

The Third Annual Tri-State Transit Symposium

*Megaprojects within the New York Metropolitan
Region and Abroad*

October 25, 2002

Conference Proceedings



Partnering Institutions:

Institute for Civil Infrastructure Systems
Metropolitan Transportation Authority
New York Metropolitan Transportation Council
University Transportation Research Center

Proceedings published by:

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Foreword

Elliot G. Sander

Director, NYU-Wagner Rudin Center for Transportation Policy & Management

It was my pleasure to welcome everyone to the Third Annual Tri-State Transit Symposium, sponsored by the NYU Wagner Rudin Center for Transportation Policy & Management and the Institute for Civil Infrastructure Systems, in affiliation with the Metropolitan Transportation Authority, the University Transportation Research Center at City College, and the New York Metropolitan Transportation Council.

The conference came at a time when many voices had expressed concern that the failure to expand our region's transportation infrastructure in the last half-century hurt our economy. From the civic, private, and public sectors comes awareness that continued neglect will jeopardize our future from economic, environmental, and quality of life standpoints. Now, for the first time in many years, a number of large expansion projects are being planned or seriously debated.

Our aim at the conference was to explore these megaprojects, identify important challenges and constraints in their implementation, and look at the experiences of other regions in executing large projects. Our speakers and panelists, along with over 225 distinguished guests from government, academia, nonprofit organizations, and industry carried out a wide-ranging and thoughtful discourse on these important issues. We were particularly pleased that Katherine Lapp, Executive Director of the MTA, and Emil Frankel, Assistant Secretary for Transportation Policy of the U.S. Department of Transportation, gave the keynote speeches at the conference.

I am now honored to send you the proceedings for this conference. I hope you will find them intellectually stimulating, professionally useful, and enjoyable to read.

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Introduction

The topic of the day was megaprojects, and the question that seemed to be on everyone's mind was, where will the money come from?

The day began with Katherine Lapp's presentation on New York City Transit's megaprojects, followed by the first panel with Mysore Nagaraja, Peter Cannito, and Richard Roberts on their agencies' respective plans. The projects they described include extension of the #7 line to the Far West Side of Manhattan; the Second Avenue Subway, a full-length line running from 125th Street to Lower Manhattan; the Interstate 287/Tappan Zee Bridge corridor, including possible replacement or rehabilitation of the Tappan Zee Bridge and transit to Stewart Airport; and Access to the Region's Core, a two-track tunnel from New Jersey to Manhattan, along with additional storage and station capacity.

Representative Jerrold Nadler also spoke for several minutes about the proposed cross harbor rail freight tunnel. In the rest of the nation, he said, 40% of intercity freight travels by rail; only 2.5% is carried by rail east of the Hudson River. New York's reliance on trucks imposes high environmental costs, and the situation is likely to worsen: the volume of goods movement in the region is expected to increase by over 70% in the next 20 years. To address these issues, New York City's Economic Development Corporation has been studying options for cross harbor freight movement, with an Environmental Impact Statement expected by the end of the year, according to the Representative.

This discussion of regional megaprojects was followed by the second panel, with Jean-Claude ZIV, Sarah Wu, and David Luberoff looking at national and international megaprojects, and a luncheon with Emil Frankel. The panelists described major projects in Paris, Hong Kong, and Boston, respectively, and articulated the challenging environment for project development; while Mr. Frankel discussed prospective changes in federal funding and the Administration's transportation priorities.

Financial Challenges

Financial issues dominated the day's discussion. In his keynote address, Mr. Frankel reviewed the pending reauthorization of the federal transportation funding bill, known informally as TEA-3 (Transportation Equity Act - 3), and emphasized that federal funding is not likely to increase significantly, as the outlook for additional revenue sources is poor. Furthermore, the geopolitics of Congressional leadership have changed since TEA-21 and are not likely to be favorable to the Tri-State region.

Representative Nadler suggested that since we cannot finance all of the proposed megaprojects, we need to ask some hard questions. What can we afford? Where do we want to put our scarce resources? Which projects are nice, and which are essential? Which can be put off for several years, and which cannot?

In response to the difficult funding environment, many agencies are looking at alternative financing techniques. Mr. Frankel indicated that TEA-3 is likely to include support for TIFIA-like financing. Several speakers pointed to the Alameda Corridor project as a model, particularly in its use of shared public-private financing. Sarah Wu explained that in Hong Kong, the private sector provided nearly one-third of the funding for the \$20 billion Airport Core Project. Mr. Nagaraja mentioned that the extension of the 7 line would most likely be financed through non-traditional means, and Mr. Roberts said that New Jersey Transit is looking into alternative financing possibilities for its projects as well.

Project Costs

Several speakers addressed the costs of mitigation – the concept that "if I hurt you, I must leave you whole," as David Luberoff put it. Project costs have jumped by a factor of 7 to 12 over the last 20 years,

he reported, and much of the increase is related to mitigation. In fact, one-third of the \$14.6 billion tab for the Central Artery Project in Boston was for mitigation. Mr. Luberoff emphasized that in order for a project to succeed, it must receive business support, and the community must be consulted at an early stage. He explained how interest groups can take advantage of the permitting process to advance their own agendas. Mr. Frankel reported on the Administration's efforts at streamlining the process to prevent such obstructions.

Community consultation has clearly become an integral part of megaproject development. Jean-Claude ZIV explained how the Paris EOLE project gave the community a role in proposing solutions to reduce the impact of construction. Mr. Cannito noted that for the I-287/Tappan Zee Bridge study, Metro-North and the New York State Thruway Authority have convened a stakeholder consultation group with over 200 representatives, to ensure input from all interested parties.

Several speakers addressed the technical challenges of creating transportation infrastructure in a built environment. In describing Boston's project to rebuild and expand the Central Artery under the existing highway, Mr. Luberoff quoted an engineer who likened the construction to "performing open heart surgery on someone while they're playing tennis." Mr. Nagaraja emphasized that a major part of the cost of the Second Avenue Subway is related to avoiding disruption of the city while construction is taking place. Dr. ZIV described the technical challenges of building a new rail line in the center of Paris, where the underground is already filled with commuter rail and Metro tunnels as well as utility lines.

Despite the tremendous constraints on project development, the speakers were optimistic about the future of megaprojects. Speakers in the first panel gave specific schedules for the planning stages of their projects, while speakers in the second panel provided plenty of evidence that megaprojects around the world and in the United States have been and are being successfully carried out. The proceedings that follow include summaries of these talks and transcripts of the keynote addresses.

- *Mark Seaman
Project Manager
Rudin Center for Transportation Policy & Management*

PRESENTATIONS

Breakfast Keynote Address
The Future of the New York Region's Transportation System

Katherine N. Lapp

Executive Director and Chief Operating Officer, Metropolitan Transportation Authority

Ms. Lapp delivered the morning keynote speech, in which she discussed the MTA's capital program. The written text of her speech follows:

Thank you, Allison, and thank you, Lee, for inviting me here this morning to kick off today's program.

In a moment, I will outline for you the various mega-transportation projects which the MTA has within its \$17.1 billion five-year Capital Plan.

But first, I want to take a minute and share with you my perspective on the importance of transportation to this region. Obviously all of you in this room know intimately the criticality that transportation systems have to the economy of this region as well as the quality-of-life that is enjoyed by the residents of this region. But as one who has come to this area with a totally unrelated background, I thought I'd share with you my perspective.

As you know, I have spent the lion's share of my career in criminal justice and law enforcement – an area obviously of great significance to the community. But as important as those issues are, I have come to appreciate how significant and intertwined the transportation systems in this region are with not only this region's success in terms of the economy, but also its attractiveness as a place to live and raise a family.

It is no secret that many urban areas throughout the country which were once thriving metropolises are suffering, and I would venture to say that one aspect of their difficulties can be blamed on the failure to understand that investments in maintaining the transportation networks in a state of good repair, coupled with a concerted effort to expand those networks to meet ever-changing travel needs of the area, is key to their vitality.

Obviously, the New York region has not made that mistake and is perhaps the model for other cities and regions to replicate when it comes to mass transportation. Mass transit can never be overlooked nor can it remain static if it is to provide businesses, residents and tourists with the type of easy access and efficient services that is demanded of an urban regions such as ours.

There is no better example of this than the hours, days and months after that fateful day – 9/11/01. Had the mass transit systems which feed this region been paralyzed, the swift recovery that we have witnessed in this area since that terrible day could not have taken place.

And so, what are we at the MTA doing to continue our success? Well as I mentioned, we have a very ambitious \$17.1 billion five-year capital plan which not only addresses standard operating functions but includes within it several megaprojects designed to provide system expansion.

The first such project is East Side Access which most of you know will allow the MTA to provide direct commuter rail access to Grand Central Terminal for the Long Island Railroad. This project, which will include tunneling from Queens through parts of Manhattan is estimated at roughly \$4 billion. The essential purpose of this project is to provide LIRR commuters the opportunity to arrive on the East Side of Manhattan where many of them work – while at the same time alleviating current overcrowding problems at Penn Station. The project when completed is projected to have an annual ridership of 47 million – which would make it alone the fifth-largest "commuter rail road" in the nation – and save customers over 30 million travel hours per year.

The MTA has already committed more than half a billion capital dollars to East Side Access. The first construction elements on shops and yards were awarded earlier this year and the first tunneling elements were awarded just a week or so ago. The project is expected to be completed in 2011.

Our second megaproject, which you will hear more about from Mysore in this morning's first panel session, is the Second Avenue Subway. Perhaps a pipe dream for some, but a project which we at the MTA take very seriously. Consider this: 1.2 million people work on Manhattan's East Side – more people than live in Boston, Seattle or Washington, D.C. Anyone who takes the current Lexington Avenue line knows all too well the great demand in the area for another subway line.

The project calls for a new line running from 125th Street to the Financial District in lower Manhattan. The subway, when completed, is projected to have an annual ridership of 181 million people a year, making it alone the third-largest transit system behind New York and Washington.

And finally, we are currently working on the preliminary plans for the extension of the current #7 line to the West Side of Manhattan in the vicinity of the Javits Convention Center. One of the last frontiers in Manhattan for development, this area stands poised for action; one of the things that has perhaps stymied such efforts is the lack of subway service in the immediate area. That is what we hope to address by this project. The first consulting contract for environmental study and preliminary engineering was awarded last month and the project is proceeding expeditiously.

So you can easily see that, in addition to running a transit system which serves nearly 8 million people each day and maintaining the system in a state of good repair, we at the MTA have our hands full. That is particularly so when one also adds the various challenges and projects which we are addressing in the area of lower Manhattan.

One of the areas which I understand you will be talking about at the afternoon panel session is best practices in managing mega-expansion projects so as to bring them in on time and within estimated budgets – obviously something which is not always easy to achieve. It is for that very reason that the MTA chairman recently announced a strategy to restructure the various entities within the MTA, which will include the creation of an MTA Capital Company – an entity which, among other things, will be charged with managing and overseeing the megaprojects I have just outlined. Clearly, the heads of all our operating agencies have a full-time job running their respective systems and maintaining their current assets – staying on top of system expansion projects is very difficult. At the same time, it is important that these projects be managed carefully. It is our expectation that this new Capital Company will perform that function.

Well, I hope I haven't overstayed my welcome and that I have given you a good sense of the various challenges before us at the MTA.

Thank you again for inviting me here this morning – have a great conference.

Session 1

Regional Megaprojects

1. Mysore L. Nagaraja, P.E.

Senior Vice President and Chief Engineer, Capital Program Management, MTA New York City Transit

Mr. Nagaraja began the panel presentations by discussing details of New York City Transit's two megaprojects.

Second Avenue Subway

Mr. Nagaraja started by describing the Second Avenue Subway, a new line that would relieve the overcrowded Lexington Avenue line and provide an alternative for commuters who currently travel by automobile. The proposed line would run from 125th Street to Lower Manhattan and would have approximately 15 stations, though the actual number and locations are not yet finalized.

The total cost of the project has not been determined, but figures should be available by early spring 2003. A major challenge and cost factor for the project is that, unlike the original subway lines, the Second Avenue Subway will have to be constructed in a built environment without disrupting the city.

A Draft Environmental Impact Statement (DEIS) was previously created for the northern portion of the line; a Supplemental DEIS for the full-length line will be completed in late 2002 or early 2003. The project team is working feverishly in order to complete the final EIS and the Preliminary Engineering in 2003 so that construction can begin in 2004.

The MTA has allocated \$1.05 billion for this early work, and Mr. Nagaraja stressed that New York City Transit is very dedicated to the project. DMJM+Harris/ARUP are the designers, and Vollmer Associates is leading the environmental process.

7 Line Extension

The second megaproject in the works for New York City Transit is an extension of the 7 line from Times Square to the Jacob Javits Center that would, for the first time, provide subway service beyond 8th Avenue and into the Far West Side. The project team, located at the MTA's offices at 2 Broadway, is working closely with the City's Department of Planning to help realize its vision of a revitalized West Midtown. The 7 line extension would also support the transportation needs of the 2012 Olympic Games should they be held in New York City.

The project team is studying various alignments for the extension, with lengths of between 1.5 and 2 miles. Preliminary cost estimates range from \$1 to 2 billion, depending on the route chosen. However, the 7 line would most likely have different funding sources than the Second Avenue Subway.

The project team began design work on October 15, and the Preliminary Engineering and EIS work was awarded to Parsons Brinckerhoff two months ago. On September 30, New York City Transit issued a Notice To Proceed. Planning for utility relocation will begin in November, and work on the DEIS has already begun. The DEIS has a target completion date of February 2004, and assuming financing is secured, construction will begin towards the end of that year.

With construction on the Second Avenue Subway beginning the same year, Mr. Nagaraja concluded, 2004 will be a busy year for New York City Transit.

2. Peter A. Cannito

President, MTA Metro-North Railroad

Mr. Cannito's presentation focused on what could result in the "biggest potential megaproject for the region:" Metro-North and New York State Thruway's joint project, the Tappan Zee Bridge/I-287 corridor study.

The urgency of the study derives from the poor condition of the bridge, which has been well- publicized by the media. The two major options are replacing the bridge or performing a structural overhaul.

Mr. Cannito stressed that, in analyzing the options, it would be negligent not to study incorporating alternate transit modes in a new or overhauled Tappan Zee Bridge. There is currently no direct rail transit to Manhattan from Orange, Rockland, or North Bergen counties. The Secaucus Transfer, slated to open in late 2003 or early 2004, will cut travel times by 20 minutes for riders on the Port Jervis or Pascack Valley lines, but riders will still have to make a transfer. Transit within the region to employment centers in White Plains, Greenwich, and Stamford is very limited. The Governor's I-287 Task Force Group has stated that "the ability to offer transit as a viable travel option to the single occupant vehicle would greatly enhance the corridor's future travel capacity."

Most of Metro-North's recent growth in ridership – at record levels in 2002, despite the current recession – comes from the northern counties. The growth is a result of quality improvements and service expansion in Putnam and Dutchess counties, as well as increases in the reverse-peak commute. Furthermore, population in the Rockland-Orange-Westchester region is forecast to grow by 10% to 12% by 2020, while employment is expected to increase by 20% to 25%, and congestion by 20% to 30%. In this context, Metro-North will be looking at accessibility from the Port Jervis and Pascack Valley Lines west of the Hudson as well as east of the Hudson Lines: Hudson, Harlem and New Haven.

On February 6, 2001, Metro-North entered into a joint study agreement with the New York State Thruway Authority, with costs split 50-50 between the authorities. The benefits of the partnership, Mr. Cannito noted, are the potentials for integrating highway and transit solutions, optimizing resources and taking advantage of construction synergies, and serving numerous markets from the same facility.

An additional component of the study is transit accessibility to Stewart Airport.

Alternatives selected by the study will need to do the following:

- improve mobility and alleviate congestion in the I-287 transportation corridor;
- address the structural and operational needs of the Tappan Zee Bridge, in a cost-effective fashion;
- meet future travel needs, including possible transit alternatives on the structure;
- maximize environmental benefits while mitigating potential negative impacts; and,
- ensure extensive outreach and coordination with all stakeholders.

Despite some stakeholders' concern that "transit" implies commuter rail for Metro-North, the study group is looking at all transit options.

Mr. Cannito introduced Janet Mainiero, Deputy Project manager for the study. The federal lead agencies for the study are the Federal Highway Administration and the Federal Transit Administration. Two Metropolitan Planning Organizations are involved in the study: the Mid-Hudson South Transportation Coordinating Committee and the Newburgh-Orange County Transportation Council. The study group is committed to community outreach and has established a stakeholder consultation group, with approximately 200 representatives from planning, environmental, transportation, educational, and economic interest groups.

The consultants selected for the study are:

- Howard Stein Hudson: public participation
- Earth Tech: alternative analysis/environmental review
- ARUP: engineering support

The study will have two phases. The first phase of the study, funded at approximately \$10 million, will be an Alternative Analysis and will include some advanced environmental work for a preliminary Draft Environmental Impact Statement (DEIS). The result will be a short list of alternatives to undergo detailed environmental review. Mr. Cannito expects this phase to be completed by mid-2004.

The second phase will include a comprehensive study of the selected alternatives in a DEIS, most likely completed by the end of 2004; a final Environmental Impact Statement is projected for mid-2005. Following a Record of Decision, detailed design would start in early 2006.

For Stewart Airport, the first phase of the feasibility study is expected to be complete by December 2002. The preliminary schedule puts public scoping meetings in early 2003, Alternative Analysis in 2003-2004, a DEIS by the end of 2004, and a final EIS in mid-2005.

Echoing Congressman Nadler's comments, Mr. Cannito expressed concern at the competition for money among the numerous megaprojects proposed for the New York region.

3. Richard T. Roberts

Chief Planner, New Jersey Transit

Mr. Roberts' presentation dealt with New Jersey Transit's network integration projects and plans for responding to changing demand. He emphasized the importance of working together to promote common goals for the region.

New Jersey Transit is the statewide transit operator and, with the third-largest fleet in the United States, provides bus, commuter rail, and light rail services. Its extensive rail network is concentrated in the northern part of the state; a second system in the south connects Philadelphia with Atlantic City. Weekday ridership for Fiscal Year 2001 (pre-September 11) averaged 760,000 passengers, up 29,200 or 4.6% from the previous year.

New Jersey Transit is in the midst of a major system integration program that involves connecting its existing rail lines to create a more complex network. The aim is to provide better service within New Jersey and to Midtown Manhattan. Major projects completed to date include Midtown Direct; the recently opened Montclair Connection; and extension of the Bayonne-Jersey City light rail line to Hoboken Terminal. The largest integration project currently underway is the Secaucus Transfer, scheduled for completion in late 2003 or 2004 along with restored PATH service to Lower Manhattan.

These projects have expanded the system's flexibility and generated new travel patterns and increases in demand. Ridership fell somewhat after September 11, but New Jersey Transit expects that ridership patterns will continue to change as individuals and businesses relocate to take advantage of the more integrated network.

Mr. Roberts identified several challenges to New Jersey Transit's system capacity, including:

- Meeting the demand generated by ambient growth.
- Accommodating new passengers attracted by system integration projects. Ridership into New York is already exceeding the levels forecast for 2005.

- Addressing shifts in travel stemming from September 11. The loss of the PATH station at the World Trade Center disrupted historic ridership patterns and affected the bus, ferry, and rail systems. Many New Jersey Transit commuters who formerly transferred at Hoboken now ride into Penn Station, eliminating capacity for Secaucus Transfer Station riders.
- Planning for long-term needs.

New Jersey Transit has become a major player in New York's commuter rail network. The number of trains it sends into New York Penn Station has grown by more than fifty percent in the last five years, from 263 in 1997 to 397 in 2002. Since the early 1990s, New Jersey Transit has invested more than \$750 million in infrastructure and facilities on the Northeast Corridor between Newark Penn Station and Sunnyside Yard. And forty-five percent of suburban commuters coming into Manhattan live in New Jersey, compared to 27% from Long Island and 28% from the north. The 2002 peak-period modal split is as follows: commuter bus, 31%; commuter rail, 18%; PATH, 22%; ferry, 11%; and drive, 18%.

New Jersey Transit is making a number of incremental investments to address its capacity constraints, such as the newly opened 7th Avenue Concourse at Penn Station, NY. Upcoming projects include:

- Developing a new 7th Avenue Concourse.
- Installing high-density signals, allowing for an increase in the number of trains that can be operated.
- Purchasing bi-level passenger cars. When these are put into service in the next few years, they will increase the number of seats coming into New York by the equivalent of more than two trains.
- Improving parking and accessibility facilities in New Jersey.
- Upgrading bus and ferry service.

With system integration complete, New Jersey Transit will have 25 peak-hour train slots into New York. However, this will still not be enough to meet expected ridership growth. New Jersey Transit's long-term solution to its capacity problem is a new tunnel under the Hudson River. The forecast for 2020 is that demand for existing services will exceed capacity by 20%. A new trans-Hudson tunnel and associated station facilities, depicted below, could expand that capacity by 13 to 21 train slots.



The new tunnel and additional station capacity will be advanced as part of the Access to the Region's Core project, which also proposes new train storage capacity on the east side of the Hudson. The project

would improve rail service not only for New Jersey riders but for commuters from Rockland and Orange Counties as well.

The Major Investment Study for this project is now being completed. New Jersey Transit has reached an agreement with the Port Authority to jointly manage the preparation of a Draft Environmental Impact Statement and finalize the project configuration; this work is expected to begin in the first quarter of 2003.

Mr. Roberts emphasized that New Jersey Transit wants to work closely with the MTA, Amtrak, and New York State and City agencies in developing the project. He concluded by inviting all players to work together, not just to improve transportation as an end in itself, but to respond to the economy of the city.

Session 2

Lessons Learned: Megaprojects in the United States and Abroad

1. Jean-Claude ZIV

**Professor and Chair of Logistics, Transport and Tourism
Conservatoire National des Arts et Métiers, Paris**

Professor ZIV's presentation was on EOLE, a new 3-kilometer link between two commuter rail lines in the middle of Paris. He accompanied his talk with a PowerPoint presentation including drawings and photographs of the project.

Historical Perspective

Professor ZIV began by discussing the governance of Paris' transit system. Unlike New York, Paris has a single regional transportation authority, with control theoretically split evenly between the national and local governments. In fact, the chairman is appointed by the president of the Republic, giving the national government an extra vote and *de facto* control.

Paris has long had two railway standards – the standard commuter rail, and the narrower Paris Metro – making interchanges between the two systems difficult. The reasons date from the late 19th century, when the Paris Metro was first proposed. A syndicate formed by the private rail companies proposed a transit system that would link the existing rail terminals in Paris. The Paris Municipal Council, controlled by the syndicate's political opponents, rejected the plan and built a system with tunnels designed to be too narrow for standard railroad cars.

In recent years, the government has forced the commuter rail lines (SNCF) to cooperate with the Paris Metro, resulting in, for example, a unified fare card. In the 1960s and 1970s, five super-express subway lines – RER lines A through E – were built by extending the commuter lines into Paris, and a sixth line F is planned. The RER replaced most of the older commuter rail lines from the outer suburbs and provided service to the center of the city. The system was an immediate success: some lines now carry over 50,000 passengers at peak hour.

EOLE (*Est-Ouest Liaison Express*, or East-West Express Connection) is a 3-kilometer extension of the E line from Gare de l'Est to Gare St.-Lazare, with two intermediate stations. It provides a one-seat ride for RER commuters who previously had to transfer at Gare de l'Est to reach their jobs further west. It was additionally designed to relieve the overcrowded RER line A; to provide new, fast connections within Paris; to contribute to the Paris Region Structure Plan; and to complete the link between northern and southern Europe's high-speed rail systems.

The Project

Construction of EOLE began in 1990 and was completed in 1999. The project cost over \$1 billion, with 10% for land acquisition.

The new line was built under a very old and dense urban area. Paris has a very complex underground, containing sewer, power, gas, telephone and other utility lines; the Metro; and historical artifacts. To avoid these obstacles, and for geological reasons, the EOLE tunnel was placed more than 100 feet below ground level.

According to Professor ZIV, a major challenge for the project was determining the precise location of the stations. EOLE had to connect with two major railway stations, two existing RER stations, and the Metro

stations for nine different lines. EOLE also had to provide direct connections to major shopping malls. The high infrastructure density resulted in a design precision of half an inch.

Geology

To provide a sense of the difficulties facing the project engineers, Professor ZIV presented facts and figures on the site reconnaissance, performed between June 1990 and February 1992. Geological tests included:

- 56 trial borings;
- 20 destructive borings with parameters being recorded;
- 60 pressure meter and expansion meter borings;
- Diagraphic measurements of density, water content and natural radioactivity;
- Permeability tests; and
- Numerous other laboratory tests.

From the east, the tunnel burrows through calcareous clays and loose stones followed by coarse limestone. The soil at the western end is geologically complex due to the presence of gypsum.

The project involved four aquiferous levels:

- Layer of old alluviums;
- Bartonian layer: infra gypseous calcareous clays, sands;
- Lutetian layer: calcareous clays, loose stones; and
- Ypresian layer: upper sands and false clays.

A tunneling machine, christened "Martine", was specially designed for the project.

Architecture

The Magenta station, at the eastern end of the line between Gare de l'Est and Gare du Nord, lies in a district of low-rise housing and small industries and is completely underground. It was designed as a major transfer station and has direct connections to the Metro, commuter and intercity rail, and buses. The structure is 180 feet wide and 700 feet long, with a single arch above the center tracks and two smaller arches over the side tracks.

The Condorcet station is also a major transfer station. Located in the heart of a dense business district close to major department stores, it was designed to be completely integrated with the activity above ground. Professor ZIV explained that the station has indeed become part of the urban environment and is used by non-riders of the E line to access surrounding attractions including the department stores.

New rolling stock was designed for the line and built by Alstom, with part of the chassis by Bombardier.

Environmental Protection

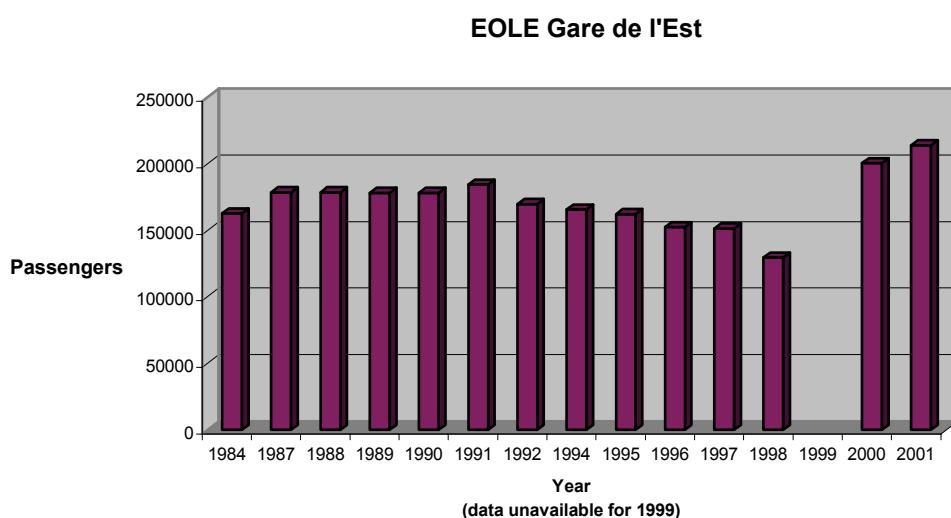
Protection of the environment and of the existing residents' quality of life was a major concern, according to Professor ZIV. An interagency committee supervised environmental protection issues, including noise, vibrations, dust, air and water pollution, and street cleaning. The committee included representatives of the Department of Works, the City of Paris, contractors, and the police, and met with area residents as well as passenger associations. Residents received tours of the project and had direct contact with the environmental committee through an information center. The committee's responsibilities included

coordinating environmental protection measures, including the contractors' plans; analyzing claims and incidents; and proposing additional protective measures.

To reduce noise pollution, protective walls were constructed, special equipment was employed, and work was halted after hours (this last measure increased the project's duration). Construction waste was hauled from the site on the underground Metro tracks.

Conclusions

A mega-project in such a dense area is heavily constrained by land use and land ownership issues, and by the necessity to interact with outside players. However, Professor ZIV asserted, the project is a total success. Ridership at Gare de l'Est, which had been declining, has increased substantially since the line went into service (see chart below). Similar results are expected at Gare St.-Lazare when the connection with the western suburbs is built.



2. Sarah P. C. Wu

Director, Hong Kong Economic and Trade Office, New York City

Ms. Wu spoke about Hong Kong's Airport Core Project. She accompanied her talk with a PowerPoint presentation that included photographs and maps of the project.

Background

Ms. Wu began her talk by describing some of the constraints on Hong Kong's development. Hong Kong has a total land area of 1,100 square kilometers, but 40% is parkland; most of the developable land is along the coast and on reclaimed land (landfill). With a population of 6.8 million in this small space, planning future development is vital.

In the late 1980s – early 1990s, Hong Kong's population grew rapidly, resulting in an increased demand for land. At the same time, the booming economy highlighted Hong Kong's airport capacity problems. The aging Kai Tak airport was very congested and too small to meet the forecasted increases in demand.

The Airport Core Project

Out of these needs came the Airport Core Project (ACP), a \$20 billion megaproject comprising a new airport, transportation links, and a new town. Construction began in 1991, and the airport and its rail links opened in 1998.

The new airport was built on 1,248 hectares of reclaimed land on the northwest side of Lantau Island. This island was relatively undeveloped at the time and lacked road links to the rest of Hong Kong. Five of the ten sub-projects encompassed by ACP focused on building a fast link via road and railway from central Hong Kong to Lantau and the new airport.

From central Hong Kong, the new link (shown below with other planned projects) comprises a new cross-harbor tunnel to the New Territories, a new expressway through West Kowloon, two bridges connecting the mainland with Lantau Island via a third island, an expressway through Lantau Island to the airport, and a new rail line running directly from Hong Kong through the tunnel and across the bridges to the airport. Ms. Wu noted that, with a transit time of 23 minutes from the airport to Hong Kong's commercial center, the rail line is regarded as one of the best airport links anywhere.

The airport, now in business for 4 years, currently has an annual capacity of 87 million passengers and 9.5 million tons of cargo. Last year, with 33 million passengers and 2.1 million tons of cargo, it rated as the largest international air cargo terminal.



Airport Core Project and Planned Projects

In addition to providing Hong Kong with a convenient, modern facility with room to grow, ACP imparted several other benefits:

- Located far from the built-up urban areas, the airport relieves living conditions for the 380,000 people under the flight path of the old airport.
- Lantau Island is now connected via a road and rail network to central Hong Kong.
- In addition to the 1,248 hectares of reclaimed land for the airport, 334 hectares were reclaimed for development in Kowloon, 67 hectares for a new town on Lantau Island, and 20 hectares in Hong Kong. The new town, Hong Kong's ninth, will be the first outside the New Territories.

- A new town for 300,000 inhabitants is being planned on the site of the old airport. The plans include development of a cruise ship terminal.

ACP has been constructed with participation from companies around the world: 183 major contracts worth about \$12.36 billion have been awarded since the project began (some components, such as the new town, are still under construction). The participation by country has been as follows:

- China: 31% – 8% Mainland & 23% Hong Kong
- Japan: 26%
- United Kingdom: 16%
- Netherlands: 6%
- France: 5%
- Belgium, New Zealand: 3% (each)
- Spain, Australia, United States, Germany: approximately 2% (each)

The Hong Kong Special Administrative Region (HKSAR) exercises a great deal of autonomy in trade and economic matters, and is a member of the World Trade Organization. Ms. Wu noted that, at \$110 billion, its foreign reserves are the fifth largest in the world. The SAR government was entirely responsible for the project and contributed two-thirds – \$14.2 billion – of the financing; the private sector provided the remaining \$5.8 billion. An executive agency, reporting to an advisory committee chaired by the Chief Secretary for Administration, was created to manage the project. This agency coordinated the work of a huge number of players, including the Works Bureau, the Highways Bureau, numerous other agencies, international contractors, and thousands of workers on different sites. Ms. Wu remarked that completing the project on time and on budget is a tremendous achievement.

Future Projects

With 90% of its population dependent on public transit and 3.5 million rail passengers per day, Hong Kong has ambitious expansion plans. It is investing \$13 billion in five new rail lines to be completed during 2002-2007, and another \$13 billion in six projects for 2008-2016. Together, these projects will give Hong Kong a 250 km rail network – a 70% increase – and bring 70% of the population and 80% of the jobs to within walking distance of a rail station.

Another key component of Hong Kong's infrastructure is its seaport, the largest in the world with over 17.8 million TEU's handled in 2001. More than 80 shipping lines serve the port, providing 400 weekly container line services to over 500 destinations worldwide. Ms. Wu emphasized that the government's role in the port is restricted to building roads and dredging the harbor; the private sector finances all other improvements. Businesses are also investing \$100 million in an air cargo terminal at the new airport, to open in 2004.

Hong Kong expects to invest \$77 billion in infrastructure over the next decade, with government providing a significant share of the funding. Looking further into the future, planners are discussing a 30 km bridge between Hong Kong and the West Pearl River delta, linking Zhuhai and Macao, and a high-speed link between Hong Kong and Canton. Nearer term, Hong Kong Disneyland will open in late 2005 or 2006.

3. David Luberoff

**Associate Director, Taubman Center for State and Local Government
Kennedy School of Government, Harvard University**

Mr. Luberoff, who is the co-author (with Alan Altshuler) of a forthcoming book on the changing politics of mega-projects in American cities, used the history of Boston's \$14.6 billion Central Artery/Tunnel (CA/T) Project to illustrate those changes.

He began by describing four eras of public infrastructure politics in the last century. The first, pre-1950s, era was marked by local planning and local funding of major projects such as the East River bridges and the Hudson River tunnels. In the second era, which ran from the mid 1950s until the late 1960s, skilled public officials, such as Robert Moses, built highly disruptive mega-projects, with funding usually coming from large infusions of federal money (but sometimes from local sources, such as surplus toll revenues from existing facilities). In the late 1960s, however, rising citizen protests stopped many planned projects, such as New York's Lower Manhattan Expressway, and, at the national level, led to the passage of significant environmental legislation that increased procedural requirements for projects and created multiple potential points of veto for them. The net result was that by the mid-1970s it had become extremely difficult, if not impossible, to build major new highways and airports in urban areas.

Contrary to popular impressions, Mr. Luberoff said, public investment in cities did not stop in the mid-1970s. Rather, many urban areas began investing in less disruptive projects, an approach that Mr. Luberoff and Mr. Altshuler have labeled the "Do No Harm" era of planning. For example, many regions, including New York, have refurbished and expanded their transit systems since the early 1970s. A few regions, moreover, have built new highways. Most notably, Boston has proceeded with the CA/T project, which involves replacing an existing elevated highway in downtown Boston with a depressed and covered road and building a new tunnel connecting the city with the region's major airport.

According to Mr. Luberoff, the "Do No Harm" era, has a number of novel characteristics, which he laid out in the remainder of his talk:

Non-routine nature of projects. Because projects must be politically acceptable and because federal law gives states and localities more flexibility in spending available funds, it is harder for technical experts to proceed with a project by simply arguing that "this was the plan we agreed to, we're just doing the next project in The Plan." Rather, experts must assemble support for specific projects and plans on a more ad hoc basis. The CA/T project plan, for example, was preceded by two decades of competing plans for the artery and the tunnel. In the early 1980, Frederick Salvucci, the state's secretary of transportation, proposed combining key aspects of existing tunnel and artery plans as one mega-project.

Business support. Support from the business community is critical in pushing projects forward. Real estate and other place-based interest groups whose fortunes are tied to a physical location are typically among the strongest supporters. Construction firms become significant advocates once the project is underway.

Policy entrepreneurs. Successful projects normally need the leadership of an individual who is willing to shepherd the project through the political and permitting processes to final approval. Like private entrepreneurs who have to sell their ideas to banks and investors in order to get financing, policy entrepreneurs take their project ideas to business interests in order to build a political coalition in support of project plans.

Recent successful policy entrepreneurs include Salvucci; Federico Peña, the former mayor of Denver and U.S. Transportation Secretary (who brokered the agreement that led to the construction of the new Denver airport while he was) and Neil Goldschmidt, the former mayor of Portland, Oregon and U.S. Transportation Secretary (who brokered the agreements that stopped planned highways in Portland and built the region's first rail line). Unlike policy entrepreneurs from earlier eras — such as Robert Moses or

Austin Tobin (who headed the Port Authority of New York in the post-war era), the recent policy entrepreneurs simultaneously build support among business, community, and environmental groups.

"Do No Harm" planning. Mr. Luberoff noted that the challenge of contemporary highway plans is best summed up by Sir Colin Buchanan, a planner who directed a seminal study of Great Britain's urban highway plans in the early 1960s. In that study, Buchanan observed:

[T]he establishment of environmental standards automatically determines the level of accessibility. But the latter can be increased according to the amount of money that can be spent.

In other words, noted Mr. Luberoff: how much money will we spend? How much harm are we willing to inflict? And how much accessibility do we want?

Mr. Luberoff proposed that Robert Moses' answers to these questions was we want the greatest accessibility for the least amount of money. Moses summed up this approach by frequently quoting the French proverb: "you can't make an omelet without breaking some eggs."

"Do No Harm" planning, in contrast seeks to make omelets without breaking eggs. The CA/T project, for example, takes no residential properties and relatively few commercial ones. In keeping with approaches suggested by Buchanan, moreover, much of the road is being built as a tunnel so that the highway will not significantly disrupt downtown Boston or its waterfront. As Buchanan predicted, however, this is a phenomenally expensive way to build highways, as evidenced by the fact that the artery project is now estimated to cost \$14.6 billion, which makes it the most expensive public works project ever undertaken in the history of the United States.

Mitigation. While "do no harm planning" has eliminated many negative impacts, some still remain. Project planners, therefore, also seek to mitigate any harms their plans do create. The rationale is not only one of equity but also expediency: project planners know that strict environmental laws give those pressing ample opportunity to delay or even stop proposed projects. (Westway, New York's plan to replace the West Side Highway, for example, was stopped in part by a lawsuit challenging project permits on the grounds that its construction would destroy striped bass breeding grounds in the Hudson River.)

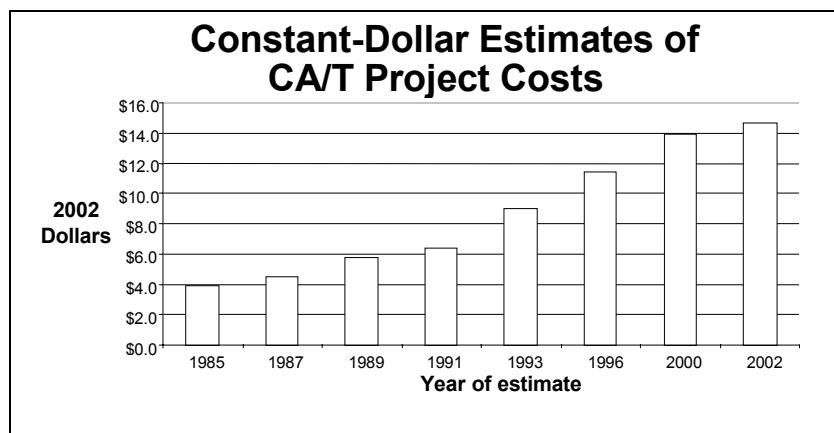
For project planners, the lesson is that they have to satisfy the demands of anyone who has the potential to stop the project in court. Recognizing this, skilled interest group leaders, have learned that they can sometimes extract benefits from proposed projects, even when there is only a tenuous connection between alleged harms and proposed mitigation agreements.

The CA/T project's planners, for example, ultimately made more than 1,500 separate mitigation agreements—which included everything from soundproofing residential buildings near key construction areas to building hundreds of acres of new parks and a multibillion expansion of the region's transit system. In total, these commitments comprise up at least one third of the projects' official cost (and their real value is higher because the multi-billion transit commitment is not part of the project's official budget but is legally binding on the state.)

Locally painless funding. Because mega-projects are very costly, it is usually hard to fund them from regular local and state funding sources, such as transportation bond issues. Rather, most have been funded via federal funds or, more rarely, state and regional entities with significant independent revenue streams, such as tolls. At the federal level, this gives congressional leaders and ranking members of the transportation committees significant power to determine what is funded. As Speaker of the House in the 1980s, for example, Massachusetts' Tip O'Neill played a major role in securing federal funding the CA/T Project. Similarly, in the 1980s and 1990s, the New York region received significant funding for transit because key legislators—notably former Representative Robert Roe of New Jersey and Senators Daniel Patrick Moynihan and Alfonse D'Amato, both of New York, were senior members of key House and Senate committees. Mr. Luberoff noted, moreover, that when project funding plans primarily rely on

outside funding, there is increased likelihood of building projects that produce few benefits in relationship to their costs.

High cost of megaprojects. For a variety of reasons, including the high cost of “do no harm” design strategies and extensive mitigation commitments, recent projects tend to be significantly more costly than their historic predecessors. Illustratively, in constant dollars, the price per centerline mile of new highway construction jumped by a factor of between 7 and 12, in large part due to both do no harm design strategies and the cost of mitigation. Moreover, as illustrated by the CA/T cost estimates on the next page, there has been no letup in historic patterns that have seen actual costs significantly exceed projected costs, suggesting that those who benefit from projects have found ways to systematically underestimate costs (and sometimes to overestimate benefits) when projects are authorized.



The Future

Given tremendous constraints in the project approval process and the high costs of current projects, one might wonder if there can be any more megaprojects. Mr. Luberoff noted that there are counterexamples, however, such as the Alameda Corridor project, a more than \$2 billion endeavor, completed in early 2002, which improved rail connections between the ports of Los Angeles and Long Beach and central railyards outside of downtown Los Angeles. In addition, many U.S. cities are moving forward with major rail transit projects and more new airport runways are under construction than at any time since the early 1970s and some regions are looking at depressing and covering aging elevated highways.

While similar projects are being discussed in the New York region, funding them could prove to be a daunting challenge. At present, for example, the tri-state region has virtually no representatives in senior leadership positions in the House or the Senate or on key transportation-related House and Senate committees. The region, therefore, cannot rely on congressional earmarking to fund desired projects but must instead work with other regions to increase overall federal spending on transportation.

However, this may be particularly difficult in coming years because federal budget deficits have returned and there seems to be little support for increasing the federal gasoline tax. Similarly, state fiscal crises will make it hard to develop new transportation funding sources.

On the other hand, the region has a long tradition of toll financing that historically has provided significant funding for road, bridge, and transit projects. Moreover, the Bush administration and several key members of Congress have also proposed streamlining the environmental permitting process for projects, which presumably would make it easier to secure approvals needed to move forward with desired projects. The region's leaders should follow these efforts closely, with the aim of securing both funding and permitting mechanisms that help advance good projects while preventing states and localities from building projects that are either highly disruptive or that produce relatively few benefits at extremely high costs.

Luncheon Keynote Address ***The Regional Impact of Reauthorization***

Emil Frankel

Assistant Secretary for Transportation Policy, U.S. Department of Transportation

In the afternoon keynote address, Mr. Frankel discussed the upcoming reauthorization of federal transportation funding and the Administration's transportation priorities. The following is an edited transcript of his speech:

It's pretty amazing to me that we are here dealing with reauthorization again. I've been hard at it, as have been my colleagues at the Department of Transportation in Washington since January of this year, developing what will be in one form or another the administration's proposal for reauthorization. We're now 11 months away from expiration of TEA-21. The Senate Environment and Public Works Committee and the House Transportation and Infrastructure Committee have been holding hearings on reauthorization since January. The Senate Banking Committee, which has responsibility for the transit program, and the Senate Commerce committee have also been holding hearings for some time. Secretary Mineta, testifying before the Environment and Public Works Committee in January, committed the administration to the introduction of our bill when the new Congress convenes. I'm not sure that we'll have it quite ready by January, but we do expect that about the time the President introduces his Fiscal Year 2004 budget in late January-early February, we'll be able to plop the Administration's bill down on the desks of Senators and Representatives. We're still drafting now, and we're still talking and thinking; it's not set in stone by any means. We hope to have a draft ready within two or three weeks.

Funding

In terms of funding, the political and financial situation has changed since ISTE. Many of the Congressional representatives from the Tri-State region who were influential in shaping transportation policy five or six years ago are no longer on the scene. In the new Congress, theographics of leadership are not likely to be favorable to this region. Therefore we must bear in mind the national context when considering megaprojects and transportation investments in this region and in the older urbanized parts of the United States.

The Secretary has said that the threshold issue is the assurance of adequate funding for investment in the nation's transportation infrastructure. But our financial circumstances are very different from what they were five years ago. We talk about the increase in funding of over 40% from ISTE to TEA-21. Much of that was due to the fact that Congress had enacted or was about to enact significant increases in the gasoline tax. Most of that money was going into the General Fund for deficit reduction. Sometime late in the ISTE period and again early in the TEA-21 period, there were transfers of revenue streams from the General Fund to the Highway Trust Fund. The impact of that was a big gasoline tax increase. With the exception of one minor opportunity, we don't have that option at this time. The exception is the gasohol or ethanol tax – approximately 2.5¢ – which is currently going into the General Fund. The Energy bill, which looks like it could die in this Congress, does contain a provision for redirection of that revenue stream to the Highway Trust Fund. It's very likely that that will be addressed in TEA-3. That amounts to between \$600 and \$800 million per year – not insignificant, but nothing like the previous redirection of gasoline taxes.

We have to maintain the link between Highway Trust Fund receipts and transportation spending, even as we seek to smooth out the peaks and valleys of the Revenue Aligned Budget Authority mechanism. That is a mechanism designed to ensure that when these revenues are raised, they won't sit in a bank account but will be spent on the transportation infrastructure as soon as possible. We have to ensure that these

receipts are spent on transportation by preserving funding firewalls, and we must ensure that all federally-collected motor fuel taxes are deposited in the Highway Trust Fund.

In terms of maintaining support for this mechanism, it is incumbent on all of us – at the federal, state, and local levels – that we are transparent and accountable in spending on transportation projects. If there is a question of accountability, it makes it easier for people to attack the preservation of these revenue sources and the assurance that they are spent on transportation infrastructure. Congress will also be looking at maintenance of efforts. There is a sentiment that the states that spend more on maintenance and system enhancement should be rewarded in terms of how the pie is divided.

The needs are clear. We have to spend a lot of money maintaining and restoring the capacity that we have. Both the Federal Highway Administration and the Federal Transit Administration have reported that we need a level funding substantially above our current level just to maintain our existing system.

So where is that money going to come from? The American Road Builders Association has proposed a 12-cent gasoline tax spread out over six years – two cents a year. Some members of Congress are advocating indexing the gasoline tax; but the Administration has so far not discussed increasing taxes. We are proceeding with the assumption that we are revenue-constrained: that there will be only modest increases in revenues – nothing like the 40% increase going from ISTEA to TEA-21. Related to that is how the funding pie will be divided, and the so-called donor-donee question. Because the revenues will not increase, if somebody gets a larger slice, someone else will get a smaller slice and fewer absolute dollars. This was not the case when TEA-21 was enacted, since there was such a large increase in total revenues available. New York and New Jersey's slices got smaller, but in absolute dollars they received more money. Unless the revenue stream is augmented in some way, that will not happen this time around. So while we're talking about megaprojects, it's this issue of funding, and how the funds will be divided, that will dominate the discussion. And that has to be borne in mind, particularly in this region, where the needs are so great, and so well demonstrated.

Safety

The Secretary has stated that our highest objective will be safety and security in the transportation system. The Administration's bill will seek to reduce the unacceptable level of death and injuries on our highways, which has been brought down significantly over the last several years – a tribute to programs and efforts to deal with key issues in safety. But the numbers are still too high, and the absolute numbers are beginning to grow again. Almost 42,000 people lose their lives on our highways every year. It's an unacceptable level which we would not accept anywhere else. We have to address that by simplifying the highway grant programs, making it easier for states to access and utilize these funds and exercise discretion in how these funds are used, providing they meet performance standards. We're hoping that the bill will contain significant performance incentives with respect to safety.

Environmental Analysis

We need to make sure that projects such as those being funded by the Federal Emergency Management Agency and the FTA in Lower Manhattan can move along – that there is an appropriate environmental analysis determination and permitting process. The President's Executive Order on environmental streamlining is not meant to alter substantive outcomes in any way, whether it's the National Environmental Protection Act process or the permitting process. "Bad projects" should continue not to be able to get permits. We are trying to rein in those who seek to use delay to defeat projects, who seek to prevent consideration and determination as a means of getting what they want, or who use delay as a means of achieving goals unrelated to the project. The President and Congress have put their weight behind rebuilding the transportation infrastructure in Lower Manhattan in a timely manner, with appropriate consideration for environmental impacts.

Freight

Freight has been seen as a stepchild of transportation policy at a state and national level. That is beginning to change. There is much more attention being paid to this, within the Department and the Transportation Research Board, and within other think tanks. We will have proposals to make with a particular focus on capital investment in bottlenecks, points of constraint, gateways. We need to follow the model of the Alameda Corridor in terms of making thoughtful investments in grade separation and other improvements to increase productivity of the ports. Goods formerly traveled from the ports of Los Angeles and Long Beach to intermodal facilities further inland at an average speed of 10 mph; now they can travel at speeds of 40 mph or higher. This has doubled if not tripled the container movement capacity of the ports. There was thoughtful utilization of federal and state grants, private investments, and borrowing supported by TIFIA-like financing. We are looking into how to make various kinds of innovative financing relevant to freight and intermodal goods movement.

Innovative Financing

For all classes of infrastructure investment – maintenance and rehabilitation, megaprojects, freight, and others – we are going to have to look at innovative financing techniques in order to increase the revenue streams. State and local governments will need to be imaginative in coming up with the revenue sources. One of the challenges for TEA-3 is that it encourage and enable innovative financing.

It's obviously going to be a very interesting time over the next few months. During the course of development of the reauthorization bill, I hope to continue this conversation with all of you.

SPEAKER AND MODERATOR BIOGRAPHIES

Speaker and Moderator Biographies

Allison L. C. de Cerreño, Ph.D. is Co-Director of the Rudin Center for Transportation Policy & Management at NYU's Robert F. Wagner Graduate School of Public Service. Previously, Dr. C. de Cerreño was Director of Science & Technology Policy at the New York Academy of Sciences (1998-2002), and Associate Director of Studies (1996-1998) and Research Associate for Latin America (1991-1996) at the Council on Foreign Relations. She has taught at Hunter and City Colleges, and is editor of *Maintaining Solid Foundations for Hi-Tech Growth: Transportation & Communications Infrastructure in the Tri-State Region* (2001).

Peter A. Cannito is President of Metro-North Railroad, the second-largest commuter railroad in the country. He became President of Metro-North in June 1999, prior to which he was Vice President of Rail and Transit Programs for Raytheon Infrastructure Inc. Mr. Cannito began his railroad career with Amtrak in 1974, holding top positions in both the Train Operations and the Engineering and Construction divisions of Amtrak. He left Amtrak in 1995 and joined ABB Traction as Executive Vice President where he oversaw all new and remanufacturing efforts for equipment in the heavy and high-speed rail markets in the United States.

Emil Frankel is Assistant Secretary for Transportation Policy of the U.S. Department of Transportation. Previously, Mr. Frankel was Management Fellow of the Yale School of Management and Senior Fellow of the Yale School of Forestry and Environmental Studies. Formerly he served as Commissioner of the Connecticut Department of Transportation (1991-1995), Chairman of the Standing Committee on the Environment of the American Association of State Highway and Transportation Officials (AASHTO), and Vice Chairman of the I-95 Corridor Coalition. Mr. Frankel was also a senior executive of The Palmieri Company (formerly Victor Palmieri & Co.)

Katherine N. Lapp is Executive Director and Chief Operating Officer of the Metropolitan Transportation Authority. Previously, Ms. Lapp was New York State's Director of Criminal Justice and Commissioner of the Division of Criminal Justice Services, serving as the Governor's chief advisor and policy maker for all areas of criminal justice. Ms. Lapp has been New York City's Criminal Justice Coordinator (1994-1997), Chief of Staff and Special Counsel to New York City's Deputy Mayor for Public Safety (1990-1993), and Law Secretary to the Presiding Justice of the Appellate Division, Second Judicial Department (1986-1990).

David Luberoff is Associate Director of the Taubman Center for State and Local Government. His research and writing focus on the political economy of infrastructure and land use policies, and he is the coauthor of *Mega-Projects: The Changing Politics of Urban Public Investment (forthcoming)*. He has authored articles, case studies, and reports on infrastructure finance, decision-making on major public projects, and land use planning. From 1995 to 2001 he was a columnist on infrastructure issues for *Governing* magazine and has been an editor for the Boston Redevelopment Authority and Editor in Chief of *The Tab*, greater Boston's largest group of weekly newspapers.

Mysore L. Nagaraja, P.E. is Senior Vice President and Chief Engineer for the Department of Capital Program Management with MTA-New York City Transit (NYCT). Mr. Nagaraja joined NYCT as a Project Manager in August 1985, was promoted to Assistant Vice President in October 1986, to Deputy Vice President in June 1989, and to Senior Vice President/Chief Engineer in 1996. He is a Licensed Professional Engineer in the States of New York and New Jersey and is a fellow of the American Society of Civil Engineers. In 1998, City College (CUNY) honored Mr. Nagaraja with The Milton Pikarski Distinguished Leadership in Transportation Award.

Robert Paaswell, Ph.D. is Director of the University Transportation Research Center and Distinguished Professor of Civil Engineering at City College (CUNY) as well as Director of the City University Institute

for Urban Systems, a University-wide initiative to examine the intersection of new technology, institutional structures and innovative finance in the provision of infrastructure. Dr. Paaswell also serves as Chairman of the Board of the Transit Standards Consortium – a professional group addressing the problems of integration of high technology into public transit systems. Previously he was Executive Director (CEO) of the Chicago Transit Authority.

Richard T. Roberts is Chief Planner at NJ Transit, responsible for all planning supporting NJT's Capital Program. He has almost 30 years of professional experience in traffic engineering and transportation planning, working on projects involving all modes of transportation, passenger and freight. He has been Director of Transportation Planning for the Hackensack Meadowlands Development Commission; Chief of Transportation Policy and Planning at the Port Authority of New York and New Jersey; Vice President, Managing Director of Strategic Planning at Edwards & Kelcey, Inc.; and Assistant Vice President, High-Speed Rail Corridor Planning, at Amtrak. Mr. Roberts holds a Bachelor of Science in Industrial Engineering and a Master of Science in Civil Engineering from Newark College of Engineering, part of the New Jersey Institute of Technology.

Elliot G. Sander is Director of the Rudin Center for Transportation Policy & Management at NYU Wagner, as well as Senior Vice President at DMJM + Harris. He is also a Commissioner on the New York City Taxi and Limousine Commission and Co-Chairman of the Empire State Transportation Alliance (ESTA), a coalition of leading business, labor, and civic organizations that he helped found. In February 2002, Mr. Sander was appointed by Governor George Pataki to the Lower Manhattan Development Corporation's citizen advisory board. He is a former Commissioner of the New York City Department of Transportation (1994-1996).

Ellen Schall is the Martin Cherkasky Professor of Health Policy and Management and Dean Designate of NYU Wagner. Professor Schall joined the Wagner School faculty in 1992 after a distinguished public service career, including serving as Commissioner of the NYC Department of Juvenile Justice (1983-1990). She began her career as a criminal defense lawyer with The Legal Aid Society and has been president of the National Center for Health Education, president of the Association of Public Policy Analysis and Management (1993-1994), and co-chair of the Permanent Judicial Commission on Justice (1991-1999).

Tom Schulze is Executive Director of the New York Metropolitan Transportation Council (NYMTC), the regional transportation planning agency responsible for the ten-county region that includes New York City and the five suburban counties on Long Island and to the north. Mr. Schulze has been a transportation planner in and around New York City for over 20 years and has worked for a variety of local and regional government agencies, including the City of New York, the Port Authority of New York and New Jersey, and NJ Transit. He has also worked for private consulting firms in and around Newark, New Jersey.

Sarah P. C. Wu took up her post as Director of the Hong Kong Economic & Trade Office in New York on June 20, 2002. As a senior representative of the Government of the Hong Kong Special Administrative Region, she is responsible for leading the development and expansion of Hong Kong's economic and business partnership throughout the Eastern United States. Ms. Wu joined the Hong Kong Government as an Administrative Officer in 1978 and has served as Deputy Representative of the Hong Kong Government Office in Brussels, Deputy Commissioner in the Office of the Commissioner for Administrative Complaints, and as Deputy Judiciary Administrator.

Robert D. Yaro is President of the Regional Plan Association (RPA), America's oldest and most distinguished independent metropolitan research and advocacy group. In 2001, under his leadership, RPA convened the Civic Alliance to Rebuild Downtown New York, a coalition of civic groups formed to guide redevelopment in Lower Manhattan after 9/11. Mr. Yaro is also Practice Professor in City and Regional planning at the University of Pennsylvania. He has been Executive Director of RPA (1990-2001), Associate Professor of City & Regional Planning at the University of Massachusetts, Amherst (1985-1989), and Chief Planner and Deputy Commissioner of the Massachusetts Department of Environmental Management (1976-1984).

Jean-Claude ZIV, Ph.D. currently serves as the Professor and Chair of Logistics Transport and Tourism at the Conservatoire National des Arts et Métiers in Paris, France. Prior positions include General Manager of various service companies in France within the fields of passenger transport, freight transport and waste management, Professor of Urban Transport and the University of Paris and consultant to CONNEX North America (Bus and Rail Transit) PROTRAVEL, France's largest travel agency group.

EVENT DAY PROGRAM

Program Schedule*

8:30 - 9:00 am	Registration and Continental Breakfast
9:00 am	Welcome
	<i>Ellen Schall, Dean Designate, NYU Robert F. Wagner School of Public Service</i>
	<i>Elliot G. Sander, Director, NYU-Wagner Rudin Center for Transportation Policy and Management</i>
	<i>Robert Paaswell, Director, University Transportation Research Center, City College, CUNY</i>
9:15 - 10:00 am	Breakfast Keynote Address: “The Future of the NY Region’s Transportation System”
	This keynote address will present an overview of various MTA “megaprojects” designed to alleviate the current strain on the New York region’s transportation network.
Introduction:	<i>Allison L. C. de Cerreño, Ph.D., Co-Director, Rudin Center for Transportation Policy & Management</i>
Speaker:	<i>Katherine N. Lapp, Executive Director, Metropolitan Transportation Authority (MTA)</i>
10:00 - 11:15 am	Session 1: “Regional MegaProjects”
	As the metropolitan population grows, pressure increases on the region’s transportation network. Panel participants will discuss the extension of the Number 7 Flushing line, plans for the Tappan Zee Bridge/I-287, and upgrades to NJ Transit.
Moderator:	<i>Tom Schulze, Executive Director, New York Metropolitan Transportation Council (NYMTC)</i>
Panelists:	<i>Mysore L. Nagaraja, Senior Vice President & Chief Engineer, Capital Program Management, MTA NYC Transit</i>
	<i>Peter A. Cannito, President, MTA Metro-North Railroad</i>
	<i>Richard T. Roberts, Chief Planner, NJ Transit</i>

* Reflects changes made during the event day.

11:15 - 11:30 am **Break**

11:30 - 12:45 pm **Session 2: “Lessons Learned: MegaProjects in the United States and Abroad”**

Representatives from Boston, Paris, and Hong Kong will discuss the specifics of their own region’s “megaprojects” touching upon funding sources, inter-agency cooperation, infrastructure and technology requirements, as well as lessons learned and best practices.

Moderator: ***Robert Paaswell, Director, University Transportation Research Center, City College, CUNY***

Panelists: ***David Luberoff, Associate Director, Tabuman Center for State & Local Government, Harvard***

Jean-Claude ZIV, Ph.D., Professor & Chair of Logistics Transport & Tourism, Conservatoire National des Arts et Métiers, Paris

Sarah P. C. Wu, Director, Hong Kong Economic & Trade Office, New York City

12:45 - 2:20 pm **Luncheon Keynote Address: “The Regional Impact of Reauthorization”**

Reallocation of city transportation funding will conceivably alter city transportation agencies’ implementation of large scale improvements. This timely address will focus on what changes cities can expect to see due to reauthorization.

Introduction: ***Robert D. Yaro, President, Regional Plan Association***

Speaker: ***Emil Frankel, Assistant Secretary for Transportation Policy, U.S. Department of Transportation***

2:20 - 2:30 pm **Closing Remarks**

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