The Metropolitan Planning Organization for the Baltimore Region

TRAFFIC SIGNAL SUBCOMMITTEE

Thursday, February 25, 2020
Howard County DPW – Bureau of Highways
7125 Riverwood Drive, Suite B, Columbia, MD 21046

MINUTES

1.   WELCOME AND INTRODUCTIONS

Mr. Bo Zhou welcomed everyone to the first meeting of the signal subcommittee of 2020 and thanked Howard County staff for hosting it. A round of introductions followed the opening comment.

2.   REVIEW OF PREVIOUS MEETING MINUTES

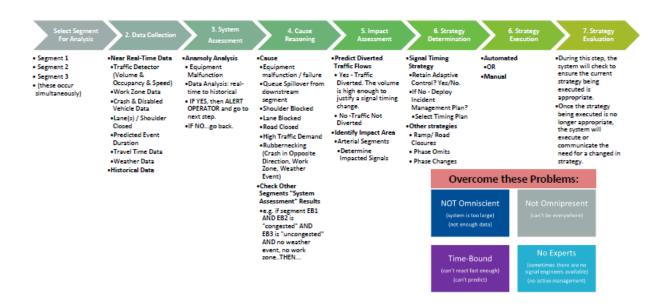Minutes from the previous meeting on June 20, 2019 were approved without any modifications.

3.   TRAFFIC SIGNAL TIMING IN MDOT SHA TSMO PROGRAM

Mr. Keith Riniker, Sabra & Associates, described a new initiative at MDOT SHA to make signal timing a part of the TSMO program. It involves a series of arterial management functions and strategies that include traffic management, safety, information dissemination, demand management, curbside and parking management, and integrated corridor management.

The current signal timing process is manually driven with annual reviews on a three-year cycle and/or customer complaints, reports from law enforcement, information providers like Waze, etc. Some of the challenges associated with this approach include not being able to react in a timely manner to changing traffic conditions, lack of reliable and timely data, and lack of manpower to make the needed changes.

The new automated approach is a seven-step process as outlined on slide 17 of the attached presentation and relies in breaking down the corridors into segments and using multiple sources of real-time data to identify problems, determining cause, assess impacts, identify, execute, and evaluate strategy.

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Voting: City of Annapolis, Anne Arundel County, Baltimore City, Baltimore County, Carroll County, Harford County, Howard County, Queen Anne's County, MD Department of Transportation and Harford Transit. Non-Voting: MD Department of the Environment, MD Department of Planning, and MD Transit Administration.

SIGNAL TIMING PROCESS - AUTOMATED

Select Segment For Analysis	2. Data Collection	3. System Assessment	4. Cause Reasoning	5. Impact Assessment	6. Strategy Determination	6. Strategy Execution	7. Strategy Evaluation
• Segment 1 • Segment 2 • Segment 3 • (these occur simultaneously)	• Near Real-Time Data • Traffic Detector (Volume & Occupancy & Speed) • Work Zone Data • Crash & Disabled Vehicle Data • Lane(s) / Shoulder Closed • Predicted Event Duration • Travel Time Data • Weather Data • Historical Data	• Anamoly Analysis • Equipment Malfunction • Data Analysis: real-time to historical • IF YES, then ALERT OPERATOR and go to next step. • IF NO...go back.	• Cause • Equipment malfunction / failure • Queue Spillover from downstream segment • Shoulder Blocked • Lane Blocked • Road Closed • High Traffic Demand • Rubbernecking (Crash in Opposite Direction, Work Zone, Weather Event) • Check Other Segments "System Assessment" Results • e.g. if segment EB1 AND EB2 is "congested" AND EB3 is "uncongested" AND no weather event, no work zone..THEN...	• Predict Diverted Traffic Flows • Yes - Traffic Diverted. The volume is high enough to justify a signal timing change. • No - Traffic Not Diverted • Identify Impact Area • Arterial Segments • Determine Impacted Signals	• Signal Timing Strategy • Retain Adaptive Control? Yes/No. • If No - Deploy Incident Management Plan? • Select Timing Plan • Other strategies • Ramp/ Road Closures • Phase Omits • Phase Changes	• Automated • OR • Manual	• During this step, the system will check to ensure the current strategy being executed is appropriate. • Once the strategy being executed is no longer appropriate, the system will execute or communicate the need for a changed in strategy.

Overcome these Problems:

NOT Omniscient (system is too large) (not enough data)

Not Omnipresent (can't be everywhere)

Time-Bound (can't react fast enough) (can't predict)

No Experts (sometimes there are no signal engineers available) (no active management)

Mr. Riniker presented two corridor scenarios where this new approach is being tested – U.S. 1 and I-95 and U.S. 40 and I-70. See attached slides for more information.

[PDF: TSMO Signal Timing]

4.   FHWA ACTIVE MANAGEMENT CYCLE WORKSHOP

This FHWA-sponsored workshop presents a self-assessment as well as guidance material (collectively a "tool") that agencies can use to improve the ways in which they manage and operate the transportation network. It was scheduled for March 25 but was postponed as a result of the COVID-19 pandemic.

[PDF: Active Management Cycle – Workshop Information]

5.   TRAFFIC SIGNAL FORUM/ITSMD ANNUAL MEETING

Mr. Bala Akundi provided an update on the Regional Traffic Signal Forum/ITSMD Annual Meeting held on October 16th at the Maritime Institute. Since 2004, the signal subcommittee has been organizing regional forums to bring stakeholders together to learn about advances in technology and to foster regional and broader cooperation and coordination. This year marks the 10th such forum.

ITS Maryland is a State Chapter of ITS America, the organization is comprised of public agencies, private companies and academic institutions. Together with the U.S. Department of Transportation, they 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 the customers and users of the systems.

For the past 10 years, ITSMD and the Traffic Signal Subcommittee held joint events to attract more and wider range of attendees. This partnership, which happens every other year, has resulted in significant interest in attendees from the public and private sectors, with almost 300 registered attendees in 2019. Two sets of concurrent sessions on ITS and signal topics were held. The morning welcome address was done via video by MDOT MVA Administrator Ms. Chrissy Nizer who heads the statewide working group on connected and autonomous vehicles (CAV). Mr. Neil Pedersen, TRB Executive Director on issues regarding the introduction of connected and automated vehicles, delivered the morning keynote address. The next regional signal forum will be in 2021.

[PDF: ITSMD-Signal-Forum-Highlights]

6. TECHNOLOGY SHOWCASE

ITS Plus VIVDS (Video Image Vehicle Detection System) provides video, loops, radar, and thermal in one device. The system provides advanced detection up to 1000 ft., stop bar detection, and vehicle counts simultaneously with one camera and one card per approach. Mr. Mike Hutchison, founder and marketing manager, and Ms. Staci Ingram, provided an overview of their products and services. For more information, go to www.ITSPlus3.com.

ATTENDANCE
Bala Akundi, Baltimore Metropolitan Council (BMC)
Yeshitlaw Argaw, MDOT SHA
Jennifer Biddle, Howard County
Eddie Bostic, Century Engineering
Andrew Burke, MWCOG
Yao Cheng, MDOT SHA
Subin George, Howard County
Hiwot Habtemariam, MDOT SHA
Mike Hutchison, ITS PLUS
Staci Ingram, ITS PLUS
Minseok Kim, MDOT SHA
Breck Jeffers, FHWA
Robert Lesueur
Jeremy Mocny, WR&A
Ben Myrick, MDOT SHA
Kris Nebre, Baltimore County
Dilip Patel, MDOT SHA
Keith Riniker, Sabra & Assoc.
Bo Yuan, Endesco
Bo Zhou, Anne Arundel County