



National Urban Freight Conference 2006

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Conference Summary and Observations

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Economic restructuring and globalization have vastly increased the volume of commodity flows by all transport modes. Increased freight flows have had significant impacts on metropolitan areas; but surprisingly most freight-related research focuses on inter-regional goods movement. Little is known about the contribution of goods movement to urban congestion, air quality, or changing land use and travel patterns. Similarly, tools for modeling and forecasting freight flows *within* regions are not well developed.

In response to this need to better understand the impacts of goods movement on metropolitan areas, the METTRANS Transportation Center at the University of Southern California and California State University, Long Beach organized the National Urban Freight Conference. The Conference was held in Long Beach, California from February 1-3, 2006. Both the Conference and a summit on goods movement and air quality called “Faster Freight - Cleaner Air” were part of “Freight Week” in Long Beach.

The Conference attracted researchers from throughout the US and other parts of the world where maritime ports, airports, and rail hubs are located. These facilities all contribute to the economic vitality of larger metropolitan regions but also add to the congestion on an already stressed network of roads and railroads.

The National Urban Freight Conference organized presentations into one of seven different tracks:

1. Models for transportation, port, air, intermodal operations, impact analysis
2. Port operations, productivity
3. Trucking, air, rail economics, productivity, labor issues
4. Local and regional environmental externalities: congestion, air quality, etc.
5. Policy and institutional issues in urban goods movement
6. Security/vulnerability of goods movement infrastructure
7. Best Practices and lessons learned

These tracks reflect the wide range of issues confronting metropolitan areas as they address the increase in freight flows. They also reflect the multi-disciplinary nature of goods movement research which draws upon engineering, economics, systems analysis, health, planning, and public policy among others. The Conference offered a unique opportunity to bridge the gap between these often disparate research areas.

In addition to papers presented in various track sessions, the Conference featured a keynote speaker and plenary sessions that addressed overarching themes tied to the movement of goods in urban areas. These include future freight transportation demand and the ways in which we identify possible solutions to metropolitan-wide problems. They also include the development of a national freight policy framework, a revolutionary change in the way goods movement has been addressed by policy makers.

This summary is organized around the keynote and plenary sessions as well as the seven tracks. Key findings and suggestions from each will be presented; some concluding comments

follow. The conference website includes a conference overview and agenda. PowerPoint presentations from plenary speakers, and abstracts and papers from track sessions are also available. Please visit <http://www.mettrans.org/nuf/index.html>.

1. **Wanted: Dangerously Good Solutions for Freight Transportation**



Lillian C. Borrone

The keynote address was given by Lillian C. Borrone, the Chair of the Board of Directors of the Eno Transportation Foundation. She is also the former Assistant Executive Director of the Port Authority of New York/New Jersey and Deputy Administrator of the US Department of Transportation.

The keynote address was titled *Wanted: Dangerously Good Solutions for Freight Transportation*. In it Ms. Borrone underscored the role that research plays in solving the problems caused by the movement of goods in metropolitan areas. She noted the intersection between critical transportation issues as outlined by the Transportation Research Board (TRB), and key community concerns with regard to transportation. Both lists include congestion and traffic flow, vulnerability and safety issues, and environmental impacts including noise and vibrations and incompatible land uses.

TRB's Critical Issues also include inadequate investment in innovation. In her address, Borrone noted that investment in all federal research, currently less than 1.2% of GDP, is shrinking as a share of the US economy. TRB has also identified a mismatch between the missions of our planning institutions and their capacity to bring about needed change. Borrone advised both researchers and practitioners to look for lessons from business and management which chart processes that help identify ways to eliminate time and improve decision making.

The same could be done for governmental agencies involved in transportation decisions. She suggested using a report card approach to measure the effectiveness of our planning institutions in the areas of policy, governance reform, funding, R&D, and leadership among others. First steps might include inventorying local ordinances to determine if they are at odds with broader, more metropolitan wide goods movement goals. Are there, for example, city regulations that either encourage or preclude certain night time operations? Do they conflict with industry practices or regional efforts to mitigate the impacts of goods movement related activities? A report card might also indicate whether planners and policy makers have been welcomed as goods movement stakeholders and given the training to effectively balance economic needs and environmental imperatives.

Lillian Borrone left the participants with a list of potentially thought-provoking research questions to help formulate a research agenda in urban goods movement. The questions for consideration include many addressed in the track sessions: Have we quantified freight volumes in local, regional and state settings? Do we know job and economic impact statistics? Do our institutions have needed authority? What performance measures should we be tracking? What examples do we have, either from the US or abroad, of multi-modal interests being married in an effective way to support long-term freight policy and improvements?

2. Future Freight Transportation Demand

One of the issues for researchers of urban freight movements is being able to anticipate future freight transportation demand. This topic was addressed in an opening plenary session at the National Urban Freight Conference by Paul Bingham. Mr. Bingham is a principal in global trade and transportation with Global Insight, Inc.

Mr. Bingham began his comments by pointing to apparent market shifts, i.e. changes in the centers of production and consumption. This includes the ascendancy of China and India. Trade growth is influenced by the emergence of these markets and the trend toward harmonization of trade and regulatory policies, as evidenced by the proliferation of trading blocs.

As Asia increases its position as the center of worldwide manufacturing, trends in China and other nations increasingly influence trends in other parts of the world. In the US, trade-related growth continues, but not consistently across commodities, trade routes or metropolitan areas. The proximity of the west coast of North America to Asia means that urban areas like LA-Long Beach, Seattle-Tacoma and Vancouver enjoy the greatest growth in trade-related occupations.



Paul Bingham

However, with increased trade comes increased traffic and congestion; and impacts will also differ from region to region because the growth is uneven. Free trade policies place added pressure on urban gateways like those mentioned above. This is not just because total US freight traffic demand is expected to increase 67% by 2020. It is because trade in containerized goods is outpacing the growth in trade of bulk shipments. This translates into a higher demand for high service growth (warehousing, etc.) in the same urban gateways with major implications for transportation networks.

Mr. Bingham did note an evolving trend toward less centralized, less urban warehousing; although even this does not relieve pressures on metropolitan transportation systems. Networks are needed to connect urban markets.

The presentation concluded with a few important questions: How can we minimize the use of alternatives that may reduce competitiveness and economic growth? Where will the money come from? Mr. Bingham suggested that the answers are national and international in scope but cautioned that the major decision-making authority rests with metropolitan planning organizations (MPOs) and the States.

3. National Freight Policy Framework

Another presentation during the opening plenary session echoed themes raised by Paul Bingham and Lillian Borrone. In his presentation, George Schoener, Deputy Assistant Secretary for Transportation Policy at the US Department of Transportation, raised questions of leadership and the role of the national government.

Mr. Schoener argued that dramatic increases in projected freight demand mean different things to different stakeholders. There are diverse interests both within and beyond the transportation sector that are influenced by trends in urban goods movement. Both public and private sectors are represented as well. These include trucking interests, railroads, shipping, labor, the private financial community, MPOs, the Department of Defense, and various communities near transportation nodes and along transportation corridors.

Ownership and accountability are needed to ensure that the performance of these various actors meets expectations. This requires leadership in the policy arena. The National Freight Policy Framework is a means of providing direction at the national level.

The national freight policy attempts to balance the capacity and demand needs of both the public and private sectors with a synergistic approach. It outlines a vision for the efficient, reliable, safe and secure movement of goods. Objectives include improving existing operations, adding infrastructure capacity, using pricing to better align costs and benefits, and mitigating and better managing environmental impacts. The national freight policy framework also points to the need to remove or reduce statutory, regulatory and institutional barriers, including those that pose an obstacle to effective public-private partnerships. At the strategic and tactical level, there are responsibilities and tasks for actors at the federal, state and local level and for the private sector.



George Schoener

Four overarching themes emerged from Mr. Schoener's presentation. First, the developing freight policy is in fact national, and not federal, in nature. Second, the success of the policy depends upon effective investment, something that is linked to his third point: that public-private collaboration is essential if objectives are to be met. Finally, he emphasized that the national freight policy is a living document. It must reflect changing trends, new information, and the capacity of stakeholders to act at various points in time.

4. Best Practices

The National Urban Freight Conference featured two Best Practice sessions, one each for truck and rail solutions, as part of the track sessions. Conference organizers also addressed the idea of Best Practices in a plenary session. This session featured three different presentations, two of which were combined under the heading *Managing Urban Goods Movement* and

considered the role of policy at the state level. The third presentation focused on the TRB's new Freight Cooperative Research Program.

Managing Urban Goods Movement: Role of State DOTs in Managing Urban Goods Movement

The role of State DOTs in urban goods movement was presented by John Horsley, the Executive Director of the American Association of State Highway and Transportation Officials (AASHTO). Mr. Horsley began by highlighting some of the trends placing pressure on urban transportation infrastructure. This includes not only increases in freight-related activity but



John Horsley

increases in personal mobility as well. US population, which increased 100 million from 1960 to 2000, is expected to increase another 110 million between 2000 and 2040. That translates into 223 million registered drivers on US roads driving 229 million vehicles (2000 figures).

Goods movement will also experience rapid growth. By 2025, Mr. Horsley projects that there will be a four fold increase in containers, double the amount of freight moved by truck and a 70% increase in rail freight. By 2010, demand will outstrip capacity in all US port regions. Mr. Horsley looked at surface transportation funding and the cost of needed improvements and revealed a mismatch:

	2003 Funding (\$billions)	Cost of Needed Improvements (\$ billions)
Highways	70	125
Transit	14	44
Rail	5	>10

Recently, states have recognized the looming crisis and begun to organize, plan, coordinate, collaborate and invest. Particularly important are multi-state and multi-modal collaborative efforts including those involving states along the I-5 western corridor and the I-95 mid-Atlantic corridor. I-95 projects include a rail operations study. The developing national freight policy framework also offers needed direction, as does the National Cooperative Freight Research Program and AASHTO's Freight Bottom Line report.

Managing Urban Goods Movement: Growing the Georgia Economy

Georgia Department of Transportation Commissioner Harold Linnenkohl also addressed the role of State DOTs in managing urban goods movement by offering examples from Georgia. Georgia has become a hub of logistics-related activity. The publication *Business Facilities* named it the top logistics location in October of 2003. The State has two deepwater Atlantic ports and two inland ports, and 5,000 miles of mainline and branch rail track, making it the most

extensive rail system in the southeast United States. Georgia experienced a 9.3% increase in container traffic between 2003 and 2004.

Mr. Linnenkohl reported that the State has taken part in a number of activities in recent years, some of which were discussed by Mr. Horsley. A Central Georgia Corridor Study determined that trucks carry 70% of the freight moving through the corridor. Georgia also took part in the Latin America Trade and Transportation Study, a regional alliance of 15 states plus Puerto Rico and the Federal Highway Administration. This effort revealed that 86% of Latin American imports and 71% of exports pass through the region.

Georgia has also undertaken a Statewide Transportation Plan and an Interstate System Plan Study, both of which must address the fact that interstate truck traffic is growing at twice the rate of auto traffic. Evidence from the State's Freight Plan shows that 30% of those truck trips traveling on the State's highways have neither an origin nor a destination in Georgia. Other recent efforts include an update of the State Freight Rail Plan; an 18-month study investigating the feasibility of truck only lanes began in February of 2006.



Georgia has used the findings from these various studies to develop a number of strategies to address both infrastructure needs in general and goods movement in particular. The Governor's Road Improvement Program is designed to ensure, in part, that 98% of state residents are within 20 miles of a four-lane road. Other strategies call for the development of truck-only lanes on I-75, improving sub-area truck movements in and around Savannah, and dredging.

The State is also addressing needed rail improvements. The Georgia DOT actually owns 10 rail segments and is undertaking grade separation projects and rail spur improvements at places like the Port of Brunswick. The State Rail Freight Assistance Program seeks to ensure that rail service to rural businesses is maintained.

National Cooperative Freight Research Program

Ron McCready, the Senior Program Officer for TRB's Cooperative Research Programs concluded the Best Practices plenary session with a presentation on the developing National Cooperative Freight Research Program (NCFRP). He placed this NCFRP program in the context of previous cooperative research efforts, showing the evolution from highway research in the early 1960s through transit in the early 1990's to the air cooperative research program which began in 2004. He also talked about TRB's synthesis program, including the Commercial Truck and Bus Safety program which dates back to 2001. The Cooperative Research programs have benefited from reliable funding, effective governance and management, a partnership with the federal government and credibility resulting from stakeholder and industry ownership of the research projects.

Federal legislation signed in 2005 (The Safe, Accountable, Flexible, Efficient Transportation Equity Act-A Legacy for Users or SAFETEA-LU) authorized \$3.75 million for the NCFRP for each of the four years between 2006 and 2009. Research projects funded under the National Cooperative Freight Research Program are expected to include freight benefits (all modes) and issues tied to traffic, trade, infrastructure and logistics. Like other cooperative programs the NCFRP will have oversight by a TRB-led panel with representatives from the public and private sectors as well as academia.

SAFETEA-LU also authorized a \$5 million Hazardous Materials Research Program. Mr. McCready expects that the audience for both programs will include a wide cross section of goods movement and freight stakeholders.

5. Track Sessions

In addition to the plenary sessions, the National Urban Freight Conference featured a total of 65 papers in seven different tracks designed to explore the various aspects of freight movement within metropolitan areas. Each track was composed of different sub-tracks around which presentations were organized.

Track 1: Models for transportation, port, air, intermodal operations, impact analysis

Track 1 comprised five sub-tracks: port economics; urban logistics; California ports, plans and policy; urban freight and trip demand; and ports and network level of service (LOS)

Port economics

Papers in the port economics sub-track addressed appropriate models for assessing port performance and evaluating investment strategies, models to better define the relationships between players in the port community and reveal how those relationships influence strategic and tactical decision-making, and optimization models of waterborne containerized imports from Asia. The latter was used in the development of a port and modal elasticity study that determined the likely impact of assessing container fees on goods moving through the Ports of LA and Long Beach.

Urban logistics

The Urban logistics sub-track included presentations on static and dynamic network models used to characterize the evolution of goods movement at the metropolitan level, models for commercial vehicle empty trips, and the influence of transportation system performance on the pattern of logistics land use.

California Ports, plans and policy

This sub-track featured three presentations focusing on ports in California. They include a discussion of the performance measures used to evaluate truck trip reduction strategies in Southern California. The paper considers changes in trip generation, vehicle miles traveled (VMT) and changes in port-related emissions brought about by strategies like extended gate

hours, virtual container yards and inland rail shuttle services. A second paper reviewed the Port of Los Angeles Port-wide Transportation Master Plan. A third paper focused on the methods used to analyze rail capacity and truck reduction benefits at the Port of Oakland.

Urban freight and trip demand

This session included three papers. The first concerns the development of an automated integration system for freight flow analysis and planning. The study area is the Los Angeles region and data sources include small-area employment data. A second paper considers statistical models to forecast truck VMT growth of certain facility categories at the county and state levels. The results show that local socioeconomic variables explain a considerable amount of truck VMT variance. The third paper developed truck trip generation models for retail stores at the disaggregate level that incorporate supply chain strategies of individual businesses.

Ports and network LOS

The fifth sub-track included a discussion of the geographical scale of freight transportation data and models and a presentation on integrating urban and international freight models for the City of Montreal and country of Canada.

Track 2: Port operations, productivity

Track 2 included three different sub-tracks: technology for port operations, port productivity, and algorithms for port operations.



Genevieve Giuliano, METTRANS Director; and Marianne Venieris, Deputy Director, METTRANS; with Beverly O'Neill, Mayor of Long Beach

Technology for port operations

This track featured six different papers in two different sessions. Topics included intelligent transportation systems for container movement between inland port and terminals. The authors used simulation models to demonstrate the performance of the proposed system. The other four papers looked at similar technology-based solutions to congestion issues including the opportunities for developing an urban maglev container corridor out of

the ports of LA and Long Beach, a “green” freight shuttle, an integrated Automated Storage and Retrieval System (ASRS) and Automated Guided Vehicle System (AGVS), and an automated shipping container system design for inter and intra-yard movements. Both the New York/New Jersey metropolitan area and Chicago were study areas discussed.

Port productivity

Port productivity was also the subject of two different sessions. Presenters addressed the industry impacts and institutional issues surrounding the off-dock storage of empty containers in British Columbia, empty container reuse in Southern California, and container terminal productivity and short sea shipping, the latter two again in the context of Southern California. Other topics

included efficiency measurements of US ports using data envelopment analysis and the challenge of last mile container handling in international port cities.

Algorithms for port operations

There were two papers in this sub-track. The first looked at the longer term impacts of double cycling (i.e. reducing or eliminating “empty” crane moves) on port operations, including crane, vessel and berth productivity. The author estimates that financial savings could be as high as \$65 per container moved. The second paper addressed methodologies for managing a fleet of trucks providing container pick-up and delivery service to a port with an appointment-based access control system.

Track 3: Trucking, air, rail economics, productivity, labor issues

This track featured papers in three different sub-tracks: transportation investments and spillovers, pricing and productivity, and labor issues in transportation.

Transportation investments and spillovers

Papers in this sub-track looked at two key issues. The first is the role that transportation infrastructure plays in production and employment in the manufacturing industry. The authors conclude that states benefit from increasing their own port infrastructure. The second issue is the ways in which aviation policies in Asia influence the performance of airports, regulatory agencies and the logistics sector.

Pricing productivity

The pricing productivity sub-track had three papers. The first analyzed the contribution of freight transportation to airport productivity, finding that freight movements and reduction of delayed flights contribute to more efficient use of many airports. The second paper analyzed the evidence regarding freight road pricing and concluded that moving trucks to the off-peak hours requires comprehensive policies targeting, among others, receivers and carriers. The final paper examined the differences between wages and work rules of longshoremens on the West Coast, East Coast and in Gulf ports.

Labor issues in transportation

The three papers in this sub-track addressed various aspects of supply chain labor. They include the impact of tenure, experience, and type of work on driver turnover; and driver hours of service of regulations. Both of these involved long haul carriers. A third paper addressed external costs tied to travel delays, demonstrating the need to consider congestion costs beyond the value of time.

Track 4: Local and regional environmental externalities: congestion, air quality, etc.

Track four featured eight different papers in two different sub-tracks. These were emissions measurements, with five papers in two separate sessions, and reducing emissions.

Emissions measurements

These papers considered a number of issues tied to measuring emissions. They include the quantitative impact of real-world emissions from heavy-duty trucks, and seasonal and spatial trends in particle concentrations and size distributions at children's health study sites. Analyses came from Southern California and Texas. Possible solutions discussed included advanced propulsion and new fuels.

Reducing emissions

There were three papers in this sub-track. The first considered opportunities for new fuels and advanced truck technologies, focusing on policies needed to create model programs. The second paper was a review of green logistics schemes used in cities around the world. The third paper looked at the impacts of freight transportation on regional emissions, using data from six large metropolitan areas: Baltimore, Chicago, Dallas-Fort Worth, Detroit, Houston, and Los Angeles.

Track 5: Policy and institutional issues in urban goods movement

This track had five separate sub-tracks, highlighting the various institutional issues influencing freight movements in metropolitan areas. They included: intermodal federal and state planning, regional freight flows, environmental and economic impacts, institutional and policy issues, and managing the impacts of urban freight.

Intermodal federal and state planning

Topics in this sub-track included financing intermodal transportation with options as varied as a value added tax (VAT) on cargo; national vehicle miles traveled fee; national vehicle registration tax; tax credit bonds; and a shift away from modal funding to the federal income tax. Other papers assessed new frameworks for seamless freight development policy and the success of intermodal planning at seven different State DOTs.



Richard Nordahl, Caltrans
Office of Goods Movement

Regional freight flows

Papers in this sub-track made arguments for grade separations to ease vehicular and railroad-related congestion, and for regional freight studies. The latter included an example from the Upper Midwest of the US.

Environmental and economic impacts

This session featured three presentations. The first considered seaport activity and local establishment dynamics, finding that establishment growth and the economic prospects near the ports of LA and Long Beach were slowed by port activity. A second paper addressed environmental justice and hazmat transport, looking at the spatial distribution of risk and nuisance from industrial production in urban areas. The third paper presented findings from a comparative study of policies to control the impacts of goods movement in various Dutch cities.

Institutional and policy issues

One paper in this section challenged the notion that little is known about the contribution of goods movement to urban congestion, air quality, or changing land use and travel patterns. The paper makes the case that Chicago is a laboratory which reveals that the weak link is in fact a systematic and serial study of freight behavior conducted in the interest of all stakeholders. A second paper provided an overview and classification of policy measures from Europe.

Managing impacts of urban freight

The three papers in this sub-track assessed the impact of gate appointment systems for trucks at the Ports of LA and Long Beach, finding that appointment systems as implemented have had no discernible impact on truck queuing; examined the implications of research findings about freight bottlenecks for urban and national transportation programs and policies; and reported on a study of truck-only toll lanes. The latter was conducted in the Atlanta region and identified significant benefits to urban mobility.

Track 6: Security/vulnerability of goods movement infrastructure

This track comprised two different sub-tracks. Papers in the first session considered port security and terrorist events; the second addressed disaster management assessment.

Port security and terrorist events

The two papers in this sub-track included a discussion of the security incident cycle of ports (prevention, detection, response and recovery). The authors investigate how ports and governments have addressed these four phases. A second paper, in simulating the State-by-State effects of terrorist attacks on major US ports in Southern California, New York/Newark and Houston, finds that impacts are a function of state size and distance from the site of an attack.

Disaster management assessment

There were two papers in this sub-track as well. The first was a rapid damage assessment of New Orleans port and intermodal infrastructure using digital globe satellite imagery, GIS and feature analyst software. The second presented a concept for measuring the effects of severe weather and weather trends on freight movement in and between major urban areas.

Best Practices and Lessons Learned

Best practices were divided into three separate sessions, one focusing on truck solutions to urban goods movement problems, one focusing on rail solutions, and a third focusing on technology in the service of more efficient ports. Solutions included the use of GIS to identify problem truck route and access points, hybrid propulsion systems for port drayage, and redeveloping aged urban rail freight infrastructure.

6. Concluding Thoughts

The National Urban Freight Conference afforded researchers and practitioners a unique opportunity to consider valuable lessons from Southern California, the US and other parts of the world. What did we learn? We learned that the movement of goods truly involves a system, and that the problems experienced in LA-Long Beach and New York are similar because they are linked. Concerns over congestion, diesel emissions, rail capacity, and inefficient use of empty containers and chassis are a product of a supply chain that stretches from Asia through North America to Europe. Increased production at Asian manufacturing centers means increased throughput locally, nationally and internationally.

We also learned that metropolitan areas in different parts of the world are looking to technology to be part of the solution to the problems at hand. From the US, we heard about the use of hybrid and automated trucks, freight shuttles and MagLev technologies. From the Dutch, we learned about freight carriers operating in channels (a new twist on an old technology), public distribution centers, and even underground freight transport to alleviate congestion on local roads and highways.

It is also apparent that the lack of financing for urban freight projects is an impediment to change, especially in the short term. Most participants agreed that innovative financing will only occur when both the public and private sector accept the fact that they have to work together to improve the system. This is easier said than done, at least in the US, where public financing streams still tend to be mode-specific.

But financing will only solve part of the problem. Funding will only accomplish so much if it is at odds with the policy and planning processes, and their outcomes. The presentations at the National Urban Freight Conference suggest that we need to pay closer attention to the unintended consequences of policy decisions that intend to change the behavior of actors along the supply chain. From terminal gate appointments and extended gate hours in the US to delivery time windows and “No Truck” zones in Europe, we now have case studies to dissect. The lesson tends to be that policy and financing should be addressing the root cause of our urban freight problems, not just the symptoms.



Paul Bingham, Global Insight; Barry Sedlick, State of California, Undersecretary Business, Transportation, and Housing; and Genevieve Giuliano, METRANS; with Beverly O’Neill, Mayor of Long Beach