



Integrated Corridor Systems Management Modeling *Best Practices Workshop*

September 14–15, 2009

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

Organized by
Transportation Research Board

Supported by
California Department of Transportation

www.TRB.org/Conferences/2009/Corridor

Planning Team

Ram Pendyala, Arizona State University, *Chair*
Vassili Alexiadis, Cambridge Systematics, Inc.
Alex Estrella, San Diego Association of
Governments

Brian Gardner, Federal Highway Administration

Mark Hallenbeck, University of Washington

Tarek Hatata, SMG

Robert Hranac, Berkeley Transportation Systems

Maren L. Outwater, Puget Sound Regional
Council

Will Recker, University of California, Irvine

Elizabeth Sall, San Francisco County
Transportation Authority

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www.TRB.org



Integrated Corridor Management Modeling for the Future

Welcome to beautiful Irvine, California!

Your participation in this best-practices workshop is important for identifying challenges and prospects faced by integrated corridor management modeling—and for generating a research agenda to address those challenges and prospects.



Pendyala

The workshop, made possible through the generous support of the California Department of Transportation and the Transportation Research Board, is a forum for professionals to share and learn from experiences in integrated corridor management across a wide variety of contexts. As urban areas strive to manage congestion, enhance mobility for people and goods, and invest scarce infrastructure dollars strategically, the need for sound practices in integrated corridor systems management and modeling has never been greater.

The scope of corridor management practices has expanded to include consideration not only of freight and passenger travel but also land use, transit, and nonmotorized transportation, thus calling for a truly integrated approach to corridor analysis. Modeling tools are being used to analyze the impacts, costs, and benefits of a range of mobility enhancement strategies, including pricing policies.

This workshop's presentations highlight experiences from across the nation—and its breakout group discussions offer participants the unique opportunity to impact the practice of integrated corridor management modeling for the future.

—Ram Pendyala
Workshop Planning Team Chair
Professor, Civil, Environmental, and Sustainable Engineering
Arizona State University

September 14–15, 2009



Workshop Program

MONDAY, SEPTEMBER 14

7:15 a.m.–8:00 a.m.

Bus Shuttle Departures to Beckman Center

Bus No. 1 7:15 a.m.

Bus No. 2 8:00 a.m.

7:30 a.m.–8:30 a.m.

Breakfast

7:30 a.m.–8:30 a.m.

Planning Team Meeting (by invitation only), **Executive Dining Room**

8:30 a.m.–10:00 a.m.

Opening Session, Auditorium

Ram M. Pendyala, Arizona State University, *presiding*

The Need for Integrated Corridor Systems Management

Jeffrey A. Lindley, Federal Highway Administration

Promise and Challenges for Integrated Corridor Systems Management Modeling

Joan Sollenberger, California Department of Transportation

Integrated Corridor Systems Management Modeling: Tools and Challenges

Vassili Alexiadis, Cambridge Systematics, Inc.

10:00 a.m.–10:30 a.m.

Break

10:30 a.m.–noon

Explaining Models and Communicating the Results, Auditorium

Brian Gardner, Federal Highway Administration, *presiding*

Why We Do Modeling: The Statewide Perspective

John P. Wolf and David Lively, California Department of Transportation

Why We Do Modeling: The Regional Perspective

Alex Estrella, San Diego Association of Governments (SANDAG)

Lessons Learned and Next Steps in Making Models Improve Decisions

Tarek Hatata, System Metrics Group, Inc.

Noon–1:00 p.m.

Lunch

1:00 p.m.–3:00 p.m.

Modeling and Data: Integration Among Models, Newport Room

Will Recker, University of California, Irvine, *presiding*

Macro-Meso-Microsimulation Integration: The State Route 1 Corridor Approach

Kevin Fehon, DKS Associates, Inc.; Kym Sterner, Dowling Associates, Inc.; Michael Wobken, DKS Associates, Inc.

Monday, September 14, 2009



A Hybrid Microsimulation Modeling Approach to Accelerate Evaluation of Advanced Corridor Systems Management Strategies

Richard G. Dowling and Kevin Chen, Dowling Associates, Inc.

O-D Inputs from Travel Demand Models: Translating to the “Real World” of Traffic Simulation

Loren D. Bloomberg and Jennifer Emerson, CH2M Hill

Modeling U.S.-75 Integrated Corridor Management in Dallas, Texas

Christopher M. Poe, Texas Transportation Institute; Koorosh Olyai, Dallas Area Rapid Transit; Khaled F. Abdelghany, Southern Methodist University

1:00 p.m.–3:00 p.m.

Modeling and Data: Improving Performance Metrics, Board Room

Elizabeth Sall, San Francisco County Transportation Authority, *presiding*

Bottleneck Identification and Calibration in Simulation for Integrated Corridor Management

Lianyu Chu, CLR Analytics; and Xuegang (Jeff) Ban, Rensselaer Polytechnic Institute

Interstate 80 Freeway Corridor Monitoring and Control

Pravin P. Varaiya, University of California, Berkeley; Andy Ho Fai Chow, University College London, United Kingdom; Gunes Dervisoglu, C. Gomes, Roberto Horowitz, A. Kurzhanskiy, and Ajith Muralidharan, University of California, Berkeley

SDA and eCBA—A Missing Link to Overcome Pitfalls of the Conventional Evaluation Methods?

Gerd Sammer, Institute of Transportation Studies

Preliminary Results of a Survey and Peer Exchange on the Decision-Making Process to Use Microsimulation Modeling Tools for Planning Studies

David B. Roden, AECOM

1:00 p.m.–3:00 p.m.

Mobility Enhancement Strategies and Lessons, Balboa Room

Alex Estrella, San Diego Association of Governments (SANDAG), *presiding*

Minneapolis Integrated Corridor Management Pioneer Site Concept and Strategy Modeling—Part 1: Planning for Modeling and Deployment Lessons Learned

Dean Deeter, Athey Creek Consultants, Inc.; Brian Kary, Minnesota Department of Transportation; Vassilios Papayannoulis, Cambridge Systematics, Inc.; Larry Head, Mark D. Hickman, and Yi-Chang Chiu, University of Arizona

Conversion of High Occupancy Vehicle Lanes to High Occupancy Toll Lanes: Efficiency Versus Equity

Yueyue Fan, University of California, Davis; Raghavender Naga, University of California

Assessing the Feasibility of Dedicated Truck Ways Through the Congested Greater Toronto Area Corridor

Hossam Abdelgawad, Matthew J. Roorda, and Baher Abdulhai, University of Toronto, Canada

Monday, September 14, 2009



3:00 p.m.–3:30 p.m.

Break

3:30 p.m.–5:00 p.m.

Implementation Challenges and Issues, Newport Room

Mark E. Hallenbeck, University of Washington, *presiding*

Raising the State of the Practice with Online Training Tools

James E. Marca, Craig Rindt, and Will Recker, University of California, Irvine; Lianyu Chu, University of California, Berkeley

Modeling Active Traffic Management for the I-80 Integrated Corridor Mobility Project

Kevin Fehon and Habib Shamskhov, DKS Associates, Inc.

Integrated Corridor Management Deployment for the I-394 Corridor

Dean Deeter, Athey Creek Consultants, Inc.

3:30 p.m.–5:00 p.m.

Modeling and Data: Focus on Data, Board Room

Rob Hranac, Berkeley Transportation Systems, *presiding*

Optimization of Traffic Data Collection Sample Rate in CORSIM and VISSIM

Elias Ana, Kris Balaji, Lee Ann Nichols, and Christine Springer, Jacobs Engineering Group

Transportation Data Collection for Multimodal Corridor Plans

William R. Loudon, Michael Mauch, and Surachet Pravinovongvuth, DKS Associates, Inc.

Corridor Deployment of the Inductive Signature–Based Real-Time Traffic Performance-Measurement System

Yeow Chern Tok, Shin-Ting (Cindy) Jeng, Hang Liu, and Stephen G. Ritchie, University of California, Irvine

3:30 p.m.–5:00 p.m.

Modeling and Data: Multimodal Evaluations, Balboa Room

Maren L. Outwater, Puget Sound Regional Council, *presiding*

Multimodal Corridor Systems Management—Incorporating Analysis of Transit, Nonmotorized Mode and Demand Management Programs

William R. Loudon, DKS Associates, Inc.

Minneapolis Integrated Corridor Management Pioneer Site Concept and Strategy Modeling—Part 2: Analysis, Modeling, and Simulation Innovations

Yi-Chang Chiu, Mark D. Hickman, and Larry Head, University of Arizona; Vassilios Papayannoulis, Urbitran Associates, Inc.; Brian Kary, Minnesota Department of Transportation; Dean Deeter, Castle Rock Consultants, Inc.

Development of a Regional Traffic Microsimulation Model

Bhaven Naik, Justice Appiah, and Laurence Russell Rilett, University of Nebraska, Lincoln

Monday, September 14, 2009



5:00 p.m.–6:30 p.m.

Poster Session and Reception

Poster Session

Estimating the Social Costs and Benefits of Transportation Demand Management Programs Using TRIMMS

Sisinnio Concas and Philip L. Winters, University of South Florida

Integrated Corridor Management: The San Diego Pioneer Site Experience

Mike Calandra, University of California; Albinder Dhindsa, Cambridge Systematics, Inc.; Alex Estrella, San Diego Association of Governments (SANDAG); Lima Kopitch, University of California; and Mark A. Miller, California Partners for Advanced Transit and Highways

Eco-friendly Integrated Multimodal Mass Transit System for Developing Countries

Sunder Lall Dhingra, Indian Institute of Technology, Bombay; Prabhat Shrivastava, Centre for Transport Research, Department of Civil Engineering

Integrated Corridor Management in Seattle, WA

Kaori Fujisawa, Brian Kemper, and Yin Hai Wang, City of Seattle

Calibration and Validation of Large-Scale Traffic Corridor Simulation Models

Ramachandran Balakrishna, Daniel Morgan, Howard L. Slavin, and Qi Yang, Caliper Corporation

A Tri-Level ICM Modeling Approach for Master Planning of State Route 285 Corridor at Wenatchee Valley, WA

Ed Hayes, Jingtao Ma, and Robert M. Shull, PTV America, Inc.

Development of a Corridor Systems Management Plan Using a Hybrid Meso-Microsimulation Model

William R. Loudon and Surachet Pravinongvuth, DKS Associates, Inc.

A Multiresolution and Simulation Assignment Capability for Analyzing Time-Dependent Variable Pricing on High Occupancy Toll Lanes

Yi-Chang Chiu, University of Arizona; and Jeffrey A. Shelton, Texas Transportation Institute

Kaka`ako Areawide Traffic Study: A Case Study with the Application of the Integrated VISUM–VISSIM Forecasting and Traffic Operation Model

Kevin Johnson, Dick Kaku, Jill Y. Liu, and John Muggridge, Fehr and Peers Associates; and Toru Hamayasu, City of Honolulu

Integrated Travel Demand Forecasting and Traffic Operations Modeling

Ron Milam, Fred Choa, and David Stanek, Fehr and Peers Associates

Evaluation of Externalities for Multimodal Transportation Corridors Using Microsimulation

Xuegang (Jeff) Ban, Coral Torres, and Jose Holguin Veras, Rensselaer Polytechnic Institute

Monday, September 14, 2009



Design of Integrated Mass Transport System

Gaurav Vyas, IIT Bombay

Bridging Origin–Destination Demand Information Between Travel Demand Forecasting Models and Traffic Operations Models

Lawrence Liao, Cambridge Systematics, Inc.

5:30 p.m.–6:50 p.m.

Bus Shuttle Departures to Hyatt Newporter Hotel

Bus No. 1 5:30 p.m.

Bus No. 2 6:10 p.m.

Bus No. 3 6:50 p.m.

TUESDAY, SEPTEMBER 15

7:15 a.m.–8:00 a.m.

Bus Shuttle Departures to Beckman Center

Bus No. 1 7:15 a.m.

Bus No. 2 8:00 a.m.

7:30 a.m.–8:30 a.m.

Breakfast

8:30 a.m.–10:00 a.m.

Discussion Breakout A: Modeling and Data, Newport Room

Will Recker, University of California, Irvine; Elizabeth Sall, San Francisco County Transportation Authority, *presiding*

Modeling Issues

- Role of origin–destination matrix estimation in integrated modeling
- Role of dynamic traffic assignment in integrated modeling
- Timescale for decision making
- Appropriate level of detail and geographic scale for modeling and comparing alternatives
- Corridor modeling as guidance for improving operational performance of nonrecurring congestion
- Trust in underlying principles of traffic models; roles for fundamental research
- Data and guidance gaps for appropriate model calibration
- Precautions for microsimulating travel conditions far into the future

Data Issues

- Role of corridor management consortia in establishing and maintaining data collection repositories
- Feasibility of network coding standardizations
- Appropriateness of an “average day” condition for useful integrated corridor models
- Leveraging of vehicle probe, cell phone, and ITS data sources
- Use of routinely collected data for streamlining model update
- Use of third-party data combined from public-source data and proprietary private-fleet GPS data



Discussion Breakout B: Mobility Enhancement–Lessons, Board Room

Maren L. Outwater, Puget Sound Regional Council; Rob Hranac, Berkeley Transportation Systems, *presiding*

- Ability of current models and data to evaluate strategies for improving mobility
- Useful measures of mobility
- Measures other than mobility that define the overall objective—air quality and greenhouse gas emissions, safety and security, and quality of life benefits
- Ability to model and measure distribution of benefits—travel time and reliability savings accrued to specific users evaluated by user class, geography, vehicle class, etc.
- Choice of whether to optimize individual strategies for each alternative or to fix input assumptions for each strategy in order to facilitate comparisons
- Evaluation of strategies to improve construction impacts or evacuation plans evaluated in modeling platforms
- Strategies that require better integration with macro- or mesoscopic models

Discussion Breakout C: Implementation Challenges–Issues, Balboa Room

Mark E. Hallenbeck, University of Washington; Alex Estrella, San Diego Association of Governments (SANDAG), *presiding*

- Approaches for reducing time and cost in applying simulation models to integrated corridor management analyses
- Up-front understanding of needed analytical capabilities for a given corridor analysis; model sensitivity to various aspects of traffic flow
- Performance of model calibration: determining (a) dates and times, (b) appropriate level, and (c) reasonable model adjustments to achieve the calibration result
- What project managers need to know about models; available training
- How to instill confidence in model results and present them to diverse groups

10:00 a.m.–10:30 a.m.

Break

10:30 a.m.–noon

Discussion Breakout A: Modeling and Data (continued), Newport Room

Will Recker, University of California, Irvine; Elizabeth Sall, San Francisco County Transportation Authority, *presiding*

Discussion Breakout B: Mobility Enhancement–Lessons (continued), Board Room

Maren L. Outwater, Puget Sound Regional Council; Rob Hranac, Berkeley Transportation Systems, *presiding*

Discussion Breakout C: Implementation Challenges–Issues (continued), Balboa Room

Mark E. Hallenbeck, University of Washington; Alex Estrella, San Diego Association of Governments (SANDAG), *presiding*

Noon–1:00 p.m.

Lunch

Tuesday, September 15, 2009



1:00 p.m.–1:45 p.m.

Discussion Breakout Reports, Auditorium

Ram M. Pendyala, Arizona State University, *presiding*

Modeling and Data

Will Recker, University of California, Irvine

Elizabeth Sall, San Francisco County Transportation Authority

Mobility Enhancement

Rob Hranac, Berkeley Transportation Systems

Maren L. Outwater, Puget Sound Regional Council

Implementation Challenges

Mark E. Hallenbeck, University of Washington

Alex Estrella, San Diego Association of Governments (SANDAG)

1:45 p.m.–2:30 p.m.

Challenges and Next Steps in Integrated Corridor Systems Management, Auditorium

Al Arana, California Department of Transportation, *presiding*

Perspectives

Tarek Hatata, System Metrics Group, Inc.

James Pinheiro, California Department of Transportation

Ram M. Pendyala, Arizona State University

2:00 p.m.–3:00 p.m.

Bus Shuttle Departures to John Wayne Airport and Hyatt Newporter Hotel

Bus No. 1 2:00 pm

Bus No. 2 3:00 pm

2:30 p.m.–3:30 p.m.

Planning Team Debrief (by invitation only), **Board Room**

Tuesday, September 15, 2009



Hotel Information

Hyatt Regency Newport Beach
Newport Beach, CA 92660
Phone: 949-729-1234

\$128/night, plus 10% occupancy tax and 16% tourism fee
Cutoff: August 1, 2009
Event Name: Integrated Corridor
Systems Management Modeling

<http://newportbeach.hyatt.com/hyatt/hotels/index.jsp>

Contacts

Matthew Miller, mamiller@nas.edu or 202-334-2608, and
Tom Palmerlee, tpalmerlee@nas.edu or 202-334-2907

Beckman Center

Sessions will be held at the Beckman Center. Owned and operated by the National Academies, the award-winning Beckman Conference Center is a first-class facility sited on seven acres bordering the cities of Irvine and Newport Beach. The retreat-like atmosphere of this 48,000-square-foot facility is highly conducive to learning and productivity. The center is equipped with state-of-the-art audiovisual equipment. Parking is free and the lot can accommodate up to 176 cars. Shuttle service will be provided from the conference hotel.

Beckman Center
100 Academy
Irvine, CA 92617
949-721-2200

<http://www7.nationalacademies.org/beckman/>

Upcoming Events

September 16–17, 2009

North American Freight Flows Conference

Irvine, California

www.TRB.org/Conferences/2009/NAFF

October 19–22, 2009

8th National Conference on Transportation Asset Management

Portland, Oregon

www.TRB.org/Conferences/2009/Asset

October 27–30, 2009

Fourth International Conference on Women's Issues in Transportation

Irvine, California

www.TRB.org/Conferences/2009/WomensIssues

November 12–13, 2009

Developing a Research Agenda for Transportation Infrastructure Preservation and Renewal

Washington, D.C.

www.TRB.org/Conferences/2009/Infrastructure

January 10–14, 2010

TRB 89th Annual Meeting

Washington, D.C.

www.TRB.org/AnnualMeeting

May 18-19, 2010

Toward Better Freight Transportation Data: A Research Road Map

Irvine, California

June 21–24, 2010

North American Travel Monitoring Conference and Exposition

Seattle, Washington

