

**Southwestern Pennsylvania Commission**  
**Transportation Operations & Safety Forum-“Smart Signals for Smart Regions Workshop”**  
**March 5, 2020**  
**SPC Conference Center, 4<sup>th</sup> Floor**  
**Meeting Summary**

**Attendees:**

Federal Highway Administration

Eddie Curtis  
Dan Walston

PennDOT-Central Office

Steve Gault  
Jeff Roecker

PennDOT-District 1

Edward Hartle

PennDOT-District 10

Michael Ashbaugh  
Ernest Cascino  
Tasha Hammer  
Dave Tomaswick

PennDOT-District 11

John Balay  
Frank Cippel  
Dan Fedio  
Jon Ferensic  
Bill Lesterick  
Ruth McClelland  
Edward Miller  
Zach Murray

PennDOT-District 12

Lauren Tomasek  
Bryan Walker  
Emily Zarichnak

County Government

Jeff Leithauser, Washington  
Ann Ogoreuc, Allegheny

Transit

Jeffrey Devlin, Port Authority  
Craig Toocheck, Port Authority

Local Government

Royce Lorentz, Slippery Rock Borough  
Michael Maloch, City of Pgh.  
Kelly Maurer, Cranberry Twp.  
Marty McKinney, Cranberry Twp.

Universities

Suhaib Alshayeb, Pitt  
Farzaneh Azadi, Pitt  
Stan Caldwell, CMU  
Rich Feder, CMU/Pitt  
Stephen Smith, CMU  
Aleksandar Stevanovic, Pitt  
Yifei Yang, Pitt  
Mateus Martins, Pitt

Private Sector

Greg Barlow, Rapid Flow Technologies  
Rachel Brownlee, AECOM  
Anthony Castellone, Pennoni  
John Claudy, Drive Engr.  
Kevin Conahan, Drive Engr.  
Dan Fritz, WRA  
Kevin Ferry, SAI  
Marc Garfield, Gibson-Thomas  
Keith Johnson, Gannett Fleming  
Brad Marsteller, JMT  
Steve Palmer, Gannett Fleming  
Ken Pappalardo, Traffic Control Products  
Darryl Phillips, HDR  
Amanda Purcell, TPD  
Andy Rebovich, AECOM  
John Sada, Michael Baker  
John Snedeker, Traffic Control Products  
Nick Streets, WRA

SPC staff: Tom Klevan, Chuck Imbrogno, Evan Schoss,  
Josh Spano, Andy Waple, Dom D'Andrea

## **Introduction**

Dom D'Andrea welcomed the attendees and initiated a round of introductions.

## **Technology within SPC's Long Range Plan/Regional Traffic Signal Program Update**

Andy Waple, Transportation Director at SPC provided a briefing on SPC's recently adopted long range plan "SmartMoves for a Changing Region". SmartMoves includes over \$35 billion for the region's transportation priorities over 25 years.

SmartMoves recognizes that successful connected mobility includes:

- Modernizing Supporting Infrastructure: Develop and deploy appropriate infrastructure to facilitate safe and efficient use of Connected Infrastructure Systems as well as Connected and Autonomous Vehicles.
- Offsetting impacts associated with Connected and Autonomous Vehicles on safety, public sector revenue, congestion and local quality of life; and
- Developing a comprehensive regional plan for public transit connections.

Dom D'Andrea, SPC's Manager of Operations and Safety Programs presented an update on SPC's Regional Traffic Signal Program. The third cycle of the program was recently completed. Together the three cycles have invested nearly \$11 Million to improve 649 traffic signals across 77 municipalities in the region and results have yielded \$51 of public benefit for every \$1 spent in terms of reduced delay, reduced vehicular stops, reduced fuel consumption, and reduced emissions. SPC is underway with a fourth cycle of projects and discussed other potential future emphasis areas for the program. Ed Miller suggested that one focus would be to continue to assist municipalities with LED replacements.

## **Structuring Programs to Sustain Smart Signals**

Eddie Curtis, Traffic Management Specialist from FHWA presented on the elements of a successful and sustainable smart signals program. Key points included:

- The built environment is an outcome of how effectively an organization focuses its organizational capability and how it uses its resources;
- The differences between output driven versus outcome driven and desired outcomes (appropriate, attainable, and measurable)
- Performance measures, and specifically, Automated Traffic Signal Performance Measures, can be used to improve the overall effectiveness of a program.

## **Smart Signals-The Statewide perspective**

Steve Gault, TSMO and Arterials Planning Chief at PennDOT Central Office discussed how we need to breakdown the intelligent silos that focus on only one element of the system. Unified command and control would facilitate in breaking down these silos. Steve also discussed local versus system control and how objectives are different for each. He explained that a "Smart" system is multimodal by minimizing user delay for all users. Steve also discussed the potential for Department management of traffic signals and the current pilot project (I-76 ICM project) that will result the management of over 150 traffic signals being turned over to the Department.

## **Adaptive Traffic Signal Projects-update-The District perspective**

Frank Cippel, Assistant District Traffic Engineer for PennDOT District 11-0 reviewed the advantages of an Adaptive Traffic Signal (ATS) System and provided a summary of completed, active, and planned ATS projects in District 11. Frank also provided a summary of current Green Light Go projects in the District. Dom D'Andrea asked about how goals and implementation might change for ATS projects in corridors with a high volume of pedestrians. Frank indicated that the District may need to reevaluate or carefully consider these types of projects in corridors with high ped/bike activity.

## **Making Smart Signals Smarter and Safer Through Connectivity with Travelers**

Steve Smith, Research Professor, CMU, and Chief Scientist, Rapid Flow Technologies discussed the SURTRAC adaptive traffic signal system and its unique features and advantages. Steve also presented work being developed at CMU which includes a smart phone application that allows pedestrians to interact directly with the signalized intersection. Potential capabilities of this application include personalizing crossing time, active monitoring and dynamic extension of walk time, anticipation of arrival time to streamline crossing, and communicating presence to vehicles. There was a good discussion relative to this application and the challenges with current pedestrian detection (the push button).

## **Definition, Classification, and Future of Traffic Control**

Aleksandar Stevanovic, Associate Professor with the University of Pittsburgh, presented on the future of traffic control with autonomous vehicles. He discussed the Combined Alternate-Direction Lane Assignment and Reservation-based Intersection Control (CADLARIC) concept. This concept is a framework for modeling directionally unrestricted traffic flows in an Automated Vehicles (AV) environment. In this concept vehicles can use 'lanes of the opposite direction' to align themselves in 'appropriate lane' to smoothly go through the downstream intersection. For instance, the lanes are assigned in such a way to eliminate conflicts between left- and right- turning vehicles and remaining traffic. At the intersection itself, vehicular conflicts are resolved through the reservation-based method.

## **City of Pittsburgh's Smart Spines Project: Using Technology to Make Our Signal System More Intelligent**

Michael Maloch, Project Engineer, City of Pittsburgh and Scott Thompson-Graves, Senior Vice President, Whitman Requardt and Associates presented on the Smart Spines project. In 2016 the City of Pittsburgh was awarded an Advanced Transportation and Congestion Management Technologies (ATCMTD) grant from the Federal Highway Administration. The primary Smart Spines corridors include Bigelow Boulevard, Centre Avenue, Fifth Avenue/Washington Boulevard, Forbes Avenue, Second Avenue, Route 51, West Liberty Avenue, and Penn Avenue. The projects goals include:

- A system that can see, sense, and provide for pedestrians as the fundamental and most vulnerable unit of an urban transportation system.
- A system that can communicate with and adapt to emergency response vehicles.
- A system that can prioritize person-throughput rather than vehicle-throughput
- A system that facilitates the even flow of vehicles to reduce overall greenhouse gas emissions.
- A system that collects and/or generates other data useful to better Pittsburgh decision-making (e.g. near-miss collisions, multimodal speeds and volumes, travel time data, real-time curbside utilization, air quality, etc.).
- A system that can use communication tools to reduce the likelihood and severity of crashes.
- ITS that provides segmented control and data planes from the rest of the network but leverages the same physical and management infrastructure.
- Architecture of the infrastructure that enables other applications beyond mobility for edge computing, wireless telecommunications, and wired infrastructure.
- An ITS system that can be protected and monitored using existing cyber security tools.
- An ITS system that coalesces with the broadband plan (in development).

Scott also discussed establishing and evaluating performance metrics and targets for the implemented system.

A brief general roundtable discussion concluded the meeting.

## **Upcoming SPC meetings include**

- June 2, 2020-Active Transportation Forum (Ped/Bike);  
Leann Chaney ([lchaney@spcregion.org](mailto:lchaney@spcregion.org))
- June 25, 2020- Transportation Operations and Safety Forum  
Dom D'Andrea ([ddandrea@spcregion.org](mailto:ddandrea@spcregion.org))