OPPORTUNITIES AND OUTCOMES OF JOINT AGENCY COLLABORATION

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PACE SUBURBAN BUS
REGIONAL TSP PROGRAM

- Builds on previous TSP Demos in the region:
  - Cermak Road (IDOT, CTA, Pace) in 1997
  - Western Avenue (RTA, CTA, CDOT) in 2008-2010
  - Harvey Transp. Center (RTA, Pace, IDOT) in 2010-2011
  - Washington Street (Pace, Lake Co.) in 2014
  - Jeffrey Jump (CTA, CDOT) in 2014

- Need to develop & implement a regional program

- $40 million CMAQ grant (90% federal, 10% RTA)

- Plus other federal and local grants
GUIDING PRINCIPLES

- Interoperable System
  - Different transit and highway jurisdictions
  - Any bus, any traffic signal (properly equipped)

- Open Architecture
  - Industry standard communication protocols
  - Vendor neutral, off-the-shelf equipment

- Use Existing Equipment if possible
  - Bus Automatic Vehicle Location (AVL) systems
  - Traffic Signal Controllers
  - V-2-I, I-2-I and I-2-C Communication
REGIONAL TSP STANDARDS

Vehicle-to-Intersection TSP Message Set
- Defines the information communicated between the bus and the traffic signal controller

5.0 GHz Wi-Fi
WHERE?

- 500 Intersections
- 100 Miles of Roads
- 13 Corridors
- 1 TSP System
**TSP Priority Corridors**

- **CTA TSP Corridors (≈ 200 signals)**
  - Ashland Avenue
  - Western Avenue

- **Pace TSP Corridors (≈ 300 signals)**
  - Milwaukee Avenue
  - Dempster Street
  - Roosevelt Road
  - Cermak Road
  - Grand Ave. (Lake Co.)
  - I-90 Corridor Access
    - Cicero Avenue
    - Halsted Street
    - 95th Street
    - Sibley Blvd./147th St.
    - 159th Street
CTA and Pace, in conjunction with RTA, are transitioning TSP in the region is to be interoperable between CTA/Pace so TSP-equipped intersections can respond to TSP calls from either agency.

Pilot intersection will be Milwaukee/Gale by Jefferson Park Transit Center
COLLABORATION

The main challenge is coordinating and collaborating between many agencies including CTA, Pace, RTA, CDOT, and OEMC.

There are many moving parts managed by many different agencies, so although some of the implementation tasks can be time consuming, the overarching theme is that all parties are working together to achieve a common goal.
Transit Signal Priority Program

Regional TSP Requirements and Interoperable Standards Development

Technology: Wi-Fi (802.11n) & 5.0 GHz
Features: Interoperable, NTCIP 1211 message set, open standards, non-proprietary
Status: Completed

Regional Signal Timing Optimization Implementation and TSP Strategies

Scope: 400 Signals – Milwaukee Ave
- Cicero Ave, Sibley/147th, Roosevelt Rd, 95th St,
- Dempster St, Cermak Rd, 159th St
- Grand Ave and Rand Road, 159th street
Status: Completed

Deployment: 2018-19
- Cermak Rd
- Cicero Ave
- Sibley/147th
- Roosevelt Rd
- 159th St
- 95th St
- Grand Ave
- Rand Rd
- Dempster St
- Halsted St (Programmed)
- I-90 Access (Programmed)

PRS Product (Testing) & Central Software Development (On-Going)

Design, PS&E (Completed). Permits, Systems Integration for 10 Corridors (Under Procurement)
Pace’s Innovative Signal Timing Optimization

Increased Corridor **SPEED:**

- Pace Connected Signal Interconnects for continuous Green
- Optimized Signal Timing along 10 Transit Corridors and Approximately 400 Intersections

**AM Travel Time Comparison**

*Eastbound US 12-20 (95th St)*

- Average Speed: 18.4 mph
- Average Number of Stops: 1.87

- Average Speed: 31.6 mph
- Average Number of Stops: 0.33

- Revised IDOT approach and introduced Pace’s Green Band Progression for entire Corridor
TSP Systems Architecture

1-2-C Data Elements:
- PRS-3 – PRS-11
- PRO-2 – PRO-21
- PRS Equipment and Radio Health Monitoring System Information

I-2-C and Health Monitoring of Radio Equipment

Pace Transit Management Center

Central Server

Server for TSP Software (Web-Based Interface)

Remote TSP Monitoring and Configuration

CTA / Pace Transit Management Centers:
- IDOT / CDOT / County DOTs

V-2-I Data Elements:
- Critical: PRO-2 – PRO-5
- Additional: PRO-6 – PRO-21

5 GHz Radio

Wireless Option

Signal Cabinet

Wireless Comm. Equipment

AVL Systems / PRG

Pace / CTA Buses on Corridor

TSP Corridor Roadside

TSP / PRS Device

Signal Controller

Traffic Signal

TSP Request

TSP Status

Signal Interconnect Fiber / Copper Option

Master Controller

CTA Transit Management Center

Central Server