Welcome to our 2015 Intelligent Transportation Society (ITS) of Maryland Annual Conference and Baltimore Regional Transportation Board (BRTB) Regional Traffic Signal Forum. This is the 20th ITS Maryland Annual Conference, the 8th Regional Traffic Signal Forum, and our 3rd joint event.

We sincerely hope that each of you take something back from this conference to your agency or firm that you can use - additional congesting-fighting and safety-promoting ideas and lessons learned for your ITS / Traffic Signal toolbox; a better understanding of emerging technologies and new products, and new or renewed business contacts.

Between the technical sessions, we encourage you to visit the exhibitor’s tables and ask about their products and applications. They are a great source of information. Our personal experience at this conferences is that we learn just as much from the exhibitors as from the technical sessions. On that note, we’ve once again inserted “Exhibitor Speed Dating” into the program providing attendees highlights of new technologies and applications.

Lunch - annually, it rates as the best “session” of the day! Seriously, don’t miss it – lunch is located in a different building from the technical sessions. Follow the signs, your colleagues, or look at the directions in the program. During lunch, we’ll announce scholarship winners, conduct some light ITS Maryland business, give you an overview of the year’s activities, and announce the results of the election for next year’s ITS MD Board of Directors and officers.

At the conclusion of our event, we will be having a happy hour with light dinner fare in the main area. Stick around, because immediately following the last session we’ll hand out free drink tickets and raffle tickets for prizes.

As of this writing, we have nearly 225 registered attendees! If you enjoy the meeting, please join us in thanking the folks that participated in the meeting planning (see the list in this program). Their hours of hard work, creativity, and coordination, have brought this conference to fruition. And also, thanks to you, our members and friends -- without your support and attendance at all the events throughout the year, none of this would be possible.

If you are not a member of ITS Maryland, we urge you to join us. Take a look at our new website www.itsmd.org for membership benefits, the application and costs.

Don’t forget to fill out the Professional Development Hours (PDH) form. ITS Maryland is an approved provider of Continued Professional Competency (CPC) courses by the State of Maryland to help you fulfill the requirements for your Professional Engineer (PE) license or Professional Traffic Operations Engineer (PTOE) certification. We only award PDHs based on the number of hours you attended, so please complete the form and hand it in at the registration desk before you leave for the day. We’ll email your PDH certificate to the email address that you used to register on the Eventbrite web site by early November.

We have a full day ahead of us, so let us make our 2015 Meeting another resounding success, and we will see you in 2016!

Best Regards,
Kevin Lee
President, ITS Maryland

Ben Myrick
Chair, BRTB Traffic Signal Subcommittee
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ITS Maryland is a State Chapter of ITS America, an organization of public agencies, private companies and academic institutions. Together with the U.S. Department of Transportation, we are supporting and promoting the coordinated development and deployment of technologies that will make our transportation systems safer, more effective, and more efficient while providing improved service to system customers and users.

The Baltimore Regional Transportation Board (BRTB) is the federally designated Metropolitan Planning Organization (MPO) for the Baltimore metropolitan region. The BRTB’s Traffic Signal Subcommittee brings together representatives of the Baltimore metropolitan jurisdictions and private sector engineers. The Traffic Signal Subcommittee meets quarterly to discuss issues and trends, share best practices, review new technologies and products, share accomplishments and support the goals of the BRTB. Accomplishments of the Subcommittee have included working with jurisdictions to gain federal funding for signal projects, organizing eight Regional Signal Forums, and bringing together jurisdictions to improve signal operations across boundaries.

CONFERENCES CENTER MAP

The Conference will be located in Building 3
The Buffet Lunch, Business Meeting, and Lunchtime Speaker will be held in Building 2
# SCHEDULE OF EVENTS

<table>
<thead>
<tr>
<th>Time</th>
<th>Session 1A</th>
<th>Session 1B</th>
<th>Break - Exhibits</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00am - 8:30am</td>
<td>Registration and Continental Breakfast / Exhibits</td>
<td>Welcome and Introductions (Auditorium)</td>
<td>Welcome and Introductions (Auditorium)</td>
</tr>
<tr>
<td>8:30am - 9:00am</td>
<td>Keynote Address - Jim Ports, MDOT Deputy Secretary for Operations</td>
<td>EXHIBITOR “SPEED DATING” (Auditorium)</td>
<td>Keynote Address - Jim Ports, MDOT Deputy Secretary for Operations</td>
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<tr>
<td>9:00am - 10:00am</td>
<td>5-minute intro and technology highlight from each exhibitor</td>
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<td>10:00am - 10:30am</td>
<td>Break - Exhibits</td>
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<td>Break - Exhibits</td>
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<tr>
<td>10:30am - 12:00pm</td>
<td>SESSION 1A</td>
<td>SESSION 1B</td>
<td>Lunch - Keynote Speaker &quot;THISisITS&quot; - Regina Hopper, President/CEO, ITS America</td>
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<tr>
<td>12:00pm - 1:45pm</td>
<td>Urban Mobility &amp; Smart Apps</td>
<td>Arterial Signal Operations</td>
<td>Lunch - Keynote Speaker &quot;THISisITS&quot; - Regina Hopper, President/CEO, ITS America</td>
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<tr>
<td>1:45pm - 3:15pm</td>
<td>Hear the latest from innovators in Shared-Use Mobility and Smart Apps for Transit, Ridesharing, Parking and eco-driving and how they are changing transportation.</td>
<td>How should we evaluate the performance of signalized arterials? Where can we find ‘good’ data (and what is considered ‘good’)? How can we capture the performance of all modes? What defines good and bad performance?</td>
<td>Lunch - Keynote Speaker &quot;THISisITS&quot; - Regina Hopper, President/CEO, ITS America</td>
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<tr>
<td>3:30pm - 4:00pm</td>
<td>LUNCH</td>
<td>4:15pm - 5:30pm</td>
<td>Lunch - Keynote Speaker &quot;THISisITS&quot; - Regina Hopper, President/CEO, ITS America</td>
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<tr>
<td>3:30pm - 4:00pm</td>
<td>MAP-21 Performance Requirements: Implications for TSM&amp;O</td>
<td>Closing Keynote</td>
<td>Lunch - Keynote Speaker &quot;THISisITS&quot; - Regina Hopper, President/CEO, ITS America</td>
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<td>3:30pm - 4:00pm</td>
<td>This session will explore how MAP-21 Performance Management requirements relate to TSM&amp;O and how strategies such as Active Traffic Management, Adaptive Signal Control and others can help agencies move the performance needle.</td>
<td>Closing Keynote - Bernie Wagenblast - Total Traffic &amp; Weather Network</td>
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<td>3:30pm - 4:00pm</td>
<td>Moderator: Roger Boothe</td>
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<td>3:30pm - 4:00pm</td>
<td>Francine Shaw-Whitson - FHWA</td>
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<td>3:30pm - 4:00pm</td>
<td>Mara Campbell - CH2M Hill</td>
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<td>3:30pm - 4:00pm</td>
<td>Glenn McGlaughlin - MD SHA</td>
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<td>3:30pm - 4:00pm</td>
<td>Tom Jacobs - UM CATT Center</td>
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<td>Lunch - Keynote Speaker &quot;THISisITS&quot; - Regina Hopper, President/CEO, ITS America</td>
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Hear the latest from innovators in Urban Mobility and Smart Apps for Transit, Ridesharing, Parking and Eco-driving and how they are changing transportation.

1. **BRIDJ - Matt George**

**Bio:** Matt is the CEO of Bridj, which is the leader in creating smart cities through smart mass transportation. Bridj has been recognized in the New York Times, the Economist, and most major American technology publications for its work in creating a smarter city through better mobility. In addition to Bridj, Matt served as the Innovation Chair for the Boston 2024 Olympic bid, as well as working with a number of community-based organizations.

**Summary:** Bridj changes the way cities work by deploying the world’s first smart mass transit system. We use big data to create pop-up shuttle routes that respond to predictive and retrospective city demand patterns. Each shuttle (operated through our partner network) is equipped with WiFi, and premium seating, creating a tremendously comfortable and enjoyable experience for our users. Bridj is the category leader in the smart mass transit space, and posts class-leading metrics in the overall transportation technology space.

2. **Parking Panda - Jackie Gilbert**

**Bio:** Jackie Gilbert is the Director of Communications for Parking Panda

**Summary:** Parking Panda is the industry leading mobile application and optimization platform for parking. It enables people in need of parking to save money and time by finding a place to park and paying right from their mobile phone or reserving a space in advance on the web. Parking owners and managers can capitalize on their parking inventory by driving extra traffic when yield is low and improving pricing when the lot is full.

3. **RideScout - John Gossart**

**Bio:** John Gossart is an original partner, head of Business Development, and currently a Senior Advisor at RideScout (www.RideScout.com), the transportation tech startup acquired by Daimler-Mercedes in 2014. He is also the Co-founder and Chief Operating Officer of GoodWorld (www.GoodWorld.me), the FinTech startup revolutionizing giving and financial transactions on social media. John graduated from Boston College in 1992 and subsequently earned a Masters in Public Policy and Fiscal Management from Georgetown University.

**Summary:** RideScout is a mobile app that helps you get from point A to point B faster and smarter. RideScout shows you real-time information about transportation options for transit, bus, bike, taxi, car share, rideshare, parking and walking directions.

4. **Traffic Technology Services - Kiel Ova**

**Bio:** Kiel Ova, P.E., PTOE, is the Chief Marketing Officer for Traffic Technology Services Inc. (TTS). TTS is a data content provider for the automotive industry, commercial fleets, telematics integrators, and other transportation service providers pursuing V2I connected vehicle applications. TTS demonstrated a non-DSRC environmental application at the 2014 Consumer Electronic Show, winning The Verge’s Best Auto Tech award.

**Summary:** Advances in the automobile industry are allowing V2I applications with minimal infrastructure investment, and bringing the USDOT connected vehicle applications into production. Learn how connected vehicle applications will change the driver’s experience at the traffic signal, and how connected vehicles may change the agency’s role in ITS.

5. **Uber - Annaliese Rosenthal**

**Bio:** Annaliese Rosenthal is the General Manager of Uber in Virginia, where she oversees operations and strategy across the state. Previously, she spearheaded supply management and growth initiatives for Uber in the Washington D.C. metropolitan area. Before joining Uber, Annaliese worked at LivingSocial, an online, local marketplace where she developed launch strategies for new products across North America. In her spare time, she is a mentor with BUILD DC, an organization that empowers high school students in under-resourced communities through entrepreneurship-based experiences. Annaliese earned her BA from Davidson College.

**Summary:** Uber is disrupting the transportation industry and changing the way we move. Learn about Uber’s vision for the future and how the company plans to leverage technology and the latest innovations to take cars off the road, conserve our environment and improve life in cities around the world.
How should we evaluate the performance of signalized arterials? Where can we get “good” data and what is considered “good”. How can we capture the performance of all modes? What defines good and bad performance?

1. An Alternative Look at Arterial Performance Measures - Dr. Stanley E. Young, P.E., Traffax, Inc.

Bio: Dr. Young is co-founder of Traffax Inc., a University startup to commercialize Bluetooth traffic monitoring technology developed at UMD, where he continues to provide strategic technical direction. From 2006 through 2015, he was on staff at the University of Maryland’s Center for Advanced Transportation Technology leading research associated with the I-95 Vehicle Probe Project (VPP), arterial performance assessment, and Bluetooth re-identification traffic monitoring. He currently leads research initiatives at the National Renewable Energy Laboratory in Golden, Colorado focusing connected and automated vehicle technology, and its impact on the nation’s future energy budget and greenhouse gas emissions.

Summary: This presentation explores four emerging arterial performance measures resulting from new data capabilities enabled by vehicle probe and high-resolution signal data. These measures include: full travel time characterization, percentile-based travel time reliability, percent stopped on red utilizing the Purdue Coordination Diagram, and frequency of split failures. These measures are important not only in traffic engineering, but also as key measures to enable arterial management systems, integration in traffic management centers, and use for long term performance monitoring and planning. Since 2008, probe data and re-identification travel time data have become available for freeways as well as for interrupted flow arterial roadway facilities. Many departments of transportation (DOT) are eager to use this data to assess the reliability and performance of arterials for both internal applications as well as the anticipated Moving Ahead for Progress in the 21st Century Act (MAP-21) requirements. Metrics such as Planning Time Index (PTI) and Travel Time Index (TTI) have been adapted for arterials, with mixed results. At the same time, the falling costs of data processing, data storage and communications has enabled central reporting and analysis of high-resolution controller data, which includes not only signal phase, and timing (SPAT), but all sensor actuations. These new data sources provide the basis for more effective performance measures. As one example, through the I-95 Corridor Coalition’s Vehicle Probe Project validation program, a new validation methodology was introduced that utilized the whole travel time distribution rather than a select metric or percentile such as TTI or PTI. This in turn led to a different treatment of arterial travel time and reliability performance based on a full distribution of percentile based travel time.

2. Arterial Congestion Management Studies: Metrics & Performance - Carole Delion, SHA

Bio: Ms. Delion works for the Maryland State Highway Administration’s (SHA) Office of Planning and Preliminary Engineering as a Traffic Engineer. A graduate from the University of Maryland, College Park for both Bachelor’s and Master’s degree in Civil Engineering (Transportation Focus), she immediately took to the detailed and ever-evolving traffic operations and regional demand modeling tools. Ms. Delion currently works on a variety of congestion mitigation projects throughout the State of Maryland, relating to intersections, corridors, parallel facilities, and regional impacts. Her experience with data collection use and SHA’s planning process makes her an ideal candidate to speak on congestion-related ITS strategies from a State government’s perspective.

Summary: The purpose of this presentation is to discuss SHA’s planning process for the implementation of congestion-related ITS strategies on Maryland arterials. The discussion will focus on existing field collection tools such as RITIS data and Bluetooth, development of potential ITS mitigation strategies through Maryland State Highway Administration’s Congestion Management Studies, current performance measures reported for decision making, and SHA’s vision towards ITS implementation.

3. Applications of Multi-Modal Arterial Performance Measures in Downtown Washington, D.C. - Robin Fish, SWA

Bio: Robin Fish is a Project Engineer in the Traffic Engineering & ITS Division at Sabra, Wang & Associates, Inc. Robin is a licensed Professional Engineer in the State of Maryland. Robin has been with SWA since September, 2011 when he graduated from the University of Maryland with Bachelors and Masters of Science degrees in Civil and Transportation Engineering.

Summary: The purpose of this presentation is to provide real-world examples and applications of multi-modal arterial performance monitoring and measurement tools including passenger vehicles, buses and bicycles. This presentation will leverage the experience and lessons learned from the DDOT Citywide Signal Timing Optimization and other operational studies, including the recent visit of Pope Francis, to offer practice-ready ideas for a wide variety of arterial performance monitoring and measurement applications.
SESSION DESCRIPTIONS

SESSION 2A - TRAFFIC SIGNAL DESIGN 201: INFRASTRUCTURE DESIGN CHALLENGES AND SOLUTIONS (Auditorium)

LUNCH | KEYNOTE SPEAKER “#THISisITS” - Regina Hopper, President/CEO, ITS America

Bio: Regina Hopper was named President & CEO of ITS America in May, 2015. She is the former President and CEO of America’s Natural Gas Alliance and former Executive Vice President of US Telecom and the American Trucking Associations. Prior to her work in industry associations, Regina was a correspondent for CBS News, where she covered the White House, anchored the network’s overnight broadcast and reported on breaking news from the New York and Washington, D.C. bureaus.

She was awarded an Emmy for investigative reporting on 48 Hours. Before working at both the ABC and CBS affiliates in Little Rock, Arkansas, Regina practiced securities and bankruptcy law.

Regina is currently the Chair of the Miss America Foundation Board of Trustees and first Vice-Chair of the Miss America Organization Board of Directors. She is a graduate of the University of Arkansas School of Law and the University of Arkansas with a Bachelor of Arts degree in political science.

This session will be a forum for training and discussion on the topic of traffic signal design.

1. Common Issues in Signal Construction - Corren Johnson, Chief, Traffic Operations Division (TOD), Maryland State Highway Administration

Bio: Corren Johnson has worked at SHA for over 11 years, serving the last 2 as Chief of the Traffic Operations Division. She has varied experience in transportation design, construction, training, contract management and project management. Throughout her career, Corren has been responsible for design and construction activities in support of traffic control device implementation for both state, county and developer projects throughout Maryland.

Summary: This presentation will focus on key signal constructibility issues.

2. Signal Design in the Vicinity of Utilities - Aneesha Griffin, P.E., PTOE, Deputy Director, Traffic Engineering and ITS, Sabra Wang and Associates

Bio: Ms. Griffin has over 11 years of experience in traffic engineering design and analysis with a special interest in traffic signal and work zone designs. Throughout her career, Ms. Griffin has been responsible for the design of over 100 temporary and permanent traffic signals throughout the State of Maryland.

Summary: One of the biggest constraints in the development of traffic signal designs is accommodating existing underground and overhead utilities. This portion of the presentation will include an overview of some critical constraints, challenges that exist to attempting to avoid conflicts with utilities, and potential methods for reducing risk.


Summary: For most intersections outside of a downtown environment, operational efficiencies can be gained through detection. There are many different detection types and configurations, and without a design that works in combination with the signal timing, an intersection may never operate as intended. Alison Tanaka will be discussing the importance of detection for identifying user presence, providing safe and efficient operations, and monitoring intersection performance.


Bio: Bill Monroe has over 34 years of hands-on experience in the full spectrum of design, construction, maintenance, and integration of traffic signal intersections, central computer systems, signal timing and optimization, vehicle detection, DMS signs and related Intelligent Traffic System devices.

Summary: This presentation will examine key considerations in signal design including foundations; anchor bolts; leveling nuts and washers; pole rake; signal pole setting, and conduit installation.
SESSION 2B - MAP-21 PERFORMANCE REQUIREMENTS: IMPLICATIONS FOR TSM&O (A111)

Moderator: Roger Boothe, CH2M Hill, Inc.

This session will explore how MAP-21 Performance Management requirements relate to Transportation System Management and Operations (TSM&O) and how strategies such as Active Traffic Management, Adaptive Signal Control and others can help agencies move the performance needle.

Summary:
• What is Performance Management and why is it important?
• How and why did Missouri DOT do it?
• Why is National Performance Management important to the industry?
• How does Performance Management impact ITS?

1. Overview of FHWA’s performance management journey - Francine Shaw-Whitson, FHWA

2. Performance Management Best Practices - Mara Campbell, CH2M Hill

3. Performance Management Activities at SHA/CHART - Glenn McGlaughlin, MD SHA

4. Methods of Generating Performance Measures - Tom Jacobs, UM CATT Center

SESSION DESCRIPTIONS

SESSION 2A - TRAFFIC SIGNAL DESIGN 201: INFRASTRUCTURE DESIGN CHALLENGES AND SOLUTIONS (Auditorium) continued

5. ADA Design Standards - Seth Young, P.E., PTOE, Associate and Senior Traffic Engineer, STV

Bio: Seth D. Young, PE, PTOE is an Associate and Senior Traffic Engineer at STV Incorporated with over 12 years’ experience in transportation planning, analysis and design. Throughout his career Seth has been responsible for the planning and design of hundreds of traffic signals in Maryland, the District of Columbia, Pennsylvania, New Jersey, Connecticut and California.

Summary: This presentation will focus on key issues in ensuring ADA compatibility.

6. Electrical and Telecommunications Design - Mr. Diederick VanDillen, PMP, ITS Systems Engineer, Jacobs Engineering

Bio: Diederick VanDillen leads the electrical and systems design group at Jacobs Engineering in Baltimore and has over 23 years of ITS experience in communications and systems design with related software and hardware product development, product sales, and technical services.

Summary: The traditional traffic signal cabinet is slowly evolving into an all-purpose ITS cabinet with increasing levels of supported functionality. As distributed intelligence expands along the arterial roadways there will be an increased reliance on communications and electrical performance needed to integrate these node points. This presentation will challenge practitioners to look beyond the state of the current practice in considering future needs and share lessons learned to prepare these cabinets for ever increasing capabilities.

CLOSING | KEYNOTE SPEAKER - Bernie Wagenblast, Total Traffic & Weather Network

Bio: Bernie Wagenblast has spent most of his career working in transportation communications. He had his start as one of the original Shadow Traffic reporters in New York City in 1979 and was heard on stations such as WABC and WINS. Following that he worked for the New York City Department of Transportation and the Port Authority of New York & New Jersey where he helped create TRANSCOM, a coalition of transportation agencies in New York, New Jersey and Connecticut. Additionally, Bernie has worked for TransCore and SmartRoute Systems. He is currently a traffic reporter for Total Traffic & Weather Network in Rutherford, New Jersey.

Since 1998 Bernie has been the editor of the Transportation Communications Newsletter. He is also the editor of the AASHTO Daily Transportation Update and newsletters for ITS California, ITS Michigan and ITS New Jersey.
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DON’T FORGET TO VISIT ALL OF OUR EXHIBITORS AND VENDORS

THANK YOU FOR ANOTHER SUCCESSFUL YEAR!

We’d like to thank everyone for attending and making this a successful event. There are several people who helped organize varying meeting activities. Thank you to the planning committee and all of their efforts:

Planning committee:
• Kevin Lee, Kittelson & Associates, Inc – ITS Maryland President
• Ruihua Tao, Maryland State Highway Administration – ITS Maryland Vice President
• Adison Zoretic, Johnson, Mirmiran & Thompson, Inc. – ITS Maryland Treasurer
• Keith Riniker, Sabra, Wang & Associates - ITS Immediate Past President
• Ben Myrick, Maryland State Highway Administration – BRTB Traffic Signal Subcommittee Chair
• Bala Akundi, Baltimore Metropolitan Council
• Eileen Singleton, Baltimore Metropolitan Council
• Diederick VanDillen, Jacobs Engineering
• Sandi Dunmyer, TS&T
• Kyle Tarnoviski, STV
• Bo Yuan, T3 Design Corporation
• Hubert Clay, Total Traffic & Weather Network
• Steve Kuciemba, Parsons Brinckerhoff
• Bailey Lozner, Kittelson & Associates, Inc
• Dorret Oosterhoff, Kittelson & Associates, Inc
• Mona Wali, Kittelson & Associates, Inc
• Derek Baker, Kittelson & Associates, Inc
• Yu-Ling Wang, Sabra, Wang & Associates