

TRB Preliminary Program



Adapting Freight Models and Traditional Freight Data Programs for Performance Measurement Workshop

April 30- May 1, 2013

**The Keck Center of the National Academies
Washington, D.C.**

***Organized by*
Transportation Research Board**

***Supported by*
Federal Highway Administration, Office of Freight Management and Operations**

www.trb.org/conferences/FreightModels2013.aspx

An Invitation to Join the Dialogue

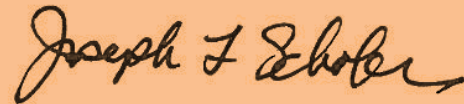
The Transportation Research Board, in collaboration with the Federal Highway Administration Office of Freight Management and Operations, is hosting the workshop to consider the adequacy of freight data and modeling for supporting performance measurement in public and private sector decision making. Managers, analysts, and researchers working with freight data and a wide range of models and professionals applying performance measurement to freight decisions have registered. I encourage you to participate in the discussions.



Schofer

Workshop Objectives

- Identify the data and models necessary to estimate key performance measures of freight system condition, efficiency, safety, and economic and environmental impacts that support public and private decision making.
- Consider the adequacy of existing data programs and models, including the Freight Analysis Framework, for meeting performance measurement needs.
- Define critical gaps in data programs and modeling tools and the essential actions needed to close them.
- Propose a focused research framework with supporting research needs statements that will lead to essential improvements in both data and models for estimating freight transportation performance measures.

A handwritten signature in black ink that reads "Joseph L. Schofer". The signature is fluid and cursive, with a long horizontal stroke at the end.

Joseph L. Schofer, Northwestern University
Conference Chair

Planning Committee

Joseph L. Schofer, Northwestern University, *Chair*
Paul H. Bingham, CDM Smith
Anne V. Goodchild, University of Washington
Jose Holguin-Veras, Rensselaer Polytechnic Institute
Charles E. Howard, Puget Sound Regional Council
Michael D. Meyer, Parsons Brinckerhoff
Gordon D. Proctor, Gordon Proctor and Associates

Liaisons

Edward L. Strocko, Federal Highway Administration
Rolf R. Schmitt, Bureau of Transportation Statistics
Matthew H. Hardy, AASHTO
Thomas G. Bolle, Research and Innovative Technology Administration

TRB Staff

Thomas Palmerlee, Senior Program Officer, Data Group
Mai Quynh Le, Program Associate

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. The National Research Council 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.

Tuesday, April 30

7:45 a.m. – 8:30 a.m. Served outside Keck 100

Breakfast

8:00 a.m.–8:15 a.m. Keck 100

Introduction, Background, Objectives and Plan for the Day

Joseph Schofer, Northwestern University. Presiding

8:15 a.m.–10:00 a.m. Keck 100

Performance Measurement for Freight Planning and Management—Views from Network Managers and Users.

Charlie Howard, Director of Integrated Planning, Puget Sound Regional Council (PSRC). Presiding

Moderated discussion addressing management needs and challenges in freight transportation, the role of performance measurement, mandates in MAP 21, current practice, challenges, and gaps.

Federal

Caitlin Rayman, Director FHWA Freight Office

State

Barbara Ivanov, Director, Freight Systems Division, Washington State DOT

MPO

Randy Deshazo, Chicago Metropolitan Agency for Planning (CMAP)

Carrier

Steven S. Grabell, NFI Industries

Shipper

Ken Allen, H-E-B (retired)

10:00 a.m. - 10:30 a.m. Refreshments served outside Keck 100

Break

10:30 a.m.–12:15 a.m. Keck 100

State of Freight Data and Models—What Can We Do Now? What Are Future Opportunities and Limitations?

Edward D. McCormack, University of Washington. Presiding

The status and trends in freight data and freight modeling, followed by moderated discussion, reviewing current public and private data programs and sources, the state and direction of freight modeling, the connections between data and modeling, and ways to assure responsiveness of data and models to public and private decision making.

Rolf Schmitt, BTS

Jose Holguin-Veras, Rensselaer Polytechnic Institute

Alain L. Kornhauser, ALK Technologies, Inc

Matt Roorda, University of Toronto

12:15 p.m. – 1:15 p.m. Served outside Keck 100, with tabletop seating in Keck 105, 202, 205, and 213

Lunch

1:15 p.m.–2:30 p.m. Keck 100

Integration—What Did We Hear? What Did We Learn? What Are the Implications for Freight Data and Models?

Michael D. Meyer, Parsons Brinckerhoff. Presiding

Initial Thoughts

Michael D. Meyer, Parsons Brinckerhoff. Leader

Summary of the Poster Presentations

Matthew H. Hardy, American Association of State Highway and Transportation. Leader

Charge to Breakout Groups

Joseph Schofer, Northwestern University. Leader

2:30 p.m.— 3:00 p.m. Refreshments served outside Keck 100

Break

3:00 p.m.– 4:45 p.m.

Four Parallel Breakout Discussion Groups—Defining Needs and Opportunities to Adapt Freight Data and Models to Support Performance Management

Group #1. Keck 105

Paul H. Bingham, CDM Smith and Matthew H. Hardy, American Association of State Highway and Transportation, Leaders

Group #2. Keck 202

Edward D. McCormack, University of Washington and Rolf R. Schmitt, BTS, Leaders

Group #3. Keck 205

Jose Holguin-Veras, Rensselaer Polytechnic Institute (RPI) and Charles E. Howard, Puget Sound Regional Council, Leaders

Group #4. Keck 213

Michael D. Meyer, Parsons Brinckerhoff and Juan Carlos Villa, Texas A&M Transportation Institute, Leaders

The purpose of this workshop is to consider the adequacy of freight data and modeling for supporting performance measurement in public sector decision making, identify the gaps, and propose a focused program of research and action to fill those gaps.

The purpose of these breakout sessions is to focus on specific needs and opportunities to adapt freight data and models. Group discussions will address the following questions, spending approximately 30 minutes per question.

- a. How adequate are existing data programs and models for supporting performance-oriented freight system planning, decision making and meeting performance measurement needs?
- b. What data and models are needed to estimate key performance measures of freight system condition, efficiency, safety and economic and environmental impacts? For example, HPMS and the GPS data will likely be a major source of data for every state to meet the MAP-21 requirements by 2015. What concerns do you have about using these data sets? Are there any other nationally available datasets that might be used for performance measurement? What datasets are you using in your state (if any) for performance measurement and what lessons have you learned as a result?
- c. What is the most important research task for developing the data and modeling support for performance-based freight system planning, decision making and meeting performance measurement needs?

5:00 p.m.–5:30 p.m. Keck 100

Progress Reports from the Breakouts and Resetting the Agenda

Joseph Schofer, Northwestern University. Presiding

Breakout Summaries from Leaders

5:30 p.m.–6:30 p.m. Keck Atrium

Electronic Poster Session on Applications of Performance Modeling to Freight

Integrated Waterborne Commerce Data Analysis for Marine Transportation System Performance Analysis

Ned Mitchell, U.S. Army Corps of Engineers, Engineer Research & Development Center (ERDC)

Marin M. Kress, U.S. Army Corps of Engineers

The marine transportation system relies on safe and reliable navigation through coastal and inland waterways. The U.S. Army Corps of Engineers (USACE) supports this vital national need through operation and maintenance of physical infrastructure such as locks, dams, and jetties along with thousands of miles of dredged navigation channels. Annual maintenance dredging decisions have historically been made on a project-by-project basis, without the ability to optimize resource allocation across the system as a whole. However, the USACE Channel Portfolio Tool (CPT) now allows authorized users to conduct system-level optimization based on the detailed origin-destination (OD) cargo database maintained by the Waterborne Commerce Statistics Center (WCSC). Future work that integrates landside freight data with the WCSC data will allow for more extensive analysis of intermodal freight flows.

Impacts of Completing the Appalachian Development Highway System

Julie Marshall, Appalachian Regional Commission

Completion of the Appalachian Development Highway System (ADHS) will yield significant economic benefits for both the Appalachian Region and the nation. The first highway system authorized by Congress for the purpose of stimulating economic development, the ADHS is a 3,090-mile highway system composed of 32 corridors located in the 13 Appalachian states. The ADHS is 86 percent open to traffic and when completed will link into an integrated network connecting to national markets and trade flows. By facilitating national freight flows, reducing travel times, improving safety, and enhancing access to markets, completion of the ADHS will create new jobs and greater value-added activity.

FHWA Freight Analysis Framework and Freight Performance Measures Program

Edward L. Strocko, Federal Highway Administration

The Federal Highway Administration's (FHWA) Freight Analysis Framework (FAF 3) data and Freight Performance Measurement Program (FPM) are tools to assist decision makers, planners, and the public understand the magnitude and importance of freight transportation to the economy. FAF 3 integrates data from a variety of sources to provide a snapshot of the volume and value of freight flows, which provides insight to states and regions about their major trading partners and the volumes and sources of through traffic at the corridor level. The FAF Data Tabulation Tool is a web tool is designed to allow users to create and download summary tables directly from the FAF3 regional database. This can be used to inform discussions of goods movement, economic conditions, and safety, energy, and environmental implications of freight transportation. The FPM uses truck probe data to identify average speeds and reliability on significant corridors and border crossings. With the Freight Performance Measurement web tool, decision makers can use FPM to evaluate the performance of key freight corridors and determine opportunities for operational or physical improvements. This capacity provides data based decision making support to strategically target investments and improve the freight network where it is needed most.

Freight Performance Measures in Metropolitan Chicago: An MPO Perspective

Randy Deshazo, Chicago Metropolitan Agency for Planning (CMAP)

"Hog Butcher for the World,
Tool Maker, Stacker of Wheat,
Player with Railroads and the Nation's Freight Handler;
Stormy, husky, brawling,
City of the Big Shoulders"

Carl Sandburg had it right, in 1914, in describing Chicago's pivotal role as the busy center of North American freight. Today that means more than a billion tons a year, or three trillion dollars of goods, and hundreds of thousands of jobs in the Chicago metro area. So much freight activity begets substantial investment needs, more than current investment resources can meet. With a customary minority share of state and federal transportation dollars for the nation's third largest metropolitan region. The Chicago metropolitan area has a particular interest in ensuring in seeing that performance measures prevail as a central decision making tool in investment decision making. Since its formation in 2005, the Chicago Metropolitan Agency for Planning has collaborated with local governments to

define a vision of future transportation investments, in GO TO 2040, that strengthen the role of performance measures in capital investment. This poster highlights both the impacts of freight on the metropolitan regions and recent actions to strengthen the role of performance based programming in Illinois.

Strategic Intermodal System Analysis: Florida DOT

Richard Biter, Florida Department of Transportation

Florida's Strategic Intermodal System (SIS) is a network of high-priority transportation facilities. The SIS carries more than 99% of all commercial air passengers and cargo, virtually all waterborne freight and cruise passengers, almost all rail freight, 89% of all interregional rail and bus passengers, 55% of total traffic and more than 70% of truck traffic on the State Highway System. Projects on the SIS are evaluated based on measures such as reliability, operational performance and economic impacts. The Florida Department of Transportation is moving forward by creating the new Office of Freight, Logistics and Passenger Operations, as well as currently developing the Florida Freight Mobility and Trade Plan Policy Element with significant stakeholder input.

Freight Transportation at the Minnesota DOT

William D. Gardner, Minnesota Department of Transportation

The Minnesota Department of Transportation, together with the Minnesota Department of Employment and Economic Development, has initiated several transportation economic analyses that identify and profile key industries and their characteristics through cluster analysis, supplemented with transportation data and analysis. The intent is to identify opportunities to optimize supply-chain productivity for individual industry clusters. These opportunities include the suitability of alternative transportation modes (in particular freight rail) established through correlation analysis, as well as needed transportation infrastructure improvements that could be achieved through coordinated public-private investments.

iCorridor Analysis Tool, Ontario Canada

Jason Z. Li, Ontario Ministry of Transportation

The MTO, Systems Analysis and Forecasting Office has a mandate to provide evidence-based analysis at the state wide level in support of policy and program development. Evidence-based analysis requires collection of large amounts of system wide data, with GPS data playing an innovative role in modernizing our suite of near real-time investment decision making tools. To unlock the potential of valuable individual data streams and integrate multi-modal travel demand data, operations and land-use data layers, we have turned to Google Maps & Google Cloud to transform a transactional request-based delivery model to a user-defined exploration model to advance open data concepts.

<http://www.mto.gov.on.ca/iCorridor/>

Building Freight Performance Measures for Washington State Using GPS Data from Trucks

Edward D. McCormack, University of Washington

The Washington State DOT and the University of Washington (UW) have partnered on a program to collect and analyze global positioning system (GPS) data from commercial, in-vehicle, truck fleet management systems. This truck performance measurement program, initiated in 2007, uses GPS spot speed and location data collected daily from over 7,000 trucks to systematically analyze the

entire freight roadway network and identify truck freight bottlenecks in Washington state. This enables the state to identify and develop solutions to address key truck freight problems and to meet the performance requirements of MAP-21.

Freight 2050: The Use of Scenario Modeling to Explore Future Freight Transportation Energy Use

Daniel F. Beagan, Cambridge Systematics, Inc.

A freight scenario planning tool was developed for the National Renewable Energy Laboratory. Scenario planning can be a tool to test the implication of various futures (e.g., changes in freight transportation demand) on a desired outcome (e.g. energy consumption). Scenario planning is applied when the actual changes in demand might be difficult to estimate, because the changes might follow complex non-linear feedback loops, or the actual degree to which demand might change is not known. Instead, by testing different factors on elements of the demand (e.g., percentage changes in flows by origin, by commodity, etc.), the implications of a variety of those changes can be estimated and compared.

What do these 108 words mean?

For example, the implications of changes of Panamax ships on the total energy consumed by domestic freight might be desired, but the changes in demand cannot be precisely determined. However, it is anticipated that the change will be a shift in certain commodities from West Coast ports to East Coast ports, and those shifts in certain commodities might be as much as 20% of demand, and as little as 5%. In this case, scenario planning can apply factors representing those changes to tables of base year and official forecasts of freight demand (e.g., tons by commodity by mode between zones), the changes in freight flows can be transformed into total domestic ton miles by mode, and rates of energy consumption by ton-mile by mode can transform this transportation demand into energy demand. By testing reasonable ranges of changes in West Coast zones and corresponding changes in East Coast zones, it can be estimated how each of those changes in demand affects total domestic energy consumption.

Linking Interstate and Business Pattern Data

Bruce Lambert, Institute for Trade and Transportation Studies (ITTS)

With a focus on economic competitiveness, interstates serve local, regional and national flows, supporting a variety of supply chains. By linking transportation geography (business and economic activity) with broad supply chain trends, performance measures could be developed that suggest where multiagency corridor planning may provide broad improvements. Furthermore, such metrics, when combined with existing freight flows, could be extended to include a possible framework for estimating the value of a corridor to either the regional or national economy.

6:15 p.m.–7:15 p.m. Keck 205. *Dinner served at 6:15 p.m.*

Planning Committee Meeting (members only)

Wednesday, May 1

7:45 a.m. – 8:30 a.m. Served outside Keck 100

Breakfast

8:30 a.m.–10:00 a.m.

Continuation of Breakout Sessions, Focusing on Specific Ideas for Research Priorities, Needs Statements, and Other Actions

Group #1. Keck 206

Paul H. Bingham, CDM Smith and Matthew H. Hardy, AASHTO, Leaders

Group #2. Keck 202

Edward D. McCormack, University of Washington and Rolf R. Schmitt, BTS, Leaders

Group #3. Keck 205

Jose Holguin-Veras, Rensselaer Polytechnic Institute (RPI) and Charles E. Howard, Puget Sound Regional Council, Leaders

Group #4. Keck 213

Michael D. Meyer, Parsons Brinckerhoff and Juan Carlos Villa, Texas A&M Transportation Institute, Leaders

The purpose of these sessions is to focus on the specific needs for research priorities, needs statements and other recommended actions. Discussions will focus around the following questions, with approximately 20 minutes per question.

- a. Based on yesterday's discussion, what are the critical gaps in data programs and modeling tools and what actions are necessary to close them?
- b. What are the different areas of focused research that could form the basis of a research program (e.g., improved performance-oriented models, innovative data sources needs and collection methods, etc.) that leads to improvements in estimating freight transportation performance measures? For each of the areas identified (or for as many as time allows), develop a research needs statement that outlines the need and benefits of conducting such research. Discuss the feasibility, likelihood of success, importance and cost/effectiveness of the proposed research.
- c. If you were to identify the most important research need of those identified in b), which one would it be? (If time permits)

10:00 a.m. – 10:30 a.m. Refreshments served outside Keck 100

Break

10:30 a.m.–noon. Keck 100

Breakout Reports and Town Hall Discussion of Important Needs for Data and Models

Joseph Schofer, Northwestern University. Presiding

Group #1.

Paul H. Bingham, CDM Smith

Group #2.

Edward D. McCormack, University of Washington

Group #3.

Charles E. Howard, Puget Sound Regional Council

Group #4.

Michael D. Meyer, Parsons Brinckerhoff

12:00 p.m. – **Workshop Adjourns**

12:00 p.m. –1:00 p.m. Keck 205 (members only)

Planning Committee Working Lunch

1:00 p.m. – 3:30 p.m. Keck 205 (open to public)

Committee Meeting on Freight Transportation Data – ABJ90

Donald Ludlow, Cambridge Systematics. Presiding

AGENDA

COMMITTEE ON FREIGHT TRANSPORTATION DATA – ABJ90

1. **Welcome and Introductions** (5 minutes)
Donald Ludlow, Cambridge Systematics
2. **Committee Business** (15 minutes)
 - a. TRB Staff Report
Tom Palmerlee, Transportation Research Board
 - b. Membership Update
Donald Ludlow, Cambridge Systematics
 - c. Summary of 2012 Activities
Alison Conway, City College of New York
3. **NCFRP Program Update** (15 minutes)
Bill Rogers, Transportation Research Board
4. **SHRP2 Freight Implementation Activities** (15 minutes)

David Plazak, Transportation Research Board
Edward L. Strocko, Federal Highway Administration

5. Federal Freight Data Updates (20 minutes)

- a. Federal Highway Administration
Edward L. Strocko, Federal Highway Administration
- b. Bureau of Transportation Statistics
Michael Sprung, Research and Innovative Technology Administration (RITA)

6. Annual Meeting Planning (60 minutes)

- a. Discussion of workshop proposals
Volunteers
- b. Freight Data User's Forum
- c. Sessions for January 2014

7. Follow Up from Adapting Freight Models and Data Programs for Performance Measurement Workshop (20 minutes)

Juan Villa, Texas A&M Transportation Institute

Registration Fees

	Early Bird <i>by</i> <i>March 1, 2013</i>	Advance <i>by</i> <i>April 1, 2013</i>	On Site <i>after</i> <i>April 1, 2013</i>
General	\$195	\$245	\$295
Speaker and TRB Sponsor	\$100	\$150	\$200
Student	\$75	\$125	\$175

Hotel Information

Embassy Suites
900 Tenth Street
Washington, DC 20001
202-739-2001

Rate: \$224/\$249 S/D (prevailing government per diem) plus taxes and fees. Group block expires March 16, 2013.

For More Information contact:

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