Agency Factoids – Metro District

Number of signalized intersections

- 674 signals MnDOT owns
- 726 signals MnDOT operate (city & county)

Communications

- Fiber optic – 241 signals (Ethernet – new standard)
  - All major arterials by end of 2018 construction
  - CCTV, Ethernet Comms, central system
- Radio (interconnect) – 14
- Twisted-pair – 370 signals
- Cellular (Ethernet) – 9 (increasing)
- No comms – 49 (decreasing)

Staffing

- Daily Operations – 1 engineer, 2 engineering specialists, 4 technicians (2 dedicated to construction)
- Signal Timing – 2 engineers
- Transitioning to TSMO Model
  - Loss of electricians
Agency Factoids – Metro District

Signal Management System

- Siemens i2 – 264
- Econolite ARIES – 370
- Presently evaluating replacement of signal central system

High resolution data

- SMART SIGNAL – 2008
  - University of MN & MnDOT partnership
  - Henry Liu & Heng Hu
- 100 intersections with SPM

- http://dotapp7.dot.state.mn.us/smartsignal/
Detection – 6’ x 6’ inductive loop
  • Lane by lane
  • [Link to DOT traffic engineering manual]

Signal Design Manual, 2014

Monitoring
  • Review of detector logs, constant calling, complaints

EVP
  • All signals
  • 20 with railroad preempt
  • 15 with transit priority

Signal Timing – get update plans at all intersections
Smart Signal

![uMonitor/uMeasure Real-time Level of Service Map](image-url)

- System Overview
- System Check
- Site Access
- Performance Alert
- Help

**LOS Legend:**
- A
- C&D
- E
- F
- Real time data not available

**Link Delay Legend:**
- 0-20 Sec./Veh.
- Between 20 and 40 Sec./Veh.
- Between 41 and 60 Sec./Veh.
- >60 Sec./Veh.
- Real time data not available

*All programming content contained herein, copyright Live Traffic Data LLC © 2015. Contains licensed material. US Patent No. 8,279,086. All rights reserved. (Last update: November 6th, 2015)*
Signal Timing Development

- Timing Plans Developed Using only outputs of Smart Signal
  - TH 10 – 5 intersections
  - TH 101/I94 – 12 intersections
    - Diverging Diamond Interchange (1st DDI Metro)
- Collect all before & after data
- Analyses existing splits
  - Gap outs, force offs – Redistribution of split time
- Offset adjustments – early/late AOG
- Monitoring over time
  - Adjustments
  - Degradation of plans
“Trouble in River City” (Elk River)

TH 10 & TH 169

- Heavy weekend traffic
  - “Going to the cabin”
- 9 intersections (MnDOT) + 2 county signals
- Outdated coordination plans
- District boundary
  - District 3
  - Metro District
Elk River, MN
Section 1. TRUNK HIGHWAY BONDS; APPROPRIATION AND BOND SALE AUTHORIZATION.

Subdivision 1. Appropriation.

$400,000 is appropriated from the bond proceeds account in the trunk highway fund to the commissioner of transportation for installation of an adaptive signal control system in lieu of the planned Smart Signal System on marked U.S. Highway 10 and U.S. Highway 169 in the city of Elk River.
Response

- Met with Senator
- Installed Smart Signal July 2015
- Project to retime signals
  - Senator wants input
  - Kick off meeting in February
  - Plan is to implement new timing in May
Questions?

Steve Misgen
Metro Traffic Engineer
steve.misgen@state.mn.us