TRAFFIC SIGNAL SUBCOMMITTEE
Thursday, October 25, 2018
Baltimore Metropolitan Council

MINUTES

1. SMART SIGNALS

Mr. Ben Myrick (SHA) gave an update on MDOT SHA's smart arterial congestion management system that includes smart signals, adaptive signal control technology, performance measures, and other arterial congestion management strategies.

He began with an overview of the state's signal systems which includes 3,647 signals of which OOTS maintains all but 750 or so and they run on Econolite ASC/3 or Econolite Cobalt controllers. Detection is mostly video, non-invasive micro loop probes, inductive loops, radar based and thermal. Timing plans are time of day/day of week and retimed every 3-years or so. Some of the challenges facing the system are outdated communication and ATMS, ability to adpat to non-recurrent congestion events, and response to early onset of peak periods or extended peak periods. From a maintenance standpoint, the signal shop covers roughly 3,000 signals spread over 12,500 square miles and it can be a challenge due to number of technicians available, especially those with CDL's and crane operator license. Emergency maintenance takes precedence over routine work.

The Governor's traffic relief plan dedicated 50.3 million dollars to modernize and manage signal systems with cutting edge technology. The objective of the smart signals initiative is to:

- Reduce congestion and delay

- Improve travel time and reliability

- Accommodate all modes -vehicles, pedestrians, transit, and emergency services

- Improve air quality by reducing vehicle emissions

- Provide a platform for future CV deployments and pilots

- Support Transportation Systems Management and Operations (TSM&O)

- Improve Customer Service

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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.

The rest of his presentation focused on adaptive signal control technology (ASCT) and how MDOT SHA is prioritizing corrdiors for deployment. The criteria include volume, LOS, weekend shopping, special events, homeland security, and pedestrian activity. About 20 corridors are currently programmed with 6 corridors operations. About 52 signals are operating adaptive with another 123 more programmed.

The US 1/MD 175 system that is currently deployed shows a 3 percent reduction in travel time that will result in about $1.3 million in annual user cost savings with a benefit to cost ration of 8:1 during the first year. The MD 24 system shows travel times reductions of over 10 percent for some segments and time periods and an annual user cost savings of about $2.1 million.

2. NORTH AVENUE TRANSIT SIGNAL PRIORITY (TSP)

Mr. Anam Ardeshiri, Sabra & Associates, briefed the committee on signal coordination between Baltimore City DOT and MDOT MTA for this TIGER grant funded project. His presentation focused on the goals of the project, methodology, analysis tools, evaluation and challenges. The main impetus behind this project was BaltimoreLink, a complete overhaul and rebranding of the core transit system operating within the city and throughout the greater Baltimore region.

The initial step involved prescreening 700 signals in Baltimore City. Several operational & geometric factors were defined to develop a pre-screening formula to prioritize signalized intersections/corridors for TSP.

The goal of the North Avenue Rising project was to support economic revitalization along North Avenue through increased mobility and to broaden access for residents of the corridor to economic opportunity throughout Baltimore. This was a collaboration between Federal, State, and local funding. The State of Maryland and Baltimore City won funding for the project from the US DOT through the TIGER program (Transportation Investment Generating Economic Recovery). The total project budget is $27.3 million. The $10 million from the TIGER grant compliments $14.7 million in funds committed by MDOT, $1.6 million from US DOT's FHWA, and $1 million from Baltimore City. The project includes sidewalk improvements, dedicated bus lanes, transit signal priority, enhanced bus stops, roadway repaving, and bikeshare stations.

TSP-enabled ATC controllers and cell modems were installed along the corridor. The presentation includes detailed analysis during AM and PM peak periods for signal timing optimization and transit travel time improvements. Some of the challenges faced during implementation include having too many near-side bus stops, highly variable boarding/alighting times, broken vehicle detection and equipment, and occasional communications failure.

[PowerPoint – North Avenue Transit Signal Priority]

3. STATE DOT EXPERIENCE WITH PEDESTRIAN HYBRID BEACONS (PHB)

Mr. Minseok Kim, MDOT SHA, provided their experience installing the first PHB in Maryland and compared it with other states that have been using this for some time.

The PHB was installed along MD 410 WB at Bethesda Chevy Chase High School. This location has a high density of pedestrian activity after school closes. There is also a service road adjacent to this location for the nearby office buildings. This signal was activated in October 2017. The presentation slides show signal location and operational features.

It was observed that over 75 percent of vehicles stop for pedestrians. About 10 percent of vehicles do not stop when they should. Only half of the pedestrians use the push button. The PHB feels safer because pedestrians have a clear signal to follow. SHA is looking to make some modifications to improve compliance and overall performance at this location. They are also looking to install one at another location such as US 1 at Hartwick Road in College Park.

On April 5th, 2017, MDOT SHA sent a short survey to the AASHTO Subcommittee on Traffic Engineering to learn about the use of Pedestrian Hybrid Beacons in other states. Attached is summary of survey results

[PowerPoint – Field Study for PHB and PHB survey results]

4. TECHNOLOGY SHOWCASE

- Ms. Sandi Dunmyer, TSS - Autoscope Vision delivers the highest levels of accuracy and performance in an easy to use detection solution that supports a variety of traffic management and ITS applications.

- Mr. Patrick Corridon, Iteris, Inc. – bicycle indicator light and bike detection algorithm

ATTENDANCE

Anam Ardeshiri, Sabra & Associates
Yeshitla Argaw, MD Dept. of Transportation State Highway Administration (MDOT SHA)
Andrew Burke, Metropolitan Washington Council of Governments (MWCOG)
Y.C. Yao Cheng, MDOT SHA
Patrick Corridon, Iteris
Sandi Dunmyer, TS &T
Subin George, Howard County DPW
Kristen Haas, STV
Breck Jeffers, Federal Highway Administration (FHWA)
Minseok Kim, MDOT SHA
Mike Lorenzo, Baltimore County DPW
Jordan Miller, JMT
Ben Myrick, MDOT SHA

Kevin Newton, Anne Arundel County Department of Public Works (DPW)
Raj Sharma, Baltimore City Department of Transportation (DOT)
Diederick VanDillen, Jacobs
Bo Yuan, Endesco
Seth Young, STV, Inc.
Bo Zhou, Anne Arundel County DPW

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Bala Akundi, Baltimore Metropolitan Council (BMC)
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