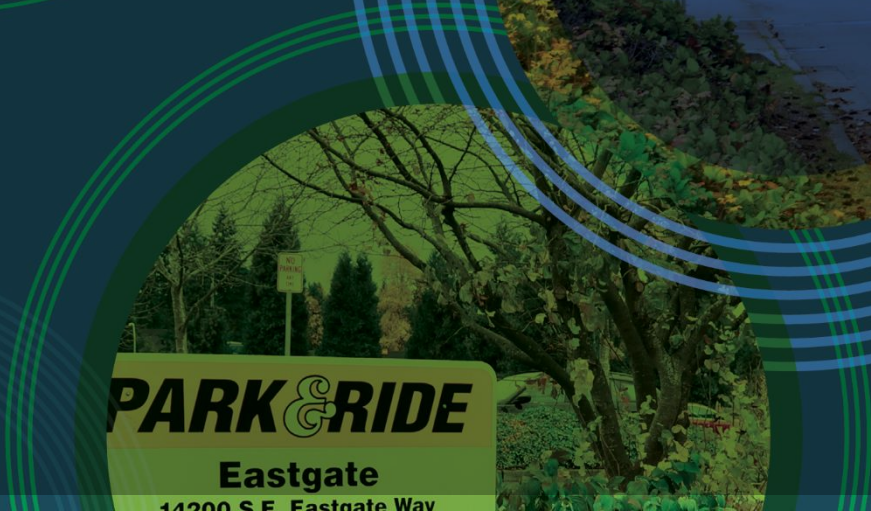


Eastgate Transportation Study

Project Concepts
Analysis Results

03/14/2019

Transportation
Commission



Introductions



Modeling Lead

Tony Woody, Concord Engineering

- Project Concept Analysis



Project Management Staff

Jeremy Chin

Kevin McDonald



Planning Lead

Chris Breiland, Fehr & Peers

- Project Evaluation



Presentation/Discussion Outline

Presentation Overview

Review Infrastructure project
concepts and results

Review Non-Infrastructure
approaches and results

Describe next steps including MMLOS
evaluation and cost estimates

Staff Request

Transportation Commission confirm the
project concepts for next steps/final
evaluation and cost estimates



Project Concept Development

Objective: Determine project concepts to relieve traffic congestion in Eastgate and Factoria area.

- Focus is on 2035 congestion relief - near term 2024 prioritization forthcoming
- Compare performance of project concepts relative to the 2035 Baseline
- Identify system-wide concepts (infrastructure and non-infrastructure) to address corridor traffic congestion

2018 Existing & 2035 Baseline V/C: PM Peak

Eastgate Study Area

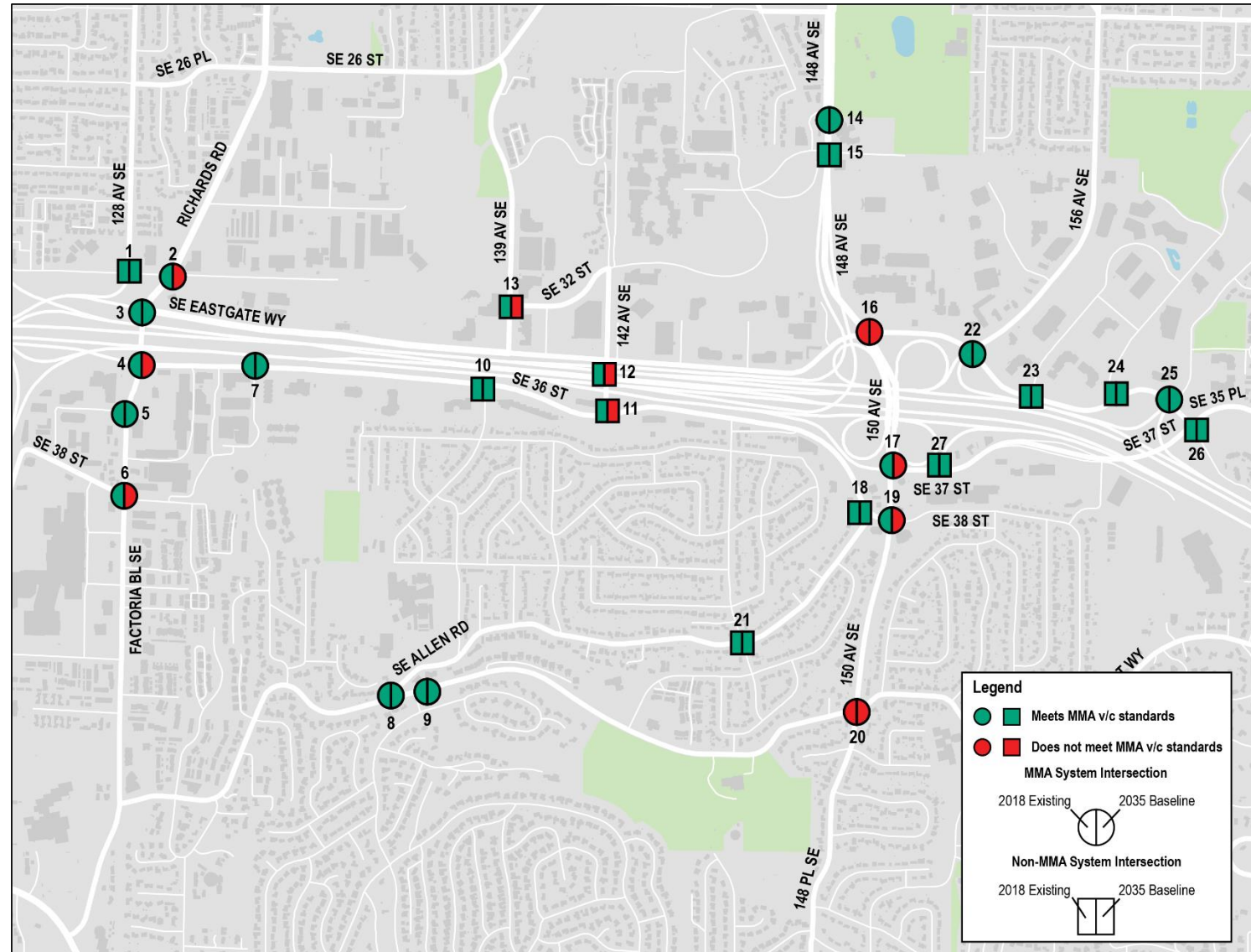
MMA System Intersections

- 2018: 13 of 15 **meet** standard
- 2035: 8 of 15 **meet** standard

Non-System Intersections

- 2018: 12 of 12 **meet** standard
- 2035: 9 of 12 **meet** standard

*Note: Project concepts intended to address intersections that **do not meet** the adopted V\C standard.*



Project Concept Development Approach

Step 1) Review Current Transportation Plans (embed funded projects)

- Bellevue, WSDOT, Sound Transit, King County Metro

Step 2) Project Concept Workshop with City Staff

- Describe and refine project concepts on 2/4/2019

Step 3) Test Individual Project Concepts

- Determine performance of individual intersection project concepts in isolation from other nearby/corridor intersections

Step 4) System-Wide Microsimulation Analysis

- Determine corridor performance in terms of vehicle delay and travel speed
- Group project concepts to achieve corridor benefits

Requested of the Transportation Commission

Confirm traffic congestion project concepts to carry forward for further analysis that will include:

- Implications for people walking, riding a bicycle or taking transit
 - Needs for additional right-of-way
 - Identify physical or environmental constraints
 - Planning-level project costs
- **For the May 9 Transportation Commission meeting**

Project Concepts - 148th-150th Avenue SE

10 Project Concepts Considered

2 Types of Analysis

- Individual intersections - v/c at intersections
- Corridor - vehicle travel speed and vehicle delay at intersections
- at Eastgate Way
 - C101 - North/South approach channelization
 - C102 - 3rd Southbound lane
 - C104 - 2-lane Roundabout
- at SE 37th Street & SE 38th Street
 - C201: Channelization + Southbound lane
 - C202/203: East/West approach channelization
 - C302: Signalize eastbound on-ramp
 - C401/402: Northbound turn pocket/receiving lane & Signal timings
- at Newport Way
 - C501 - 2nd southbound left turn lane

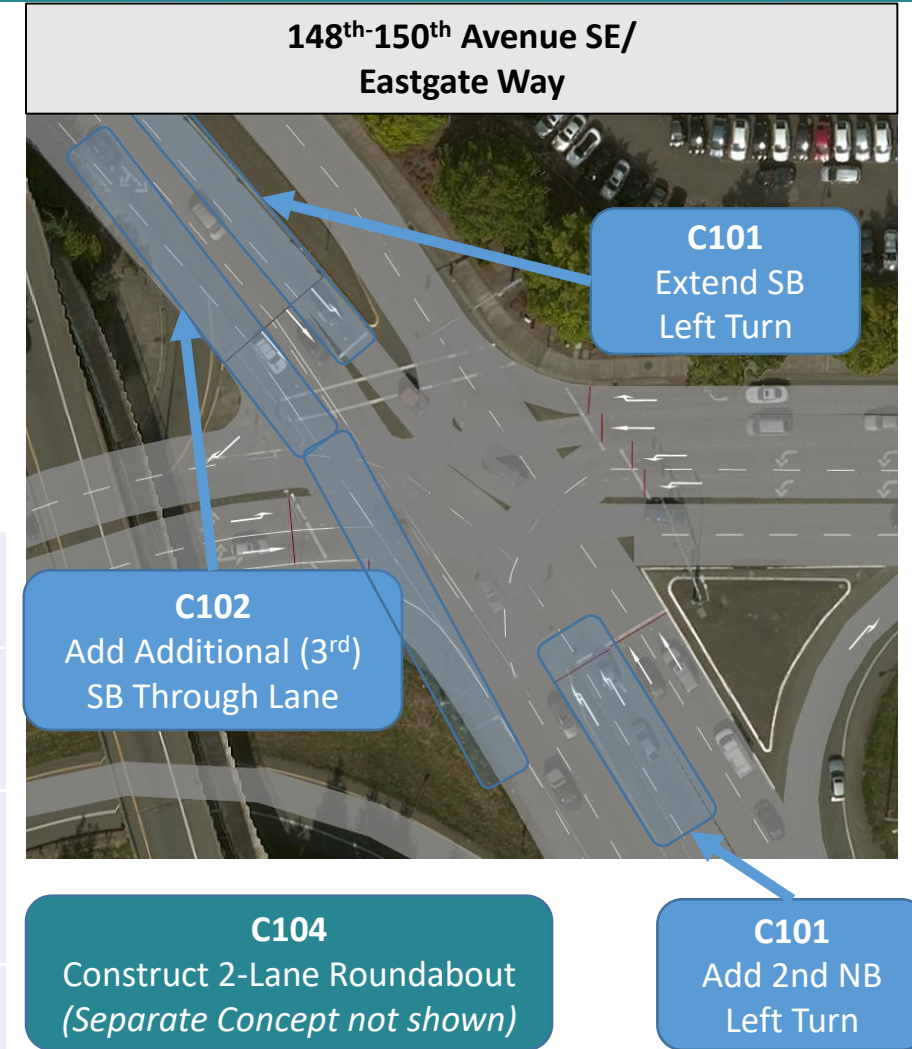


Intersection v/c Analysis- Eastgate Way

Tested individual project concepts at Eastgate Way to determine feasibility and benefit

- C101 and C102 have most potential to relieve congestion
- C104 Roundabout concept does not provide adequate PM Peak capacity

ID	Concept Description	v/c Change compared to 2035 Baseline
C101	Add a second Northbound (NB) Left, Extend Southbound (SB) Left turn lane	1.14 → 1.12 Does Not Meet Standard
C102	C101 + SB Through lane from north of Eastgate to south of intersection	1.14 → 0.93 Does Not Meet Standard
C104	Construct 2-Lane roundabout	Does Not Meet Standard

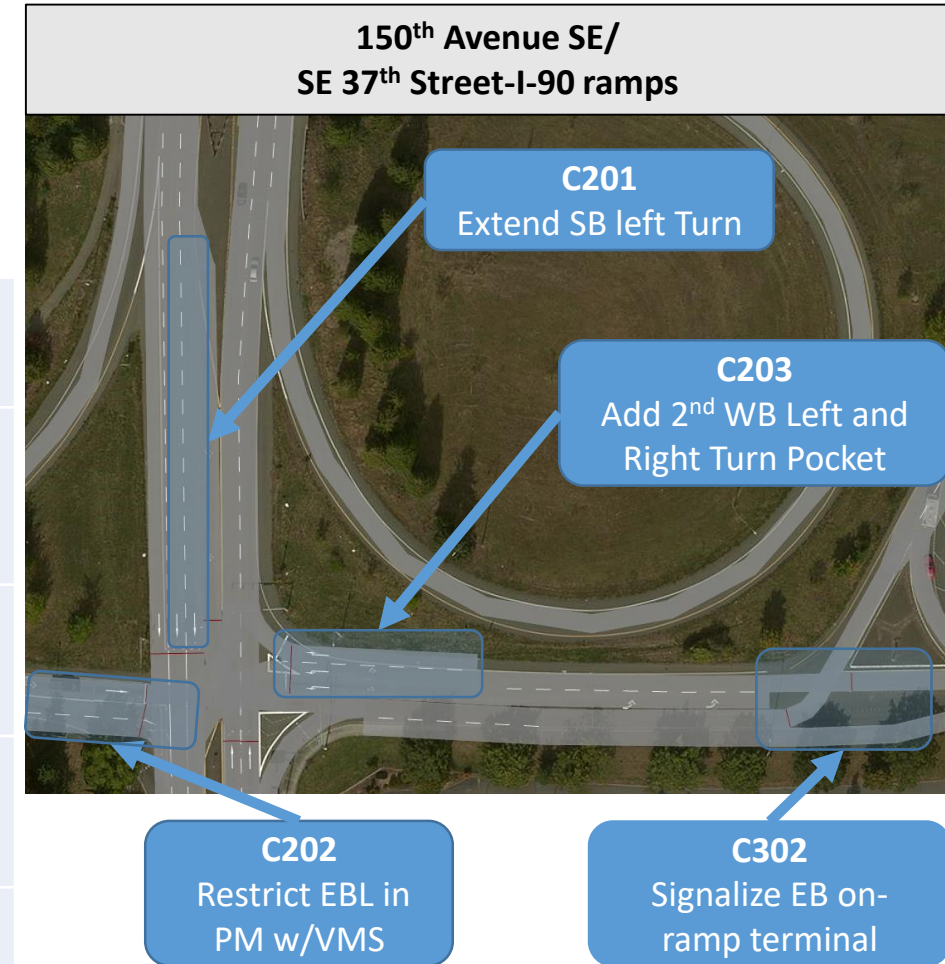


Intersection v/c Analysis- SE 37th Street - I-90 off-ramp

Tested individual project concepts at SE 37th Street

- C201, C202, C203 have most potential to relieve congestion at SE 37th Street-I-90 off-ramp intersections
- C302 increases capacity and flow at EB I-90 on-ramp

ID	Concept Description	v/c Change compared to Baseline
C201	Add a second Eastbound Right (EBR), Extend SB left turn pocket, Extend SB through lane from loop ramp to SE 38 th Street	1.05 → 0.94 Does Not Meet Standard
C202	C201 + Restrict Eastbound Left (EBL) in PM w/Variable Channelization and Signage (VMS)	1.05 → 0.89 Meets Standard
C203	C201+ Add a second Westbound Left (WBL) and Westbound Right (WBR) turn pocket	1.05 → 0.75 Meets Standard
C302	Modify channelization between 150 th Avenue SE and I-90 EB on ramp & Signal at EB on-ramp	EB on-ramp 0.78 v/c Meets Standard

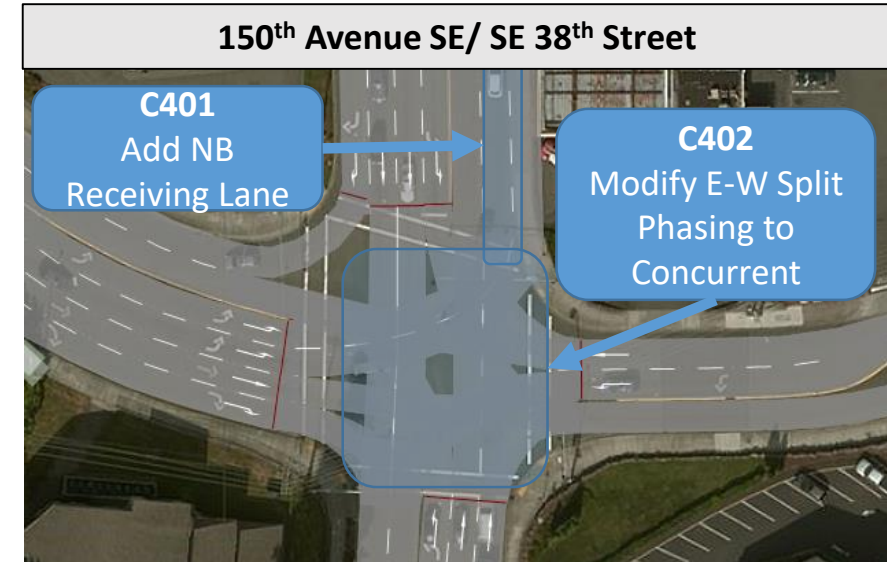


Intersection v/c Analysis- SE 38th Street and Newport Way

Tested individual project concepts at SE 38th Street and at Newport Way

- C401, C402 have most potential to relieve congestion when coupled with other corridor improvements
- C501 requires widening of 150th Avenue SE north of Newport Way

ID	Concept Description	v/c Change compared to Baseline
C401	Extend NB receiving lane/right turn pocket between SE 38 th Street and SE 37 th Street	No change v/c = 0.97 Does Not Meet Standard
C402	Adjust signal timings to remove split phasing and optimize green time	0.97 → 0.95 Does Not Meet Standard
C501	Add a second Southbound Left (SBL)	0.99 → 0.72 Meets Standard



Corridor Analysis - Alternatives

Corridor analysis of project concepts using VISSIM microsimulation

Two performance measures; 1) Corridor Travel Speed, 2) Vehicle Delay at Intersections

- 2 Alternatives analyzed and compared to 2035 Baseline
 - Alternative A1: 6-lane I-90 Overcrossing
 - Alternative A2: 7-lane I-90 Overcrossing with 3rd Southbound lane at Eastgate

C104 (Roundabout at Eastgate) and C501 (2nd SB left at Newport Way) not advanced in VISSIM analysis

Intersection/Location	Project Concept ID	Alternative A1	Alternative A2
150 th Ave. SE overcrossing at I-90	n/a	6-Lane Section (3 SB/3 NB)	7-Lane Section (4 SB/3 NB)
148 th -150 th Ave. SE/ Eastgate Way	C101	X	X
	C102		X
150 th Ave. SE/ SE 37 th St.-I-90 EB off-ramp	C201	X	X
	C202	X	X
	C203	X	X
I-90 EB On-ramp/ SE 37 th Street	C302	X	X
150 th Ave. SE/ SE 38 th Street	C401		X
	C402	X	X

Corridor Analysis - Corridor Travel Speed - PM

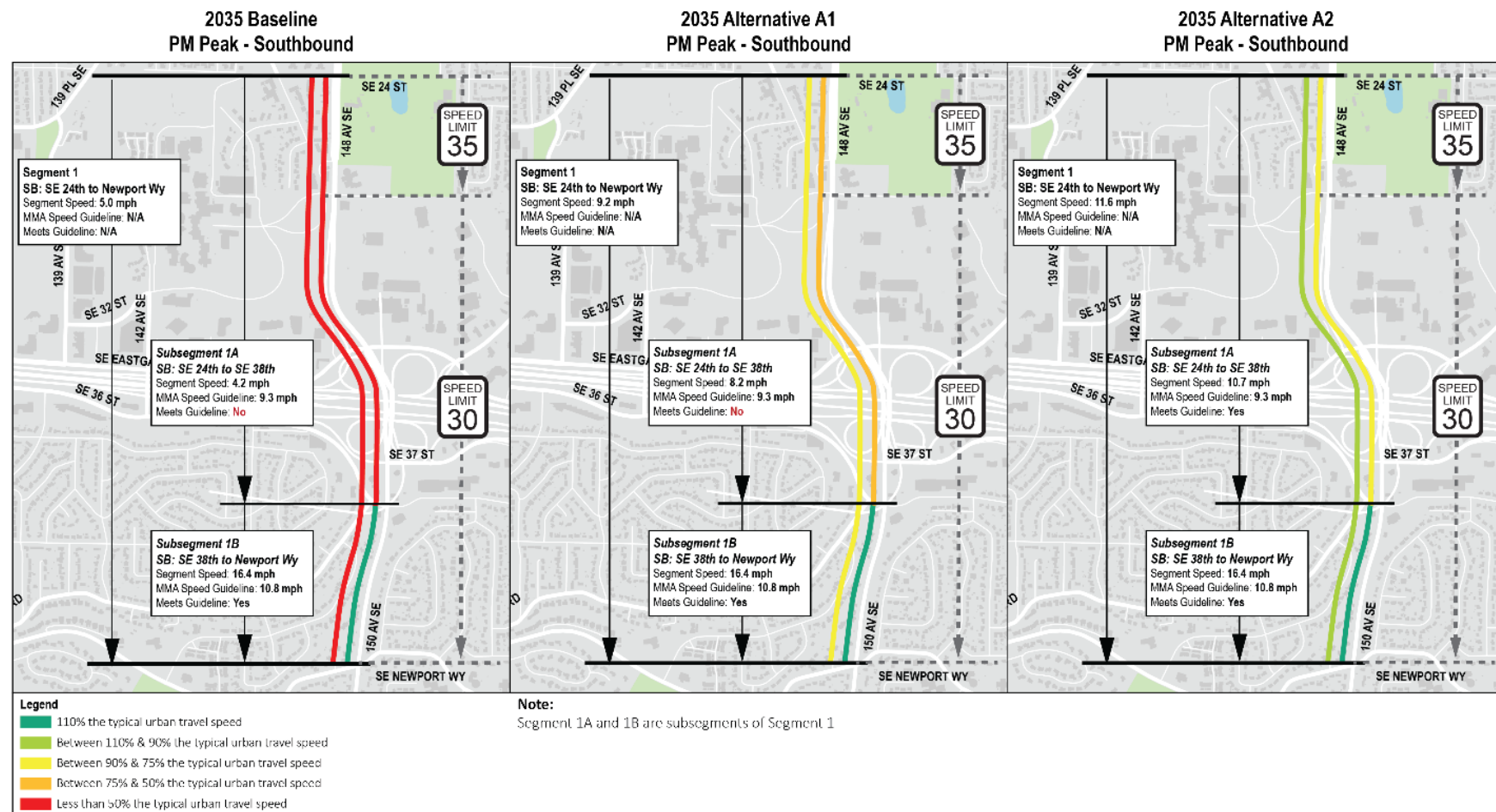
148th-150th Avenue SE

Alternatives A1 and A2 increase corridor speed over 2035 Baseline

- 2035 Southbound - PM
- 80%-120% increase in speed

Base	A 1	A 2
5.0 mph	9.2 mph	11.6 mph

Congestion relief between SE 24th Street and SE 38th Street due to channelization and additional southbound lane



Corridor Analysis - Corridor Travel Speed - AM

148th-150th Avenue SE

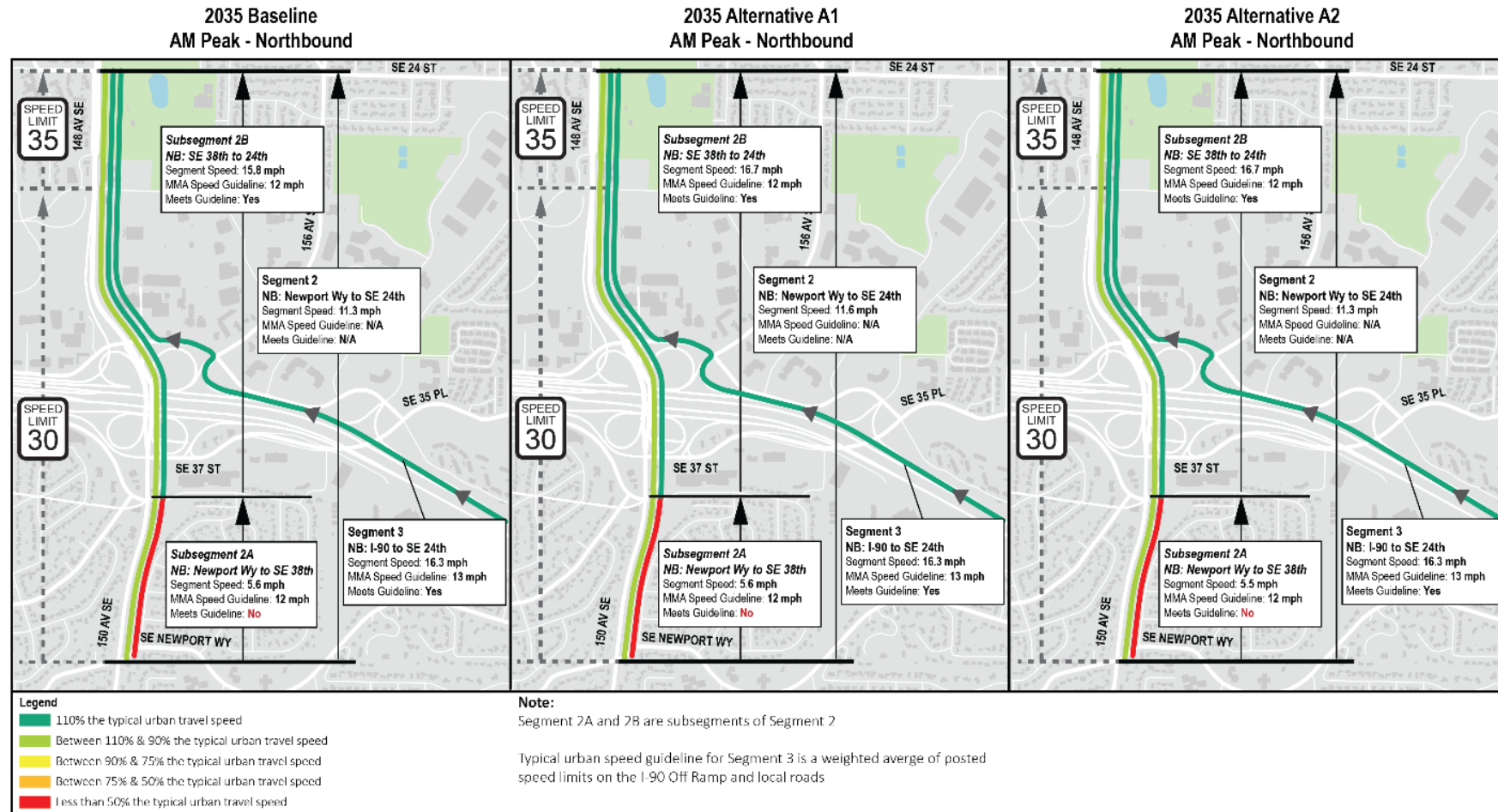
Alternatives A1 and A2
increase corridor speed over
2035 Baseline

- 2035 Northbound - AM
 - 3%-10% increase in speed

Base	A 1	A 2
11.3 mph	11.6 mph	11.3 mph
4.6 mph	5.6 mph	5.5 mph

Some congestion relief
between SE 38th Street and
Eastgate Way

Congestion still occurs
between Newport Way and SE
38th Street



Corridor Analysis - Vehicle Delay @ Intersections

148th-150th Avenue SE

Alternative A1: Vehicle delay is reduced at 3/4 intersections

Alternative A2: Vehicle delay is reduced at 4/4 intersections

Vehicle delay is reduced (35%-60%) at Eastgate Way, SE 37th Street

Alternative		148 th -150 th Ave. SE/ Eastgate Way		150 th Ave. SE/ SE 37 th Street		150 th Ave. SE/ SE 38 th Street		150 th Ave. SE/ Newport Way	
		Avg. Vehicle Delay (sec)	% Change	Avg. Vehicle Delay (sec)	% Change	Avg. Vehicle Delay (sec)	% Change	Avg. Vehicle Delay (sec)	% Change
PM Peak	2035 Baseline	122	n/a	125	n/a	54	n/a	45 (78)	n/a
	2035 Alternative A1	74	-39%	51	-59%	64	19%	44 (66)	-2% (-15%)
	2035 Alternative A2	44	-64%	59	-53%	52	-4%	43 (61)	-4% (-22%)
AM Peak	2035 Baseline	106	n/a	75	n/a	131	n/a	99	n/a
	2035 Alternative A1	94	-11%	37	-51%	102	-22%	91	-8%
	2035 Alternative A2	52	-51%	35	-53%	105	-20%	91	-8%



Project Concepts

Questions/Discussion

Next

**Project Concepts for
Richards Road/Factoria Boulevard**

Project Concepts - Richards Road-Factoria Boulevard

4 Project Concepts Considered

- at SE 36th Street-EB I-90 off-ramp
 - C701 - Variable channelization for AM peak traffic
- at SE 38th Street
 - C801: East approach - add a second WB left
 - C802: West approach channelization
- Corridor-Wide
 - TDM - Various TDM Strategies

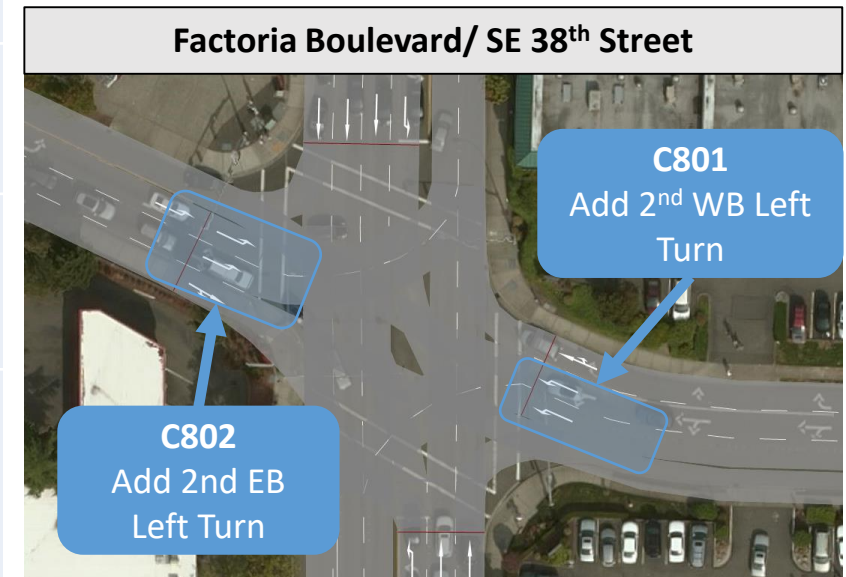
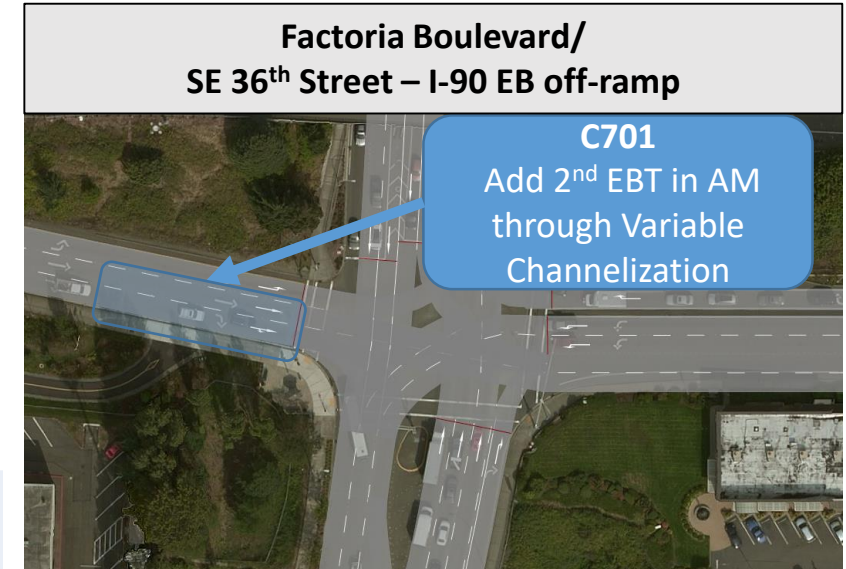


Intersection v/c Analysis- SE 36th Street-I-90 off-ramp and SE 38th Street

Tested individual project concepts at SE 36th Street and SE 38th Street

- C701 has potential to reduce vehicle queue length in AM Peak
- C801, C802 have potential to improve V/C at SE 38th Street and reduce delay for north-south corridor traffic

ID	Concept Description	v/c Change compared to Baseline
C701	Add variable channelization for EB approach (second EBT in AM)	1.03 → 0.98 (AM) Does Not Meet Standard
C801	Add a second WB Left	1.12 → 1.03 Does Not Meet Standard
C802	C801 + Channelization modifications – Adds a second EBL and an EBR turn pocket	1.12 → 0.99 Does Not Meet Standard



Corridor Analysis - Alternatives

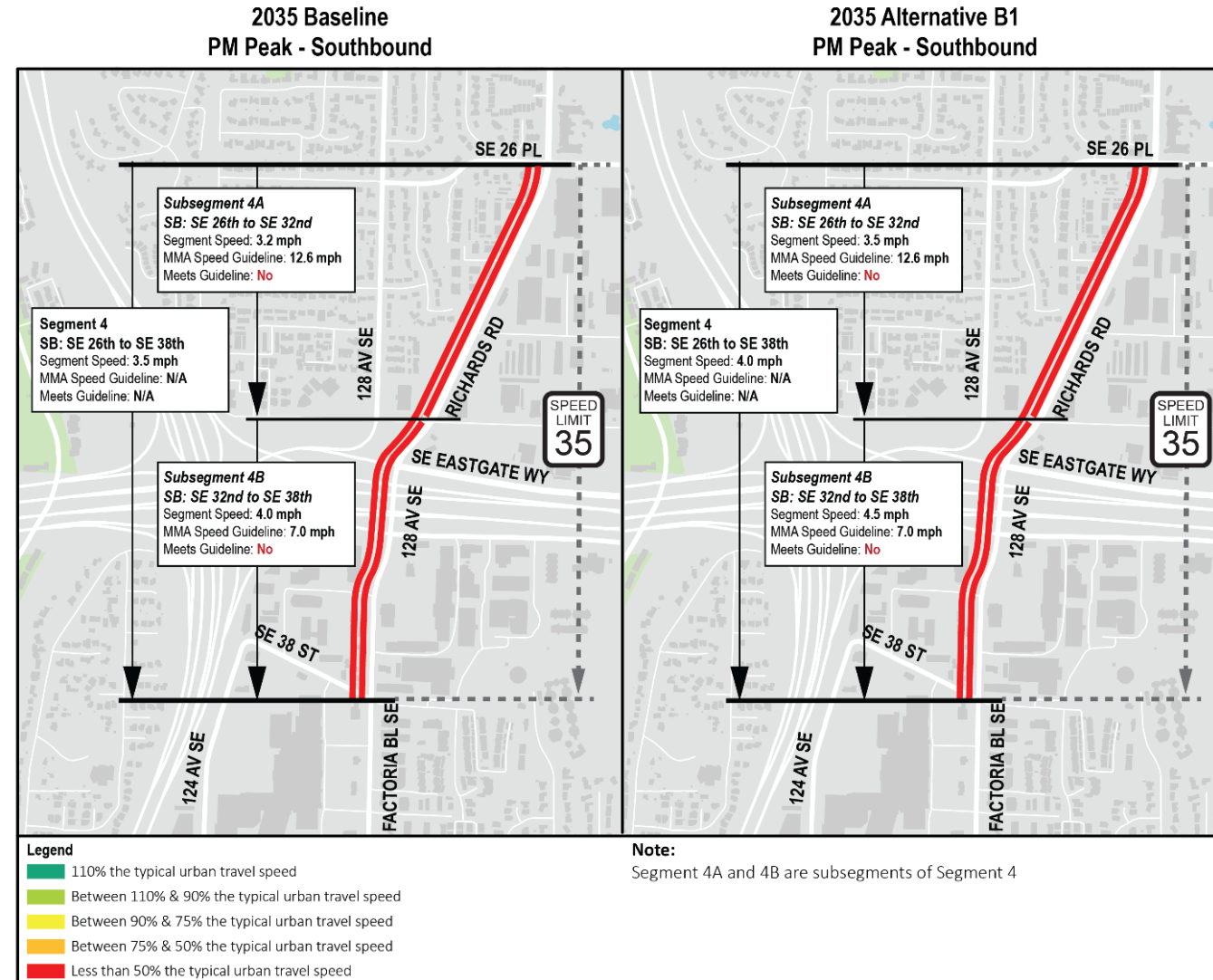
Richards Road-Factoria Boulevard

Tested C801 and C802 in VISSIM for PM Peak

1) Corridor Travel Speed

2) Vehicle Delay at Intersections

- One PM Alternative (B1) analyzed and performance compared to Baseline
- Concept C701 - not included in PM VISSIM



Corridor Analysis - Vehicle Delay @ Intersections Richards Road-Factoria Boulevard

- Alternative B1: Vehicle delay at intersections is reduced at 3 of 4 intersections, increases at 1 intersection
- Largest reduction in vehicle delay is at SE 38th Street, where C801, C802 projects concepts are implemented

Alternative	Richards Road/ SE 32 nd Street		Richards Road/ Eastgate Way		Factoria Boulevard/ SE 36 th Street-EB off- ramp		Factoria Boulevard/ SE 38 th Street	
	Avg. Vehicle Delay (sec)	% Change	Avg. Vehicle Delay (sec)	% Change	Avg. Vehicle Delay (sec)	% Change	Avg. Vehicle Delay (sec)	% Change
2035 Baseline	319	n/a	60	n/a	101	n/a	92	n/a
2035 Alternative B1	302	-5%	68	13%	97	-4%	67	-27%



Project Concepts

Questions/Discussion

Project Concepts for
Richards Road/Factoria Boulevard

Next

Project Concepts for
Other Eastgate Intersections

Project Concepts - Other Study Intersections

6 Project Concepts Considered

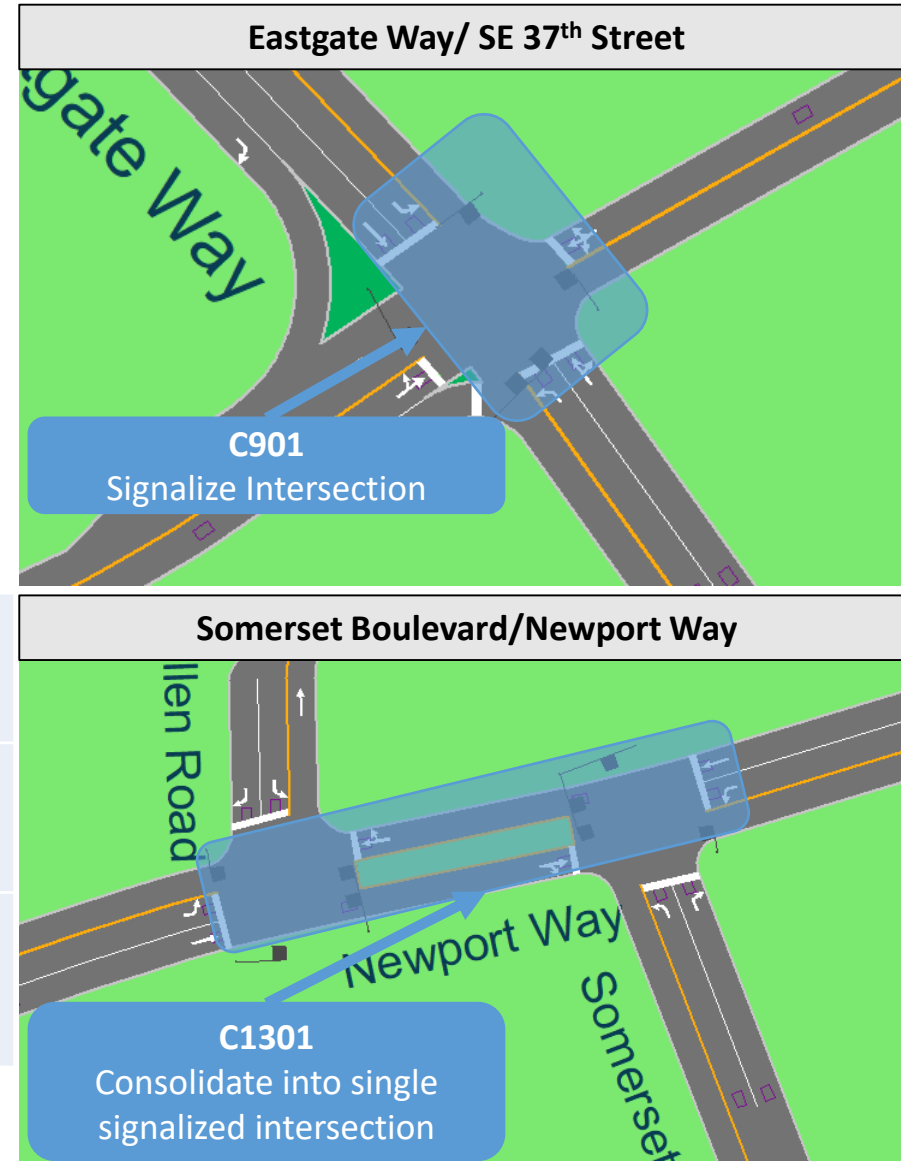
- at Eastgate Way, east of 150th Avenue SE
 - C901 - Signalize Eastgate Way/SE 37th Street
- at Somerset Boulevard/Newport Way
 - C1301 - Consolidate Somerset Boulevard & Allen Road into new signalized intersection
- at 142nd Place SE, Eastgate P&R vicinity
 - C1001: Channelization at 142nd Place SE/SE 36th Street
 - C1101: Channelization at 142nd Place SE/I-90 Direct Access Ramp
 - C1102: Convert direct access to transit only
 - C1201: Signalize 139th Avenue SE/SE 32nd Street



Intersection v/c Analysis - Eastgate Way/SE 37th Street & Somerset Boulevard/Newport Way

- C901 meets signal warrants in future and will help alleviate queue spillback to 160th Avenue SE and 161st Avenue SE
- C1301 continues to meet standard if consolidated into one intersection and signalized

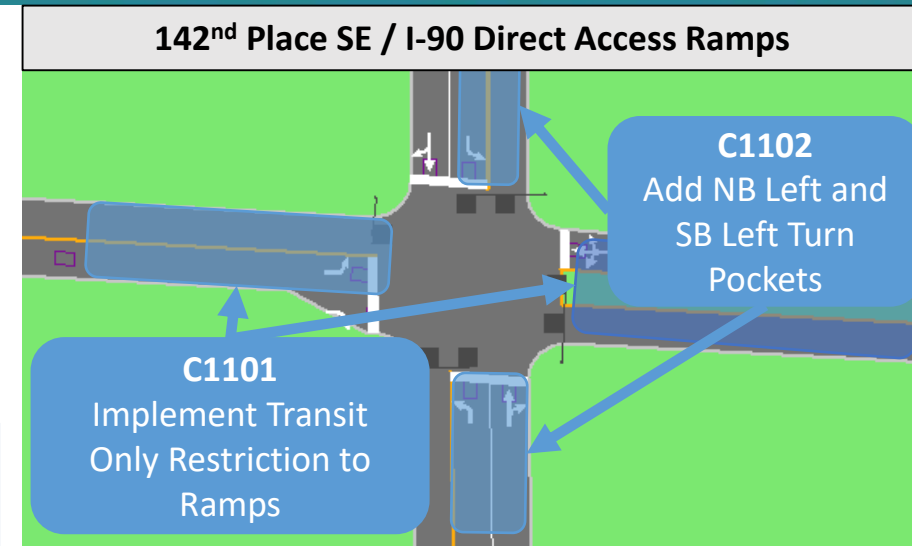
ID	Concept Description	v/c Change compared to Baseline
C901	Add a new signal and modify channelization at SE 37 th Street	0.53 v/c after signal No Standard
C1301	Align Somerset and Allen Road into signal	0.74/0.72 → 0.76 Meets Standard



Intersection Performance - 142nd Place SE and Eastgate P&R vicinity

- C1001 provides benefits even with small turn pocket
- C1101 requires widening of direct access 142nd Place SE crossing
- C1102 requires additional traffic diversion analysis
- C1201 meets signal warrants in 2035

ID	Concept Description	v/c Change compared to Baseline
C1001	Add a SBL or SBR and remove pedestrian crosswalk on the north or south legs	0.95 → 0.66 No Standard
C1101	Add NBL and SBL turn pockets	1.03 → 0.62 No Standard
C1102	Transit only ramps, remove HOV left turns at intersection	1.03 → 0.44 No Standard
C1201	Signalize intersection	1.25 → 0.53 No Standard





Project Concepts

Discussion/Questions

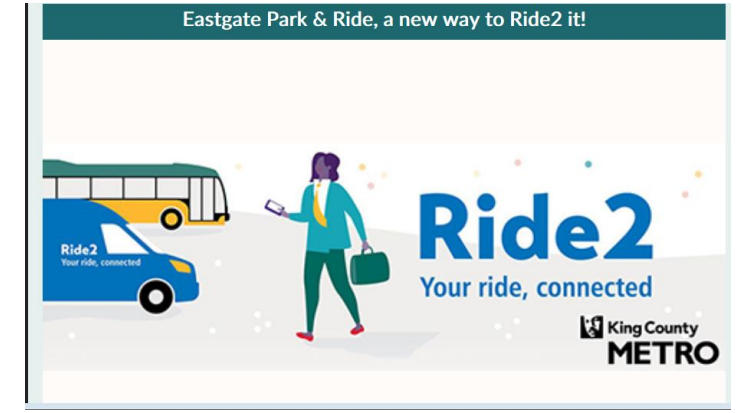
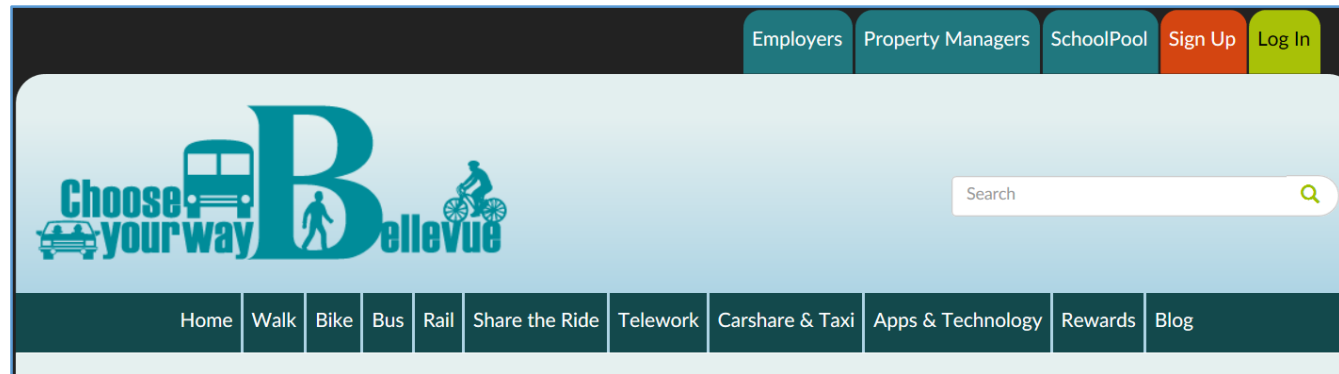
Project Concepts for
Other Eastgate Intersections

Next

Non-Infrastructure Approaches

Non-Infrastructure Approaches

- Ongoing traffic signal optimization along corridors
- Transit service improvements (Including Bellevue College Connector)
- Transportation Demand Management (TDM)



Transportation Demand Management

Background assumptions

- Bellevue Transportation Management Program - applies to larger developments/employers
- Washington State Commute Trip Reduction

Additional TDM options

- Less extensive - 10 percent reduction in commute trips
- More extensive - 15-20 percent reduction in commute trips; 5 percent reduction in other trips

Preliminary results: up to 3-5 percent reduction in corridor travel time and vehicle delay at intersections



Next Steps

May 9 Transportation Commission Meeting

- Refine project concepts
- Identify MMLoS impacts and mitigation
- Evaluate right-of-way needs
- Estimate project concept cost
- Develop preferred alternative with full analysis results
- Analyze 2024 results to prioritize projects for early implementation

Schedule

TC Study Session	Information	Commission Action/Direction
December 13	Evaluation framework 2018 baseline conditions	Approve evaluation framework
January 24	2035 modeling results Preliminary project concepts	Review modeling results Direction to define and evaluate project concepts
March 14	Preliminary Project Concepts	Review descriptions and preliminary evaluation of project concepts
May 9	Evaluation results and recommended projects	Preliminary recommendation to approve project concepts, further direction
June 13 or 27	Final documentation of projects	Final recommendation to approve project concepts. Direct staff to prepare a final report for transmittal to City Council

Thank You!

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