Traffic Signal Systems Committee
TRB Annual Meeting – Washington, DC
Monday, January 24, 2011, Marriott - Wilson B & C

Agenda

PART 1: Marriott, Wilson B & C

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 (Eddie Curtis and Joe Peters)

2:15 PM Committee Activity Reports
   Paper Review (Larry Head)
   Best Paper Award (Paul Olson)
   Committee Website/Communications Coordinator (Monty Abbas)
   January Workshop (Mike Kyte)

3:00 PM 2011 Summer Meeting- July 18-21, 2011 (Doug Gettman)
Regional Traffic Management (joint meeting with RTSMO and Freeway Ops)
Location: Las Vegas, NV

3:15 PM - 3:30 PM Break

3:30 PM Subcommittee Reports
   Signal Timing (Peter Koonce)
   Simulation (Brian Park)
   Controller Architecture (Larry Head)
   Research Problem Statements (Jim Powell)

4:30 PM Research Updates (15 minutes each)
   FHWA EAR: Advanced Signal Control Algorithms (Alex Skabardonis, PATH)
   Joint Subcommittee on Emergency Evacuation (Larry Head)

5:00 PM 2012 Summer Meeting
   Geometric Design and Traffic Signals????
   Woods Hole, MA!
   (Susan Langdon, Rick D
   Future Topics for Summer Meetings
   Reliability, Efficiency and Fuel Consumption, TSP, Signal Timing,
   Adaptive Control, ……

5:20 PM Other Business
5:30 PM Adjourn
Paper or Conference Session (S)s

570 (RCS11-027) Tuesday Jan 25, 2011 3:45-5:30, Marriott Salon 3
New Paradigms in Traffic Signal Control
Thomas Urbanik, Kittelson & Associates, Inc., presiding
Sponsored by Committee on Traffic Signal Systems

Visual Education Tools to Illustrate Coordinated System Operation (11-0590)
  Thomas M. Brennan, Purdue University
  Christopher M. Day, Purdue University
  James R. Sturdevant, Indiana Department of Transportation
  Darcy M. Bullock, Purdue University
Predictive Priority for Light Rail Transit: University Light Rail Line in Salt Lake County, Utah (11-2102)
  Milan Zlatkovic, University of Utah
  Peter T. Martin, University of Utah
  Aleksandar Stevanovic, Florida Atlantic University
Heuristic Algorithm for Priority Traffic Signal Control (11-3697)
  Larry Head, University of Arizona
  Qing He, IBM Corporation
  Jun Ding, University of Arizona
IntelliDrive Application in Traffic-Responsive Control (11-3903)
  Pooja Dwivedi, Virginia Polytechnic Institute and State University
  Montasir M. Abbas, Virginia Polytechnic Institute and State University
Automated Intersection Control: Performance of a Future Innovation Versus Current Traffic Signal Control (11-3496)
  David Fajardo, University of Texas, Austin
  Tsz-Chiu Au, University of Texas, Austin
  S. Travis Waller, University of Texas, Austin
  Peter Stone, University of Texas, Austin
  C. Y. David Yang, Federal Highway Administration

Poster Session (P)s

469 (RCP11-016) Tuesday Jan 25, 2011 9:30-12:00, Marriott Salon 2
Measured Traffic Signal State and Performance for Improved Control
Thomas M. Brennan, Purdue University, presiding
Sponsored by Committee on Traffic Signal Systems

Vehicle Queue Location Estimation for Signalized Intersections Using Sample Travel Times from Mobile Sensors (11-3975)
  Peng Hao, Rensselaer Polytechnic Institute
  Xuegang (Jeff) Ban, Rensselaer Polytechnic Institute
Real-Time Traffic Signal Delay Estimation Using State-of-the-Practice Detection Technology (11-2344)
  Elizabeth Boden, AECOM
  Steven M. Click, Tennessee Technological University
Traffic State Estimation and Signal Control Performance (11-1675)
  Chen Cai, National ICT Australia
  Yang Wang, National ICT Australia
  Glenn Geers, National ICT Australia
Modeling Urban Travel Time Variability by Analyzing Delay Distribution for Multiple Signalized Intersections (11-0828)
  Fangfang Zheng, Delft University of Technology, Netherlands
  Henk J. van Zuylen, Delft University of Technology, Netherlands
Quantifying the Benefit of Retiming Traffic Signals Through Multiple Regression (11-0806)
  James Mulandi, Resource Systems Group, Inc.
  Peter T. Martin, University of Utah
Heuristic Approach for Estimating Arterial Signal Phases and Progression Quality from Vehicle Arrival Data (11-0388)
  Tiffany Elizabeth Barkley, Berkeley Transportation Systems
  Rob Hranac, Berkeley Transportation Systems
  Kim Fuentes, South Bay Cities Council of Governments
  Philip Law, Southern California Association of Governments
Development and Evaluation of Optimal Arterial Control Strategies for Oversaturated Conditions (11-4044)
  Montasir M. Abbas, Virginia Polytechnic Institute and State University
  Zain Adam, Virginia Polytechnic Institute and State University
Comparison of Alternative Real-Time Performance Measures for Measuring Signal Phase Utilization and Identifying Oversaturation (11-0931)
  Edward James Smaglik, Northern Arizona University
  Darcy M. Bullock, Purdue University
  Christopher M. Day, Purdue University
  Hiromal Premachandra, Purdue University

733  (RCP11-017) Wednesday Jan 26, 2011 2:30-5:00, Marriott Salon 2
Getting Information into Traffic Signal Optimization
Zain Adam, Virginia Polytechnic Institute and State University, presiding
Sponsored by Committee on Traffic Signal Systems

Traffic Signal Optimization with Greedy Randomized Tabu Search Algorithm (11-3166)
  Ta-Yin Hu, National Cheng Kung University, Taiwan
  Li-Wen Chen, National Cheng Kung University, Taiwan
Data-Driven Approach to Arterial Offset Optimization (11-2987)
  Henry X. Liu, University of Minnesota, Twin Cities
  Heng Hu, University of Minnesota, Twin Cities
A Monte Carlo Simulation Procedure to Search for the Most-likely Optimal Offsets on Arterials
Using Cycle-by-Cycle Green Usage Reports (11-2951)
  Pengfei "Taylor" Li, Kentucky Transportation Center
  Peter G. Furth, Northeastern University
  Stephen S Sawyer, Sebago Technics, Inc
  Xiucheng Guo, Southeast University, China
Cross-Entropy Method for Deterministic Optimal Signalization in an Urban Network (11-1946)
  Dong Ngoduy, University of Leeds, United Kingdom
  M. Maher, University of Leeds, United Kingdom
Signal Timing Estimation Using Sample Intersection Travel Times (11-1717)
  Xuegang (Jeff) Ban, Rensselaer Polytechnic Institute
  Peng Hao, Rensselaer Polytechnic Institute
  Kristin Bennett, Rensselaer Polytechnic Institute
  Qiang Ji, Rensselaer Polytechnic Institute
  Zhanbo Sun, Rensselaer Polytechnic Institute
Evaluating Robustness of Signal Timings for Conditions of Varying Traffic Flows (11-1533)
  Aleksandar Stevanovic, Florida Atlantic University
  Cameron Kergaye, Utah Department of Transportation
  Jelka Stevanovic, Consultant
Comprehensive Analysis of Reinforcement Learning Methods and Parameters for Adaptive Traffic Signal Control (11-1492)
  Samah El-Tantawy, University of Toronto, Canada
  Baher Abdulhai, University of Toronto, Canada
Methodology for Assessing Signal Timing Plans and Control Technology Under Varying Demands and Capacities (11-0359)
  Richard G. Dowling, Dowling Associates, Inc.
  Alexander Skabardonis, University of California, Berkeley
  Senanu Ashiabor, Dowling Associates, Inc.
Vasin Kiattikomol, Dowling Associates, Inc.
Computational Efficiency of Alternative Arterial Offset Optimization Algorithms (11-0181)
Christopher M. Day, Purdue University
Darcy M. Bullock, Purdue University

466  (RCP11-018) Tuesday Jan 25, 2011 9:30-12:00 Marriott Salon 2
Improving Intersection Operations
Milan Zlatkovic, University of Utah, presiding
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Improving Safety and Mobility at High-Speed Intersection with Innovations in Sensor Technology (11-4089)
Anuj Sharma, University of Nebraska, Lincoln
Darcy M. Bullock, Purdue University
Senem Velipasalar, University of Nebraska
Mauricio Casares, University of Nebraska
Jacob Schmitz, University of Nebraska
Nathaniel Burnett, University of Nebraska, Lincoln

Design of Intergreen Times based on Safety Reliability (11-3181)
Keshuang Tang, Tohoku University, Japan
Masao Kuwahara, Tohoku University, Japan
Shinji Tanaka, University of Tokyo, Japan

Integrated Freeway Interchange Control Model Based on Enhanced Cell Transmission Model (11-2925)
Zichuan Li, University of Maryland, College Park
Ruihua Tao, Maryland Department of Transportation

Delay Analysis of Traffic Signal Phase Termination Algorithm Using Computer Simulation (11-0960)
Edward James Smaglik, Northern Arizona University
Peter Tarmo Savolainen, Wayne State University
Robert Christopher Steele, Northern Arizona University
John E. DiBiasi, Northern Arizona University

Stop-Bar Traffic Flow State Detection (11-0950)
Jean F. Perez-Montesinos, University of Idaho
Michael P. Dixon, University of Idaho
Michael Kyte, University of Idaho

Intelligent Traffic Signal System for Urban Isolated Intersections: Dynamic Pedestrian Accommodation (11-0848)
George (Xiaozhao) Lu, University of Vermont
Yi Zhang, University of Wisconsin, Madison
David A. Noyce, University of Wisconsin, Madison

Theoretical Analysis for Variable Yellow and All-Red Intervals (11-0511)
Faisal Awadallah, Birzeit University, Palestine

Turn-Pocket Blockage and Spillback Models: Applications to Signal Timing and Capacity Analysis (11-0851)
William Reynolds, North Carolina State University, Raleigh
Nagui M. Rouphail, North Carolina State University, Raleigh
Xuesong Zhou, University of Utah

Quantifying Dynamic Factors Contributing to Dilemma Zone at High-Speed Signalized Intersections (11-3100)
Heng Wei, University of Cincinnati
Zhixia Li, University of Cincinnati
Ping Yi, University of Akron
Kevin R. Duemmel, Ohio Department of Transportation

Empirical Study of Yellow and Red Light Running Behavior on High-Speed Signalized Intersection Approaches (11-2204)
Ihab El-Shawarby, Virginia Polytechnic Institute and State University
Ahmed Mohamed Mostafa Amer, Virginia Polytechnic Institute and State University
Abdel-Salam Gomaa, Virginia Polytechnic Institute and State University
Hesham Rakha, Virginia Polytechnic Institute and State University
Effectiveness of Different Signal Control Strategies for Dilemma Zone Protection on High-Speed Approaches to Traffic Signals (11-2002)
Isaac K. Isukapati, North Carolina State University, Raleigh
Alixandra Demers, North Carolina State University, Raleigh
George List, North Carolina State University, Raleigh
New Evidence of Improvements in Dilemma Zone Protection by Detection-Control System (11-1785)
Dan Middleton, Texas Transportation Institute
James A. Bonneson, Texas Transportation Institute
Hassan A. Charara, Texas Transportation Institute
Analysis of Peer Intersection Data for Arterial Traffic Signal Coordination Decisions (11-0037)
Christopher M. Day, Purdue University
Thomas M. Brennan, Purdue University
Hiromal Premachandra, Purdue University
James R. Sturdevant, Indiana Department of Transportation
Darcy M. Bullock, Purdue University
Detection Performance of Wireless Magnetometers at Signalized Intersection and Railroad Grade Crossing Under Different Weather Conditions (11-3585)
Juan C. Medina, University of Illinois, Urbana-Champaign
Ali Hajbabaie, University of Illinois, Urbana-Champaign
Rahim F. Benekohal, University of Illinois, Urbana-Champaign
Advance Warning of End of Green Systems Using IntelliDrive Architecture: Proof of Concept (11-2402)
Srinivasa R. Sunkari, Texas Transportation Institute
Kevin N. Balke, Texas Transportation Institute

732 (RCP11-019) Wednesday Jan 26, 2011 2:30-5:00, Marriott Salon 2
Adaptive Signal Timing for Travelers and the Environment
Xinkai Wu, University of Minnesota, Twin Cities, presiding
Sponsored by Committee on Traffic Signal Systems

General-Purpose Scheme to Incorporate Global ATIS Strategies in Real-Time Traffic Control (11-3087)
Inchul Yang, University of California, Irvine
R. Jayakrishnan, University of California, Irvine
Signal Timing Optimization with Environmental Concerns (11-1413)
Lihui Zhang, Dalian University of Technology
Yafeng Yin, University of Florida
Reliability, Flexibility, and Environmental Impact of Alternative Arterial Offset Optimization Objective Functions (11-0036)
Christopher M. Day, Purdue University
Thomas M. Brennan, Purdue University
Alexander Michael Hainen, Purdue University
Stephen Matthew Remias, Purdue University
Hiromal Premachandra, Purdue University
James R. Sturdevant, Indiana Department of Transportation
Greg Richards, Indiana Department of Transportation
James S. Wasson, Indiana Department of Transportation
Darcy M. Bullock, Purdue University
Assessing Opportunities and Benefits of Alternative Winter Operation Timing Plans for Signalized Arterials (11-0010)
Thomas M. Brennan, Purdue University
Christopher M. Day, Purdue University
James R. Sturdevant, Indiana Department of Transportation
James S. Wasson, Indiana Department of Transportation
Darcy M. Bullock, Purdue University
Responsive Signal Control for Nonrecurrent Traffic Congestion on Arterials (11-3127)
  Shahadat Hossain, Alberta Transportation, Canada
  Lina Kattan, University of Calgary, Canada
  Ahmad Radmanesh, University of Calgary, Canada

Evaluation of Operational Effectiveness of Adaptive Traffic Signal System (11-1953)
  Jessica M. Hutton, Midwest Research Institute
  Courtney D. Bokenkroger, Midwest Research Institute

Delay-Time Actuated Traffic Signal Control for Isolated Intersections (11-1719)
  Robert Oertel, German Aerospace Center
  Peter Wagner, German Aerospace Center

734  (RCP11-020) Wednesday Jan 26, 2011 2:30-5:00, Marriott Salon 2
Priority for Transit at Traffic Signals
Burak Cesme, Northeastern University, presiding
Sponsored by Committee on Traffic Signal Systems

Traffic Signal Optimization with Transit Signal Priority: Application to an Isolated Intersection (11-3092)
  Eleni Christofa, University of California, Berkeley
  Alexander Skabardonis, University of California, Berkeley

Dynamic Programming Model for Optimal Bus Signal Priority Control with Multiple Requests (11-2851)
  Wanjing Ma, Tongji University, China
  Yue Liu, University of Wisconsin, Milwaukee
  Xiaoguang Yang, Tongji University, China

Estimating Signalized Intersection Delays to Transit Vehicles from Archived AVL-APC Data (11-1791)
  Fei Yang, University of Waterloo, Canada
  Bruce Hellinga, University of Waterloo, Canada
  Jordan D. Hart-Bishop, University of Waterloo, Canada

Optimization of Transit Signal Priority Extensions Along an Uncoordinated Arterial (11-0110)
  Katherine E. Winters, Virginia Polytechnic Institute and State University
  Montasir M. Abbas, Virginia Polytechnic Institute and State University

Traffic Signal Timing for Optimal Transit Progression in Downtown San Francisco (11-3924)
  Christopher Pangilinan, San Francisco Municipal Transportation Agency
  Kristen Camarius, San Francisco Municipal Transportation Agency

Workshop (W)s
143  (RCW11-004) Sunday Jan 23, 2011 9:00-5:00, Marriott Thurgood Marshall North
Educating Transportation Engineers
Michael Kyte, University of Idaho, presiding
Sponsored by Committee on Traffic Signal Systems

This workshop examines best practices and innovations in traffic signal education and training
and identifies what students, engineers, and technicians need to know and understand about
traffic signal systems, the available resources to improve skills and competencies in practice, and
how the Traffic Signal Systems Committee can encourage development of educational materials,
curriculum, tools, and activities to improve education and training in traffic signal systems.

Innovations and Best Practices (Part 1) (9:00 am - 10:15 am) (P11-2002)
  Henry X. Liu, University of Minnesota, Twin Cities
  Peter J. V. Koonce, City of Portland
  Steven M. Click, Tennessee Technological University
  Edward James Smaglik, Northern Arizona University

  Zong Z. Tian, University of Nevada, Reno
  Anuj Sharma, University of Nebraska, Lincoln
Eddie James Curtis, Federal Highway Administration
Michael Kyte, University of Idaho
Perspectives of the Profession (11:30 am - Noon) (P11-2004)
Susan Langdon, Savant Group Inc.
Peter T. Martin, University of Utah
The MOST Curricula (1:00 pm - 2:15 pm) (P11-2005)
Michael Kyte, University of Idaho
Paul R Olson, Federal Highway Administration
Rick Denney, Federal Highway Administration
The National Transportation Curriculum Project (2:15pm - 3:30 pm) (P11-2006)
Andrea R. Bill, University of Wisconsin, Madison
Rhonda Kae Young, University of Wyoming
David Scott Hurwitz, Oregon State University
Rod E. Turochy, Auburn University
Laura S. Sandt, University of North Carolina, Chapel Hill
Transportation Education Development Pilot Program: The Region X Consortium Distance Education Curriculum Development Project (3:30 pm - 4:45 pm) (P11-2007)
Kelly Pitera, University of Washington
Ashley Raye Haire, Portland State University
Ming Lee, University of Alaska, Fairbanks
Clark C. Martin, Federal Highway Administration

Published Meeting - Committee (M)s
RCM11-034
Traffic Signal Systems Committee Monday Jan 24, 2011 1:30 - 5:30 Marriott Wilson B&C
Larry Head, University of Arizona, presiding
Sponsored by Committee on Traffic Signal Systems

RCM11-060
Traffic Signal Systems Research Subcommittee, AHB25(2) Monday Jan 24, 2011 9:00 - 10:00 Marriott Johnson
Sponsored by Committee on Traffic Signal Systems

RCM11-061
Traffic Signal Controller Architecture Subcommittee, AHB25(4) Monday Jan 24, 2011 10:00 - 11:00 Marriott Johnson
Sponsored by Committee on Traffic Signal Systems

RCM11-062
Traffic Signal Timing Manual Subcommittee, AHB25(1) Monday Jan 24, 2011 11:00 - 12:00 Marriott Johnson
Sponsored by Committee on Traffic Signal Systems

RCM11-067
Simulation of Traffic Signal Systems Subcommittee, AHB25(3) Monday Jan 24, 2011 8:00 - 9:00 Marriott Johnson
Sponsored by Committee on Traffic Signal Systems

Unpublished Meeting (X)s
RCX11-005
Joint Operations Summer Meeting Planning Committee
AHB25 Cosponsored Sessions (only editable by the primary committee sponsor)

RCW11-001
John A. Halkias, Federal Highway Administration, presiding

Designed for practitioners, this workshop provides an understanding of how operational improvements affect greenhouse gas emissions. It will look at how these strategies improve traffic flow, contribute to diversions and induced demand, and affect emissions. Also examined is how practitioners can use the new U.S. EPA MOVES model and other power-based emission models integrated with simulation models to analyze the energy and air-quality impacts of transportation projects.

- Impact of Operational Strategies on Induced Demand and Emissions (P11-1827)
  - Richard A. Margiotta, Cambridge Systematics, Inc.
- Green Routing Strategies: Field Results and Modeling Logic (P11-1828)
  - Hesham Rakha, Virginia Polytechnic Institute and State University
- Optimizing Traffic Control for Emissions with a Valid Simulation Program (P11-1829)
  - Henk J. van Zuylen, Delft University of Technology, Netherlands
- Toward Ecosensitive Traffic Management (P11-1830)
  - Peter Wagner, German Aerospace Center
- Measuring Emissions Impact of Traffic Control Change (P11-1831)
  - Robert Chamberlin, Resource Systems Group, Inc.
- Simulating the Impact of Variable Speed Limits on Air Quality in Barcelona (P11-1832)
  - Jordi Casas, Transport Simulation Systems, Spain
- Traffic Signal Control Strategies for Emission Reduction: The Case of IntelliDrive (P11-1833)
  - Alexander Skabardonis, University of California, Berkeley
- Current Practice in Optimization of Signal Timings and Impact on Emissions (P11-1834)
  - Aleksandar Stevanovic, Florida Atlantic University
- Panel Discussion (P11-1835)

RCW11-002
Doctoral Student Research in Transportation Operations and Traffic Control
Michael A. Knodler, University of Massachusetts, Amherst, presiding

This workshop is for the presentation of research findings by doctoral students nearing the completion of their academic requirements. For practitioners and researchers, these presentations provide a current snapshot into the ongoing, state-of-the-art and cutting-edge research in transportation operations and traffic control at universities across the world.

- Design Warrant for Application of Bicycle Climbing Lanes for Rural Roads (P11-1750)
  - Jeremy R. Chapman, University of Wisconsin, Madison
- Young Driver Involved Crashes in Kansas: Characteristics and Contributory Factors (P11-1751)
  - Niranga Amarasingha, Kansas State University
- Assessing the Potential for Adaptive Traffic Management in Work Zones Using Disaggregate Performance Measures (P11-1752)
  - Emily R. Kushto, Northwestern University
- Suggestions on How Agencies Should Apply the Highway Safety Manual to Two-Lane Road Curves (P11-1753)
  - Daniel J. Findley, North Carolina State University, Raleigh
- Traffic Operational Impacts due to Incidents at Freeway Facilities (P11-1754)
  - Cuie Lu, University of Florida
Intersection Controls Under IntelliDrive Environment (P11-1755)
  Joyoung Lee, University of Virginia
Predictive Traffic Signal Control Algorithm with IntelliDrive (P11-1756)
  Noah Goodall, University of Virginia
Allocation of Space and the Costs of Multimodal Transport in Cities (P11-1757)
  Eric Gonzales, University of California, Berkeley
Safety Effects of Access Points near Signalized Intersections (P11-1758)
  Reza Jafari, North Carolina State University, Raleigh
Dual-Loop Length-Based Vehicle Classification Modeling Against Synchronized and Stop-and-Go
Traffic Flows (P11-1759)
  Qingyi Ai, University of Cincinnati
Modeling Dynamic Dilemma Zone and Optimal Loop Placement for Protection (P11-1760)
  Zhixia Li, University of Cincinnati