

15th Edition

Summer 2006

***Buildings
and
Transport***

CIUS Receives Grant for Building Performance Lab

**Announcement of
NYSERDA Grant
Michael Bobker**

**By Michael Bobker, CIUS Senior Fellow
and Research Associate**

nationally and globally. Such collaborations will bring opportunities for technology transfers into the NYC market. The present project is seen as a first-tier in which a research agenda will be elaborated for pursuit of subsequent rounds of funding for faculty and student research.

1

With initial funding from the New York State Energy Research and Development Authority (NYSERDA), CIUS will initiate over the summer its Building Performance Lab (BPL). This CIUS project is intended to be a permanent institutional base at CUNY for the study and promotion of enhanced building operations within New York City.

The project will capitalize on CUNY's ability to deliver educational services to multiple audiences: engineering students through degree programs, practicing engineers, building operators and property managers via continuing education. Involving engineering students will greatly increase the pool of skilled labor available to the local marketplace. Continuing education will encourage working building technicians to learn new methodologies for system monitoring and optimization that can be directly applied in their work settings. Outside experts will be brought to the city for professional development. The program will support early adopters in undertaking projects and pursuing certifications such as EPA Energy Star and LEED-EB, while providing learning opportunities and strengthening ties between CUNY education and the NYC consulting engineering community.

**CIUS Assists
NYMTC with Re-
gional Modeling**

2

As an emerging technical center, the BPL will provide applied engineering opportunities for work on "living lab" building systems. As an organizational structure the Building Performance

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**I-278 Multimodal
Corridor Study**

3

Lab will coordinate with a range of activities emerging across CUNY and with strategic partners. The goal is to create a major public platform for the continuation of market transformation in the commercial buildings sector, especially for long-term workforce development.

**Full Freight Access
Program
Ben Miller**

4

Through a stakeholder process, real estate, property management, engineering and technology firms and labor unions will be engaged with the development of the Lab and of enhanced building operations generally. A consortium will meet regularly to consider Best Practices and market needs, identifying topics for sponsored research.

**Society and
Technology
Lena Marvin**

5

Existing CUNY research competencies will be focused onto the buildings sector. This focus will make possible collaboration with building research institutions, regionally,

The Lab's first offices will be located at the Newman Real Estate Institute, Baruch College, under the leadership of Michael Bobker, CIUS Senior Fellow and Research Associate.

CIUS Assists NYMTC with Regional Modeling

After ten years of development, the New York Metropolitan Transportation Council's next-generation travel demand forecasting model, the New York Best Practice Model, entered into use in 2002. This model covers a 28-county region in the New York City metropolitan area, and contains a network of over 52,000 highway links and 3,400 transit routes. It features microsimulation of the activity and travel decisions of each individual in the region. Now that the model has been used successfully in corridor studies, conformity determinations, and major investment studies, attention is turning to the model's future development.

The New York Metropolitan Transportation Council has recently asked the University Transportation Research Center to evaluate the model and provide recommendations of priorities for its future development and improvement. The two-year project is beginning in early 2006, and will be conducted by a team from CIUS (Robert Paaswell, Cynthia Chen, and Todd Goldman) and Rutgers University (Maria Boilé and Kaan Özbay).

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

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 NYBPM
- Develop Policy Analysis and Visualization Tools
- Perform Sensitivity Analysis and Demonstrate the Effectiveness of the NYBPM

The project will include three main research components.

The first component will focus on assessing the status of the model, and assisting NYMTC with prioritizing future improvements. Having made a significant time and monetary investment in the development of a state-of-the-practice regional travel demand forecasting model, NYMTC faces a new set of difficult choices concerning priorities for the future evolution of the model. The purpose of this task is to characterize the current capabilities of the New York Best

Practice Model (NYBPM), and to recommend priorities for future improvements to the model.

The second component will examine options for a management strategy for data from the region's transportation agencies. NYMTC has initiated an ambitious process to encourage the region's many generators of transportation data to adopt common standards, so that the data can be pooled and shared for regional planning and policy analysis purposes. These data sources both provide the basic underpinnings for calibrating and validating the New York Best Practice Model, and they complement the NYBPM by allowing more thorough analysis of the region's evolving and emerging transportation needs.

The third and largest component of the project will be an effort to demonstrate and quantify the advantages of the NYBPM for policy analysis in the New York Metropolitan Region, through thorough, peer-reviewed sensitivity analyses. In close consultation with NYMTC staff, the research team will select three simple but important policy questions to examine. Each question chosen will be one that the NYBPM is theoretically capable of being applied to answer. The outcome of this project will be a report detailing the assumptions, methods and the results of the two sensitivity analyses, the extent to which the NYBPM's performance overcomes the imitations that have been documented in traditional four-step travel demand forecasting models.

In addition to this research, CIUS and Rutgers will assist NYMTC in better understanding the model's inner workings. For selected model subcomponents where documentation is not available, the research team will examine in detail the models' source code and document the computational techniques being applied. This will help both NYMTC and the research team better understand what types of future improvements are most desirable and feasible.

This project is significant for a number of reasons. First of all, it represents an unusual willingness by a public agency to expose its model to systematic testing in order to demonstrate its validity and help prioritize investment strategies for its future expansion and improvement. Second, it will yield valuable insights into the strengths and limitations of one of the first operational activity-based microsimulation models, which will provide lessons for the development of future such models.

CIUS and RPA Team Up for Innovative Study of the I-278 Corridor

New York City is bisected by two critical transportation corridors: Interstate 95 to the north, and Interstate 278 to the south. Of these, Interstate 95 receives more concentrated and coherent policy attention because its essential role in the region is well recognized. It is highly efficient, yet operates nearly at capacity and has little prospect for further expansion. In contrast, the Interstate 278 corridor follows a more circuitous route, has lower design standards, and has traditionally received only fragmented attention by the agencies responsible for its constituent parts.

With planning underway for the construction of a Cross-Harbor Freight Tunnel between New Jersey and Brooklyn, now is an appropriate time to take stock of I-278 as a multi-modal corridor, in terms both of its current role in the region, and of its potential as a catalyst and a lifeline for the region's future growth. The University Transportation Research Center will convene an "Innovative Freight Working Group" (IFWG) that will develop and refine a series of short working papers on innovative freight policy options for New York City.

These studies will develop and evaluate proposals for how

innovative policies and management strategies throughout the I-278 corridor can maximize the economic, environmental, and quality of life benefits from the region's and the nation's investment in the Cross-Harbor Freight Tunnel. The study will take a holistic, interdisciplinary approach, drawing leading scholars from the region's universities and civic organizations together to develop fresh policy perspectives.

A new freight tunnel can become a catalyst for dramatic improvements in the efficiency and environmental consequences of freight transportation in New York, but only if integrated into and supported by an effective freight and transportation policy framework. Together, the new tunnel and new policy strategies can help create an integrated, intermodal "smart corridor," helping provide the region with a cleaner, more efficient freight movement system.

Based on the analysis of freight flow between locations west of the Hudson, and five distinct markets east of the Hudson: Manhattan, Brooklyn/Queens, Nassau/Suffolk, the Bronx, and "Points Beyond," a research team can develop a set of policy options for each market. Using state-of-the-art models that simulate decision-making by private sector actors, they will then evaluate which types of policy interventions are likely to be most effective at maximizing the economic and environmental benefits of the tunnel.

A key part of the challenge facing the city will be the preservation of land for transportation, warehousing, and light manufacturing, and the opportunities for growth of new businesses in these sectors. It will require particular attention to areas where freight facilities will have special impacts, particularly Sunset Park and Maspeth, and the involvement of both community and private sector leaders. The completion of a rail freight tunnel and development of efficient east-of-Hudson intermodal facilities will provide significant and rare opportunities for freight-oriented economic development within New York City.



Featured CIUS Research

Full Freight Access Program

By Ben Miller, CIUS Senior Fellow and Research Associate

Despite its central role in the region’s economy and its effect not just on the cost of living and working but on the region’s overall quality of life, the transportation system that serves the metropolis’s material needs—its freight infrastructure—has received only a small part of the attention and investment focused on its passenger facilities. As last month’s MTA strike demonstrated, the absence of a working transit network imposes severe penalties of one sort or another on nearly everyone in this highly interdependent urban environment. Though arguably as significant in terms of the volume and value of traffic generated, we have become so inured to the destructive consequences of the region’s almost total dependence on truck-based freight transport—the costs of congestion, pollution, accidents, capital repair, and the baleful effects on the region’s manufacturing and retail economy (a congeries of impacts akin to that of a permanent state of strike)—that they have generally been treated by the region’s officials (like FEMA facing Katrina) as if they were an immutable force of nature.

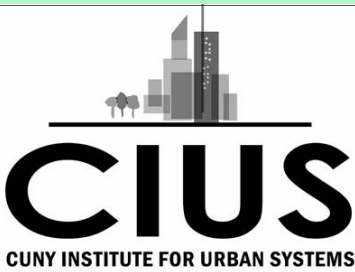
The most significant exception to this rule in the past half century is New York State’s Full Freight Access Program, which the Department of Transportation began planning in 1975, was substantially completed in 1997, and whose final link was put in place last year. Designed to open the metropolitan region east of the Hudson River to the high-profile, double-stack freight cars that have come to play such an important part in rail transportation in the rest of the continent, the Program involved the expenditure of over \$300 million in public funds to upgrade rail routes into New York City from the north and west to provide the clearance needed for these more-efficient cars and to reduce delays due to conflicts with passenger trains and to a zig-zagging chokepoint in the South Bronx. It also provided for the development of a major facility along the Harlem River for transferring containerized freight between railcars and trucks, and for float bridges in Brooklyn to facilitate the transfer of freight between barge and rail.

CIUS commissioned Senior Fellow Benjamin Miller to provide an analysis of what the now-completed Program has accomplished in its first decade of partial operation and of what remains to be done before it will meet the objectives established by its planners. Building on prior investigations by government officials and others, on reviews of project-related documents, and interviews with those involved with

the Program, Miller found that though to date the Program has achieved only a small fraction of the rail-freight benefits originally envisioned, it has nonetheless helped to stem the decline of rail-hauled goods East of the Hudson and has provided a platform of usable infrastructure that can be built on in the years ahead. Although specific proposals for increasing usage of the Program’s facilities were beyond the scope of Miller’s paper, his conclusions about the reasons for the Program’s failure to fully meet its objectives suggest five general areas for future efforts:

- Increasing the public sector’s power to respond flexibly to changing circumstances, rather than, for example, foreclosing the use of critical rail facilities by allowing the construction of long-term capital-intensive facilities or committing to long-term leases;
- Exploring the possibility of making access to the region’s publicly owned rail freight infrastructure more open, to increase the demand for its use;
- Strengthening the capacities of the region’s transportation planning entities to provide ongoing planning and management;
- Providing guaranteed levels of rail service, using public subsidies if necessary, to attract shippers (a source of such public subsidies might be dedicated user fees levied against cross-harbor trucking and/or revenues from enforcement measures designed to ensure that trucks do not exceed the region’s weight limits);
- Expanding the use of relatively small-scale transloading yards, perhaps along existing railroad right-of-ways, for non-intermodal commodities.

Next steps: Miller is participating in a forthcoming CIUS study devoted to maximizing the benefits of the proposed cross-harbor rail freight tunnel. Miller’s work will provide recommendations for increasing the usefulness of the region’s existing publicly owned rail infrastructure, including that related to the Full Freight Access Program. Miller is also at work on a book that examines the historical context and current significance of the proposed cross-harbor freight tunnel.

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Technology in Society addresses Sustainable Cities

By Lena Marvin

The international journal, *Technology in Society*, has published a special issue on the theme of “Sustainable Cities.” This issue (vol. 28, no. 1-2, January-April 2006) contains 18 articles on a wide range of topics in urban sustainability, including land use, transportation, energy efficiency, public health, safety and security. Urban sustainability in both industrialized countries and developing countries is considered. The editors, A. George Schillinger and George Bugliarello, professors emeriti at Polytechnic University, thanked CIUS Senior Fellow William Shore for his dedicated support in helping prepare this special issue.

Shore also contributed an article, “Land-Use, Transportation and Sustainability,” which described the importance of the pattern of urban development on the sustainability of energy and water use, food production, waste generation and disposal, biodiversity and equal opportunity. Shore illustrates the role of regional planning and the importance of recentralizing the urban environment to achieve sustainability. Shore writes about strategies the government can take to recentralize urban life and reviews four steps that can be utilized to build a more sustainable city; deconstruction, high performance building, green roofs and high-performance maintenance.

Several other individuals associated with the CUNY Institute for Urban Systems also made noteworthy contributions to the “Sustainable Cities” issue. CIUS Senior Fellow Albert F. Appleton wrote an essay, “Sustainability: A Practitioner's Reflection,” about the advancement of the concept of sustainability and sustainable development in practice from his personal perspective, as a

stakeholder advocate, expert resource, and former New York City Commissioner of Environmental Protection. His article explores the origins of sustainability in the environmental movement and how the concept had grown from an “insider's code word and a technician's concept” into a concept embraced by “the men in the middle” as a recognition of the reality that the earth is in trouble.

CIUS Associate Director Todd Goldman and Roger Gorham contributed an article on “Sustainable Urban Transport: Four Innovative Directions.” This article examines how efforts to define sustainable transport provide no real guidance to policymakers for how to make systemic change. Policies often tend to fall short of achieving their goals because they ignore the larger social and economic systems in which transportation is embedded. However, there are at least four emerging areas of innovation in real cities that take a more systems-oriented approach, and provide models for how to move forward: New Mobility, City Logistics, Intelligent System Management, and Livability.

“Infrastructure Conundrums: Investment and Urban Sustainability,” by CIUS Senior Fellow Michael F. Bobker, examines the case of electrical capacity for New York City as an example of the relationship between infrastructure, investment, and urban sustainability under conditions of de-regulation. Bobker uses the electrical system as an example of a networked infrastructure, which was traditionally regulated and state-owned that has recently been subject to de-regulation and privatization. He examines how untimely investment decisions of large projects due to uncertainties regarding competing projects result in capacity shortfalls that impact the sustainability of a city that competes in regional and global markets.

CIUS seeks to advance the state of the practice in public infrastructure investment through research, education, policy advisement, and professional development. Its work focuses on three main challenges: how *technology* is reshaping the nature of infrastructure systems; how *institutions* can adapt to manage the next generation of infrastructure effectively; and how the methods and strategies of *public finance* are changing to meet evolving needs and constraints. CIUS seeks to help the region identifying innovative solutions to its changing infrastructure needs, by actively working to bridge the professional and academic realms.