Research Issues in Freight Transportation

*Congestion and System Performance*

**October 22–23, 2007**
The National Academies Keck Center
Washington, D.C.

*Organized by*
Freight Systems Group, Marine Group, and Freight Data Committee
Transportation Research Board

*Supported by*
Research and Innovative Technology Administration

[www.TRB.org/conferences/FreightResearch](http://www.TRB.org/conferences/FreightResearch)
The movement of freight is an important national issue. Not only does freight movement contribute directly to the nation’s and states’ economies, but eventually all the goods and commodities delivered find their way into the businesses and households of America, and thus freight affects the quality of life afforded Americans. The freight system is facing serious challenges. Congestion in ports, on access roads to intermodal facilities, and on the rail system has significant impacts on the productivity and competitiveness of the U.S. economy. Environmental issues where freight movement concentrates—such as in ports—are becoming of greater concern to the surrounding communities. Finding the funds to improve the nation’s freight infrastructure relies increasingly on innovative financing mechanisms that combine public and private investment sources.

The nation’s research universities have a great deal to offer in finding new solutions to the problems facing the freight system. The purpose of this conference is to provide a forum for researchers, government officials, and private-sector representatives to exchange ideas on how the freight transportation system can be improved.

This is the second University Transportation Center–oriented conference organized by TRB and supported by the U.S. Department of Transportation (DOT) Research and Innovative Technology Administration. The conference objectives are to

- Improve collaboration among researchers;
- Encourage interaction and synergies among universities, government, private interests, and TRB committees;
- Define freight-related research opportunities of interest to academia, government, and the private sector; and
- Identify future freight-related critical issues for U.S. DOT personnel and other government staff, including state and metropolitan planning organization staff.

The conference will serve as a major point-of-departure for the transportation research community, with participants from all levels of government, the private sector, and the academic community identifying needed freight and logistics research topics.

—Michael Meyer
Georgia Institute of Technology
Conference Chair

The Transportation Research Board is one of six major divisions of the National Research Council, which serves as an independent adviser to the federal government and others on scientific and technical questions of national importance, and which is jointly administered by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The mission of the Transportation Research Board is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board’s varied activities annually engage about 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

www.TRB.org
MONDAY, OCTOBER 22

8:00 a.m.–8:30 a.m., Keck 100 Foyer
Continental Breakfast

8:00 a.m.–8:30 a.m., Keck 109
Facilitators and Recorders Meeting

8:30 a.m.–9:30 a.m., Keck 100
Opening Session

Welcome and Conference Objectives
Michael Meyer, Professor, Civil and Environmental Engineering, Georgia Institute of Technology, Conference Chair

Congestion and System Performance Initiatives at the U.S. Department of Transportation
Paul Brubaker, Administrator, Research and Innovative Technology Administration

Keynote
Challenges Facing Freight Transportation: A User’s Perspective
Tracy L. Rosser, Vice President, Traffic, Wal-Mart Stores, Inc.

Mr. Rosser will discuss his perspectives on the key challenges facing freight transportation in the United States. Meeting these challenges will require the collaboration of government and the business community and will provide important opportunities for the research community.

9:30 a.m.–10:00 a.m., Keck 100 Foyer
Break

10:00 a.m.–11:15 a.m., Keck 100
Measuring the Impact of Congestion on the Economy
Susie Lahnse, Manager, Transportation and Land Use Policy, Port of Portland, Presiding
David Ganovski, Maryland Department of Transportation, Recorder

Representatives from government, industry, and the university community will discuss the role of transportation system performance in fostering economic productivity and efficiency. Current efforts to measure the economic impacts of congestion on the national, state, and regional economies will be described, and future challenges will be identified.

A State Department of Transportation Perspective
Matthew L. Garrett, Director, Oregon Department of Transportation

Retailers’ Perspective
Erik Autor, Vice President and International Trade Counsel, National Retail Federation

A Carrier’s Perspective
Robert Sappio, Senior Vice President of Trans-Pacific Trade, APL

A Researcher’s Perspective
Tim Lomax, Research Engineer, Texas Transportation Institute
11:30 a.m.–1:45 p.m.
Breakout Discussions and Lunch: Measuring the Impact of Congestion on the Economy

These breakouts expand on the previous session to highlight what have we heard and what are the research issues. The following are the discussion questions:

1. What were the major points made by the speakers relative to research, and, from your experience, what important things on freight did we not hear about?
2. What aspects are important but not yet well researched?
3. What types of issues are the most appropriate for the academic research community.

12:30 p.m. (Group assignments appear on name badges)

Breakout Groups 1–4 pick up lunch in foyer and return to breakout rooms.

Breakout Group 1, Keck 100
Teresa Adams, University of Wisconsin, Madison, Facilitator
Anne Goodchild, University of Washington, Recorder

Breakout Group 2, Keck 100
Christina Casgar, San Diego Council of Governments, Facilitator
James R. Gosnell, Southern California Association of Governments, Recorder

Breakout Group 3, Keck 105
Harold Cervany, The Tioga Group, Facilitator
Gregory Harris, University of Alabama at Huntsville, Recorder

Breakout Group 4, Keck 105
Genevieve Giuliano, University of Southern California, Facilitator
Catherine Lawson, University at Albany, Recorder

1:00 p.m. (Group assignments appear on name badges)
Breakout Groups 5–8 pick up lunch in foyer and return to breakout rooms.

Breakout Group 5, Keck 109
Susie Lahsene, Port of Portland, Facilitator
Kate Quinn, Federal Highway Administration, Recorder

Breakout Group 6, Keck 109
Ronald J. Duych, Research and Innovative Technology Administration/Bureau of Transportation Statistics, Facilitator
Edward Strocko, Federal Highway Administration, Recorder

Breakout Group 7, Keck 201
Cecil Selness, Minnesota Department of Transportation, Facilitator
Daniel Turner, University of Alabama, Recorder

Breakout Group 8, Keck 201
Thomas Marchessault, Research and Innovative Technology Administration, Facilitator
Joyce Wenger, Booz Allen Hamilton, Recorder
Monday, October 22, 2007

Research Issues in Freight Transportation

2:00 p.m.–3:15 p.m., Keck 100

What Are We Doing About It?
Heather Nachtmann, Associate Professor of Industrial Engineering at the University of Arkansas and Associate Director of the Mack-Blackwell Rural Transportation Study Center, University of Arkansas, Presiding
Joseph Schofer, Professor, Northwestern University, Recorder

University research and technology development efforts that have resulted in both operational improvements and technology deployment will be discussed. With respect to operations, emphasis will be given to low-cost and short-implementation time-frame improvements that can make a positive impact on transportation system performance. The opportunities for applying the new technologies produced through university research also will be described.

Developing Truck Mobility Benchmarks in Washington State
Edward D. McCormack, Senior Research Engineer, University of Washington

Mississippi Valley Freight Traveler Information Clearinghouse
Bruce Wang, National Center for Freight Infrastructure Research and Education, University of Wisconsin, Madison

Impacts of the Long Beach and Los Angeles Ports PierPASS Program
Genevieve Giuliani, Professor and Senior Associate Dean, School of Policy Planning and Development, University of Southern California
Thomas O’Brien, Center for International Trade and Transportation, California State University, Long Beach

3:15 p.m.–4:00 p.m., Keck Atrium, Third Floor

Posters and Break
The poster session demonstrates ongoing university research in freight transportation. Each poster includes a project description, background, process, findings and conclusions, and recommendations for further action.

Modeling Truck Traffic Volume Growth Congestion
Michael Anderson, University of Alabama at Huntsville

Strategies for Efficient Freight Movement in Metropolitan Transportation Networks with Applications to the Los Angeles–Long Beach Area
Anastasios Chassiakos, California State University, Long Beach

Advanced Technologies to Improve Cargo Movement in Metropolitan Networks with Applications to the Los Angeles–Long Beach Area
Anastasios Chassiakos, California State University, Long Beach

Evaluation of Strategies for Efficient Cargo Movement and Public Policy Implications
Anastasios Chassiakos, California State University, Long Beach

Research Needs Reported by Industry
Matthew R. Cuddy and Joseph L. Schofer, Northwestern University

Glucose Tolerance and Commercial Truck Crashes: A Pilot Study
Jeff Foster, Injury Control Research Center, University of Alabama at Birmingham

(continued)
POSTERS (continued)

Improved Freight Modeling of Containerized Cargo Shipments Between Ocean Port, Handling Facility, and Final Market for Regional Policy and Planning
Kaori Fujisawa, University of Washington

ARGOS: Dynamic Composition of Web Services for Goods Movement Analysis and Planning
Genevieve Giuliano, University of Southern California

Assessing Intermodal Transportation Planning at State Departments of Transportation
Andrew R. Goetz, University of Denver Intermodal Transportation Institute

North American Freight Transportation Data: Overview of the Workshop
Kathleen Hancock, Virginia Polytechnic Institute and State University

A Freight Planning Framework
Gregory Harris, University of Alabama at Huntsville

Essentials of Analysis in the Control of Overloaded Trucks
Eric Moreno-Quintero, Instituto Mexicano del Transporte

Freight Modeling in Small and Medium-Sized MPOs: Case Study of the Fargo–Moorhead Metropolitan Area
Diomo Motuba, Advanced Traffic Analysis Center, North Dakota State University

Dynamic Routing Under ATIS for Congestion Avoidance
Alper E. Murat, Wayne State University

Safety Synthesis of Oversize/Overweight Commercial Vehicles
Leslie Anne Nicholson, University Transportation Center for Alabama

Estimating Truck Equivalencies for Freeway Sections
Hesham Rakha, Virginia Polytechnic Institute and State University

Evaluating Alternative Truck Management Strategies Along I-81
Hesham Rakha, Virginia Polytechnic Institute and State University

Making the Case for Auxiliary Power Units in Long-Haul Trucks: Researching Idling Energy Use
Laurence Rilett, Mid-America Transportation Center

Meeting Freight Data Challenges
Joseph L. Schofer, Northwestern University, Thomas Bolle, Research and Innovative Technology Administration; Michael Bronzini, George Mason University; Kathleen Hitchcock, Virginia Polytechnic Institute and State University; Daniel Murray, American Transportation Research Institute; Thomas Palmerlee, Transportation Research Board; Johanna Zmud, NuStats LLC

Bridge Weigh-in-Motion Application in Alabama
Virginia P. Sisiopiku, University of Alabama at Birmingham

Mississippi Valley Freight Travelers’ Information Clearinghouse
Bruce X. Wang, University of Wisconsin, Madison

Rail Relocation Projects in the United States: Case Studies and Lessons for Rail Planning
Jeffery Warner, Texas Transportation Institute
4:00 p.m.–5:30 p.m.
Breakout Discussions: What Are We Doing About It?

This set of breakouts will build on the previous session’s examples of successful research and what processes work. The following are the discussion questions:

1. What types of research are the most appropriate for collaborations of government/industry/ universities?
2. What are the characteristics of successful collaborations?
   a. What are major challenges that need to be addressed in such collaborations?
   b. What are priority issues that should be included on a research agenda?
   c. Are the benefits of successful collaborations aligned with those who need to provide the resources to support research?

   Breakout Groups 1 and 2, Keck 100
   Breakout Groups 3 and 4, Keck 105
   Breakout Groups 5 and 6, Keck 109
   Breakout Groups 7 and 8, Keck 201

5:30 p.m.–6:30 p.m., Keck Atrium, Third Floor
Posters (continued) and Reception

6:30 p.m–8:00 p.m., Keck 109
Review of Breakouts—Facilitators
and Chair Only

TUESDAY, OCTOBER 23

7:30 a.m.–8:15 a.m., Keck 100 Foyer
Continental Breakfast

8:15 a.m.–9:00 a.m., Keck 100
Synthesis of Monday Sessions
Michael Meyer, Georgia Institute of Technology

9:00 a.m.–10:30 a.m.
Implementation Strategies and Operational Modes
Christina S. Casgar, Goods Movement Policy Manager, San Diego Council of Governments, Presiding
Thomas H. Wakeman, III, Deputy Director, Center for Maritime Systems, Stevens Institute of Technology, Recorder

New institutional models for university–industry–government collaboration in implementing strategies to improve the movement of freight will be described. Recent examples of such collaboration will be used to illustrate the benefits of these efforts and the characteristics of their success. The respective roles of each partner will be highlighted.

Partnership to Maximize Port Industry Performance: Can Advanced Research Methods Assist in Practice? The Case of Port of New York and New Jersey
Maria Boile, Director of Research and Education, Maritime Infrastructure Engineering and Management Program, Rutgers, The State University of New Jersey
Sotirios Theofanis, Assistant Director, Strategic Development, Center for Advanced Infrastructure and Transportation, Rutgers, The State University of New Jersey
Implementation Strategies and Operational Modes (continued)

Mississippi Valley Freight Coalition: Facilitating University–Industry–Government Partnerships
Teresa Adams, Professor, University of Wisconsin, Madison

Applying Operations Research to Improve Logistics Efficiency
Chelsea (Chip) C. White III, H. Milton, and Carolyn J. Stewart Chair, Schneider National Chair in Transportation and Logistics, Georgia Institute of Technology

10:30 a.m.–11:00 a.m., Keck 100 Foyer
Break

11:00 a.m.–Noon, Keck 100
Research Issues
Michael Meyer, Georgia Institute of Technology, Presiding

Research issues defined in the breakout sessions will be discussed by the conference participants, leading to the development of a research agenda. Future work force skills and the desired characteristics of university educational programs will be identified.

Discussants
Mary Lynn Tischer, Director, Commonwealth’s Multimodal Transportation Planning Office, Virginia Department of Transportation
Harold Cerveny, Senior Associate, The Tioga Group
John T. Gray, Executive Director, Interline, Union Pacific Railroad Company

12:30 p.m.–2:00 p.m., Keck 109
Planning Committee Working Lunch

Conference Planning Committee

Michael D. Meyer, Georgia Institute of Technology, Chair
Teresa Adams, University of Wisconsin, Madison
Christina Casgar, U.S. Department of Transportation
Harold Cerveny, The Tioga Group
Ronald Duych, Research and Innovative Technology Administration
Genevieve Giuliano, University of Southern California
Kathleen Hancock, Virginia Polytechnic Institute and State University
Susie Lahsene, Port of Portland
Heather Nachtman, University of Arkansas
Cecil Selness, Minnesota Department of Transportation
Thomas Marchessault, Research and Innovative Technology Administration
Robin Kline, Research and Innovative Technology Administration
Thomas Bolle, Research and Innovative Technology Administration
Elaine King, TRB
Thomas Palmerlee, TRB
David Floyd, TRB