in careers that address regional transportation issues. And a common "success story" is from the many students who cite significant career advancement as a reward for being engaged in UTRC programs or studies. UTRC also plays a leadership and integrative role with the many other Institutes and centers in the region.

It has been gratifying to serve as Chairman during this period of progress and growth and I am proud to present this report on our many achievements.

John C. Falcocchio, Ph.D.
Professor of Transportation Planning and Engineering
Director, Urban ITS Center, Polytechnic University

DIRECTOR'S MESSAGE

ROBERT E. PAASWELL

In last year's message, I discussed how the new paradigms of transportation operations were causing profound changes in how we provide transportation and how we, as users, perceive transportation. I think back to the Year 2000 when our biggest problem seemed to be the Y2K computer issue. Yet, as I write this, the newer, and somewhat more profound issues of security and extreme events are becoming a part of our daily vocabulary.

I would estimate that UTRC colleagues have been asked to talk about transportation security more than any other issue over the last year – including funding, land use and alternative fuels. Yet, extreme events underscore how critical our technical knowledge – coupled with our 21st Century applications of information technology – is to sustaining the sense of equilibrium to our movements of people and goods. For the summer of 2005, I recommended that our UTRC colleagues read Thomas Friedman's newest book, "The World is Flat".

In a global age, we must sustain and help grow our technical competencies. The UTC program is uniquely positioned to do just that. The UTCs are at the cutting edge of the applications of the newest technologies to our nations transportation systems. In Region 2, with new partners such as the nanotechnology center at SUNY Albany, we will be testing totally new applications of materials science to transportation problems ranging from security to infrastructure repair. At CUNY we are training labor personnel for using computer technology for jobs that don't exist yet. RPI continues its innovative development of freight computer models. And in a Region 1 (Massachusetts Institute of Technology) – Region 2 (Columbia University) collaboration, faculty and students are going to address real world impacts of ITS applications on travel behavior – with implications for road capacity during extreme events. So, while in 2005 we are concerned with security and hurricanes, the public would like to get back to the routine problems of Saturday afternoon congestion, finding parking, waiting for the bus, and finding a quick way to get to the airport – even as they travel more, and have more goods delivered by trucks to their doors.

UTRC is working on the robustness of solutions to these problems as it trains, in Friedman's vision, the entrepreneurs and technical experts of the next decade.

Robert E Paaswell, Ph.D.
Distinguished Professor of Civil Engineering
The City College of New York



CENTER'S THEME

The transportation systems throughout Region 2 are complex and undergoing rapid change. The complexity comes from the extent of the Region, and the impact that the nation's largest city has on it. The New York metropolitan area has over 19 million people, 600,000 businesses, 9 million workers, 3 major airports, 10,000 miles of highway, one third of the nation's transit riders, dozens of marine and inter modal terminals, and over 700 million tons of freight that must be moved annually. The Region also serves international borders in northern New York state and Puerto Rico. The transportation systems that serve Region 2, both multi-modal and inter modal, must serve the customers and stakeholders within the region and globally.

Planning today, in Region II, assumes knowledge of multi-modal and inter modal systems serving both freight and passenger movements. Professionals must address the demands of sustainability and the environment, while squeezing more capacity out of aging and costly infrastructure to meet current pressures of economic growth. Planners must also understand why regional stakeholders make implementation of projects time consuming and difficult, while the region is characterized by severe congestion and the high costs of moving goods and people. Planners must understand the links between investment needs and funding strategies. Examples of major planning issues abound: access to New York regional airports, restructuring of the Niagara Frontier Transportation Authority, and development needs linked to new rail construction in Northern New Jersey. Today's professionals involved with regional infrastructure improvements need to integrate a broad base of

disciplines that cut across technology, law, finance, management, and consumer behavior.

Management of Region II today requires knowledge of interaction among complex multi-modal systems, budgeting, system operations and performance targets, customer needs, and, when fighting fires stops, a sense of vision of system performance and regional change. Management takes place at every level from Board Chairpersons to line operators. Managers are called upon to become productive and efficient, to understand their roles in operations and administration, and to help make the complex set of modes respond to customer needs, providing quality transportation as an integrated inter modal system.

Planning and Management as a Response to Change

Transportation systems serving the Region are being rapidly modernized. The introduction of electronic toll and fare collection has had major impact on the region: 80% of morning commuters over the Tappan Zee Bridge use EZ Pass; introduction of Metrocard on New York subways and buses have generated 1 million new riders per day! New Jersey is building a number of new rail transit lines, using innovative financing, and it will need to plan and design new organizations to operate these systems and manage the development they stimulate. Puerto Rico is building a rail system in San Juan that will force major cultural changes in the traditional por puertos - the private cab system. New York State voters had just approved \$2.9 Billions bond to improve the transportation system. The bond will support the 2nd Avenue subway as well as other projects upstate. New York City is considering construction of



“PLANNING AND MANAGEMENT OF REGIONAL TRANSPORTATION SYSTEMS”

major freight inter modal facilities that will dramatically change the freight inter modal system in the region.

we need to create a momentum toward advanced capability for those who plan and manage these systems.

While modernization involves the integration of new technologies into the modes, it also concerns new ways of linking labor and management to operate the systems, new organizational and institutional structures to address multi-modal and multi-jurisdictional issues, and new means of funding investments coupled to new means of users paying for the services they receive. Planners and managers need new tools to address such issues. The examples show that the momentum of change in the regional transportation systems is well underway;



The University Transportation Research Center (UTRC) presents unique capabilities to the profession as the momentum of change in the regional transportation system is evolving. A concentration of major universities with capabilities to address such issues: the quantification of environmental impact (Columbia) and valuation of externalities and congestion pricing (RPI, POLY, Rutgers, SUNY), Intermodal (SUNY, UPR, Cornell), transit operations and reform (CCNY), UTRC, is at the intersection of practice and the entering professional.

CENTER'S STAFF



Dr. Robert Paaswell

Director and Distinguished Professor of Civil Engineering, City College of New York



Camille Kamga

Assistant Director Administration & Information Technology



Robert Baker

Assistant Director Research



Dr. Claire McKnight

Assistant Director Education & Training

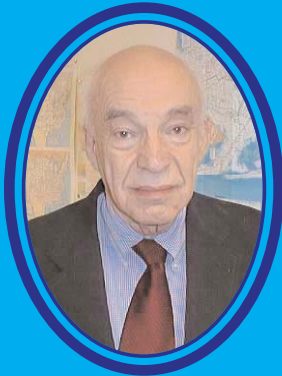




Dr. Todd Goldman
*Assistant Director
New Initiatives*



Dr. Ellen Thorson
*Senior Research
Fellow*



Herbert Levinson
Icon Mentor



Patrick Isaac
Student Intern



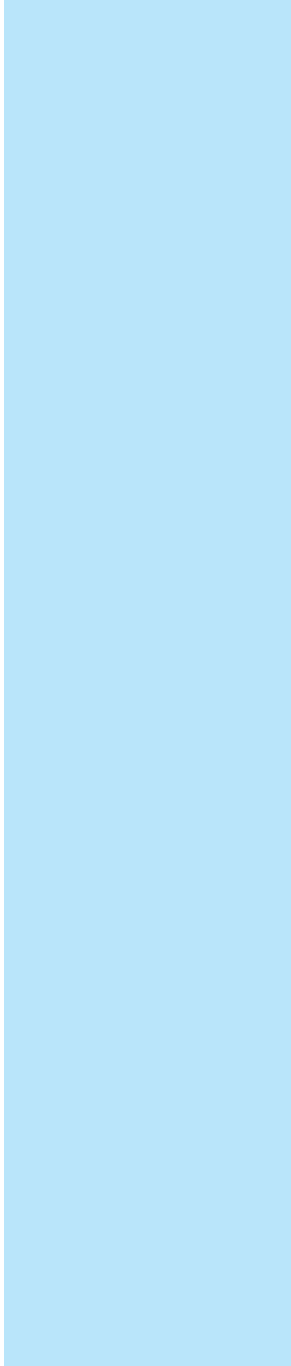
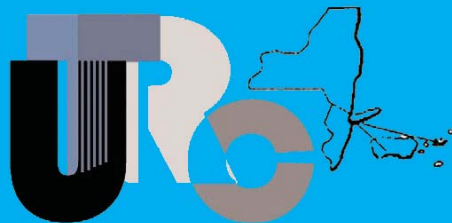
Dr. Joseph Berechman
Visiting Scholar



**Feaid
Mohammed**
Student Intern



Mark Seaman
Research Associate



MANAGEMENT STRUCTURE

UTRC has adopted a corporate style of management. In this style, the UTRC Board provides policy guidelines, and approval of UTRC activities. Dr. Robert Paaswell, Distinguished Professor of Civil Engineering at City College of New York, serves as Chief Executive Officer, overseeing day to day operations and providing a bridge between UTRC policies and the activities and resources used to carry out those policies.

The Board of Directors, chaired by Dr. John Falcocchio of Polytechnic University, conducts its business through a well organized committee structure. The Board (Committee of the whole) reviews Center Objectives and Programs, approves budgets, and reviews and recommends actions forwarded by its two major working committees.

The two committees, Research and Technology Transfer, chaired by Dr. Ali Maher of Rutgers University, and Education and Training, chaired by Dr. Neville Parker of City College, are the working hearts of the Board. Each is responsible for developing the yearly program of activities, overseeing the selection of projects, and recommending to the full Board the programs of projects commensurate with the budget.



Robert Paaswell, Ph.D.

Executive Director

Neville Parker, Ph.D.

City College of New York, New York

Arthur Lerner-Lam, Ph.D.

Columbia University, Earth Center, New York

Arnim H. Meyburg, Ph.D.

Cornell University, New York

Roy Sparrow, Ph.D.

New York University, New York

John Falcocchio, Ph.D. (Chairman)

Polytechnic University, New York

Jose Holguin-Veras, Ph.D.

Rensselaer Polytechnic Institute, New York

Ali Maher, Ph.D.

Rutgers University, New Jersey

Shmuel Yahalom, Ph.D.

State University of New York, Maritime, New York

Herbert Herman, Ph.D.

State University of New York, Stony Brook, New York

Henry Dobbelaar, Jr., Ph.D.

Stevens Institute of Technology, New Jersey

Benjamin Colucci, Ph.D.

University of Puerto Rico, Puerto Rico

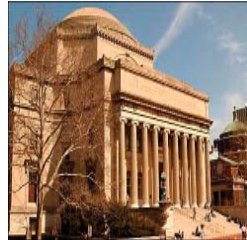
BOARD OF DIRECTORS

MEMBER UNIVERSITIES



CITY UNIVERSITY OF NEW YORK

The City University of New York (CUNY), situated in one of the world's pre-eminent cities, is the largest urban university in the United States and its third-largest public university system. Some 200,000 students are enrolled for degrees on 20 campuses in all five boroughs of New York City. Another 150,000 students take adult and continuing education courses.



COLUMBIA UNIVERSITY

Through its broad range of innovative multidisciplinary programs, and through the earnest exploration of difficult questions, Columbia provides students from the United States and around the world with the depth of understanding and intellectual flexibility they need to respond to the challenges we all will face in the years to come.



CORNELL UNIVERSITY

Cornell University offers a Master of Civil Engineering Program (usually a ten course curriculum) designed to prepare students for professional practice. There are two options in this program: one in civil and environmental engineering design and one in engineering management. Both options require a broad based background in an engineering field.



DOWLING COLLEGE

Housed at the Brookhaven Center, Dowling College's School of Aviation & Transportation is a nationally recognized leader in aviation education, as well as a pioneer in the field of intermodal transportation.



NEW YORK UNIVERSITY

Center for Transportation Policy and Management conducts research and education in the field of transportation policy and management, with particular emphasis on urban transportation issues. The Center has an extensive program for transportation managers and professionals.



POLYTECHNIC UNIVERSITY

The Urban Intelligent Transportation Center was established by New York City Department of Transportation to promote the use of ITS technologies that enhance the operational efficiency of City services, better serve customer' travel needs, and improve the City's quality of life.



PRINCETON UNIVERSITY

Princeton University's program in transportation is an interdisciplinary program offered jointly by the School of Engineering and Applied Science and the Woodrow Wilson School of Public and International Affairs.



RENSSELAER POLYTECHNIC INSTITUTE

The Center for Infrastructure and Transportation Studies provides a focal point for campus research addressing the world's infrastructure and transportation needs. More than 30 faculties over 15 departments and each Rensselaer's five schools participate in the research of the Center.



RUTGERS UNIVERSITY

The State University of New Jersey programs of graduate study leading to the Masters of Science and Ph.D. degrees may be arranged in a wide variety of areas. The fields of specialization may include structural analysis and design, computational mechanics, structural reliability, or structural optimizations.,



STATE UNIVERSITY OF NEW YORK

SUNY's graduate programs offers instruction in transportation management. There are also programs leading to degrees in applied mathematics and statistics, computer science, electrical engineering, material science and engineering, and mechanical engineering. SUNY is host to the Albany NanoTech Center.



STEVENS INSTITUTE OF TECHNOLOGY

Major areas of current faculty research include soil structure interactions, soil mechanics and deep foundation systems, advanced oxidation of hazardous wastes, transport of nonaqueous-phase liquids in the subsurface.



UNIVERSITY OF PUERTO RICO

University of Puerto Rico offers a five year degree of Bachelor of Science in Civil Engineering, and programs leading to the degrees of Masters of Science, and Doctorate of Philosophy. Students specialize in Structural, environmental/water resources, soils or transportation engineering.

FINANCIAL REPORT

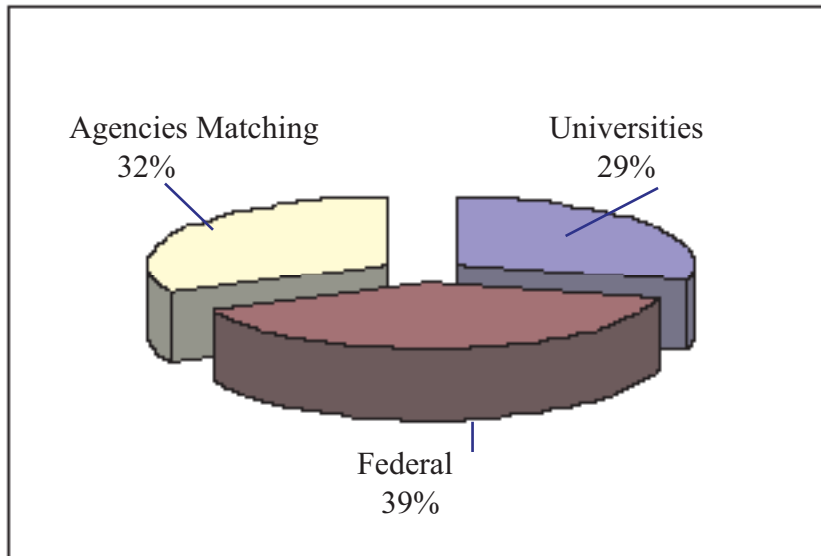
The following charts summarize the UTRC revenues and expenditures for fiscal year 2004-2005. The University Transportation Research Center Region 2 funding allocated to programs totaled more than \$2.5 M in 2004-2005. This year, the annual USDOT grant allocated to programs represents 39 percent of the total allocation.

UTRC's longtime partners, New York State Department of Transportation, New York Metropolitan Transportation Council and New Jersey Department of Transportation, provided a combined 26 percent of the revenues in fiscal year 2004-2005. Other sources of revenues were from the Federal Transit Administration and the Metropolitan Transportation Authority to conduct special studies of interest to them. UTRC's support from university members and agencies were 29 percent of the total budget.

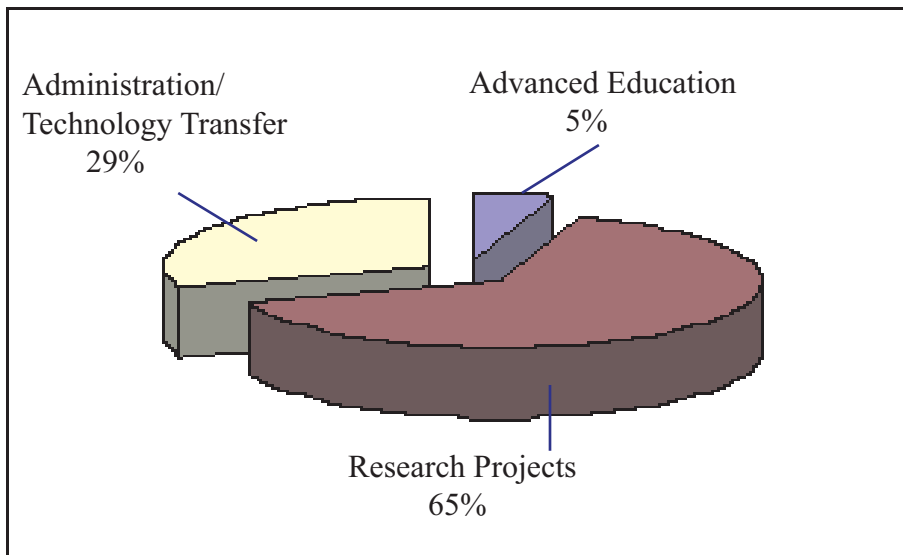
Continued with its tradition and with strong partnerships and solid financial commitment from federal, state and local transportation agencies, UTRC allocated 65 percent of its total budget to research projects. To carry out administrative and technology transfer programs, 30 percent of funds were used. The remaining funds were allocated to the Advanced Institute for Transportation Education program.



Fiscal Year 2004-2005 Revenues



Fiscal Year 2004-2005 Funds Allocation



EDUCATION AND TRAINING

STUDENT OF THE YEAR AWARD GIVEN TO UTRC SUPPORTED STUDENT

Mr. Joseph Davis graduated from the School of Engineering at Rutgers, The State University of New Jersey in 2001 with a Bachelors Degree in Civil and Environmental Engineering. Joseph continued his education at Rutgers thereafter receiving a Masters in Structural Engineering in May 2003. Presently Joseph is a Teaching Assistant for the Reinforced Concrete Laboratory in addition to being a Ph.D. candidate.



Joseph Davis



2005 UTC Recipients and USDOT Officials

The University Transportation Research Center supported Mr. Davis in his work with Dr. Hani Nassif, Rutgers University, on the instrumentation of the newly constructed Doremus Avenue Bridge in Newark, NJ. Mr. Davis is also involved with other research at the Doremus Avenue Bridge, including the approach

slabs. Several new designs are being implemented to reduce cracking from settlement and early age overloading. Strain sensors are placed at key points in the slab and live load testing is conducted to verify finite element models of the new designs.

2005 SUMMER TRANSPORTATION INSTITUTE AT CCNY

The enrollment of students with engineering or technical backgrounds is far below the number needed by the Transportation industry. These facts represent an unusual opportunity for students to enroll in engineering and/or technical disciplines. The Institute for Transportation Systems (ITS) - Summer Transportation Institute (STI) hosted at The City College of The City University of New York, completed its tenth year in 2005. The STI Project Director, Neville A. Parker, Ph.D., P.E., continued bridging the gap between supply and demand by creating awareness and stimulating interest in high school students to take maximum advantage of the opportunities that exist in the Transportation industry.

The Non-Residential - 2005 Summer Transportation Institute, commenced with the Opening Ceremony on Tuesday, July 5, 2005, and concluded with its Closing/ Award Ceremony on Saturday, July 30, 2005. Of the 21 scholarships awarded, 19 students completed the program, in addition to 2 participants in the Internship component. The 19 primary students were in grades 9 through 12. The 2 interns attended the eleventh and twelfth grades.



STI Students at a Site Visit

Science, Technology, Engineering and Mathematics Project Director, Claude Brathwaite, Ph.D., invited the STI Interns to participate in the NYC LSAMP Summer 2005 Poster Session. The Poster Session was held on August 12, 2005, at the Stevens Institute of Technology in Hoboken, New Jersey.

2005 – STI HIGHLIGHTS

- Dr. John Fillos, Chairman, Department of Civil Engineering - The City College of New York, addressed the 2004 students, staff, and parents during the Opening Ceremony on July 5, 2005.

- Ms. Leslie Porter, President – Professional ManagementTouch LLC, delivered the Keynote Address, during the Closing Ceremony. Ms. Porter was a former administrator in the US Department of Transportation (DOT) Federal Highway Administration.

- To address the need and provide high school students with relevant etiquette and good manners in their personal lives, at school, and in the work place, a Life Skills component was added to the curriculum. Program Administrator, Alma Jefferson, collaborated with Linda Smith, of the Civil Engineering Department (CCNY), and Developed a Life Skills Workshop. As the facilitator, Ms. Smith's classes focused on Developing and Enhancing Self-Esteem.

The students enthusiastically received this added program enhancement. On July 28, 2005, the students were celebrated during the first annual Life Skills Luncheon. The luncheon was held in the Amsterdam Room, at CCNY. Attended guests included President Gregory Williams, Acting Dean (SOE) Joseph Barba, and Chairman John Fillos, UTRC's Director Robert Paaswell, as well as other members of the CCNY community.

- The NYC Louis Stokes Alliance for Minority Participation (LSAMP) in



2005 STI Closing Ceremony



2005 STI Students

A UNIVERSITY
TRANSPORTATION RESEARCH
CENTER'S RESEARCH
ASSOCIATE: ASSISTANT
PROFESSOR AT TEXAS
SOUTHERN UNIVERSITY

Yi (Grace) Qi, currently Assistant Professor at Texas Southern University, started her graduate studies at Polytechnic University (Poly) of New York in 1999. She graduated from the transportation program at Poly with her Master's and Ph.D. degrees in 2002 under the supervision of Dr. Hualiang (Harry) Teng. After her graduation, she worked at University of Virginia as a Research Associate for about two years. She moved to her current position in 2005.

During her studies at Poly, she participated in two UTRC projects, which are "Analytical Tool for Measuring Emission Impact of ACCEL/DECEL" from 1999-2000 and "Frequency of Work Zone Accidents on Construction Projects" from 2002-2004.

In the project on emission modeling, she developed microscale regression models to estimate the second-by-second emissions with the consideration of vehicle speed and acceleration/deceleration. She also independently developed a way to aggregate the second-by-second emissions for a large transportation network. In the work zone project, she developed models to identify factors that influences the occurrence of rear-end accidents. She made a significant contribution to the successes of these two UTRC projects.

Based on the project on emissions, she wrote two journal papers which have been published in the ASCE Journal of Transportation Engineering. Currently, she is preparing a paper for publication based on the project on work zone.

The supports from the UTRC projects had been critical to her carrier. In addition to the papers she published based on

the UTRC projects, she also published about ten more papers in peer reviewed technical journals.

During her stay at Poly, she won the Helene M. Overly Memorial Scholarship award by Women's Transportation Seminar in 2001, and a scholarship from Massachusetts Institute of Technology for a summer session on Econometric Modeling in 2002.



Dr. Yi (Grace) Qi

CUTC STUDENT AWARD
RENAMED IN HONOR OF
PROFESSOR NEVILLE A. PARKER,
UTRC BOARD MEMBER

During the January 8, 2005 annual Banquet of the Council of University transportation Centers (CUTC), which precedes the Annual Meeting of the Transportation Research Board in Washington, D.C., the CUTC Non-Thesis Masters Degree Award was renamed in honor of Neville A. Parker, PhD., P.E. The Neville A. Parker Award will be recognized with two other prestigious CUTC Awards, The Milton Pikarsky Memorial Award and the Charley V. Wootan Memorial Award. These distinguished awards are presented for outstanding masters, doctoral dissertations, and theses, in transportation,

produced at leading colleges, university transportation centers, and institutes throughout the nation.



Dr. Neville Parker



WOMEN'S TRANSPORTATION SEMINARS

On October 11, 2005, UTRC awarded \$1000 to the winner of the Greater New York WTS Graduate Scholarship winner, Neha Mittal. Neha is working on a Ph.D. in Transportation Engineering and Planning from Rutgers University under Dr. Maria Boile. Her interest in transportation started when she was a civil engineering undergraduate at Gujarat University in India.

She is currently a research assistant at Rutgers Center for Advanced Infrastructure and Transportation, working on truck movement in New Jersey.

AITE GRADUATE SCHOLARSHIP PROGRAM

In 2005, 15 people applied for Advanced Institute for Transportation Education Graduate Scholarships. Seven of these were full time students and eight were agency employees. From these applications, six received scholarships, four full time students and two agency employees. They all started their programs in September.



SEPTEMBER 11TH MEMORIAL PROGRAM FOR REGIONAL TRANSPORTATION PLANNING

The New York Metropolitan Transportation Council (NYMTC) established the September 11th Memorial Program for Regional Transportation Planning to honor its three employees lost in the attack on the World Trade Center. The program has two main components: and Academic Initiative, which funds student research projects and internships, and a Planning Initiative, which promote projects that promote innovation or public involvement in planning. The University Transportation Research Center has worked closely with NYMTC in the design of the overall program, and in administering the Academic Initiative.

On September 8th, 2005, NYMTC announced its first slate of projects to be awarded under this program. Four students were selected for the first year of the Academic Initiative:

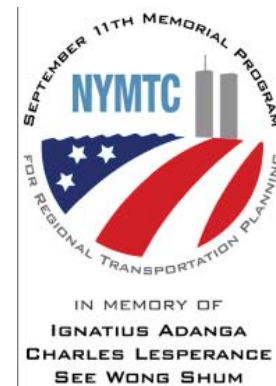
Li Chen will do research at the New York City Department of Transportation, where she will examine multimodal transportation, demographic, and land use changes in Manhattan's rapidly evolving West Side, in support of a major planning effort underway for the area. Ms. Chen is a Ph.D. student in Civil Engineering at the City College of New York.

David Dayu Zhang will work with NYMTC to organize conferences on emerging transportation issues and challenges facing the region, such as bus rapid transit, and providing safe transportation options for senior citizens. These forums will enable the region's stakeholders to discuss and learn more about the issues at stake, and what other regions are doing. Mr. Zhang is a Masters student in Urban Planning at Columbia University.

Jeevanjot Singh will research time-of-

day pricing strategies in public transit. Variable pricing can improve overall efficiency of the transportation system by encouraging some peak users of transit to shift to off-peak periods, attracting auto users to transit, and providing more affordable mobility options in off-peak periods. Ms. Singh will evaluate policy options for time-of-day pricing on Westchester County's Bee Line Bus system. Ms. Singh is a doctoral student in Civil Engineering at Rutgers University.

Wei Li will examine transportation challenges facing the region's aging population. She will investigate gaps in existing transportation services available to the carless elderly, and examine survey needs and methods that public agencies could use to better understand and address these needs. Ms. Li is a doctoral student in Civil Engineering at the City College of New York.



The four students will receive a \$2,000 per month stipend over 12 months, and up to \$10,000 in tuition assistance. Over the course of the year, the program will also fund the students' participate in other activities aimed at promoting their development as transportation professionals, such as attending the Transportation Research Board Annual Meeting. At the end of the year, the students will make a public presentation of their work.

TECHNOLOGY TRANSFER

PUBLIC MANAGEMENT SEMINAR

The University Transportation Research Center sponsored a seminar on Public Management by Dr. Roy Sparrow, Professor of Public Management, Robert F. Wagner School of Public Service, New York University. The New Jersey Department of Transportation presentation featured Management strategies for a changing public agency and was attended by NJDOT staff.

Dr. Sparrow has served as acting Dean and Associate Dean of the Wagner School and from 1995-2000 headed the management program at Wagner. Currently he co-directs the Program in Nonprofit Management and Judaic Studies. He specializes in public transportation policy and management with a particular interest in strategic change in organizations that design and deliver urban infrastructure services.

FREIGHT AT THE PORT OF NEW YORK AND ITS ROLE IN THE ECONOMY OF NEW YORK STATE

The UTRC sponsored a seminar on "Freight at the Port of New York and its Role in the Economy of New York State," presented by Dr. Shmuel Yahalom, P.E., Professor of Economics, SUNY Maritime College, Director of Research, NY Strategic Center for Port & Maritime Security, at the NYSDOT headquarters in Albany, New York.

This presentation provided an overview

of freight activity at the Port of New York and New Jersey. It focused on the flow of freight from the Port onto the land-side transportation system. Dr. Yahalom discussed how geography affects the competitiveness of New York State and how the state can respond to the challenge. He identified and discussed obstacles to economic growth and offered suggestions as to how New York can overcome them. The seminar was well attended by NYSDOT staff.

TRANSACTION 2005 NEW JERSEY TRANSPORTATION CONFERENCE AND EXPO: 30TH ANNUAL

The University Transportation Research Center participated in the 30th Annual New Jersey TransAction Conference in Atlantic City, New Jersey in April 2005. The Center exhibited its education, research and technology programs to acquaint the conference attendees with the UTRC activities.

The conference provided engineers, managers and students with an opportunity to learn about the state-of-the-art transportation, road and bridge projects, and transit programs in an atmosphere of transportation managers, directors and engineers. The conference presentations featured experts from federal, state, county and local government as well as the private sector, consultants, users and others from across the nation and provided valuable information on transit, paratransit, highway construction, community minibuses, goods movement, pedestrian, bicycling, ferryboats, ridesharing, and transportation policy.



CURRENT TRENDS IN TRANSIT ORGANIZATION AND FINANCING

The University Transportation Research Center organized two presentations featuring Dr. Wolfgang Meyer, president of the International Association of Public Transport (UITP). Local transportation leaders attended the first presentation, held at the New York Metropolitan Transportation Council. A second presentation was held at The CUNY Graduate School and University Center and was attended by more than 100 interested transportation specialists.



Dr. Wolfgang Meyer

Dr. Meyer presented a review of the latest developments in organization, financing, efficiency improvements and competitiveness of transit agencies in many cities and countries around the world. He discussed how the conflict between the need to provide high-quality transit services at moderate fare levels and unstable financial resources has led in recent decades to a variety of changes in transit organizations and financing methods. Developments of new types of organizations and financing in different countries were reviewed with evaluation of their successes as well as problems.

Other major items discussed included changes in the form of transit organizations for higher efficiency and competitiveness;

examples of successful partial privatization and failures of deregulation; founding of intermodal transportation organizations in charge of transit, parking and other functions; personnel training needs and labor relations; and fundamental changes in attitudes toward public/customers. The presentation was followed by an informal discussion.

The International Association of Public Transport founded in 1885 by the Belgian King Leopold II, has its main office in Brussels and regional offices in Rome, Moscow, Hong Kong, Canberra (Australia), Abidjan (Ivory Coast/Africa) and Sao Paulo (Brazil). It covers all modes of regional public transport – metro, bus, light rail, regional and suburban railways as well as waterborne transport – and represents worldwide nearly 3000 members from more than 80 countries (operating companies; local, regional and national authorities; the service and supply industry, including consultants; research institutes and academics; and national and other transport-related associations).



TRANSIT ORIENTED
DEVELOPMENT:
TRANSPORTATION SOLUTION,
REAL ESTATE CHALLENGE

Robert T. Dunphy is Senior Resident Fellow, Transportation and Infrastructure at the Urban Land Institute, a global education and research organization based in Washington, D.C. His research in traffic congestion, transit, transportation solutions, and parking has emphasized their connection to housing, land use, and development. He was managing author of the recent ULI publication, *Developing Around Transit: Strategies and Solutions that Work*. Mr. Dunphy is active in the Transportation Research Board, for which he chaired the Transportation and Land Development committee from 1998 – 2004, the Institute of Transportation Engineers, Lambda Alpha International, an honorary land economics society, and other national transportation committees.

At a seminar organized by UTRC, Robert Dunphy discussed experiences in transit oriented development from a new Urban Land Institute book, *Developing Around Transit: Strategies and Solutions that Work*, a collaboration among six authorities from the fields of development, planning, and transit. The value of transit to developers and property owners as well as broader community aspirations was addressed along with new research on real estate property values. Fundamental challenges were examined for new transit projects; convincing the larger community that transit will work there; and making the case that compact, urban development around transit, will work there. The importance of such smart growth in established markets that have grown up around transit was also discussed.

The importance of collaboration was highlighted, because from a transit perspective, urban projects yield the

greatest leverage in expanding transit ridership and supporting transit services. However, building in such established urban areas is transit friendly, but development unfriendly. In contrast, the vast majority of the growth in most regions is expected to be in the suburbs, which are developer friendly, but generally transit unfriendly. The challenges of remaking the suburbs to support desired transit services and more urbane growth was presented. The presentation



Robert Dunphy (top) and Dr. Robert Paaswell (bottom)

concluded with a number of principles for successful development around transit.

The University Transportation Research Center sponsored the event that was attended by 120 planners, engineers and consultants. The event was hosted at the Graduate Center of the City University of New York. The Visiting Scholar Seminar program is co-sponsored by the Rudin Center for Transportation Policy and Management, the New York City College of Technology, CUNY, the Journal of Urban Technology, CUNY Institute for Urban Systems, Port Authority of New York and New Jersey, and the New Jersey Department of Transportation.



Seminar Audience

EXPRESS BUS SERVICE: A CASE STUDY OF THE SAN FRANCISCO BAY AREA

The University Transportation Research Center sponsored a presentation in New York City featuring Prof. Elizabeth Deakin of the University of California Transportation Center (UCTC). Prof. Deakin presented a seminar on regional express bus services as an important and cost-effective travel mode for peak-hour commuters. In 2003, the UCTC entered into an innovative partnership with San Francisco Bay Area public transit agencies, Caltrans District 4, and the Metropolitan Transportation Commission to develop a Bay Area System Plan for Regional Express Bus Service.



Prof. Elizabeth Deakin

The first phase of this study examined the nearly 300 express buses already in operation in the San Francisco Bay Area, providing feeder services to rail stations, direct suburb-to-CBD service, and limited stop cross town express service, mostly center city neighborhoods to CBD. UCTC conducted on-board surveys of express bus riders; park and ride surveys from major lots along freeways and at multimodal transfer stations; and focus groups with bus users, carpoolers, and solo drivers in express bus and rail corridors. We also examined the equity implications of current fare structures. The presentation discussed the findings of this

study, where plans for a Regional Express Bus system in the Bay Area appear to be headed, and how the case illustrates key issues that have been arising in numerous large urban areas where express bus and rail services are key components of the transportation system.

This joint effort between the two University Transportation Centers provided an excellent opportunity for cooperation and information exchange. More than 100 interested transportation specialists attended the event.



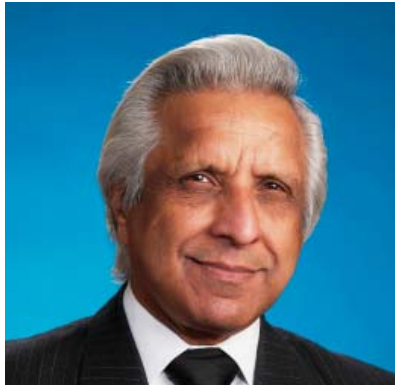
DEVELOPMENT OF A PORTABLE PETROLEUM BY-PRODUCTS SENSOR

The University Transportation Research Center and the School of NanoScience and NanoEngineering, State University of New York at Albany are presently cooperating in the study, "Development of a Portable Petroleum By-Products Sensor" for the New York State Department of Transportation. The study develops nano particles based chemical sensors for the sensitive, selective and field portable analysis of soil samples for petroleum spills. By moving these tests from off-site analytical

laboratories to a field portable device, the overall cost of construction budgets will be significantly lower and construction projects will experience fewer delays due to untimely lab results. The study is lead by Dr. Michael Carpenter and Dr. Maria Petrukhina of SUNY Albany.

FIBER REINFORCED POLYMERS

The University Transportation Research Center sponsored two seminars at the New Jersey Department of Transportation and the New York State Department of Transportation on Fiber Reinforced Polymers. Dr. Aftab Mufti and Dr. Kenneth Neale of Intelligent Sensing for Infrastructure Structures (ISIS) in Canada gave the seminars.



Dr. Aftab Mufti

Dr. Mufti and Dr. Neale discussed fiber reinforced polymers for civil engineering structures such as bridges, high-rise buildings, dams and marine platforms have contained iron or steel as the reinforcement for concrete or wood. The useful lives of these structures have often been severely limited by the corrosion of this ferrous component. Much thought has been given in recent years to constructing structures that are lighter, stronger and non-corrosive. ISIS Canada intends to significantly change the design and construction of civil engineering structures by developing innovative new structures. For these new structures to be

accepted by the engineering community, it is mandatory that they be monitored and the results reported to the engineering community as well as being incorporated into civil engineering codes.

Dr. Aftab Mufti is a Professor of Civil Engineering at the University of Manitoba, Winnipeg, Manitoba, Canada. He is the Program leader and President of ISIS Canada, a Network of Centres of Excellence, and President of ISHMII (International Society for Health Monitoring of Intelligent Infrastructures). Dr. Kenneth Neale is a Professor of Civil Engineering at the University of Sherbrooke, Canada and a vice president of ISIS.

The UTRC was proud to sponsor this international event of information exchange between USA transportation engineers at the NYSDOT and NJDOT, and the Canadian researchers at ISIS Canada. Over 150 engineers attended the event from both State DOTs.



Dr. Kenneth Neale

THE 5TH ANNUAL TRI-STATE TRANSIT SYMPOSIUM

The Rudin Center for Transportation Policy & Management at NYU Robert F. Wagner Graduate School of Public Service in affiliation with the Metropolitan Transportation Authority (MTA), the New York Metropolitan Transportation Council (NYMTC), and the University Transportation Research Center (UTRC) hosted “The 5th Annual Tri-State Transit Symposium” on October 26, 2004.

The half-day conference focused on the next federal transportation bill on the state and the MTA’s Capital Program and Operating Financial Plan recently proposed. It was a timely conference since we are facing a critical period when major decisions will be made affecting the future of transit in the New York region. In addition, with an increasing need to expand transit system capacity and improve customer service and system reliability, Bus Rapid Transit (BRT) is a transit alternative that has already begun to attract significant attention in our region.



Featured speakers included: John Blazey, Staff Assistant, U.S. House of Representatives Full Committee on Appropriations, and Joyce Rose, Professional Staff, U.S. House of Representatives Committee on Transportation and Infrastructure. Panelists included: Katherine Lapp, Executive Director, the Metropolitan

Transportation Authority; Robert Yaro, President, Regional Plan Association; Mortimer L. Downey, President, PB Consult; Roger Toussaint, President, Transport Workers Union Local 100; Jonathan Bowles, Research Director, Center for an Urban Future; and Anne Y. Herzenberg, Chief Operating Officer, Massachusetts Bay Transportation Authority.

The symposium was attended by more than 200 people from agencies across modes and transportation associations, as well as legislators, policy analysts, academics, and the media. Evaluation results collected after the symposium reflected the overall success of the conference. The majority thought that the presentations were overall very good to excellent and felt that the symposium was worthwhile and valuable.



SMART CARSHARING AND SMART PARKING - INITIATIVES AT CALIFORNIA PATH

The University Transportation Research Center sponsored two seminars at the New Jersey Department of Transportation, Trenton, New Jersey and at the New York Metropolitan Transportation Council, New York City. The featured speaker was Linda Novick, a Project Manager/Research Specialist at California Partners for Advanced Transit and Highways (PATH), based at the University of California.

Ms. Novick discussed two projects that were designed to facilitate connections to public transportation and encourage changes in travel behavior. Each project contains an “applied” research component in the field and a research evaluation based on data collected during the pilot program.

The first research project, CarLink, investigated a unique business model and enabling technology for carsharing. The project’s first phase was a one year demonstration that closed in 2000. The second phase was a pilot project introduced more advanced reservation, vehicle access and tracking technologies, and ultimately transitioned to Flexcar, a private operator, at the close of the research study in July 2002. Ms. Novick’s talk provided an overview of the partnership development, CarLink operations, CarLink technology, and the behavioral research component of the project.

The CarLink model of carsharing, targeted towards commuters, operated as follows: each weekday morning, commuters drove the carshare vehicles from their homes to the train station, parked in preferred designated spaces and took the train to work. Meanwhile, another set of commuters took the train to the station, picked up the same vehicles and drove to work. During the day, the cars were available for use by

company employees. At the end of the day, the process reversed with the home commuters using the cars on the evenings and weekends. Each project formed a private/public partnership, which included the California Department of Transportation (Caltrans) a public transit operator (Bay Area Rapid Transit and Caltrans), American Honda, University of California researchers, and private companies as the employment locations.

The second project discussed in this presentation was a Smart Parking pilot project. This initiative featured a variable message sign positioned on a freeway that provided real-time information about the availability of parking at a nearby commuter rail station. The project enabled participants to reserve parking spaces by phone or Internet, and was intended in part to examine how improved information and reliability influenced participants’ travel behavior.

UTRC invited these presentations both because of the specific merits of these research projects, and because of the creative partnerships among government, industry, and the universities that they represent.



Linda Novick



PLANNING AND DESIGN WITH COMMUNITIES IN MIND: CONTEXT-SENSITIVE SOLUTIONS IN OUR REGION

The Rudin Center for Transportation Policy & Management at NYU Robert F. Wagner Graduate School of Public Service, in affiliation with the University Transportation Research Center (UTRC), the New York Metropolitan Transportation Council (NYMTC), American Institute of Architects, NY Chapter (AIA), American Planning Association (APA), Regional Plan Association (RPA), and the Steven L. Newman Real Estate Institute at Baruch College, hosted a conference on, “Planning and Design with Communities in Mind: Context-Sensitive Solutions in Our Region.”

Context sensitive design/solutions (CSD/S) has roots in the 1969 National Environmental Policy Act (NEPA) which required that agencies engaged in projects utilizing federal monies must undergo an analysis of the projects’ impacts on natural and human resources. Implementing Context-Sensitive Solutions (CSS) is not always easy. Several factors can constrain effective implementation, including competing interests, fiscal constraints, institutional inertia, lack of contextual definition, legal concerns, and organizational culture and personalities. This conference explored these issues as well as opportunities or CSS. It highlighted examples from the New York metropolitan region, which can

offer lessons for additional efforts. The Keynote speaker was Honorable Tom Suozzi, Nassau County Executive.

The half-day conference was attended by more than 125 people. Not only was there an overwhelming amount of positive feedback about the quality of the conference and presentations, but a number of respondents to the evaluation survey wanted to attend follow-up conferences on more topics related to CSS. Following the Context-Sensitive Solutions Conference, there has been ongoing interest in exploring more approaches to CSD/S.

SERVING THE TRANSPORT NEEDS OF CORE AND PERIPHERY IN THE NYC REGION

The UTRC sponsored a Technology Transfer seminar for the New York Metropolitan Transportation Council (NYMTC). The seminar featured two speakers: Dr. Jonathan Peters, Assistant Professor, Department of Business, College of Staten Island, CUNY, and Dr. Cameron Gordon, Assistant Professor, Department of Business, College of Staten Island, CUNY.

The seminar topic was regional economic development. Any study of regional economic development is going to start, at least implicitly, with a

definition of economic centrality, i.e., a determination of which parts of the region are economically central and which are economically peripheral. In this context, transportation policy is a set of decisions in which core and periphery are optimally linked so as to maximize the economic welfare of both. Using the New York City region as a case study, this talk focused on three general questions: how are cores and peripheries defined in practical economic terms; how are cores and peripheries best served by transportation infrastructure; and how do transportation infrastructure investments affect centrality and periphery in general?

SPEED PROJECT CLOSEOUTS AND STREAMLINE LOCAL FINANCING

In 2002, NYSDOT's Construction Division identified the numerous issues that slowed or prevented project closeouts as a problem that locked up existing Department funds in projects that could not be closed out. The Department did not expect any additional work to be done on these projects. Over \$25 million of Department construction funds were locked up in these projects that the Department could not bring to closure. In one case the outstanding project had been locked up but on the books for over a quarter century. In several cases the firm contracted to do the work on the contract had gone out of business.

NYSDOT used UTRC to address this problem. The UTRC Investigators - Neville Parker, Ph.D., Professor of Civil Engineering at the City College of New York, Camille Kamga and Robert Baker, Research Associates at the UTRC, and the law firm of John E. Osborn, PC identified an effective legal mechanism the New York State Department of Transportation could use to close out these projects. As of June 2005, the Department has recover \$3.4 million of

these Department Construction funds that had been locked up in projects that the Department previously could not close out. The Department anticipates recovering significantly more funds using the mechanism identified by the study.

THE 7TH ANNUAL NEW JERSEY DEPARTMENT OF TRANSPORTATION RESEARCH SHOWCASE

The 7th Annual NJDOT Research Showcase was held on October 2005 at Princeton, NJ. The event brings the New Jersey and New York transportation community to join together to showcase its transportation research activities and reach out to research users within the region.

The focus of this event is to highlight the broad spectrum of transportation topics being explored by the Bureau of Research of NJDOT. The university partners are encouraged to highlight ongoing projects as well as present panel discussions themed to a particular aspect of research. All NJDOT employees, customers, and private sector parties are invited.

The program interests practitioners, decision makers, and end users who are seeking new ways of addressing ITS-Congestion Mitigation, Infrastructure, Safety/Human Factor and Environmental issues. The NJDOT Bureau of Research has sponsored this program at no cost to the participants.

The University Transportation Research Center participated in the conference with speakers and a booth to showcase our research efforts. UTRC researchers met with NJDOT engineers and consultants to discuss cooperative research projects and regional research efforts.

CHALLENGE OF CONGESTION IN NEW YORK REGION

On November 16th, 2004, the Rudin Center for Transportation Policy & Management at NYU Robert F. Wagner Graduate School of Public Service and the New York Metropolitan Transportation Council (NYMTC), in affiliation with the University Transportation Research Center (UTRC), hosted a conference entitled, "The Challenge of Congestion in the New York Region." The all-day conference focused on the issue of highway and street congestion in the New York metropolitan region.

Featured speakers included: Joseph H. Boardman, Commissioner, New York State Department of Transportation; Mary E. Peters, Administrator, Federal Highway Administration; and Anthony Downs, Senior Fellow, Brookings Institution. In addition to the featured speakers, panel sessions comprised of transportation professionals, government officials, members of the business community, activists, private consultants and academics who discussed many issues surrounding congestion.



NYSDOT Commissioner Joseph Boardman

There were approximately 270 attendees with backgrounds ranging from the public, private, government, and academic sectors. In general, positive responses and reviews were received from those who attended. According to evaluation forms collected from participants, the overall quality of the conference was rated "Very Good" – a 4.0 out of 5.0 (where 5 being

Superb). Those surveyed thought the information presented overall was very interesting and provided valuable insight into the subject of congestion in the New York region.



AVIATION SECURITY AND TECHNOLOGY

The CUNY Aviation Institute at York College and the University Transportation Research Center co-sponsored the second annual Aviation Seminar, which was held at York College, Jamaica, New York. The speakers discussed the current challenges and plans to meet aviation's and, specifically, airports' security requirements in the post 9-11 environment.

The speakers were: James M. Begley, Deputy General Counsel, Litigation – Security, Law Department, Port Authority of New York & New Jersey; William Hooper, Managing Principal for JetBlue Terminal Project JFK Int'l Airport & Security Expert, Gensler Architects; Joseph S. Paresi, President, Security & Detection Systems.

The opening remarks were given by Alan Reiss, Deputy Director, Aviation, Port Authority of New York & New Jersey and Mark Torbeck, Aviation Security Analyst, DOT, Transportation Security Administration.

THE MANAGEMENT OF
ROAD SAFETY:
RISK COMPENSATION VERSUS
THE OBEDIENT AUTOMATON
THEORY OF HUMAN
BEHAVIOUR

The University Transportation Research Center sponsored this event as part of its Visiting Scholar Seminar series for 2005. The seminar was held at the NYC College of Technology, CUNY, Brooklyn, New York. The featured speaker was John Adams, professor of geography at the University College London (UCL). Dr. Adams was a member of the original board of directors of Friends of the Earth in the early 1970s and has been a participant in debates about transport planning and environmental risks ever since.

He has published widely on risk management issues both in specialist journals and the national press, and is a frequent contributor to radio and television programs on these subjects. His publications include *Risk and Freedom: the record of road safety regulation* (TPP, 1985), *Risk* (UCL Press, 1995), and (with Michael Thompson), *Taking Account of Societal Concerns about Risk*, a report for the Health and Safety Executive (2002).

Dr. Adams discussed the topic, “Risk Compensation Versus the Obedient Automaton Theory of Human Behaviour.” Most engineering solutions to road safety problems – better brakes and suspensions, more crash-worthy cars, seat belts and helmets, longer sight lines ... etc assume no change in road user behaviour. Most regulatory safety measures such as speed limits assume voluntary compliance or, failing that, strict enforcement. Most safety training, whether skills training for motorists, or road crossing training for children assumes that the trainee will apply the lessons with sense and vigilance. Most signs warning of danger are put in place on the assumption that people will read them. All these assumptions are routinely

confounded by risk compensation: whenever there is a perceptible change in the safety environment, but no change in propensity to take risk, there is a behavioural response. If a car is fitted with better brakes, drivers do not drive the same way as before and enjoy a wider margin of safety. They go faster, follow more closely, start braking later or drive with less vigilance. The potential safety benefit gets consumed as a performance benefit. The lecture will discuss the widespread denial of this phenomenon and its potential, if acknowledged, to create more civilized urban environments.

The event was attended by more than 70 engineers, planners and consultants. The Visiting Scholar Seminar program is co-sponsored by The Rudin Center for Transportation Policy and Management, The New York City College of Technology, CUNY, The Journal of Urban Technology, CUNY Institute for Urban Systems, Port Authority of New York and New Jersey and the New Jersey Department of Transportation



Dr. John Adams

VISUALIZING ALTERNATIVE URBAN FUTURES: CREATING OPPORTUNITIES FOR CONVERSATION, COMMUNICATION, AND POLICYMAKING

The University Transportation Research Center and the New York Metropolitan Transportation Council presented a seminar on “Visualizing Alternative Urban Futures: Creating Opportunities for Conversation, Communication, and Policymaking,” by Professor Laxmi Ramasubramanian, Hunter College, CUNY.

The dominant discourse about the adoption and diffusion of information technologies is surrounded by diver and sometimes contentious debates regarding their capacity to ameliorate social and economic inequities. As academic debate continues, technology adoption and use by grassroots groups continues to grow rapidly. Although cyberutopians are quick to point to technology adoption by non-technical users and community-based groups an indicator of community empowerment, the linkages between technology use by grassroots groups and the overall development and empowerment of these communities remain tenuous.

Based on the context mentioned above, Dr. Ramasubramanian has addressed three major objectives: First, a conceptual model that places information technology adoption and use within the context of organizational decision-making is presented. Second, data from case studies of advocacy organizations in two major U.S. cities, Boston and Chicago, are used to describe how and why community-based organizations (CBOs) use information technologies. Finally, it is argued that one of the most significant contribution of information technologies lies in their ability to assist CBOs in reframing problems to influence local

and national policy decisions.

The seminar concludes by arguing that community-based organizations that have developed the capacity to harness the benefits of information technologies while transcending both organizational and technical barriers associated their adoption and use are more likely to be better advocates for their communities.

EMPTY MARINE CONTAINER MANAGEMENT IN A PORT MEGACITY REGION

The UTRC organized the seminar for the New York Metropolitan Transportation Council in New York City. Dr. Maria Boilé, Assistant Professor of Civil and Environmental Engineering and Director of Research and Education, Maritime Infrastructure Engineering and Management Program at Rutgers University, addressed the very dynamic and multidimensional problem of empty marine container management in a port megacity region, with special reference to the NY-NJ region. The two major aspects of empty container management, namely effective use of empty equipment with empty trip minimization, and empty container accumulation, were discussed. Global experiences and trends and regional challenges for NY-NJ were presented.

The talk aimed at promoting awareness of the nature of this crucial intermodal. With the global container population approaching 16 million TEU (20-foot container equivalent units) and the annual production of new boxes exceeding two million TEUs, an estimated 2.5 m TEU of empty boxes are currently sitting in yards and depots around the world waiting for use. Stockpiling of containers at the port terminals or at nearby areas is a potential environmental hazard and consumes valuable land for businesses.

THE CALIFORNIA INNOVATIVE CORRIDORS INITIATIVE

The University Transportation Research Center sponsored two seminars by Rachel Finson, a Project Manager/Research Specialist at California Partners for Advanced Transit and Highways (PATH) at the University of California, Berkeley. The seminars were held at the New Jersey Department of Transportation in Trenton, and at the New York Metropolitan Transportation Council, in New York City.

Ms. Finson discussed California's Innovative Corridors Initiative (ICI), a multi-year project to test a new approach for accelerating the deployment of Intelligent Transportation Systems (ITS) technologies, products, and services along major California corridors. As part of the effort, ICI's public sector partners (including Caltrans and local and regional agencies in Northern and Southern California) developed a Call for Submissions (CFS) to solicit proposals for demonstration projects to be showcased in conjunction with the 2005 ITS World Congress in San Francisco, California.

The unique nature of this CFS was that no public funds would be awarded. The goal was to test the viability of soliciting industry partners to implement innovative ITS demonstration projects at no cost to participating public agencies. In return, the agencies are offering possible access to public rights-of-way, data and a streamlined process during the required normal permitting period. The premise of the CFS is that introducing and leveraging innovative technologies into California's transportation system can yield significant public benefits.

Ultimately, nine of the proposals received through the CFS process resulted in final agreements to proceed with implementation. The demonstration projects resulting from the CFS deploy

current and emerging intelligent transportation system technologies to improve mobility and convenience for transportation system users, while also providing variety of benefits to transportation system managers. Ms. Finson's presentation provided an overview of the development of the CFS, the extensive evaluation and negotiation process, expected future activity and lessons learned from this effort about the types of emerging private sector business models made possible by ITS technologies.

As with the other PATH projects featured in UTRC's Technology Transfer seminar series (see p. 29), the Innovative Corridors Initiative provides a highly compelling model of public-private-academic partnership. All three parties benefit from this model. If true innovation is to occur in ITS, universities, governments, and businesses must all understand one another's processes, objectives, and constraints – and nothing can promote this understanding better than the collaborative negotiation and implementation of a difficult project.



Rachel Finson

NEPA AND ENVIRONMENTAL IMPACT ASSESSMENT

Dr. Beth Wittig is an assistant professor of Civil and Environmental Engineering at the City College of New York. In this presentation sponsored by the UTRC at the New York Metropolitan Transportation Council's headquarters, Dr. Wittig addressed the development of the NEPA-EIA process, the difference between an environmental assessment and environmental impact statement, the potential outcomes of the NEPA-EIA process (categorical exclusion, finding of no significant impact, and record of decision), and the information needed to perform an EIA. A few examples were given to highlight the application of the process to transportation-related activities.

USDOT SITE VISIT TO UTRC

The Region 2, University Transportation Research Center (UTRC) 2005 University Transportation Center Program site visit was held on March 25, 2005 at City College of City University of New York. The site visit was initiated by the Research and Innovative Technology Administration of the United States Department of Transportation as partial fulfillment of the UTRC's federal grant requirements.

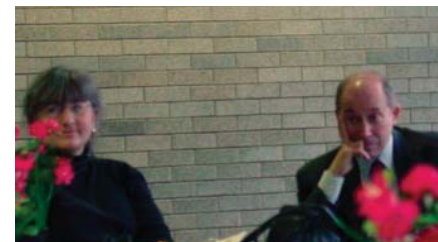
The visit was hosted at the UTRC facilities on the City College campus in upper Manhattan, New York. Dr. Robert E. Paaswell, Director and Distinguished Professor of Civil Engineering presented the Center's staff, principal investigators and the UTRC Board of Directors from the twelve Universities in the Center's consortium. Representatives from the New Jersey Department of Transportation, New York State Department of Transportation, the Port Authority of New York & New Jersey, New York Metropolitan Transportation

Council and other regional transportation agencies were in attendance at the meeting.

Dr. Paaswell presented an overview of the University Transportation Research Center which includes education, student diversity, research and technology transfer, discussed the goals and future of the Center and showed how the UTRC's theme relates to the Center's vision as a source for preparing the new professionals for the XXI Century transportation workplace and to provide the innovative research and tools for practicing professionals and key stakeholders to understand critical problems as they plan and manage the region's complex transportation systems.

Several of the Center's Principal Investigators presented the purpose and significance of their research activities, involvement of the diverse students body and emphasized the interaction between consortium members. A laboratory tour was held to show what portions of the laboratory facilities are used by UTRC students and researchers, and to demonstrate its use by the students. Students explained how they benefited from the UTRC grants and research. Representatives from Regional transportation agencies discussed the importance and the benefits of the Center's programs and research activities for their agencies.

The Research and Innovative Technology Administration staff came away from the site visit with an understanding of how the UTRC is managing the Federal funds awarded under the UTC grant and with the experience of productive meeting.



Amy Stearns and Dr. Robert Paaswell

RESEARCH PROJECTS

The research program objectives are (1) to develop a theme based transportation research program that is responsive to the needs of regional transportation organizations and stakeholders, and (2) to conduct that program in cooperation with the partners. The program includes both studies that are identified with research partners of projects targeted to the theme, and targeted, short-term projects. The program develops competitive proposals, which are evaluated to insure the most responsive UTRC team conducts the work.

The research program is responsive to the UTRC theme: “Planning and Management of Regional Transportation Systems.” The complex transportation system of transit and infrastructure, and the rapidly changing environment impacts the nation’s largest city and metropolitan area. The New York/New Jersey Metropolitan has over 19 million people, 600,000 businesses and 9 million workers. The transportation systems that serve Region 2, both multi-modal and intermodal must serve the customers and stakeholders within the region and globally.

Under the current grant, the new research projects and the ongoing research projects concentrate the program efforts on the categories of Transportation Systems Performance and Information Infrastructure to provide needed services to the New Jersey Department of Transportation, New York State Department of Transportation, the Port Authority of New York and New Jersey and the New York Metropolitan Transportation Council while enhancing the center’s theme.

The objective of the research program is to develop an agenda that is responsive to the problems addressed by regional organizations and stakeholders, and to conduct that program in close cooperation with these partners, developing means of rapid dissemination of results.

NEW RESEARCH PROJECTS

FREIGHT MOVEMENT AS AN ECONOMIC INDICATOR FOR THE NEW JERSEY/NEW YORK BI-STATE AREA

PERFORMING ORGANIZATION: University Transportation Research Center

SPONSORS: United States Department of Transportation

PRINCIPAL INVESTIGATOR: Kaan Ozbay, Ph.D.
Associate Professor
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PROJECT ABSTRACT

The purpose of this project is to investigate the relationship between truck movements and the economic performance of the New York/New Jersey region, and thereby, to test whether truck movements on the I-95 Corridor are a leading indicator of changes in the performance of the New York/New Jersey regional economy.

The economy is susceptible to fluctuations as economic conditions change over time. Economists, forecasters, and others use monthly economic measures to track the performance of the economy, to understand the short-term relationships among different sectors of the economy, and to forecast the performance of the economy, particularly business cycles. To do this they use measures called “indicators”, such as employment, manufacturing production, sales, business inventories, and consumer confidence, among other things. In addition to giving information that is valuable in its own right, the indicators often have a relationship to the growth of the economy, measured by Gross Domestic Product (GDP) for the nation, or Gross State Product (GSP) for a state. Until now, freight movements were not included in these indicators. Preliminary work suggests that a freight indicator when used with other economic indicators could produce a better understanding of the current and future course of the economy. The movement of a freight index over time can be compared with other economic measures to understand the relationship of transportation to changes

in the regional economy. Leading indicators are especially useful in forecasting turning points in the economy, and are therefore of particular interest to economic decision-makers.



PROJECT OBJECTIVE

The Rutgers team proposes to develop an econometric model to test whether a correlation with a lag effect exists between truck movements on the NJ Turnpike and various economic time series data. It will also assess the feasibility of producing a freight index and publishing this index on an ongoing quarterly basis for the larger New York/New Jersey region. Using an existing model of New Jersey’s economy that is provided by the Rutgers Economic Advisory Service (R/ECON), truck movement data will be provided by the NJ Turnpike so that the project team can examine the feasibility and investigate the relationship between truck movements and the performance of the New Jersey economy.

Investigating this relationship and collaborating with the NJ Turnpike will produce a ‘first of its kind’ project that should advance the understanding and value of freight to our economy. Using a student researcher from the Center for Advanced Transportation and Infrastructure and teaming with an economist will generate new perspectives across disciplines. The work effort will be complete in 12 months and this proposal is offered as the first phase that will result in a determination of the feasibility of the concept.



EFFECTS OF NEW YORK STATE ROADWAYS ON AMPHIBIANS AND REPTILES: A RESEARCH AND ADAPTIVE MITIGATION PROGRAM

PERFORMING ORGANIZATION: New York State Department of Transportation

SPONSORS: United States Department of Transportation
New York State Department of Transportation

PRINCIPAL INVESTIGATOR: James P. Gibbs, Ph.D.
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PROJECT ABSTRACT

New York State hosts 67 species of frogs, toads, turtles, snakes and lizards, collectively called “herpetiles.” This group of small-bodied, generally slowly moving creatures is, somewhat paradoxically, an extremely mobile group of animals. Virtually all species of frogs, toads, and salamanders move each year from forests and fields, where they spend much of the year feeding, resting, and hibernating, to wetlands to breed. Many aquatic turtles do the reverse – females emerge each year from ponds, lakes, and other wetlands to dig holes in the uplands and lay their eggs. Snakes also roam widely in search of prey and mates, visiting both wetlands and uplands in their meanderings.

To conserve New York’s herpetiles we must protect a diversity of habitats that they require as well as the connections between them. Roadways are thus a critical consideration because they frequently bisect migration and dispersal routes of herpetiles. Road mortality of herpetiles is a worldwide conservation concern, and the United States is no exception. Roads and traffic ecologically affect about one-fifth of the land area of the

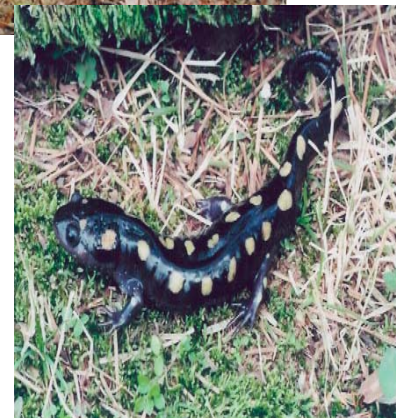
conterminous United States. The ecological effect of roads is a particularly germane issue to New York State, which has the 11th highest road density among the 50 states.

Most research on the effects of road mortality on amphibians has entailed simple tallies of numbers of individuals killed at particular road crossing sites, in some cases yielding surprisingly substantial counts. For example, counts along a 3.6 km section of a two-lane paved causeway in Ontario, Canada over two seasons yielded > 32,000 individual road-killed amphibians. In New York State, Wyman (1991) reported average mortality rates of 50.3% to 100% for hundreds of salamanders attempting to cross a paved, rural road near Oneonta. For turtles, chronic road mortality of females on nesting movements may result in sex ratios of turtles becoming skewed toward males in roadside wetlands.

PROJECT OBJECTIVE

Three primary objectives:

1. Document the impacts of transportation infrastructure on herpetile populations,
2. Determine the landscape, local habitat, and architectural attributes of effective herpetile crossing structures
3. Employ habitat analyses to identify “connectivity zones” where crossing structures would be most appropriately deployed along New York State roadways.



NEW RESEARCH PROJECTS

THE COST OF TRANSPORTING PEOPLE IN NEW JERSEY,
PHASE 2: MODEL ENHANCEMENTS AND INTEGRATION WITH EXISTING TRAVEL DEMAND MODELS AND OTHER TOOLS

PERFORMING

ORGANIZATION: New Jersey Department of Transportation

SPONSORS:

United States Department of Transportation
New Jersey Department of Transportation

PRINCIPAL

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PROJECT ABSTRACT

The extensive and highly developed highway infrastructure of New Jersey carrying heavy traffic of freight and commuters plays a pivotal role in ensuring mobility in the area. Yet, with high-density growth, it becomes harder to meet the current and potential demand even with an expanded highway system. To keep in pace with the economic growth in the State, the highway transportation system must continuously evolve to face the challenge of achieving increased efficiency and connectivity. This is a challenge that has been a major objective of the federal and local governments for decades. Numerous policy options have been contemplated to achieve this goal, such as improving roadway infrastructure, taxation on fuel use, improving/expanding public transportation, congestion pricing, traffic control management, etc.

At the heart of these options lies the accurate estimation of travel costs. This information is essential for allocation of resources efficiently, for ensuring equity among users of different transportation mode users, and for developing effective pricing mechanisms. Economists and policy analysts have repeatedly argued that it is important to use the concept of social marginal cost, which incorporates user costs and external costs in measuring the cost of

transporting people and goods. Social marginal costs measure the real increase in costs due an additional trip, user or vehicle-mile traveled, and they are the real costs that the State should consider in evaluating various policy decisions.

PROJECT OBJECTIVE

Objective 1: Improve the developed cost models and cost estimation procedures.

Cost functions developed in the Phase 1 of the project need to be improved using up-to-date data. Our experience with data acquisition in Phase 1 showed that most of the data exists but not always in a usable format or sometimes is very hard to access. In Phase 1, much of the effort was spent to obtain the data. Based on this previous experience with data collection, the cost functions that need to be improved and the availability of the necessary data will be carefully identified to avoid delays. Then, a decision will be made to improve the most important cost functions. Moreover, we will improve our methodology used in determining trip costs (mainly route costs).

Objective 2: Create a User-Friendly Cost- Analysis Tool for the Calculation of Costs and Evaluation of Different Policy Decision Applications.

A simplified version of this tool has already been developed as a part of Phase 1. The model should be enhanced to make it a more robust and effective tool for policy analysts to analyze and evaluate various policy decision applications. In other words, the tool should be compatible with the existing travel demand models and software used by the NJDOT and capable of retrieving and updating the data.



NYMTC BEST PRACTICE MODEL SUPPORT
PROJECT: EVALUATION AND TESTING OF
REGIONAL MODELS -PHASE 1

PERFORMING
ORGANIZATION:

New York Metropolitan
Transportation Council

SPONSORS:

United States Department of
Transportation
New York Metropolitan
Transportation Council

PRINCIPAL
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Benefits of the Project: By providing an independent, academic evaluation of the model, this project will set the groundwork for its eventual greater acceptance and use in the region. By involving students, it will also help build a future workforce in the region who understand and can use the model.

PROJECT OBJECTIVE

The goal of this study is to assist the New York Metropolitan Transportation Council (NYMTC) to develop, test, revise, and use regional transportation models in support of its planning and public policy activities. Its primary objectives will be to help NYMTC:

- * Organize, Assess and Prioritize Future Modeling and Data Collection Needs.
- * Develop Detailed Documentation and Instructions for Using the Best Practice Model (BPM).
- * Develop Policy Analysis and Visualization Tools
- * Perform Sensitivity Analysis and Demonstrate the Effectiveness of the BPM.



PROJECT ABSTRACT

The project will address the complete system of analytical tools being supported by NYMTC, including the Best Practice Model (BPM), as well as the full range of data collection efforts and simulation and data reporting tools that support and complement its capabilities.

NEW RESEARCH PROJECTS

PUBLIC TRANSIT IN NEW YORK CITY: KEEPING UP WITH THE TREND

PERFORMING

ORGANIZATION: University Transportation Research Center

SPONSOR: United States Department of Transportation

PRINCIPAL

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PROJECT ABSTRACT

The concept of transit development along with the land use development (or called transit-oriented development) has long been accepted in the field as a viable solution to solve transportation related problems such as congestion and air quality problems. The hypotheses behind these transit-oriented developments are two: a) because of the close proximity between activities, it is hoped that the need to make trips, especially longer-distance trips, is reduced; and b) for the same reason (because of the close proximity between activities), it is also hoped that people will shift from low-occupancy modes (e.g., automobiles) to high-occupancy modes such as public transit and non-motorized modes (e.g., walking and biking). The above two hypotheses further assume that there is no excess travel, or no longer-than necessary or more-than-necessary trips will be made. If this were true, then all the hypothesized benefits of transit-oriented developments would indeed be achieved. However, the latter hypothesis can be rejected in

some mobility-inclined market segments. Variety seeking and possible positive utilities associated with traveling probably contribute to excess travel.

Therefore, in order for the transit-oriented developments to be successful, it is extremely important to understand how people make travel related choices, especially their mode choices. Understanding in one's travel related choices requires a full understanding of one's daily activity and travel patterns, because of the widely recognized notion "travel as a derived demand", which suggests that people travel to perform activities distributed in space.

Furthermore, we are at a very special turning point when understanding in the current and potential transit users' needs become extremely important. During the last decade, we have started seeing first signs of inward immigration into the city as well as growth of the city cores, after decades of outward migration. Three special market segments have potentially contributed to this important observation: the empty nesters, the young generation X professionals and the new immigrants. Compared to the typical middle-class married couples with young kids (those who most likely prefer living in suburbs), these three groups of people are finding the inner city to be an attractive place to live and are likely to reside in the city. It is those people who will become a very significant proportion of the transit riders for the next 10 years to come.

PROJECT OBJECTIVE

The objectives of the proposed research are two-fold:

1. To analyze the daily activity and travel patterns of the above three special groups in comparison to the control group (middle-class married couples with young kids) in order to understand their activity and travel needs via simple descriptive analysis coupled with statistical tests (e.g., ANOVA analysis), and

2. To quantitatively assess the impact of various factors in the decision making process for mode choice made by people in the different groups described above by applying the mixed logit model and the heterogeneity-accounted logistic model.



DEFORMATION OF COHESIONLESS FILL DUE TO CYCLIC LOADING

PERFORMING

ORGANIZATION: University Transportation Research Center

SPONSORS:

United States Department of Transportation
New York State Department of Transportation

PRINCIPAL

INVESTIGATOR:

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PROJECT OBJECTIVE

Study applicable theories, choose the theory that most closely answers the question on the pressure distribution and magnitude of integral abutments and check the theory with our data.

- Separate the different mechanisms responsible for the pressure built-up. We have data that will help us quantify the different affects on the development of the pressure. For example, data at the beginning of the measurements does not show the accumulated plastic strain. Data right after a freeze period shows very high pressures that dissipate with higher temperatures. (Note that one would expect the passive pressure to be the greatest at the highest temperatures).
- Identify the role of skew in the development of pressure. Data taken at the East and West part of the abutment can be used to quantify the effect of skew.
- Recommend design parameters for the safe evaluation of pressure behind integral abutments.

PROJECT ABSTRACT

In an on-going research project with the NJDOT, we have instrumented an integral bridge and have been gathering data every two hours for the past two years. We found that there is a significant pressure built-up in the soil behind the abutment. We have reported the built-up to the NJDOT, however our project does not allow for an in-depth analysis of the mechanics that are responsible for the development of the high pressures.

We have identified at least four mechanisms responsible for the increase in the pressure: 1) strain ratcheting (or the plastic accumulation of strain) due to the cyclic loading of the soil; 2) a flow of the sand particles during the daily and seasonal cyclic loading; 3) the presence of frozen ground; and 4) possible failure of a soil wedge during the active pressure periods of the winter months which may be shifting the equilibrium position during every season.

In order to recommend design parameters for the correct pressure distribution and magnitude, we must understand the pressure development mechanisms. This is of vast and immediate importance to the design community, considering that the construction of integral abutments is becoming widespread.



NEW RESEARCH PROJECTS

INVESTIGATING THE FEASIBILITY OF ESTABLISHING A VIRTUAL CONTAINER YARD TO OPTIMIZE EMPTY CONTAINER MANAGEMENT IN THE NY-NJ REGION

PERFORMING ORGANIZATION: University Transportation Research Center

SPONSOR: United States Department of Transportation

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PROJECT ABSTRACT

Trade imbalances create a substantial problem of empty container handling throughout the US and particularly in port regions and densely populated economic centers, such as the NY-NJ region. The two main aspects of empty container management deal with empty storage accumulation and excessive unproductive empty trips to and from marine terminals and empty depots. The most straightforward and efficient way to minimize unproductive empty trips and associated VMTs and vehicle emissions; and to alleviate marine terminal and depot gate delays, additional road congestion and associated emissions is to maximize chances for direct empty interchange, the so called "street turns".

A Virtual Container Yard (VCY) is a mean of developing a shared resource information system to match empty equipment needs through the adoption of next generation internet and new technology information platforms (ex., Virtual Private Networks VPNs and ebXML). The project will examine the feasibility of developing and operating a Virtual Container Yard to serve the freight and maritime community in the NY-NJ region. Definition of user requirements and potential business and institutional impediments in successfully establishing the system will be identified. To support user requirements production and solutions, and to address potential impediments, literature dealing with local, US and International experience in applying web-based shared information systems will be

critically reviewed.

Subsequently, the conceptual architecture, specifications and functionalities of the system will be developed based on latest e-business collaborative solutions, systems and protocols. Special attention will be given to systems security architecture to make the application robust and attractive to potential partners. Proprietary products either dealing directly with street-turn matching or with wide range matching applications will be critically evaluated in view of the developed user requirements. Financial and economic evaluation, potential funding alternatives and investment recovery strategies to ensure successful development and long term viability of systems' operation, will be presented. Systems governance structure and potential partnership will be investigated and proposed to serve the purpose of long-term sustainability of the system. Finally, a staged application timeline and implementation plan will be produced, to cater for an intermediate pilot demonstration phase, necessary to draw experiences leading to proper full-scale application. The project will provide for an integrated support product to enhance setting up a Virtual Container Yard system application in the NY-NJ region.

PROJECT OBJECTIVE

- * Provide information about containers (status, location, etc.).
- * Facilitate communication between parties (motor carriers, ocean carriers, leasing companies, chassis pool operators), with a view to matching their needs
- * Permit equipment interchange and other processes to take place without moving the container to the marine terminal.
- * Assist the parties to make optimal decisions regarding container logistics (return, reuse, interchange, etc.), rationalize moves, and plan ahead.



COLLABORATIVE EXPLORATORY RESEARCH:
ON THE ANTICIPATORY ROUTE GUIDANCE
PROBLEM

PERFORMING

ORGANIZATION: University Transportation
Research Center

SPONSORS: United States Department of
Transportation
New York State Department of
Transportation

PRINCIPAL

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PROJECT ABSTRACT

This research will focus on predictive driver information systems that provide messages intended to facilitate drivers' path choice decisions before and during a trip. In general, the messages may inform drivers about anticipated traffic conditions on different available paths, or (based on these conditions) recommend a specific path to follow, or both. Such systems are called route guidance systems. If only a few drivers receive route guidance messages, they may benefit from it by making better path choice decisions. When more drivers receive guidance, on the other hand, their reactions to the guidance may affect traffic conditions significantly. The key issue in generating guidance messages based on traffic condition forecasts is to ensure that drivers' reactions to the guidance do not invalidate the forecasts that the guidance is based on, and so render the guidance irrelevant or worse. Messages predicting im-

pending congestion on one road, for example, may cause drivers to switch en masse to a parallel road less able to accommodate them, leaving the original road free flowing and producing overall worse traffic conditions than if no guidance had been issued. Predictive guidance is said to be consistent when the forecasts on which it is based are indeed experienced by drivers after they react to it. Generating consistent guidance is called the Anticipatory Route Guidance (ARG) problem.



PROJECT OBJECTIVE

This project is exploratory with the main goal to establish and analyze a general analytical framework for the Anticipatory Route Guidance (ARG) problem. The project will allow a deeper understanding of the problem under relatively weak assumptions. Furthermore, it will develop and study algorithms for solving this framework and test our results. To the best of our knowledge, this is the first analytical framework. In summary, the research contributions will be to (i) design and study a framework for the ARG problem based on a fixed-point as well as an equivalent variational inequality formulation of the problem, (ii) discuss and incorporate efficiently the stochastic aspect of the problem, (iii) examine the efficient solution of the problem based on averaging methods and (iv) validate the results computationally and provide the community with software on the web that will be accessible to both practitioners and academics.



NEW RESEARCH PROJECTS

PEDESTRIAN SAFETY IN THE NYMTC REGION PHASE 1

PERFORMING

ORGANIZATION: New York Metropolitan
Transportation Council

SPONSOR: New York Metropolitan
Transportation Council

PRINCIPAL

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implementing effective strategies to reduce the number and severity of pedestrian accidents at the street level (i.e. sidewalks, crosswalks, highways and bridges).



PROJECT OBJECTIVE

The University Transportation Research Center team will prepare a summary overview of pedestrian safety issues for NYMTC and its Safety Advisory Working Group (SAWG). The results of this study are intended to be used by the SAWG in developing recommendations on how NYMTC can best assist its member jurisdictions in developing and implementing effective strategies to reduce the number and severity of pedestrian accidents.

PROJECT ABSTRACT

According to the NYMTC Safety Advisory Working Group (SAWG), pedestrian fatalities represent approximately 50% of all fatalities resulting from motor vehicle crashes in New York City and 20% in the suburban counties of Nassau, Suffolk, Westchester, Putnam and Rockland.

The UTRC proposes to prepare a report that provides the SAWG with a summary overview perspective of pedestrian safety issues, reflecting studies completed to date and efforts underway by each of NYMTC's member agencies. Therefore, this study will assist the SAWG by identifying the existing pedestrian safety activities of its members, documenting the status of efforts to assess pedestrian safety investment needs, and compiling a sourcebook of pedestrian safety technologies and strategies in use in the region and around the nation.

The results of this study are intended to be used by the SAWG in developing recommendations on how NYMTC can best assist its member jurisdictions in developing and



HOUSEHOLD TRAVEL SURVEY RESEARCH

PERFORMING

ORGANIZATION: New York Metropolitan
Transportation Council

SPONSORS:

United States Department of
Transportation
New York Metropolitan
Transportation Council

PRINCIPAL

INVESTIGATOR: Dr. Catherine Lawson
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PROJECT ABSTRACT

New York Metropolitan Transportation Council (NYMTC) and the Metropolitan Transportation Authority (MTA) are planning an effort for 2005/2006 to collect data in order to update the Best Practice Model (BPM) and Regional Transportation Forecast Model (RTFM). This research project will assist NYMTC's Technical Survey Unit by documenting issues incurred in the planning and process of the Regional Travel Household Interview Survey 1996/1997 (RT-HIS) and the Comprehensive Travel Telephone Survey 1989 (CTTS). Also to be included in this document is research describing new methodology and new technology, recently used in practice.



PROJECT OBJECTIVE

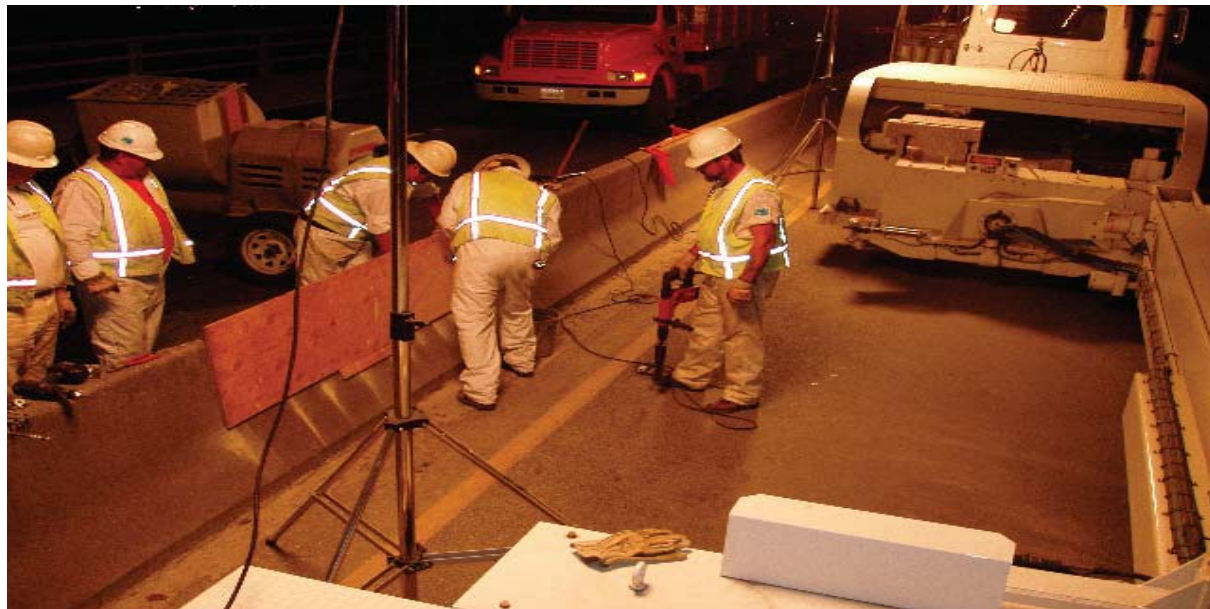
The following items are the objects in each task:

- * List of issues before the pretest or survey, and identify if each of the issues were resolved as planned. If issues were not resolved, list why and ways to improve.
- * List of issues learned during the actual survey and identify problems and possible solutions.
- * List of data that was collected in survey that has not been used anywhere in model or analysis.



ONGOING RESEARCH PROJECTS

PROJECT NO	TITLE	PERFORMING ORGANIZATION	SPONSORS	PRINCIPAL INVESTIGATOR:
49777-13-05	Identification of Traffic Control Devices for Mobile and Short Duration Work Operations	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Robert E. Paaswell, Ph.D. City College of New York
55657-01-14	Seasonal Variations of In-situ Materials Properties in New York State	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	Lynne H. Irwin, Ph.D. Cornell Local Roads Program Cornell University
55657-12-15	Quantifying Non-Recurring Delay on New York City's Arterial Highways	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	John Falcocchio, Ph. D. Polytechnic University Kaan Ozbay, Ph.D. Rutgers University Kyriacos C. Mouskos, Ph.D. City College of New York George F. List, Ph.D. North Carolina State University
49777-13-03	Survey of Driver Perceptions of Railroad and Light Rail Warning Devices/Grade Crossings	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Raghavan Srinivasan, Ph.D. University of North Carolina
55657-04-15	Development of Smart Bridge Bearing Systems- A Feasibility Study	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	Anil K. Agrawal, Ph.D The City College of New York



COMPLETED RESEARCH PROJECTS

ANALYSIS OF CAPITAL COST ELEMENTS FOR LIGHT RAIL TRANSIT

SPONSOR: Federal Transit Administration

PRINCIPAL INVESTIGATOR: Robert E. Paaswell, Ph.D.
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EXECUTIVE SUMMARY

The apparent increase in light rail transit capital costs is a significant concern for Federal Transit Administration, as well as for its partner agencies at the state and local levels. While unit costs have shown no clear trend over the past decade, many individual agencies are experiencing unexpectedly high project costs, and could use assistance in both bringing these costs under control and in gaining tools to better anticipate ultimate project costs.

There are three distinct but interrelated ways in which costs may appear to rise over time, some of which are illustrated by the data from this study:

- Cost overruns occur within individual projects, in which final costs exceed initial forecasts. These are an ongoing problem that plague major public capital investments of all kinds.

- Unit cost escalation occurs when unit costs for comparable projects rise over time, due to changes in the costs of factor inputs (such as labor and materials) or the costs of construction or specialized services. According to data analyzed for this study, the past decade has seen relatively stable unit costs. However, price spikes can cause significant short-term problems, and a future inflationary cycle is always a possibility.

- Project escalation occurs when changes in the scope or complexity of projects cause costs to rise over time. This is exemplified by recent trends towards smaller and more technically complex projects.

Our analysis shows that since the mid-1990s there has not been a statistically significant increase in prices in any individual light rail transit asset category. However, there remain significant differences in unit costs among projects, and all three of the above factors come into play in explaining these disparities. Ongoing problems with cost containment have implications for the ability of the FTA and its partner agencies to keep up with demand for funding of light rail transit capital projects.

Guidance or policy development in the following areas would help agencies to better contain costs over the long term:

- Technical and Institutional Capacity. Agencies with in-house expertise are generally better able to contain project costs than those without. Training and technical assistance on state-of-practice cost estimation, procurement, project management, and lifecycle economic analysis techniques would help agencies develop the expertise they need to control costs.

- Regulations. Existing administrative mandates limit the ability of transit agencies to adopt more innovative procurement and project management practices.

- Competition. Preserving a competitive marketplace is essential to controlling the costs of LRT-related procurements. Federal policies should encourage a free and open marketplace by revisiting its requirements for contractors, and by discouraging the use of proprietary technologies that limit market competition.

- Lifecycle costs. Capital cost components should be judged by the net present value of the full range of operating and capital impacts that they create over time. Some project elements may more than pay for themselves in operational savings; others may impose an ongoing maintenance burden without any redeeming societal benefits.

- Standards, either relating to the process of procurement and project management, or to the design of specific project components themselves, may play a significant role in helping contain project costs. They should also be evaluated using a lifecycle approach. Standards are but one of several related strategies for reducing the project lifecycle costs; others include harmonization, optimization of design, and reduced use of specification.

With the development of new light rail systems throughout the U.S. over the last quarter century, concerns have arisen over cost growth on these capital projects. Rising costs pose a significant challenge for agencies seeking to finance new projects. Because of limited federal funds for discretionary capital transit projects, rising costs can mean that individual projects will eventually be funded at lower levels and that some projects will remain unfunded. Locally, this can delay or eliminate the benefits that new investments might provide, adversely affecting system users, agency revenues, and potentially the economy.

This report explores potential factors driving changes in the costs of light rail transit systems in the United States.

COMPLETED RESEARCH PROJECTS

PROJECT NO	TITLE	PERFORMING ORGANIZATION	SPONSORS	PRINCIPAL INVESTIGATOR:
75150-00-01	NYCDOT Green Bus Lines Route Analysis	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	Claire McKnight Ph.D. City College of New York Robert E. Paaswell, Ph.D. City College of New York
49777-07-02	Analysis of Human Factors in Nighttime Work Zones	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Jose Holguin-Veras, Ph.D. City College of New York
75144-07-01	Crosswalk Safety: Evaluation of the Light Guard System	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Peter Boyce, Ph.D. Rensselaer Polytechnic Institute
75144-04-01	Evaluation of the Effectiveness of the Graduated Driver Licensing System in New Jersey - Phase 1	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Raghavan Srinivasan, Ph.D. Dowling College Claire McKnight Ph.D. City College of New York
75144-06-01	Analytical Tool for Measuring Emission Impact of ACCEL/ DECEL Lanes	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Hualiang Teng, Ph.D. Polytechnic University
58635-01-02	Development of Bus Maintenance Information	New York City Transit	United States Department of Transportation New York City Transit	Mohsen Jafari, Ph.D. Rutgers University
55657-01-13	Benefits Package Value	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	Frederick Brodzinski, Ed.D Institute for Transportation Systems City College of New York
75144-01-02	Evaluation of the Performance of Retro reflectors in Snowplow able Raised Pavement Markers	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Neville A. Parker Ph.D. Institute for Transportation Systems City College of New York
49777-11-02	Characteristics of Traffic Flow in 55 & 65 MPH Speed Limits	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Raghavan Srinivasan, Ph.D. Dowling College
55332-01-02	An Assessment of Methodological Alternatives for a Regional Freight Model in the NYMTC Region, Phase 2	New York Metropolitan Transportation Council	United States Department of Transportation New York Metropolitan Transportation Council	Jose Holguin-Veras, Ph.D. Institute for Transportation Systems City College of New York



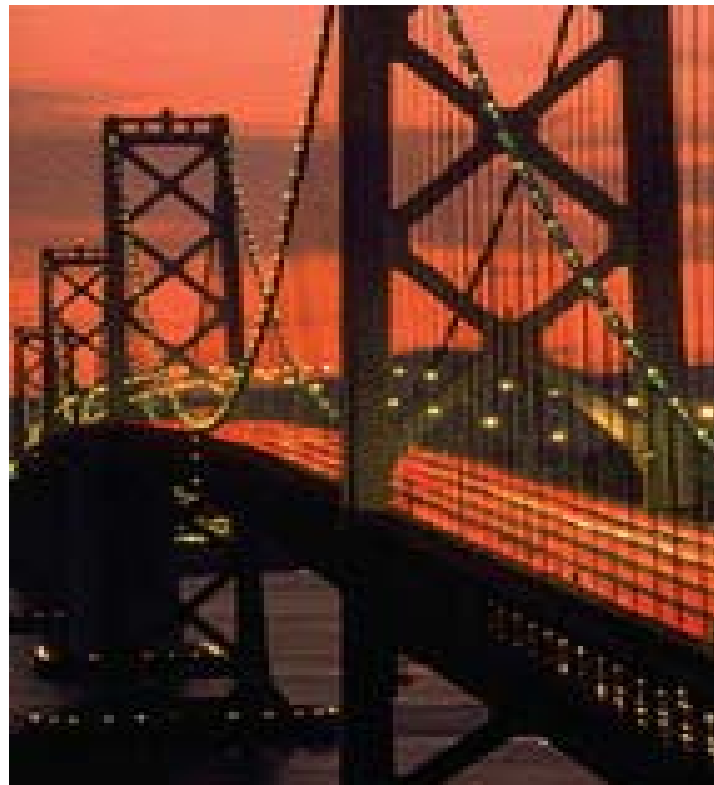
PROJECT NO	TITLE	PERFORMING ORGANIZATION	SPONSORS	PRINCIPAL INVESTIGATOR
49777-16-03	Technical Solutions to Overcrowded Park & Ride Facilities	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Kyriacos C. Mouskos, Ph.D. City College of NY Maria Boile, Ph.D. Rutgers University
49777-15-03	Technology Transfer Projects: Energy Absorption Fender System, Precast or Prefabricated Bridge Deck Systems, & Smart Bridge Applications	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Neville Parker, Ph.D. City College of New York Farhad Ansari, Ph.D. University of Illinois at Chicago
75144-01-01	New Jersey Link to the 21st Century: Maximizing the Impact of Infrastructure Investment	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Robert E. Paaswell, Ph.D. City College of New York Jose Holguin-Veras, Ph.D. City College of New York Raghavan Srinivasan, Ph.D. Dowling College Claire McKnight Ph.D. City College of New York Kaan Ozbay, Ph.D. Rutgers University Joseph Berechman Ph.D. UTRC
55657-02-14	New York in the New World Economy	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	Robert E. Paaswell, Ph.D. City College of New York Ross Weiner, Ph.D. City College of New York Catherine Lawson, Ph.D. SUNY, University at Albany
49777-12-03	Impact of Congestion on Bus Operations and Costs	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Claire McKnight Ph.D. City College of NY Robert E. Paaswell, City College of New York
55657-09-15	Funding Analysis for Long Term Planning	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	Allison L. C. de Cerreño, Ph.D. New York University

COMPLETED RESEARCH PROJECTS

PROJECT NO	TITLE	PERFORMING ORGANIZATION	SPONSORS	PRINCIPAL INVESTIGATOR:
55657-01-15	Information Technology Operations	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	William Wallace, Ph.D. Decision Sciences & Engineering Systems Rensselaer Polytechnic Institute
49777-11-03	The Impact of Mode and Mode Transfers on Commuter Stress	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Richard Wener, Ph.D. Polytechnic University Gary Evans, Ph.D. Cornell University
49777-11-04	Handbook of Scour Countermeasures Designs	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Anil K. Agrawal, Ph.D. City College of NY
55657-08-15	Severance Damage Study	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	Richard Marchitelli School of Continuing and Professional Studies Real Estate Institute; New York University
49777-12-02	ITS Operation Support Contracts	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Hualiang Teng, Ph.D. Polytechnic University Raman Patel Urban ITS Center, Polytechnic University
49777-21-03	Evaluation Study of the Port Authority of NY & NJ's Value Pricing Initiative	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Jose Holguin-Veras, Ph.D. Dept. of Civil and Environmental Eng. Rensselaer Polytechnic Institute Kaan Ozbay, Ph.D. Rutgers University
55657-11-15	Speed Project Close-outs/Streamline Local Financing	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	Neville Parker, Ph.D. Department of Civil & Envir. Engineering City College of New York
49777-14-05	Assessing New York State DOT's Alternatives to Herbicides	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	Christopher Nowak, Ph.D. Forest and Natural Resource Management State University of New York College of Environmental Science and Forestry
55657-06-15	Development of a Portable Petroleum By-Products Chemical Sensor – Phase 1	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	Michael Carpenter, Ph.D. Assistant Professor School of NanoScience and NanoEngineering State University of New York - Albany



PROJECT NO	TITLE	PERFORMING ORGANIZATION	SPONSORS	PRINCIPAL INVESTIGATOR:
49777-15-02	Developing Data Resources For the 21st Century: Urban Applications of Geographic Information Systems	New York State Department of Transportation	United States Department of Transportation	Catherine Lawson, Ph.D. SUNY, University at Albany
55657-02-15	Frequency of Work Zone Accidents on Construction	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	Raghavan Srinivasan, Ph.D. Highway Safety Research Center University of North Carolina Hualuang Teng, Ph.D. The University of Virginia
49777-14-05	Assessment of Border Crossing Needs in New York State	New York State Department of Transportation	United States Department of Transportation New York State Department of Transportation	Robert E. Paaswell, Ph.D. Distinguished Professor City College of New York Allison L. C. de Cerreño, Ph.D. Rudin Center New York University
49777-17-03	Assess impacts and Benefits of Traffic Signal Priority for Buses	New Jersey Department of Transportation	United States Department of Transportation New Jersey Department of Transportation	Raghavan Srinivasan, Ph.D. Dowling College

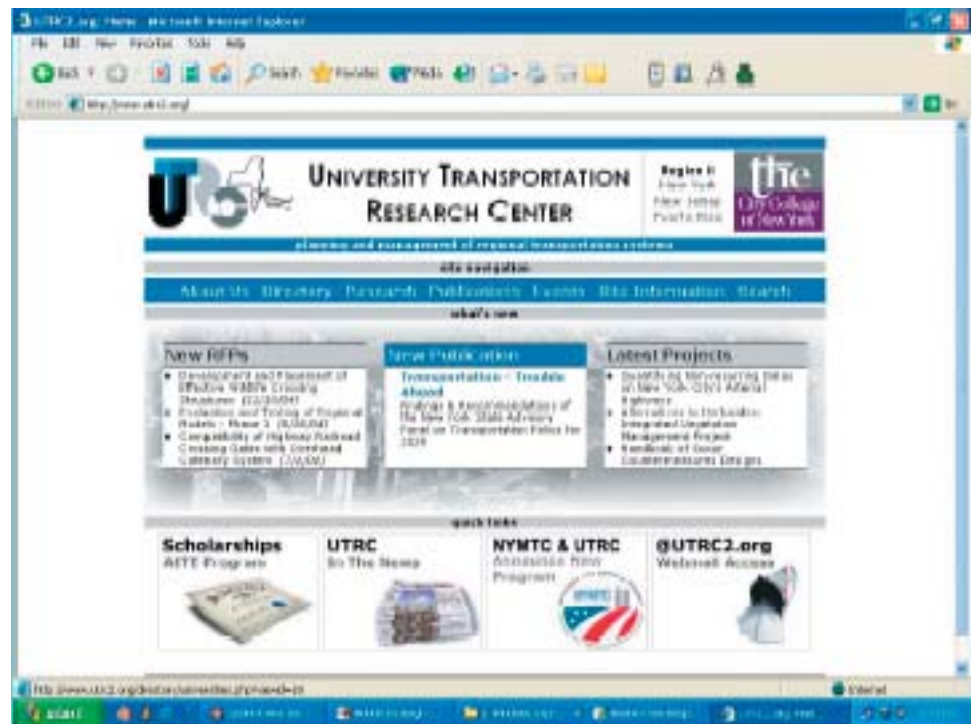


UTRC'S WEBSITE

The University Transportation Research Center Region 2 maintains a Website at <http://www.utrc2.org> which contains a comprehensive overview of the center's objectives, purposes and functions for planning and management of regional transportation systems.

The Website serves as an information tool for those transportation agencies that are interested in the Center's Research activities and as a bulletin board for students who are interested in pursuing transportation research studies toward advanced degrees.

The Website is a focal point for updated information presented in an accessible format which is visually pleasing and logically navigable.



UTRC'S NEWSLETTER

UTRC's Newsletter, Research News is published semiannually and provides information to transportation professionals about research, education, and outreach activities in Region 2. Research News is available online.

2007 UTRC Research Initiative Program

Investigate the Relationship Between Truck Movements and the Economic Performance of the New York/ New Jersey Region.

Dr. Joan Cahoy, Associate Professor, Department of Civil and Environmental Engineering, Rutgers, The State University of New Jersey
Adrian E. Roberts, Director, Alan M. Hines/Best Transportation Center, Rutgers
Dr. Nancy M. Alameddine, Director, Rutgers Research Advisory Service (RRAS)
Patricia Blawie, Project Development Specialist, Alan M. Hines/Best Transportation Center, Rutgers
Dr. Allan Mohanadas, Senior Project Manager, Alan M. Hines/Best Transportation Center, Rutgers

Problem: The purpose of this project is to investigate the relationship between truck movements and the economic performance of the New York/New Jersey region, and the I-95 Corridor.

The economic conditions affect our performance relationship to formal business of transportation. The following information offices have announced information, etc.

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Quantum Dots for the DOT: Development of a Portable Petroleum By-Products Sensor

Michael A. Caporaso, Ph.D., College of Nanoscale Science and Engineering
Maria A. Fortulidis, Ph.D., Department of Chemistry, University at Albany-SUNY

The UTRC and the Materials Science and Engineering, University at Albany-SUNY are presently conducting the study "Development of a Portable Petroleum By-Products Sensor" for the New York State Department of Transportation. The study develops nanoparticles based chemical sensors for the sensitive, selective and quantitative analysis of soil samples for petroleum spills. By moving these tests from off-site analytical laboratories to a field portable device, the overall cost of construction budgets will be significantly lower and construction projects will experience fewer delays due to costly lab results.

The sensitive, selective and field portable analysis of soil and water samples for petroleum spill indicating hydrocarbons such as benzene, toluene, ethylbenzene, and xylene is a necessary requirement for transportation related construction and research. Specifically, the UTRC-SUNY operates approximately 300-420000 truck and pile driver samples and these results are made more secure by taking to construction meeting from sample collection and their subsequent analysis. By moving the majority of these tests from an off-site analytical lab, to a field portable device, the overall cost of construction budgets will be significantly lower and construction projects will experience fewer delays due to costly analytical lab reports.

Comment on page 1

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... PLANNING AND MANAGEMENT OF REGIONAL TRANSPORTATION SYSTEMS ...

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