

Traffic Signal Systems Committee

TRB Annual Meeting – Washington, DC
Monday, January 22, 2007, Marriott Lincoln 2

Draft Agenda

- 1:30 PM Call to Order (Larry Head)
Self Introductions (All)
Approval of Minutes
TRB Staff Report (Rich Cunard)
NCHRP Report (Ray Derr)
- 2:00 PM FHWA and other Related Reports
Research (Raj Ghaman)
Arterial Management (Eddie Curtis)
- 2:30 PM Subcommittee Reports
Paper Review (Larry Head)
Best Paper Award (Paul Olson)
Signal Timing (Peter Koonce)
Simulation (Brian Park)
January Workshop (Kevin Balke)
Strategic Plan (Tom Urbanik)
Controller Architecture (Larry Head)
Problem Statements (Jim Powell)
- 3:00 PM Break
- 3:30 PM CICAS/VII Update (Gene McHale)
- 4:00 PM 2007 Summer Meeting
Location
Refinement of Topic
Future Topics for Summer Meetings
- 5:00 PM Other Business
- 5:30 PM Adjourn

Note: Subcommittees meet Monday in the, *Marriott Park Tower Suite 8228*

8:00 – 9:45 AM	Signal Timing	Koonce
10:00 – 11:00 AM	Research	Powell
11:00 – 12:00 PM	Simulation	Park
12:15 – 1:15 PM	Controller Architecture	Head

Paper and Poster Sessions:

Paper or Conference Session (S)s

506 (RCS07-017)

Tuesday, January 23, 2007, 1:30pm- 3:15pm, Marriott

Understanding Traffic Signal Dilemma-Zone Control

[James L. Powell](#), Parsons Transportation Group Inc., presiding

Sponsored by Committee on Traffic Signal Systems; Committee on Traffic Control Devices

Providing safe transitions on approaches to high-speed intersections requires the designer of the traffic signal control plan to consider many factors including the human, the control, and other objectives such as pedestrians and coordination. This session examines some important aspects of designing intersection operations with dilemma-zone considerations.

Empirical Observations of Dynamic Dilemma Zones at Signalized Intersections (07-1658)

[Yue Liu](#), University of Maryland, College Park

[Gang-Len Chang](#), University of Maryland, College Park

[Ruihua Tao](#), Maryland Department of Transportation

[Thomas Hicks](#), Maryland State Highway Administration

[Eric Tabacek](#), Maryland State Highway Administration

Effectiveness of Alternative Detector Configurations for Option Zone Protection on High-Speed Approaches to Traffic Signals (07-1192)

[Jianwen Si](#), University of Tennessee, Knoxville

[Thomas Urbanik](#), University of Tennessee, Knoxville

[Lee David Han](#), University of Tennessee, Knoxville

Recasting Dilemma-Zone Design as a Marginal Cost and Benefit Problem (07-1001)

[Anuj Sharma](#), Purdue University

[Darcy M. Bullock](#), Purdue University

[Srinivas Peeta](#), Purdue University

Analysis of Dilemma Zone Driver Behavior at Signalized Intersections (07-3351)

[Tim J. Gates](#), University of Wisconsin, Madison

[David A. Noyce](#), University of Wisconsin, Madison

[Luis Laracuente](#), University of Puerto Rico

Age and Gender Impact on Driver Behavior at the Onset of a Yellow Phase on High-Speed Signalized Intersection Approaches (07-0208)

[Ihab El-Shawarby](#), Ain Shams University, Egypt

[Hesham Ahmed Rakha](#), Virginia Polytechnic Institute and State University

[Vaughan William Inman](#), Science Applications International Corporation

[Gregory W. Davis](#), Federal Highway Administration

Poster Session (P)s

650 (RCP07-005)

Wednesday, January 24, 2007, 9:30am-12:00pm, Marriott

Performance Measures to Close the Control Loop

[Stacie Leigh Phillips](#), Kimley-Horn and Associates, Inc., presiding

Sponsored by Committee on Traffic Signal Systems

Significant advances have been made in the past few years in measuring performance of traffic signal systems using a variety of methodologies and technologies. Using these performance measures for making control improvements will improve control effectiveness and efficiency. This session presents some new results on measuring performance and some new ways to use performance in traffic signal control.

Time-Dependent Travel Time Estimation Model for Signalized Arterial Network (07-2650)

[Henry X. Liu](#), University of Minnesota, Twin Cities

[Wenteng Ma](#), University of Minnesota, Twin Cities

Event-Based Data Collection for Generating Actuated Controller Performance Measures

(07-1094)

[Edward James Smaglik](#), Purdue University

[Anuj Sharma](#), Purdue University

[Darcy M. Bullock](#), Purdue University

[James R. Sturdevant](#), Indiana Department of Transportation

[Gary Duncan](#), Econolite Control Products, Inc.

Input-Output and Hybrid Techniques for Real-Time Prediction of Delay and Maximum Queue Length at a Signalized Intersection (07-0487)

[Anuj Sharma](#), Purdue University

[Darcy M. Bullock](#), Purdue University

[James A. Bonneson](#), Texas Transportation Institute

Traffic State Classification Under Operational Constraints of Condition-Responsive Traffic Control Systems (07-3478)

[Geza Pesti](#), Texas Transportation Institute

[Montasir M. Abbas](#), Virginia Polytechnic Institute and State University

[Nadeem A. Chaudhary](#), Texas Transportation Institute

A Platoon Identification Algorithm for Urban Arterial Links (07-2851)

[Rajesh Krishnan](#), Imperial College London, United Kingdom

[John W. Polak](#), Imperial College London, United Kingdom

Comparison of Traffic Simulation Models with HCM 2000 Methodology Using Various Traffic Levels Under Pretimed Signal Control (07-2519)

[Shawn Birst](#), Advanced Traffic Analysis Center

[Jason Baker](#), Advanced Traffic Analysis Center

[Khaled Shouman](#), Minnesota Department of Transportation

Modeling Traffic Variability and Evaluating Strategies for Designing Arterial Signal Coordination Under Limited Volume Data (07-1553)

[Wei Li](#), Purdue University

[Andrew P. Tarko](#), Purdue University

Analysis of Cycle-Based Data and Development of Enhanced Signal Timing Models to Reduce Red Light Running (07-0774)

[Offer Grembek](#), University of California, Berkeley

[Yue Li](#), University of California, Berkeley

[Meng Li](#), University of California, Berkeley

[Wei-Bin Zhang](#), University of California, Berkeley

[Kun Zhou](#), University of California, Berkeley

Performance of Modern Stop Bar Loop Count Detectors over Various Traffic Regimes (07-1090)

[Edward James Smaglik](#), Purdue University

[Srinivas Vanjari](#), Purdue University

[Virgil Totten](#), Purdue University

[Edhi Rusli](#), Purdue University

[Mandoye Ndoye](#), Purdue University

[Allen Jacobs](#), Reno A&E

[Darcy M. Bullock](#), Purdue University

[James V. Krogmeier](#), Purdue University

Models for Quantitative Assessments of Video Detection System Impacts on Signalized Intersection Operations (07-0455)

[Zong Tian](#), University of Nevada, Reno

[Montasir M. Abbas](#), Virginia Polytechnic Institute and State University

Tuesday, January 23, 2007, 9:30am-12:00pm, Marriott

Priority, Preemption, and Transition in Traffic Signal Control

Bruce Zvaniga, City of Toronto, Canada, presiding

Sponsored by Committee on Traffic Signal Systems

Priority and preemption used to be considered the rare exceptions in signal control; now they are more frequent and need the operation and impacts to be integrated as a normal part of control. This session presents some results aimed at addressing these issues in traffic signal control.

Modeling Impact of Near-Side Bus Stop on Transit Delays at Transit Signal-Priority-Enabled Intersections (07-2503)

Jianyang Zheng, University of Washington

Yinhai Wang, University of Washington

Hongchao Liu, Texas Tech University

Mark E. Hallenbeck, University of Washington

Artificial Neural Network Bus Arrival Time Prediction Tool for Transit Signal Priority with Near-Side Bus Stops (07-1967)

Mohammad Ghanim, Michigan State University

Francois Dion, Michigan State University

Ghassan Abu-Lebdeh, Michigan State University

Active Signal Priority for Light-Rail Transit at Grade Crossings (07-1914)

Meng Li, University of California, Berkeley

Guoyuan Wu, University of California, Berkeley

Yue Li, University of California, Berkeley

Fanping Bu, University of California, Berkeley

Wei-Bin Zhang, University of California, Berkeley

Development and Evaluation of a Coordinated and Conditional Bus Priority Approach (07-1154)

Wanjing Ma, Tongji University, China

Xiaoguang Yang, Tongji University, China

Meiping Yun, Tongji University, China

SCOOT MC3 and Current Developments (07-1543)

David Bretherton, TRL Limited, United Kingdom

Using Software-in-the-Loop Simulation Methodology to Evaluate Traffic Signal Transition Strategies Employed to Exit Preemption Control (07-2673)

Jon T. Obenberger, Federal Highway Administration

John Collura, University of Massachusetts, Amherst

Evaluation of Emergency Vehicle Preemption Strategies on a Coordinated Actuated Signal System Using Hardware-in-the-Loop Simulation (07-2415)

Ilsoo Yun, University of Virginia

Matthew Best, University of Virginia

Byungkyu (Brian) Park, University of Virginia

Incorporating Bus and Passenger Car Operations in Arterial Signal Optimization for Emergency Evacuation (07-0796)

Ying Liu, University of Maryland, College Park

Gang-Len Chang, University of Maryland, College Park

Advance Preemption with Gate Down Confirmation: Solution for Preempt Trap (07-0282)

Jacob Russell Yohe, A-Del Construction Company, Inc.

Thomas Urbanik, University of Tennessee, Knoxville

Modeling Traffic Signal Operations Using Precedence Graphs (07-0686)

Larry Head, University of Arizona

Douglas Gettman, Siemens ITS

Darcy M. Bullock, Purdue University

Thomas Urbanik, University of Tennessee, Knoxville

Performance Analysis of Coordinated Traffic Signals During Transition (07-2007)

David Hayden Cohen, University of Arizona

Larry Head, University of Arizona

[Steven G. Shelby](#), Siemens ITS

454 (RCP07-007)

Tuesday, January 23, 2007, 9:30am-12:00pm, Marriott

Strategic Network and Tactical Intersection Control

[Susan Langdon](#), Street Smarts, presiding

Sponsored by Committee on Traffic Signal Systems

Strategic timing and control of networks of traffic signals involve consideration of the relationships between intersection control as well as the complex tactical control at each intersection. This session presents papers that address both of these critical concerns.

Solving the Integrated Corridor Control Problem Using Simultaneous Perturbation

Stochastic Approximation (07-1065)

[Jingtao Ma](#), University of California, Davis

[Yu \(Marco\) Nie](#), University of California, Davis

[H. Michael Zhang](#), University of California, Davis

VISGAOST: VISSIM-Based Genetic Algorithm Optimization of Signal Timings (07-0466)

[Aleksandar Stevanovic](#), University of Utah

[Peter T. Martin](#), University of Utah

[Jelka Stevanovic](#), University of Utah

Short or Long--Which Is Better? Probabilistic Approach to Cycle-Length Optimization (07-2427)

[Lee David Han](#), University of Tennessee, Knoxville

[Jan-Mou Li](#), University of Tennessee, Knoxville

Evaluation of Adaptive Maximum Feature in EPAC300 Actuated Traffic Controller Using

Hardware-in-the-Loop Simulation (07-1900)

[Ilsoo Yun](#), University of Virginia

[Matthew Best](#), University of Virginia

[Byungkyu \(Brian\) Park](#), University of Virginia

Implementation of Lane-by-Lane Detection at Actuated Controlled Intersection (07-0805)

[Edward James Smaglik](#), Purdue University

[Darcy M. Bullock](#), Purdue University

[James R. Sturdevant](#), Indiana Department of Transportation

[Thomas Urbanik](#), University of Tennessee, Knoxville

Intelligent Traffic Signal Control: Adding Pedestrians to the System (07-0989)

[Richard Wayne Wall](#), University of Idaho

[Tom Urbanik](#), University of Tennessee, Knoxville

[Darcy M. Bullock](#), Purdue University

[Steve Allen](#), University of Idaho

[Michael Busby](#), University of Idaho

[Dustin DeVoe](#), University of Idaho

[Andrew Huska](#), University of Idaho

[Tyson Rallens](#), University of Idaho

Vehicular Projection Dynamics for Real-time Signal Control (07-1964)

[Fang Fang](#), University of Hartford

[Lily Elefteriadou](#), University of Florida

APPLICATION OF DIAMOND INTERCHANGE CONTROL STRATEGIES AT CLOSELY-SPACED INTERSECTIONS (07-0261)

[Zong Tian](#), University of Nevada, Reno

Data-Driven Algorithms for Real-Time Adaptive Tuning of Offsets in Coordinated Traffic Signal Systems (07-0651)

[Steven G. Shelby](#), Siemens ITS

[Douglas Gettman](#), Siemens ITS

[Larry Head](#), University of Arizona

[Darcy M. Bullock](#), Purdue University
[Nils Soyke](#), Siemens AG, Germany

Workshop (W)s

130 (RCW07-004)

Sunday, January 21, 2007, 8:30am- 5:00pm, Marriott

Operating Traffic Signal Systems in Oversaturated Conditions

[Kevin N. Balke](#), Texas Transportation Institute; [Peter J .V. Koonce](#), Kittelson and Associates, Inc., presiding

Sponsored by Committee on Traffic Signal Systems; Committee on Regional Transportation Systems Management and Operations

This workshop focuses on the challenge of traffic signal control in oversaturated conditions. Issues addressed relate to defining, detecting, and measuring congested conditions and strategies and philosophies for management of traffic in congested conditions, including multimodal stakeholder (vehicles, transit, goods movement, and pedestrians) objectives. The standard of practice will be presented and discussed. New research topics will be identified to help address areas that need improvement or where there is insufficient experience.

Published Meeting - Committee (M)s

RCM07-009

Monday, January 22, 2007, 1:30pm- 5:30pm, Marriott

Traffic Signal Systems Committee

[Larry Head](#), University of Arizona, presiding

Sponsored by Committee on Traffic Signal Systems

RCM07-020

Monday, January 22, 2007, 8:00am- 9:45am, Marriott

Traffic Signal Timing Manual Subcommittee, AHB25(1)

[Peter J .V. Koonce](#), Kittelson and Associates, Inc., presiding

Sponsored by Committee on Traffic Signal Systems

RCM07-021

Monday, January 22, 2007, 10:00am-11:00am, Marriott

Traffic Signal Systems Research Subcommittee, AHB25(2)

[James L. Powell](#), Parsons Transportation Group Inc., presiding

Sponsored by Committee on Traffic Signal Systems

RCM07-022

Monday, January 22, 2007, 11:00am-12:00pm, Marriott

Simulation of Traffic Signal Systems Subcommittee, AHB25(3)

[Byungkyu \(Brian\) Park](#), University of Virginia, presiding

Sponsored by Committee on Traffic Signal Systems

RCM07-023

Monday, January 22, 2007, 12:15pm- 1:15pm, Marriott

Traffic Signal Controller Architecture Subcommittee, AHB25(4)

Larry Head, University of Arizona, presiding

Sponsored by Committee on Traffic Signal Systems

AHB25 Cosponsored Sessions

RCM07-015

Monday, January 22, 2007, 7:30pm- 9:30pm, Marriott

Traffic Simulation Models Joint Subcommittee of AHB45, AHB20, AHB25, AHB40

Kenneth G. Courage, University of Florida, presiding

RCS07-007

Tuesday, January 23, 2007, 3:45pm- 5:30pm, Marriott

Timing Parameters, Signaling Operations, and Pedestrians: Providing Safe and Effective Control for Intersection Users

David A. Noyce, University of Wisconsin, Madison, presiding

Intersection signaling has become more complex as operations have striven to be more efficient. Consideration of driver behavior, signaling strategies, timing, and pedestrians requires careful understanding of the interactions. This session presents a comprehensive view on this interaction.

Foundation for Joint Determination of Passage Time and Detection Zone Length Using Stop Bar Presence Detection (07-1560)

Michael Kyte, University of Idaho

Thomas Urbanik, University of Tennessee, Knoxville

Enas Amin, University of Idaho

Evaluation of Driver Comprehension for Solid Yellow Indications Resulting from Implementation of Flashing Yellow Arrow (07-2293)

Michael A. Knodler, University of Massachusetts, Amherst

David A. Noyce, University of Wisconsin, Madison

Kent C. Kacir, Siemens ITS

Chris Brehmer, Kittelson & Associates, Inc.

Safety Effectiveness of All-Red Clearance Intervals at Urban Low-Speed Intersections (07-2031)

Reginald R. Souleyrette, Iowa State University

Molly O'Brien, Kimley-Horn & Associates, Inc.

Thomas J. McDonald, Iowa State University

Impact of Coordination Parameters on Pedestrian Operations in NEMA Controllers (07-2701)

Srinivasa R. Sunkari, Texas Transportation Institute

Kevin N. Balke, Texas Transportation Institute

Exploratory Analysis of Pedestrian Signalization Treatments at One- and Two-Lane Roundabouts Using VISSIM Microsimulation (07-2655)

Bastian J. Schroeder, North Carolina State University

Nagui M. Rouphail, North Carolina State University

Ronald Granger Hughes, North Carolina State University

RCW07-002

Sunday, January 21, 2007, 1:30pm- 5:00pm, Shoreham

Simulation Practices, Needs, and Challenges for Corridor Management

As agencies realize the importance of operating their facilities to make the most of their existing capacity, there has been an increasing interest in the concept of managing multiple transportation facilities as an integrated corridor. Simulation modeling plays a key component in the planning and design of corridor management strategies and plans. There are many challenges in using simulation for a multimodal, multiroadway corridor that implements various intelligent transportation system devices and strategies. This workshop highlights and discusses the current practice, case studies, international experiences, research needs, and various challenges of simulating corridor management applications.

RCW07-003

Sunday, January 21, 2007, 8:30am-12:00pm, Marriott

Doctoral Student Research in Transportation Operations and Traffic Control

David A. Noyce, University of Wisconsin, Madison, presiding