
Traffic Computer System Upgrade PW-R-155 Council Update



Study Session
March 7, 2011



BELLEVUE
INTELLIGENT TRANSPORTATION SYSTEMS

What we'll cover

- SCATS Phase 1 Implementation
- SCATS Operations
 - Responsiveness
 - New Features
 - Some Initial Results
- 2011-2012 Program and Beyond



SCATS Phase 1

- SCATS Traffic Adaptive – 31 Intersections
- Downtown and Factoria
- Target Completion – end of 2010
- Cost = \$630,000



- NE 8th Street - 100th to 112th
- Bellevue Way - Main to 12th
- NE 4th Street - Bellevue Way to I-405 NB on/off ramp



- Factoria Blvd - Newport Way to SE 32nd St

SCATS Phase 1

- Council Award July 2010
- Software/Hardware Testing Summer/Fall 2010
- Installation October 2010
- Traffic Adaptive Active Early November
- System Adjustments and Training – November & December



SCATS Phase 1

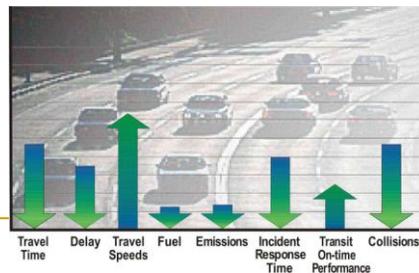
Summary – Phase 1

- 31 intersections completed on time and within budget
- Seven intersections added
 - Bellevue Square (3 intersections)
 - Coal Creek Pkwy (4 intersections)
 - Completion April 2011
- Successful Effort
 - City staff (engineers/signal shop)
 - TransCore ITS
- First City in Washington State

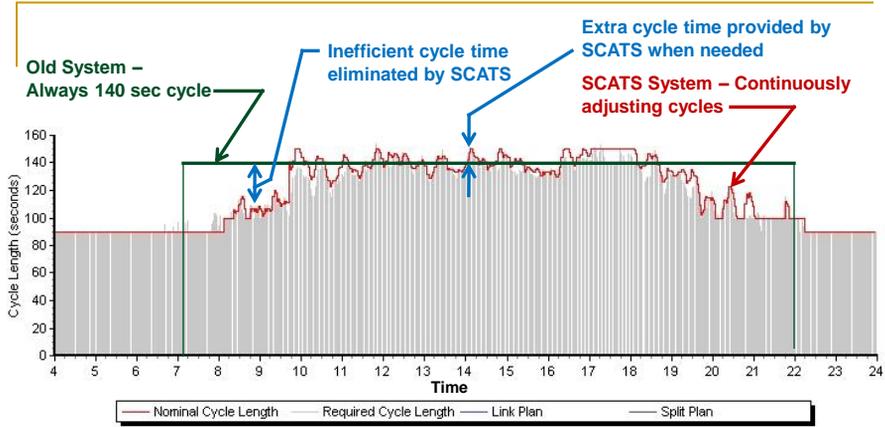


Operations

- Objectives:
 - Reduce delay
 - Vehicles
 - Pedestrians
 - Adapt quickly to changing traffic conditions
 - Lower signal cycle lengths when possible
 - Gain New Features



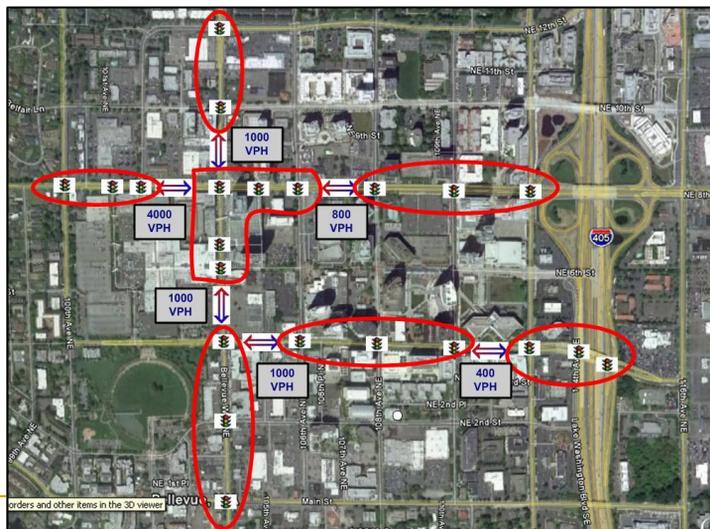
Operations



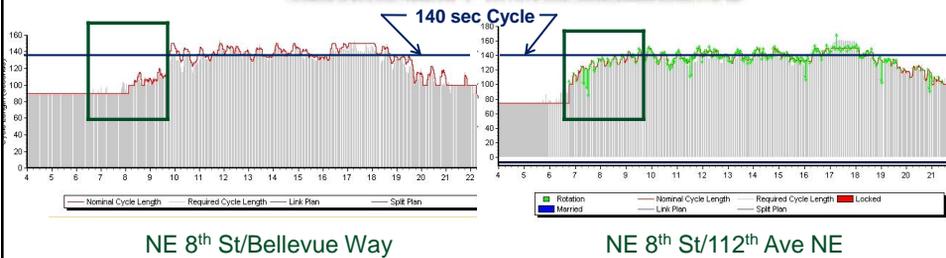
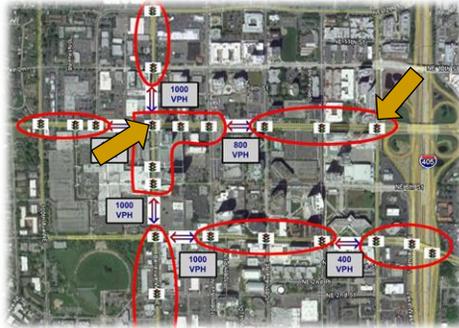
Bellevue Way and NE 8th Street –
Cycle Length before & after SCATS

Operations

SCATS Downtown Coordination Design



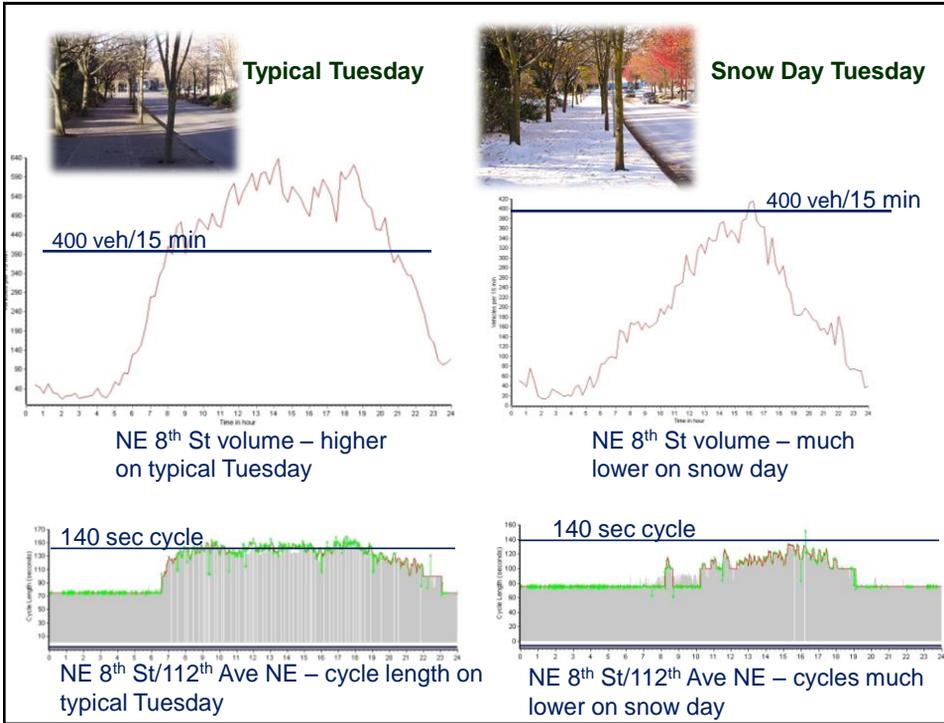
Operations – SCATS Downtown



Operations – Responsiveness



November 23rd, 2010 Snow Day (Tuesday)



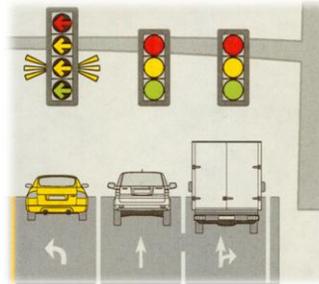
Operations – Responsiveness



Truck Accident Closes NE 8th St

Operations – New Features

- Flashing Yellow Arrow (FYA)
 - New left turn signal display
 - Ability to change left turn rules based on conditions



Operations – New Features

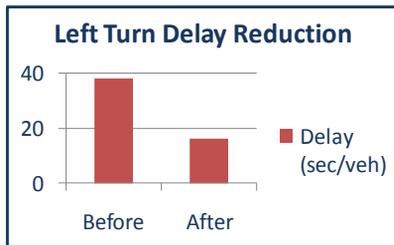
EXAMPLE

- Factoria Blvd & Newport Way – South to East Left Turn
 - Old System – Left on Green Arrow Only
 - SCATS – Left also allowed on FYA most of day



Operations – New Features

- Factoria Blvd & Newport Way – RESULTS
 - Delay Reduction Sample – Weekday PM peak
 - Old Delay = 38 sec/veh
 - SCATS Delay = 16 sec/veh
 - 58% Reduction



Operations – New Features

- More FYA Planned with SCATS Phase 2
 - 116th Ave/Main
 - Lk Hills/SE 8th St
 - NE 8th St/124th Ave
 - Others

I am taking the time to commend you all for the innovation of the "blinking yellow turn arrows". In these times of bad news and budget crunches, this idea stands out as a gem and a winner. Keep up the good work.

- Mr. Hamilton
Woodridge resident

Operations – New Features

- Phase Reservice
 - NE 4th St at NB I-405 on-ramp
 - Factoria Blvd at WB I-90 on-ramp

Eastbound NE 4th Queue to NB I-405

(March 1 & 2, 2011)

EB 4th Queued Past 110th:

	<u>Start</u>	<u>End</u>
Old System	4:10pm	7:00pm
SCATS	4:40pm	6:30pm

Result = 1 hr less congestion



Operations – New Features

- Pedestrian Reservice
- Pedestrian Advance



Operations – Results

■ Flashing Yellow Arrow - Results

Intersection	Annual Delay Reduction (hours)	Annual Public Benefit (\$)
Factoria Blvd & Newport	7000 hrs	\$70,000
NE 8 th St & 100 th	8100 hrs	\$81,000
Richards Rd & SE 32 nd	2700 hrs	\$27,000
Bellevue Way & NE 12 th	6400 hrs	\$64,000
5 Others	2000 hrs	\$20,000
TOTAL	26,000 hrs	\$260,000

Operations – Results

Intersection Delay Change Sample (Delay Reduction due to SCATS)

January 25, 2011

Intersection	8am-9	10am-11	Noon-1pm	3pm-4	5:30-6:30
BelWay/8th					
Factoria /SE 38 th					
NE 4 th /112th					
BelWay/12th					

KEY:

Little or no change

Delay reduction > 10%

Delay reduction > 20%

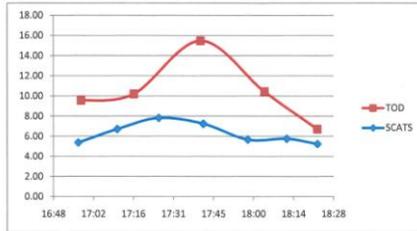
Overall Delay Reduction approx. 10%

Operations – Results

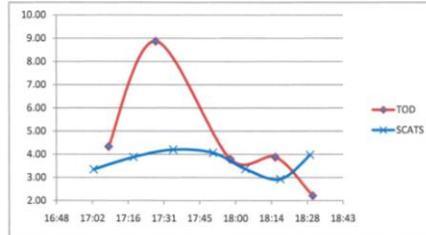
Factoria Blvd

Travel Time – SCATS vs Old System
(PM Peak)
Feb 15 & 16, 2011

Southbound Travel Time Factoria



Northbound Travel Time Factoria



Operations – Results

NE 8th Street & NE 4th Street
Travel Time – SCATS vs Old System
(2 pm to 6 pm)
February 15 & 16, 2011

- **NE 8th Street – Bellevue Way to 112th Ave NE**
 - Eastbound – 9 sec reduction
 - Westbound – 100 sec reduction

- **NE 4th Street – Bellevue Way to I-405 NB ramp**
 - Eastbound – 70 sec reduction
 - Westbound – 27 sec increase



Operations – Results

NE 8th Street & Bellevue Way
Pedestrian Crossing Opportunities
(7am to 8pm)

8% Increase



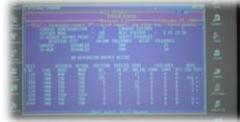
2011-2012 and Beyond



2011-2012 and Beyond

Current Status

- Old System (Computran)
 - 52 intersections, 28%
- Bridge System (i2TMS)
 - 93 intersections, 51%
- Traffic Adaptive (SCATS)
 - 38 intersections, 21%



2011-2012 and Beyond

Project Phasing

- Phase 1 – complete
- Phases 2 thru 6 – next

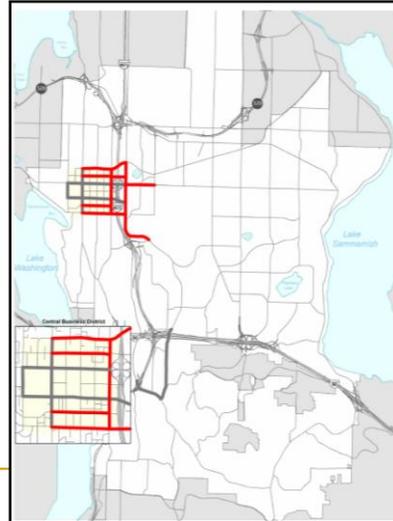


SCATS Phase 1
* 38 Intersections
* 5 Corridors

2011-2012 and Beyond

SCATS Phase 2

- Finish Downtown Corridors
- Hospital District
- 116th Corridor
- 31 intersections
- 37% completion



2011-2012 and Beyond

SCATS Phase 2

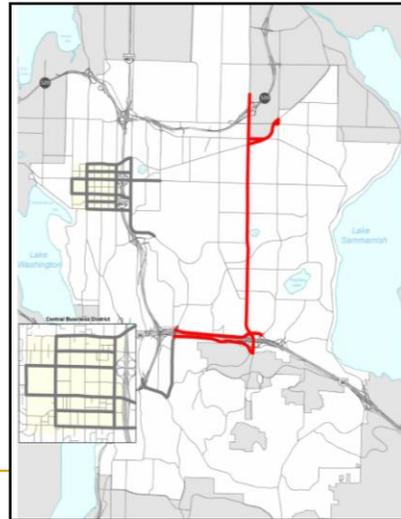
- Cost Estimate \$479,000
- Federal TCSP Grant (\$360,000)
- Council Award late Spring 2011
- Implementation Summer/Fall 2011



2011-2012 and Beyond

SCATS Phase 3

- 148th Avenue NE/SE
- Triangle, Eastgate, SE 36th St
- 30 Intersections
- Cost Estimate = \$475,000
- Implementation 2012
- Funded thru PW-R-155
- 53% Completion



2011-2012 and Beyond

■ SCATS Phase 4

- 2013
- 69% Completion



■ SCATS Phase 5

- 2014
- 88% Completion



■ SCATS Phase 6

- 2015
- Completes Project



2011-2012 and Beyond

520 Eastside Transit & HOV

- Rebuilds Bellevue Way & 108th Ave NE Freeway Interchanges
- 6 Intersections onto SCATS
- Funded by 520 Eastside Project
- Implementation 2014



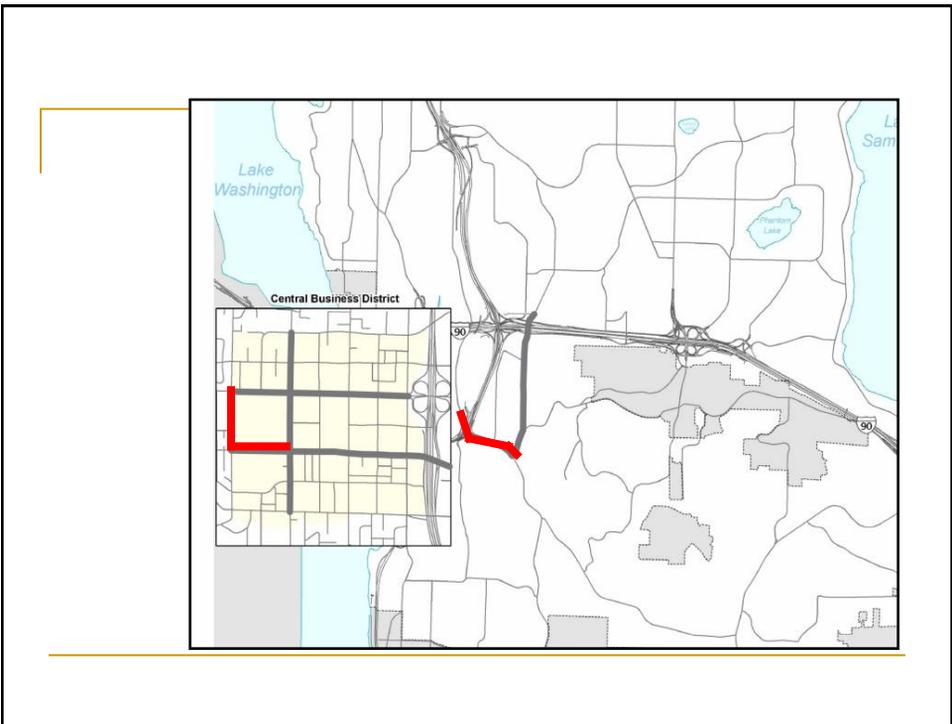
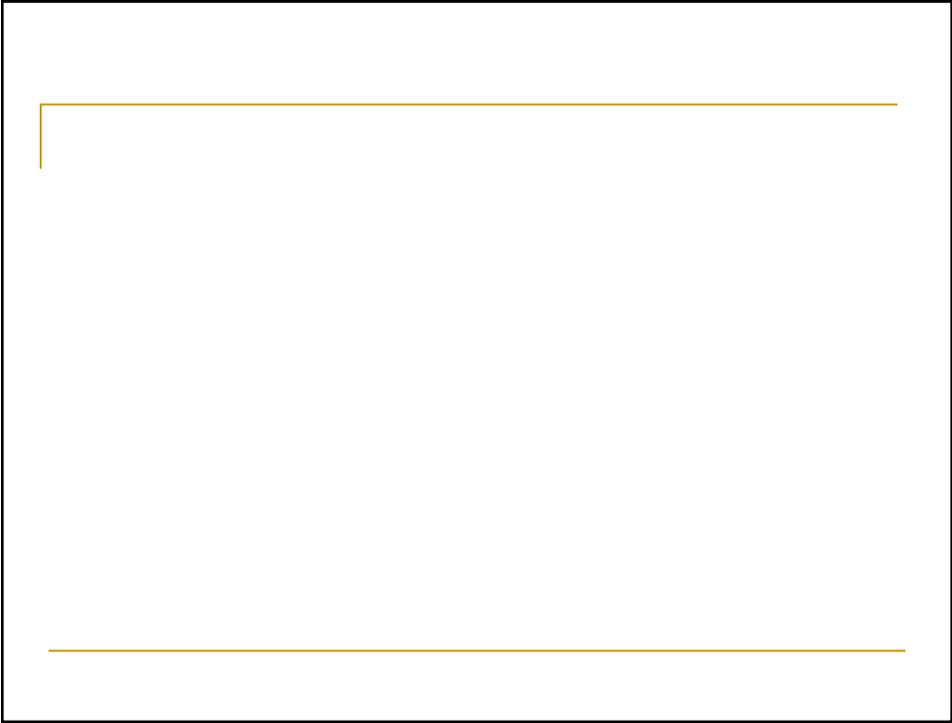
Traffic Computer System Upgrade PW-R-155 Council Update



Questions?



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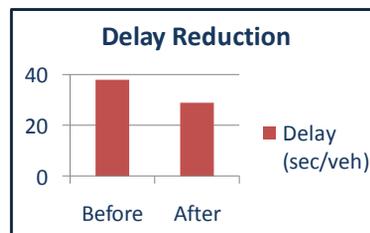
Review

- Current Signal System Obsolete
- PW-R-155 begins 2009
- Communication system upgraded
- Signal System Study
- SCATS Traffic Adaptive – May 2010
- SCATS Phase 1 Contract – July 2010

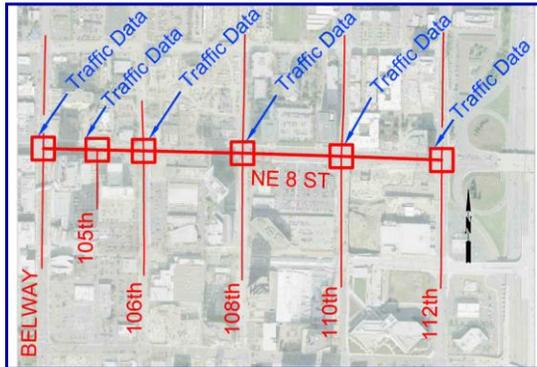


Operations

- Bellevue Way and NE 8th St
 - Mid-Morning, Mid-Week Delay Sample (10:00 hour)
 - Old Delay = 38 sec/veh
 - SCATS Delay = 29 sec/veh
 - 24% Reduction
 - Approximately \$XX,XXX/yr in travel time savings

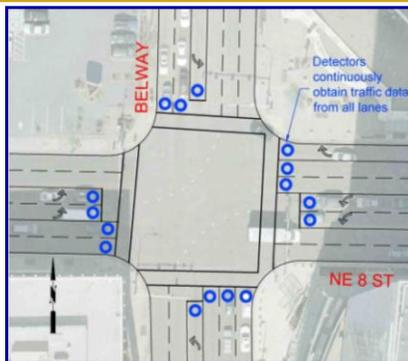


Operations

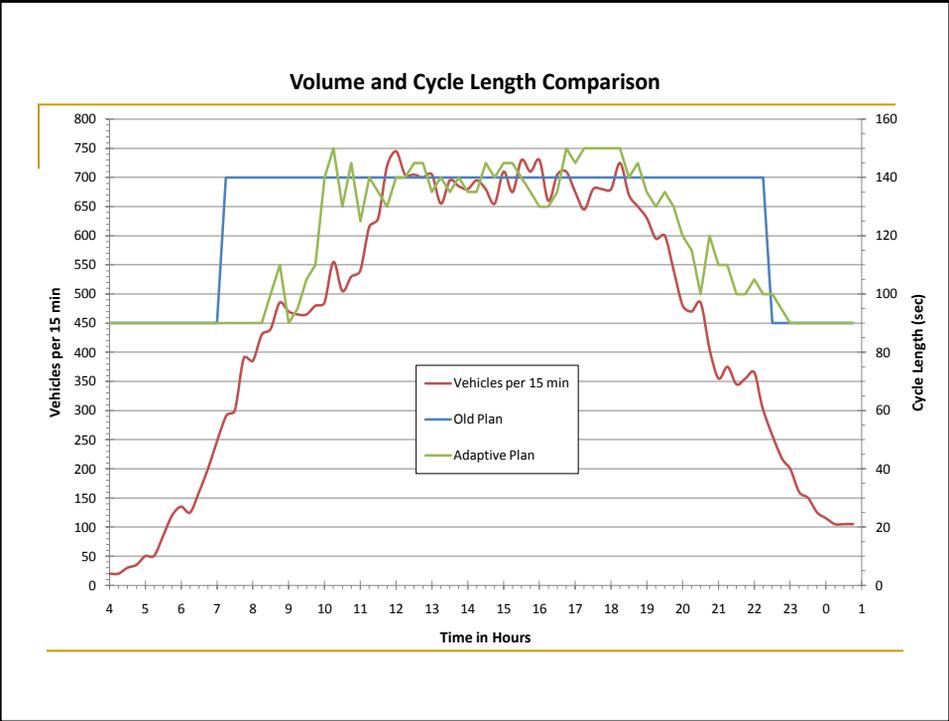


- Traffic Adaptive
 - Continuously obtain traffic data from all lanes at all intersections

Operations

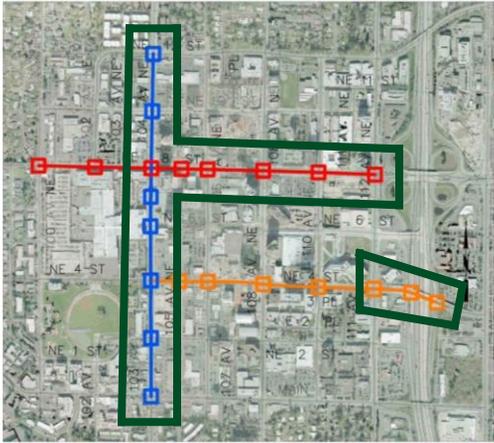


- Traffic Adaptive
 - Data fed to central computer via communication system
 - Computer sends new coordination plan every cycle

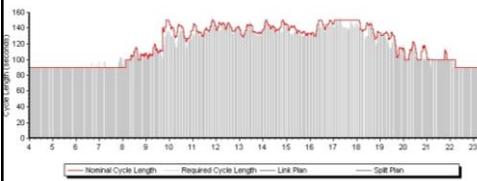
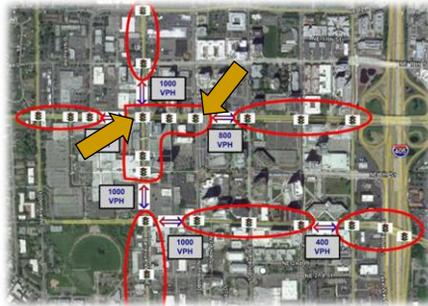


Operations

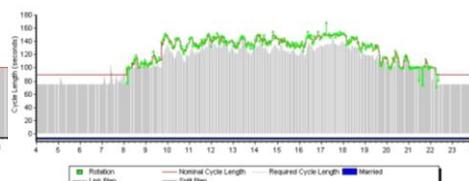
Computran Coordination (old signal system)



Operations – SCATS Downtown

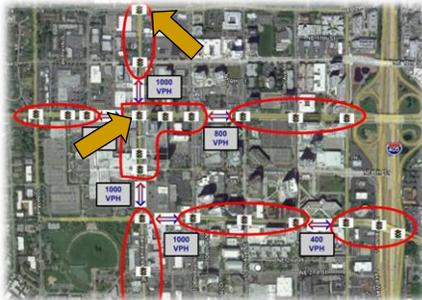


NE 8th St/Bellevue Way

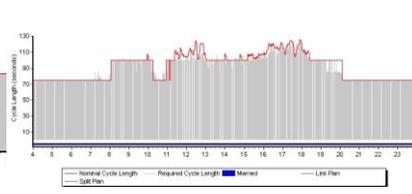


NE 8th St/106th Ave NE

Operations – SCATS Downtown



NE 8th St/Bellevue Way

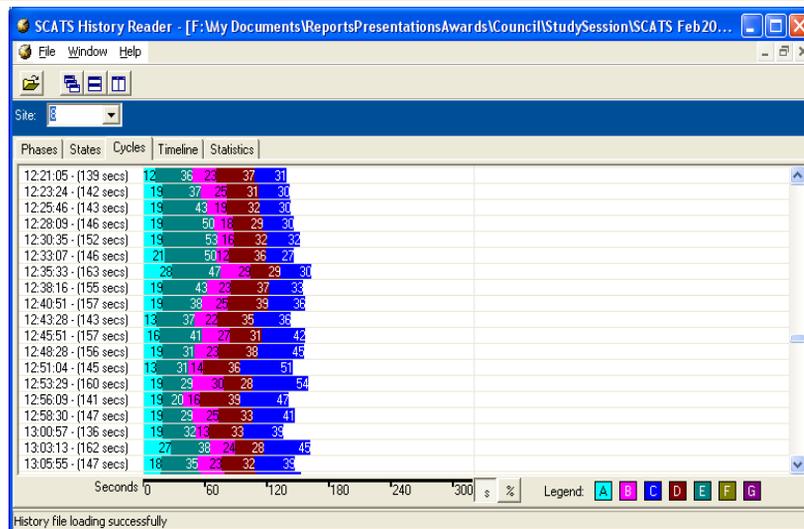


Bellevue Way/NE 12th St

Operations - Responsiveness

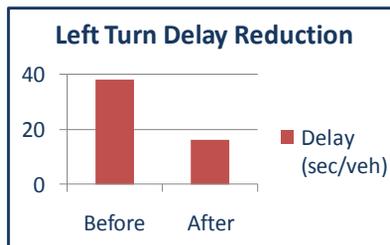


Operations - Responsiveness



Operations - FYA

- Factoria Blvd & Newport Way – RESULTS
 - Delay Reduction Sample – Weekday PM peak
 - Old Delay = 38 sec/veh
 - SCATS Delay = 16 sec/veh
 - 58% Reduction
 - Approximately \$60,000/yr in travel time savings



Operations – Results

Intersection Delay Modeling Results
(Delay Change due to SCATS)

Intersection	8am-9	10am-11	Noon-1pm	3pm-4	5:30-6:30
BelWay/8th	-20%	-12%	+3%	0%	+4%
Factoria /SE 38 th	+2%	-3%			-51%
NE 4 th /112th	-6%	-9%	-13%	-13%	-10%
BelWay/12th	-23%	-23%	-19%	-24%	-13%

Operations – Results

Intersection Delay Modeling Results (Delay Change due to SCATS)

Intersection	8am-9	10am-11	Noon-1pm	3pm-4	5:30-6:30
BelWay/8th	>20%	>10%			
Factoria /SE 38 th					>30%
NE 4 th /112th			>10%	>10%	>10%
BelWay/12th	>20%	>20%	>10%		>10%

2011-2012 and Beyond

Funding Picture

- PW-R-155 (Traffic Computer System Upgrade)
 - 2011 = \$435,000
 - 2012 = \$390,000
- Federal TSCP Grant
 - \$360,000
 - Council Acceptance Sept. 2010

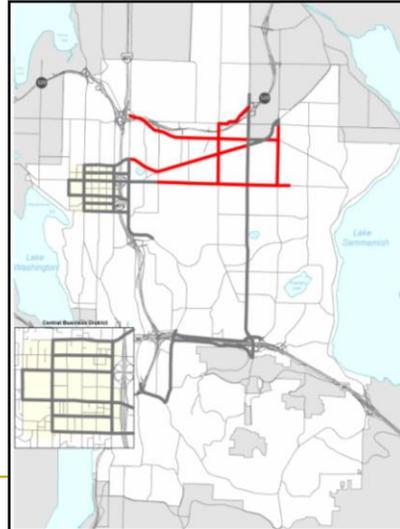


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2011-2012 and Beyond

SCATS Phase 4

- 156th Crossroads
- Bel-Red Rd
- NE 20th/Northrup
- NE 8th St East Bellevue
- 29 Intersections
- Cost Estimate = \$348,000
- Funded PW-R-155
- Implementation 2013
- 69% Completion



2011-2012 and Beyond

SCATS Phase 5

- Bellevue Way south/north
- SE 8th St @ I-405
- 140th Ave SE
- Lakemont
- 29 Intersections
- Cost Estimate = \$348,000
- Request Funding '13-'14 Budget
- Implementation 2014
- 88% Completion



2011-2012 and Beyond

SCATS Phase 6

- Completes SCATS Project
- Isolated Intersections
- 23 Intersections
- Cost Estimate = \$276,000
- Request Funding '13-'14 Budget
- Implementation 2015

