Data and Tools for Linking Goods Movement, Air Quality, and Transportation Infrastructure Decisions

June 2–3, 2009

Arnold and Mabel Beckman Center
of the National Academies
Irvine, California

Organized by
Transportation Research Board

Supported by
California Department of Transportation and
the California Air Resources Board

www.TRB.org/conferences/2009/AirQuality
Welcome to the workshop—Data and Tools for Linking Goods Movement, Air Quality, and Transportation Infrastructure Decisions—sponsored by the Transportation Research Board, California Department of Transportation, and the California Air Resources Board. The workshop is designed to address the increasingly complex issues of balancing transportation’s costs and benefits, and the insufficiency of existing data and tools to do so. Air quality has become an increasing concern not just in California but around the country, as has the role of infrastructure as the backbone of economic activity.

We’ve worked hard to develop a targeted program that identifies the problems driving the research, reveals the most current activities in the area, and brings together all of the stakeholders relevant to the discussion. This is our opportunity to share our expertise, identify the gaps in our methods and data sources, and develop specific, actionable plans for improving both data and tools to support better decision making. There is much work to be done, but by coming together we can fully exploit the existing resources, share the cost of expanding our modeling capabilities, identify the data requirements, and develop better tools. Our goal is to improve economic competitiveness and reduce the negative consequences of transportation on our communities.

I look forward to working with you.

—Anne Goodchild
Workshop Chair
Assistant Professor
University of Washington
Workshop Program

Tuesday, June 2

7:15 a.m.–8:00 a.m.
**Buses from Hyatt Regency to Beckman Center**

7:45 a.m.–8:30 a.m.
**Breakfast at Beckman Center**

8:30 a.m.–10:30 a.m.
**Improving Decision Making with Better Data and Tools**  
Anne Goodchild, University of Washington, *presiding*

This session offers different perspectives on decisions that will require better data and tools within the next few years. These speakers will discuss the issues and decisions that they must address and reveal the data and tools they are using to make them.

**Carrier Perspectives**  
Ron Hall, Director of Business Strategy, C.R. England, Inc.

**Representing the Shipper Perspectives**  
Virginia Hessenauer, Director, Environmental Affairs, APL

**Regulator Perspectives**  
Peter Greenwald, Senior Policy Advisor, South Coast Air Quality Management District

**Nonregulatory Approaches**  
Tracie Jackson-Hall, SmartWay Transport Partnership Group, Office of Transportation and Air Quality, U.S. Environmental Protection Agency

**Making Infrastructure Decisions**  
Sarah Chesebro, Chief Office of Travel Forecasting and Analysis, California Department of Transportation

10:30 a.m.–11:00 a.m.
**Morning Break**

11:00 a.m.–12:30 p.m.
**State of the Practice for Data and Models for Improving Decisions**  
Michael D. Meyer, Professor and Chair, Georgia Institute of Technology, *presiding*

This session evaluates the state of the practice of freight data and models relative to the decisions discussed in the previous session.

**Insights from the TRB Freight Demand Modeling Conference on the Contributions of Models and Data to Decision Making**  
Michael D. Meyer, Professor and Chair, Georgia Institute of Technology

**Current Capabilities of Freight Data Systems**  
Dan Beagan, Cambridge Systematics, Inc.

**Current Practice in Air Quality Modeling and Freight Operations**  
Cristiano Facanha, ICF International

12:30 p.m.–1:30 p.m.
**Lunch**

1:30 p.m.–3:00 p.m.
**National and California Activities: Building a Roadmap for Freight–Air Quality Modeling**  
Christina S. Casgar, SANDAG; and Doug Maclvor, California Department of Transportation, *presiding*
This panel session will examine the state of the practice in air quality modeling and freight operations. The panel will include snapshots of two relevant NCFRP studies underway. Staff experts from California agencies will then discuss data and tool issues related to air quality initiatives at their agencies.

**NCFRP 6: Freight Demand Modeling to Support Public Sector Decision Making**  
Dan Beagan, Cambridge Systematics, Inc.

**NCFRP 16: Representing Freight in Air Quality and GHG Models**  
Lou Browning, ICF International

**Freight Modeling at the State of California**  
Matthew Malchow, California Air Resources Board

**SANDAG’s Heavy-Duty Truck Model: Driving in Data Darkness**  
Rick Curry, SANDAG; and Rolf Moeckel, Parsons Brinkerhoff

3:00 p.m.–3:30 p.m.  
Break

3:30 p.m.–5:00 p.m.  
**Case Studies**  
Michael Sprung, Federal Highway Administration, *presiding*

**Freight Modeling: The Oregon Trail**  
Becky Knudson, Oregon Department of Transportation

This presentation will provide an overview of the Oregon Modeling Improvement Program, the context in which Oregon transportation modeling is managed. Specifics related to the Statewide Integrated Model will be shared, including details regarding the data required for the models. A case study related to commodity flow and a large number of highway bridge weight restrictions will be presented.

**Overview of the Model Improvement Plan for the SCAG Heavy-Duty Truck Model**  
Jonathan Nadler, Southern California Association of Governments (SCAG)

This presentation will provide an overview of SCAG’s current Heavy-Duty Truck (HDT) Model enhancement efforts, a component of SCAG’s Comprehensive Regional Goods Movement Plan and Implementation Strategy. A model development plan has been prepared that identifies analytical needs for the HDT Model, data requirements, and model enhancement options.

**Supply-Chain Mapping to Understand Washington State Freight System Resilience**  
Anne V. Goodchild, University of Washington

To understand the dependence of supply chains on the freight infrastructure, two case studies will be used to describe Washington State’s bottom-up approach. The speaker will identify challenges in data collection, data quality, and data merging that are necessary for understanding transportation in sufficient detail so that economic consequences can be estimated. A multimodal GIS network is developed to capture infrastructure capacity and travel cost.
San Diego Regional Truck Model
Rick Curry, San Diego Association of Governments
Rolf Moekcel, Parsons Brinkerhoff

Leveraging ITS Sensor Data for Freight and Air-Quality Modeling
Rob Hranac, Berkeley Transportation Systems, Inc.

Current Modeling Research in California and National Freight Corridors: Fastest, Cheapest, and Cleanest
Earl Lee, Department of Civil and Environment Engineering, University of Delaware

Human Health-Risk Visualization Tools in Transportation Infrastructure Planning
Margaret Lobnitz, Weston Solutions, Inc.

Using Truck Probe Data to Improve Freight Flow and Reduce Greenhouse Gas Emissions: Otay Mesa Case Study
Richard Mudge, Delcan Corporation

Freight Demand Modeling and Data Improvement Strategic Plan—Plans for SHRP 2 Capacity Project C20
David Plazak, Transportation Research Board, Strategic Highway Research Program 2

Integrating Freight Considerations into Collaborative Decision Making for Additions to Highway Capacity—Plans for SHRP 2 Capacity Project C15
David Plazak, Transportation Research Board, Strategic Highway Research Program 2

Guidebook for Developing Subnational Commodity Flow Data, Plans for NCFRP 20
William Rogers, Transportation Research Board

Reducing Freight System Emissions and Impacts Through Environmental Benchmarking, Plans for NCFRP 27
William Rogers, Transportation Research Board

A Multilevel Model for Generating County-Level Freight Data
Minyan Ruan, University of Illinois at Chicago

A National-Level Micro-Simulation for Goods Movement in the United States: Data and Method
Amir Samimi, University of Illinois at Chicago

Estimating the Air Quality Impacts of a Major Freight Corridor: A Study of the Alameda Corridor in Southern California
Jean Saphores, University of California, Irvine

2007 Commodity-Flow Survey (CFS): Profile and Data-Release Schedule
Joy Sharp, Bureau of Transportation Statistics

A Methodology for Applying FAF-2 Data to Regions in California
Michael Sprung, FHWA; Mark Jensen, Juan Zorilla, and Akshay Mani, Cambridge Systematics

Ontario Ministry of Transportation, Measuring Operational Improvements Using GPS Truck and Car Probe Data to Improve Flow and Reduce GHG Emissions
Robert Tardif, Ontario Ministry of Transportation

5:00 p.m.–6:30 p.m.
Posters and Reception

5:30 p.m.–7:15 p.m.
Buses return to Hyatt Regency
Wednesday, June 3

7:15 a.m.–8:00 a.m.
**Buses from Hyatt Regency to Beckman Center**

7:45 a.m.–8:30 a.m.
**Breakfast at Beckman Center**

8:30 a.m.–10:00 a.m.
**Improving Understanding of Commercial Trucks with GPS**
Robert J. Tardif, Ontario Ministry of Transportation, *presiding*

**Lessons Learned From Collecting GPS Data for a Truck-Based Freight Performance Monitoring Program**
Edward McCormack, University of Washington

This presentation will discuss a program to collect GPS data from commercial in-vehicle fleet management systems and from drivers’ cell phones. This information will be used to demonstrate the feasibility of a state-level, long-term, truck-based freight performance monitoring program.

**Using Commercial GPS Data to Support Decision Making**
Alain Kornhauser, ALK Technologies, Inc.
Colin Warkentin, Turnpike Global Technologies

These speakers will describe their operational experience in the use of commercial GPS data to support public and private decision making.

**Opportunities for Working with Commercial GPS Vendors**
Kevin Henderson, @Road, a Division of Trimble
Michael Bray, Qualcomm Enterprise Services

Representatives from commercial GPS vendors will offer observations on opportunities and constraints in using commercial GPS vendor data on individual projects and on a continuing basis.

10:00 a.m.–10:30 a.m.
**Morning Break**

10:30 a.m.–12:30 p.m.
**Potential Actions to Improve Data Tools**
Anne Goodchild, University of Washington, *presiding*

Incorporating the discussion from Day 1, four speakers will suggest specific actions to improve data and tools in the next few years. Suggestions will be made in the real context of limited budgets, reduced demand, and changing economic and system dynamics.

**Improving Data Models**
James J. Corbett, University of Delaware

The speaker will identify specific activities to improve models that capture the goods movement–air quality connection and address the decisions raised in Day 1. The speaker is working with CARB to develop such capability for California and has worked extensively with emissions models for both land-side and waterside transportation. He will identify both short-term actions that will improve upon the state of the art and more long-term needs that will require a longer research commitment.
**New Data Relationships**  
*Joseph L. Schofer, Northwestern University*  
The speaker will discuss what new and improved relationships, including public–public partnerships and private–public partnerships, might fill data gaps or improve data quality.

**New Ways to Organize or Access Data**  
*Scott Drumm, Port of Portland*  
Air quality analyses need freight data to be organized and accessed in different ways than freight data are currently collected and disseminated. Actions to align traditional freight data collection and dissemination with the needs of air quality monitoring analyses will be suggested.

**Use of Commercial Vehicle GPS Data**  
*Robert J. Tardif, Ontario Ministry of Transportation*  
Specific actions and opportunities for implementing and improving the use of commercial GPS data to support public and private decision making will be identified. Suggested actions will range from insights into successful agreements between carriers, GPS vendors, and public customers to visualization tools to improve understanding and use in decision making.

12:30 p.m.–1:30 p.m.  
**Lunch**

1:30 p.m.–3:30 p.m.  
**Town Meeting**  
*Michael D. Meyer, Professor and Chair, Georgia Institute of Technology, presiding*  
This session will be the workshop culmination, with general debate to determine the most effective near-term actions to improve data and tools for understanding the goods movement–air quality connection. Meyer will moderate a broad group discussion focused on developing an action plan to improve data and tools for understanding the goods movement–air quality connection. The discussion will be used to develop more detailed research-needs statements to submit to national funding programs and to offer to state and federal agencies for implementation.

3:30 p.m.  
**Adjourn**

2:00 p.m.–4:00 p.m.  
**Bus shuttle to John Wayne Airport and Hyatt Regency**

3:30 p.m.–5:30 p.m.  
**Planning Team Work Session (by invitation)**  
The Planning Team will develop an implementation plan to develop the priority proposals identified in the Town Meeting.
Hotel–Airport Shuttle

A complimentary shuttle bus runs to and from the Hyatt and John Wayne–Orange County Airport, 6:00 a.m.–10:00 p.m. The shuttle leaves the hotel every hour on the hour and picks up at the airport at approximately 15 minutes past the hour outside the baggage claim in the ground transportation area.

Beckman Shuttle Service Provided

A morning and evening bus shuttle will be provided for transportation between the Beckman Center and the Hyatt Regency Newport Hotel. These shuttles will depart twice in 30-minute intervals from the Hyatt Regency Newport Hotel in the morning and twice in 30-minute intervals from the Beckman Center in the evening.

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