Regional Traffic Operations Committee Meeting
5/2/2019

Adaptive Signal Control Technology
Multi-Jurisdictional Installation and Operations

Paul Coffelt, City of Lynnwood Traffic Engineer
Purpose of Today’s Presentation:

Describe Lynnwood’s experience installing, activating, and operating an Adaptive Signal Control Technology solution across multiple jurisdictions.

...and some of what’s coming up with additional adaptive projects.
RECAP- Steps to this point:


STEP 1a: Local Match $.
STEP 1b: Staff Support CA and WSDOT Local Programs.
STEP 1c: Obligate, Prospectus, etc.
RECAP- Steps to this point:

STEP 2: Identify an appropriate Adaptive Signal Control Technology solution. 2015.

The FHWA Systems Engineering Process
RECAP- Steps to this point:

STEP 2a: Request for Qualifications- Choose Consultant (Systems Engineering Assistance)
DKS Associates

STEP 2b: Create Concept of Operations for ASCT

STEP 2c: Create and Publish Request for Proposals
RECAP- Steps to this point:

**STEP 3: Receive and Review Proposals.**
**Make a Selection**
RECAP - Steps to this point:

STEP 3a: Create and Negotiate a Contract

STEP 3b: Review and Agree to Terms of License Agreement

STEP 3c: Define Roles and Responsibilities

STEP 3d: Concept of Operations ➔ Functional Requirements ➔ Acceptance Test for Contract Fulfillment
STEP 4: Installation and Turn On

STEP 4a: Detection (Roles and Responsibilities) Lynnwood In-House

SynchroGREEN requires individual lane detection at STOP Bar and Advanced on Mainline and Minor Street Approaches.
Scope of Adaptive Installation:

196th Street from 24th Ave W to 76th Ave W
13 Signals (3 WSDOT, 10 Lynnwood)

Hwy 99 from 164th St SW to 238th St SW
15 Signals (5 Edmonds, 10 Lynnwood)
What to do about detection?

- Took inventory intx by intx
  OK with STOP Bars ➔ Traficon Video Detection
  Not OK with ADVANCED Loops tied together
  Some Sensys in-pavement wireless, also some struggles

~$120 to $180k in non-budgeted hardware to achieve detection requirements (video, microwave, in-pavement, loops)

DEMO- Trafficware in-pavement wireless PODS
PODS Worked Reliably!!
Creative Finance Shellgame
Overspent Budget in Biennium

Meeting with Finance Director and Public Works Director About Overspending budget.

Within 15 minutes we found enough actual budget to pay for detection equipment without going back to Council breaking any rules or raising eyebrows.

HOW?

Timesheet Codes Performing Technology Work for Other City Departments Reclassifying Purchase Percentages of Technology Items
STEP 4b: Installation of controller firmware and license codes.

STEP 4c: Central Server Application Installation and Configuration.

STEP 4d: Client PC Application Installations.
- Lynnwood Traffic Center
- Edmonds
- Mountlake Terrace
- WSDOT
STEP 5: WSDOT Agreement for Lynnwood to Maintain and Operate Three Signals

STEP 5a: Created, Edited, Negotiated by Both Lynnwood and WSDOT.

STEP 5b: Lynnwood City Council Approved Mayor to Sign Agreement.

STEP 5c: WSDOT...Functioning as if fully executed.
Key Elements for Successful Multi-Jurisdictional Signal Coordination and Transit Signal Priority
- Communication; Professional to Professional
- Communication; Physical (Lynnwood installed fiber optic conduit and cable then invited as appropriate) Edmonds and Mountlake Terrace. WSDOT- Traffic Busters and Connection of their Signal Controllers to their Central Signal System. Community Transit for Transit Signal Priority
- Professional and Technical Ability; Preventative Maintenance Program, Responsive to Complaints, Responsive to Knock-Downs, On-Call Schedule.
Key Elements for Successful Multi-Jurisdictional Signal Coordination and TSP (Continued)
- Resources; Spare Parts, Test and Troubleshooting Equipment.
- Host Training and Refreshers
- Check-in with Officials “Any Complaints?”
- When Possible, Create Solutions to Problems and Offer to Share. Examples: NTP Server for Controller Clocks. Leverage existing equipment for Transit Signal Priority.
STEP 6: Turn-on and Calibrate Adaptive
October 31, 2016

STEP 6a: Remote Access into ATMS.now
Server by Trafficware Engineer.

STEP 6b: Three Trafficware Engineers at
Lynnwood Traffic Center on
ATMS.now Workstations Full-Time
ten days and available as needed.
STEP 7: Training by Trafficware

STEP 8: Acceptance Testing
- TSP didn’t work with adaptive until three weeks ago.

STEP 9: Verification/Validation Testing

Systems Engineering Complete
So...how did things work with failing acceptance test on TSP?

Lynnwood built in a retainage amount on contract. WSDOT Local Programs said we had ten years to finish spending grant. We encouraged Trafficware at every opportunity and talked it up with Community Transit.

From October 31, 2016 to April 15, 2019 we waited a long time but today everyone is happy and no one is unhappy.
What’s Coming For Mountlake Terrace/WSDOT/Edmonds/Lynnwood?

220th Street SW Adaptive
4- MLT Signals
2- WSDOT Signals
1- Edmonds Signal
What’s Coming For Bothell, Mill Creek, Unincorporated Snohomish County, WSDOT, Lynnwood, and Mountlake Terrace?

Bothell-Everett Hwy, 164th Street SW, 44th Ave W Adaptive Signal Control.

At least two different ASCT Systems?
CONSIDERATIONS

- Often Most Challenging Task of Any Signal Coordination Is Time Synchronization; Time Synchronization of Servers and Controllers to a Single Time Source is Possible Through Multiple Affordable Means.
Thanks