Citizen Advisory Committee

April 7, 2011
1. Transportation planning 101.

2. Review the transportation issues and constraints in the corridor.

3. Identify where and how we might address the needs of motorists, transit riders, bicyclists, and pedestrians.
April 7 Meeting - Discussing a range of transportation strategies that we will advance through our alternatives development and analysis phase.
Transportation Planning 101
At the end of this process the CAC will arrive at a set of transportation strategies that implement the land use vision, improve mobility, and consider:
Bellevue’s approach to improving traffic flow and mobility.

**Adding capacity strategically**

Adding new capacity to the transportation system removes choke points, and improves reliability and throughput.

**Operating roadways efficiently**

More efficient traffic signals, information, and transit priority are effective countermeasures in areas where demand exceeds capacity.

**Managing demand & providing choices**

Providing more travel choices and options for people improves the efficiency and effectiveness of the system.

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**Transportation Strategies**

**Eastgate/I-90 Land Use & Transportation Project**
This table is in the Transportation Element (Table TR-2) of the Bellevue Comprehensive Plan and represents the City’s adopted Traffic Standards Code (Chapter 14.10) for satisfying mobility and level of service.

<table>
<thead>
<tr>
<th>LOS Categories</th>
<th>Average Volume-to-Capacity Ratios</th>
<th>Description (Subjective Impression of User)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOS A</td>
<td>Less than or equal to 0.600</td>
<td>Highest drive comfort. Little delay. Free flow.</td>
</tr>
<tr>
<td>LOS B</td>
<td>0.601 - 0.70</td>
<td>High degree of drive comfort. Little delay.</td>
</tr>
<tr>
<td>LOS C</td>
<td>0.701 - 0.80</td>
<td>Some delays. Acceptable level of driver comfort. Efficient traffic operation.</td>
</tr>
<tr>
<td>LOS D+ (High D)</td>
<td>0.801 - 0.85</td>
<td>Some driver frustration. Efficient traffic operation.</td>
</tr>
<tr>
<td>LOS D- (Low D)</td>
<td>0.851 – 0.90</td>
<td>Increased driver frustration. Long cycle length.</td>
</tr>
<tr>
<td>LOS E+ (High E)</td>
<td>0.901 - 0.95</td>
<td>Near capacity. Notable delays. Low driver comfort. Difficulty of signal progression.</td>
</tr>
<tr>
<td>LOS E- (Low E)</td>
<td>0.951 - 1.000</td>
<td>At capacity. High level of congestion. High level of driver frustration.</td>
</tr>
<tr>
<td>LOS F</td>
<td>Greater than or equal to 1.001</td>
<td>Breakdown flow. Excessive delays.</td>
</tr>
</tbody>
</table>

Assessing Traffic Operations
“Don't increase density without increasing road capacities.”
“Benefits of Transit Intensive Service in 2030: Traffic modeling efforts that examined a long term transit intensive scenario found that new transit facilities, such as a Factoria Transit Center at Factoria Boulevard and SE 38th St; bus rapid transit freeway stations on I-90 and I-405, and additional pedestrian connections could resolve most of the intersection congestion problems without additional roadway construction.”

- Factoria Area Transportation Study (2005)
EAST BELLEVUE TRANSPORTATION STUDY

Project Descriptions

Bellevue, Washington

Kittelson & Associates, Inc.

December 1992

City of Bellevue

Eastgate/I-90 Corridor Study
Final Report

November 2002

Prepared by

Perfect Engineering, Inc.
Everest, Washington

1992 EBTS

2002 Transportation Study

Prior Eastgate Studies
2009 Preliminary Screening

2030 Original (Base) Land Use Alternative - PM Peak LOS (Synchro Model)

Preliminary Recommended Projects
Travel Demand Modeling

- **Trip Generation**
  - Based on land use forecast (i.e., 2030)

- **Trip Distribution**
  - Where trips go on the street network

- **Mode Choice**
  - SOV, HOV, Transit, Ped/Bike

- **Trip Assignment**
  - Trips assigned to specific streets

**Land Use Forecast for Horizon Year**

**Transportation Network Assumptions**
### DRAFT - LOS & Delay for 2008 & 2030 Land Use Alternatives

<table>
<thead>
<tr>
<th>Intersection</th>
<th>2008 AM</th>
<th>2030 AM Orig LU</th>
<th>2030 AM Mod LU</th>
<th>2008 PM</th>
<th>2030 PM Orig LU</th>
<th>2030 PM Mod LU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LOS</td>
<td>Delay</td>
<td>LOS</td>
<td>Delay</td>
<td>LOS</td>
<td>Delay</td>
</tr>
<tr>
<td>#55 - 148th Ave SE @ SE 24th Street</td>
<td>A</td>
<td>8.6</td>
<td>B</td>
<td>10.3</td>
<td>B</td>
<td>10.4</td>
</tr>
<tr>
<td>#57 - 148th Ave SE @ SE 28th Street</td>
<td>C</td>
<td>22.4</td>
<td>D</td>
<td>46.0</td>
<td>D</td>
<td>45.5</td>
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<tr>
<td>#86 - 156th Ave SE @ SE Eastgate Way</td>
<td>C</td>
<td>23.6</td>
<td>C</td>
<td>25.6</td>
<td>D</td>
<td>38.8</td>
</tr>
<tr>
<td>#101 - 150th Ave SE @ SE Eastgate Way</td>
<td>D</td>
<td>42.4</td>
<td>E</td>
<td>58.5</td>
<td>F</td>
<td>95.3</td>
</tr>
<tr>
<td># 105 - Richards Road @ Eastgate Way</td>
<td>D</td>
<td>42.0</td>
<td>D</td>
<td>39.3</td>
<td>D</td>
<td>46.5</td>
</tr>
<tr>
<td>#133 - 150th Avenue SE @ SE Newport Way</td>
<td>C</td>
<td>20.4</td>
<td>C</td>
<td>23.3</td>
<td>C</td>
<td>25.0</td>
</tr>
<tr>
<td>#171 - 142nd Avenue SE @ SE 36th Street</td>
<td>A</td>
<td>9.7</td>
<td>C</td>
<td>2.8</td>
<td>C</td>
<td>26.9</td>
</tr>
<tr>
<td>#174 - 150th Avenue SE @ SE 38th Street</td>
<td>C</td>
<td>21.1</td>
<td>C</td>
<td>24.8</td>
<td>C</td>
<td>26.6</td>
</tr>
<tr>
<td>#204 – Factoria Blvd @ SE 36th Street</td>
<td>D</td>
<td>53.5</td>
<td>F</td>
<td>83.1</td>
<td>F</td>
<td>101.5</td>
</tr>
<tr>
<td>#227 - 150th Avenue SE @ I-90 Off-Ramp</td>
<td>D</td>
<td>49.3</td>
<td>E</td>
<td>74.9</td>
<td>E</td>
<td>79.9</td>
</tr>
</tbody>
</table>

1. 2030 Base Alternative – The following additional amounts above the 2008 (Existing): 1 million feet office space; 66,000 feet institutional use; 109 multi-family dwelling units; and, 320 hotel rooms.

2. 2030 Modified Alternative – The following additional amounts above the 2030 Base Alternative: 1.8 million feet office space; 280,000 feet institutional use; 1,000 multi-family dwelling units; and, 400 hotel rooms.
- **Comprehensive Plan** outlines the City’s long-term (over 20 years) land use vision.

- **Long range facility plans** include a wide range of improvement projects designed to meet the mobility goals of the subarea.

- **Transportation Facilities Plan (TFP)** City’s transportation implementation plan, constrained by identified City and other revenues that are projected for the next 12 years.

- **Capital Investment Program (CIP)** provides a minimum six-year period (the City adopts a seven-year CIP every two years) for implementation of TFP projects that are likely to be needed in the short term.
<table>
<thead>
<tr>
<th>TFP#</th>
<th>Project Name, Location and Limits</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFP-154</td>
<td>148th/150th Avenue SE/I-90 westbound on-ramp to I-90 westbound off-ramp</td>
<td>Widen by extending the third southbound lane on 148th Avenue SE from the on-ramp to westbound I-90 to south of Eastgate Way at the I-90 westbound off ramp.</td>
</tr>
<tr>
<td>TFP-162</td>
<td>156th Avenue SE at SE Eastgate Way (I-90 westbound off-ramp)</td>
<td>Widen the I-90 westbound off-ramp to provide two dedicated left turn lanes and a shared through/right lane with a channelized right turn.</td>
</tr>
<tr>
<td>TFP-195</td>
<td>150th Avenue SE/SE 37th Street/I-90 off-ramp widening</td>
<td>Widen I-90 off-ramp 300' west of 150th Avenue SE and add a through lane. Widen SE 37th Street approximately 500' to the east of 150th Avenue SE to allow for a bypass lane on the right side of the street.</td>
</tr>
</tbody>
</table>
I-90 Constraints & Opportunities
Once called the Sunset Highway and US Route 10, I-90 became part of America’s Interstate system in the early 1970s.
What Do You Like?

- Freeway Access
- Nice Neighborhoods
- Proximity To Home
- Shopping Choices
- Parking And Ride
- Quiet

What’s Not So Good?

- Traffic
- Limited Transit Service
- Shopping Choices
- Freeway Access
- Car Dealerships
- 148th Ave
- I-90
- Rush Hour
- Bicycling Accommodation
- Noisy

Public Opinion
Today, this travel-shed has an estimated 118,000 households or a population of roughly 295,000 people and a job base of 250,000. This population is projected to grow to 156,000 households (375,000 people) and the job base to 390,000 by the year 2030.
Eastbound Auxiliary Lane
1 full lane of traffic enters Eastbound I-90 at the interchange and has an immediate merge on to the mainline.

Eastgate Interchange
1 full lane of traffic enters I-90 in the p.m. peak hours and has to merge into the through lanes in a very short distance. This merge causes congestion back up to Richards Road.

By providing an eastbound Auxiliary Lane, vehicles will have more space to enter the mainline traffic resulting a smoother merge and less congestion at this point.

Note: Not in current Bellevue 2030 travel demand model.
New Roundabout
A new roundabout at this ramp terminal intersection will address an existing and future queuing and delay for left turning vehicles at the I-90 westbound off-ramp terminal. For many hours each day it is difficult to make this left turn from this stop controlled approach. A new roundabout will also facilitate left turns onto westbound I-90. Additional ramp widening is required to assure that ramp meter queues do not extend back to this new roundabout.

Currently unfunded and needed by 2030.

Existing Roundabout
Expand the existing single lane roundabout to a two lane roundabout to address the existing and future PM peak period queues in the southbound direction that can extend back up to Vasa Park. In addition, it will accommodate any future projected traffic growth in the area.

Currently unfunded and needed by 2030.

New Slip Ramp
A proposed new slip ramp off the eastbound to northbound loop ramp will provide a more direct connection for traffic traveling to eastbound Newport Way. This will reduce both existing and future congestion and delay at the eastbound to southbound ramp terminal as well as at the SE Newport Way/Lakemont Blvd. SE intersection.

Currently unfunded and needed by 2030.

Note: Not in current Bellevue 2030 travel demand model.
“Work to improve the performance of state facilities in the area – I-90 and its access points— which today create major issues for the City’s land use and arterial system.”

– Bellevue Council Principle

2030 No Action
Assumes the completion of the three improvements referenced in Bellevue Transportation Facility Plan (programmed/unfunded).

2030 Build Alternative
Could also include improvements from Eastgate/I-90 projects including WSDOT’s I-90 Corridor Project List, as well as other improvements.
“The most needed improvement to urban design is directional signage to help drivers exiting or accessing freeways, to locate businesses, to connect between centers and to adjacent areas.”
WSDOT will replace 13 freeway exit signs on westbound I-90 in the Eastgate area of Bellevue to improve sign clarity, helping unfamiliar drivers reach their destination more easily.

Providing more understandable and readable signs improves safety by reducing last minute or unnecessary lane changes caused by driver confusion.

WSDOT maintenance crews should be finished by July.

Total project cost: $80,000
Questions or Comments on WSDOT’s I-90 Concepts?
Arterial Constraints & Opportunities
“Enhance the Eastgate corridor’s economic vitality without degrading mobility in other parts of the City, and ensure that it continues to contribute to the diversity of the City’s economic mix.” – Bellevue Council Principle

Solutions for Arterial Congestion

*Increase Efficiency*
- Signal Coordination
- Time-Based Changes (Reversible Lanes)
- Corridor-wide ITS

*Increase Capacity*
- Add Lanes
- Reconfigure

Solutions for Intersection Congestion

*Reconfigure (At Location)*
- Change Lane Configuration
- Grade Separate
- Roundabout

*Change Operations (At Location)*
- Reconfigure Signal
- Restrict Turns
Illustrative Example #1

Increasing Capacity
<table>
<thead>
<tr>
<th>Intersection</th>
<th>2008 AM</th>
<th>2030 AM Orig LU</th>
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<tr>
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<td>Delay</td>
<td>LOS</td>
<td>Delay</td>
<td>LOS</td>
<td>Delay</td>
</tr>
<tr>
<td>#227 - 150th Avenue SE</td>
<td>D</td>
<td>49.3</td>
<td>E</td>
<td>74.9</td>
<td>E</td>
<td>79.9</td>
</tr>
<tr>
<td>@ I-90 Off-Ramp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150 Ave SE &amp; SE 37 St</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“People living south of I-90 have very limited options for accessing Eastgate or parts of Bellevue north of I-90. We all end up on 150th Ave and compete with cross traffic and people entering or exiting I-90.” – Public Opinion

Approximately 1,800 vph enter I-90 from these ramps during the PM peak and must merge with the mainline which is operating at capacity.

When WSDOT activates the ramp meter (to avoid breakdown on the I-90 mainline) traffic backs up to the point of grid-locking intersections on 150th Avenue SE (both at SE 37th and 38th Street).

150 Ave SE Congestion
NB Vehicles on 150th Ave SE (SE 37th Street)
NB Vehicles on 150th Ave SE (SE 37th Street)

Elapsed Time: 02:00
NB Vehicles on 150th Ave SE (SE 37th Street)

Elapsed Time: 03:00
Note: Exclusive turning lanes for vehicles remove stopped vehicles from through traffic. A synthesis of research on this topic found a 25 percent increase in capacity, on average, for roadways that added a left-turn lane.
Illustrative Example #2

Capacity + Ped/Bike
<table>
<thead>
<tr>
<th>Intersection</th>
<th>2008 AM</th>
<th>2030 AM Orig LU</th>
<th>2030 AM Mod LU</th>
<th>2008 PM</th>
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<tbody>
<tr>
<td></td>
<td>LOS</td>
<td>Delay</td>
<td>LOS</td>
<td>Delay</td>
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<td>F</td>
<td>95.3</td>
</tr>
</tbody>
</table>
“This project includes provision of a third southbound lane along 148th Avenue SE from the ramp to westbound I-90 north of Eastgate Way south to the 150th Avenue SE overpass.

The ramp from eastbound I-90 immediately south of Eastgate Way would merge with the third southbound lane as the overpass of I-90 already has three lanes.

Drivers are projected to experience a 41% reduction in travel time along this corridor during the pm peak hour over the travel times projected for 2020 without this widening.”

- Eastgate/I-90 Corridor Study (2002)
Pedestrians & Cyclists
150 Ave SE & SE Eastgate Way

- **Concept:** Roadway widening, new sidewalk on the north side of the road, and bicycle improvements (including bike lanes and striping or painting through the intersection).

- **LOS improvements:**
  - 2030 AM Orig (E > C);
  - 2030 AM Modified (F > D);
  - 2030 PM Orig (E > D);
  - 2030 PM Modified (F > E).

- **Cost Estimate:** $2.1M

*Note: At intersections with substantial right-turn movements, a dedicated right-turn lane segregates these cars from through traffic and increases the capacity of the road.*

**2009 Preliminary Analysis**
At-Grade Crossing Options
Illustrative Example #3
SE Eastgate Way & Sunset Village Drive
SE Eastgate Way & Sunset Village Drive

Elapsed Time: 00:20
Between 2005 and 2010, nearly all the collisions at the Sunset Village Driveway—12 of 14—involved drivers attempting to turn EB on to Eastgate Way and colliding with a WB vehicle or, in one case, an EB vehicle in the turn lane. Three of the collisions were injury-causing.

Based on information contained in Bellevue Police Department reports, congestion was often a factor in these collisions: WB vehicles queuing for the light at 150th Ave SE and Eastgate Way block the view of the inside lane for SB drivers attempting to turn out of the driveway on to Eastgate Way.

These turning drivers tended to drive across the first lane thinking that the second was clear, only to hit a WB vehicle or be hit by it.
Factoria Blvd Project (2004): Replaced Two-Way Left Turn Lanes (TWLTL) with raised median that restricts left-turn egress movements from driveways except at signalized intersections. Reducing the number of left turn movements significantly improved the safety along this corridor (fewer collisions; especially T-bone).
Illustrative Example #4
“Going from I-90 westbound to 148th northbound is sloppy. There are two stoplights and two turns on this very common path. How much congestion could we eliminate if there were no stoplights/turns/intersections?” - Public Opinion
The City of Bellevue is moving all traffic signals citywide to a new signal system that uses adaptive traffic signal technology (SCATS system).

SCATS is better able to adjust to changing traffic patterns because it constantly monitors approaching traffic at every intersection and uses this information to update timing plans every signal cycle.

The City of Bellevue installed the SCATS system in the Factoria Blvd in 2010 and is upgrading the 148th, 150th, Eastgate Way, and SE 36th St (i.e. Eastgate area) corridors to traffic adaptive as part of its 2012 program.
156th Avenue SE at SE Eastgate Way (I-90 WB off-ramp)

TFP-162 (2002 Study)  
Roundabout Concept
Golden, Colorado:

Travel Time through Corridor Reduced
- 78 sec (expected to go to 103 sec) to 68 sec

Access to Businesses Delay Reduced
- Before – average 28 seconds, maximum 118 seconds
- After – average 13 seconds, maximum 40 seconds
- Right turn/U-turn Safer and Quicker than Left Turn

85th percentile Speed Reduced from 47 mph to 33 mph

<table>
<thead>
<tr>
<th></th>
<th>3 years prior (96-98)</th>
<th>7 years after (00-06)</th>
<th>Accident Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accidents</td>
<td>360</td>
<td>150</td>
<td>-85%</td>
</tr>
<tr>
<td>Injuries</td>
<td>31</td>
<td>3</td>
<td>-96%</td>
</tr>
<tr>
<td>Daily Traffic</td>
<td>11,500</td>
<td>15,500</td>
<td>35%</td>
</tr>
</tbody>
</table>

In 2004, sales tax revenues had increased 60% since roundabouts constructed – only portion of city that had seen increase each year. Plus, over 75,000 sq ft additional retail/office space added.

4 roundabouts (1998) in ½ mile corridor.
Towson, Maryland (Before)
Towson, Maryland (After)

"The Roundabout has relieved traffic congestion in this busy area. Other improvements such as street-scaping and landscaping make Towson an even more attractive place for people to live, attend school, or take a break for a day of shopping."

- Towson (Maryland) Business Association's Year 2000 Business Directory
**Improves safety**
- **Fewer crashes** – Reduces conflict points (where the path of traffic movement crosses) from 32 to 8 – results in 35% decrease in number of crashes (relative to signals).
- **Less severe crashes** – Slower speeds (15-25 mph) and converting traffic movements to right-turns (no head-on and T-bone collisions) reduces severe injury crashes by 60 -80%.
- **Pedestrian friendly** – Crash reduction factor of 27%.

**Reduces Delay & Improves Traffic Flow**
- **Reduces delay** – Traffic not required to stop – only yield – so intersection can handle more traffic in same amount of time.
- **Improves traffic flow** – Conversion to roundabouts led to 20% reduction in delays.

**Other**
- **Aesthetics** – Creates a focal point that symbolizes the entrance to the community.
- **Environmental** – Cuts down vehicular emissions and fuel consumption by reducing vehicle idle time at intersections (33% less hydrocarbons; 36% less CO; 21% less nitric oxides).
- **Emergency management** – Not subject to power outages.

Existing Conditions
Questions or Comments on Arterial Concepts?
Transit Services & Facilities
“Continue to evolve Eastgate’s transportation infrastructure to a high performing, multi-modal system, including coordinating with service providers on increased transit service to the area.” – Bellevue Council Principle

The Four Constraints on Transit

<table>
<thead>
<tr>
<th>Capital Funds</th>
<th>Operating Funds</th>
<th>Land-Use Measures</th>
<th>Transit Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money to Build Infrastructure and Buy Vehicles</td>
<td>Money to Operate Vehicles and Maintain the System</td>
<td>The Match Between Transit Investments and Land Use</td>
<td>Roads are Optimized for Transit and Pedestrians</td>
</tr>
</tbody>
</table>
Average weekday boardings/alightings increased from 2,016 (2000) to 5,471 (2005) in the project area, a 171% increase.

Average weekday boardings/alightings increased from 5,471 (2005) to 6,368 (2009) in the project area, a 16% increase.
### Non-Drive-Alone Mode Split Comparison to City’s Targets

<table>
<thead>
<tr>
<th>Area</th>
<th>2008 Actual</th>
<th>2005 Target</th>
<th>Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtown Bellevue</td>
<td>39%</td>
<td>40%</td>
<td>-1</td>
</tr>
<tr>
<td>Bel-Red / Northup</td>
<td>19%</td>
<td>25%</td>
<td>-6</td>
</tr>
<tr>
<td>New Bel-Red</td>
<td>15%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Crossroads</td>
<td>15%</td>
<td>25%</td>
<td>-10</td>
</tr>
<tr>
<td>Eastgate</td>
<td>27%</td>
<td>35%</td>
<td>-8</td>
</tr>
<tr>
<td>Factoria</td>
<td>31%</td>
<td>20%</td>
<td>11</td>
</tr>
</tbody>
</table>

### Drive-Alone Rate Over Time by MMA

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtown Bellevue</td>
<td>61%</td>
<td>71%</td>
<td>68%</td>
<td>68%</td>
</tr>
<tr>
<td>Bel-Red / Northup</td>
<td>81%</td>
<td>74%</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>Crossroads</td>
<td>85%</td>
<td>83%</td>
<td>81%</td>
<td>84%</td>
</tr>
<tr>
<td>Eastgate</td>
<td>73%</td>
<td>77%</td>
<td>74%</td>
<td>76%</td>
</tr>
<tr>
<td>Factoria</td>
<td>69%</td>
<td>79%</td>
<td>85%</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Near-Term Transit Strategies

Metro & ST Operations
“Not enough transit service in the surrounding neighborhoods (the Park & Ride is great, but good luck getting over there, even if you live within a 3-mile radius).”
Key Considerations:

1. Be more productive & cost effective
2. Recognizes everyone contributes, everyone benefits
3. Address growth and respond to demand
“Assuming no change in revenue sources between 2009 and 2015, Metro Transit projects a revenue shortfall of $1.176 billion and faces up to 600,000 service hour cuts.”

- Regional Transit Task Force Final Report & Recommendations, October 2010
Thresholds and points used to set service levels

<table>
<thead>
<tr>
<th>FACTOR</th>
<th>MEASURE</th>
<th>THRESHOLDS</th>
<th>POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Use</td>
<td>Households within ¼ mile of stops per corridor mile</td>
<td>3,110¹</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2,080</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,040</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;1,040</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17,390²</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Jobs within ¼ mile of stops per corridor mile</td>
<td>11,480</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5,810</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;5,810</td>
<td>0</td>
</tr>
</tbody>
</table>

¹ Thresholds for land use factors were set based on where a corridor scored relative to the highest score of all corridors.

² Thresholds for households per mile were set based on 75%, 50% and 25% of the highest score.

2 Thresholds for jobs per corridor mile were set based on 50%, 33% and 16% of the highest score.
“Eastgate Park and Ride is an important asset. It should be considered a transit center with more employment and residential uses created within a short walk from the station.”
“Better integrate land use and transportation across Eastgate, which may include consideration of transit-oriented development in portions of the area. Changes in land use should be informed by transportation opportunities and impacts. For example, the large Eastgate park and ride facility may create an opportunity for a transit overlay district, with well integrated land use and transportation performance.”

– Bellevue Council Principle
“Bus transit through Bellevue College takes too long.”
Current Transit Routing
**Concept:** Reconstruct roads, improve intersection at Snoqualmie River Road and Coal Creek Road, and new transit stops.

**Benefits:** More direct bus service to/through Bellevue College. Reduced running times would save King County Transit approximately $500K/annually.

**Cost Estimate:** $4.4M
Long-Range Transit Strategies
“Start planning now for possible Sound Transit 3 - future Light Rail expansion to Eastgate P&R/Bellevue College, Eastgate Business District, and eastwards to Issaquah Transit Center, Downtown Issaquah, Issaquah Highlands, and Sammamish.”
The Sound Transit Phase 2 (ST-2) measure approved by voters in 2008 is the means by which light rail will be extended from Seattle to Bellevue and Redmond (the East Link project).

ST-2 also included $82 million in funding for detailed study of ST3, including “high capacity transit” or HCT from Bellevue to Issaquah. It is not clear when Sound Transit will start the ST-3 study.

The Eastgate/I-90 Project provides an opportunity for Bellevue to work with other agencies to determine potentially desirable station locations in advance of the Sound Transit study.
Evaluate “geographic value” of land use alternatives and potential to support high capacity transit investments in the corridor.

Source: Nelson\Nygaard – “Summarizes national research into the minimum densities that may be required to support investments in different modes. It is representative of industry standard densities in station areas or corridors for the various modes. These figures should not be taken too literally; depending on the amount of ridership one requires and cost one is willing to take on, lower densities may be acceptable.”

<table>
<thead>
<tr>
<th>Density</th>
<th>Transit Mode Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 housing / acre 50 emp. / acre</td>
<td>Light Rail</td>
</tr>
<tr>
<td>20 housing / acre 25 emp. / acre</td>
<td>Streetcar Rapid Transit</td>
</tr>
<tr>
<td>20 housing / acre 25 emp. / acre</td>
<td>Commuter Rail</td>
</tr>
<tr>
<td>10 housing / acre 20 emp. / acre</td>
<td>Bus Rapid Transit</td>
</tr>
<tr>
<td>5 housing / acre 15 emp. / acre</td>
<td>Partial Bus Rapid Transit</td>
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</table>
Quantify costs/benefits of connectivity improvements to potential future high capacity transit station locations.
Questions or Comments on Transit Service & Facility Concepts?
Pedestrian, Bicycle, & Connectivity
Illustrative Example #1

Greenway Trails
“Remember it is more than just traffic flow--this is a neighborhood! I would like to see safer bicycle lanes on the frontage roads.”
Pavement overlays offer opportunities to improve the riding surface for cyclists, and to restripe the street with bike lanes.
“Improve the Eastgate Corridor’s urban design quality and coherence, recognizing the area as a major City gateway and prominent location on the Mountain to Sound Greenway.” – Bellevue Council Principle
Four Types of Transportation Cyclists
By Proportion of Population

- The length of off-street bicycle paths per unit of area has a stronger correlation with the number of bicycle commuters than the length of on-street bicycle lanes. (PSU, 2003)

- The risk of injury for cyclists riding on physically-separated bike paths is about 28% lower than for cyclists riding on comparable Montreal roads unprotected from traffic. (Harvard, 2011)
“I-90 trail has a substantial gap that forces users to ride on the very busy road or along sidewalks with busy driveway access. I understand that a separate trail that connects the facilities would be very costly but it would be fabulous.”
2009 Ped-Bike Plan
Design solutions needed to facilitate cyclist movements at intersections along Mountains to Sound Greenway Trail.

South of I-90
Factoria Blvd & SE 36 Street

- Build Curb Extensions and New Ramps
- Design solution needed to facilitate cyclist movement
- Trailhead
- Bellevue

North of I-90
SE Eastgate Way & 150 Ave SE

- Additional SB lane on 148th (Programmed)
- Add new WB lane on Eastgate Way
- Design solution needed to facilitate cyclist movement
- Restripe EB & NB Approach
- Extend NB Right turn lane to the south

2009 Preliminary Analysis
Grade Separated Crossing
This bridge over I-90, a $6M project, will complete a trail about 1,200 feet long, and connect the SR 900 boardwalk with the Sammamish Trail.

A multi-use pathway facility on structures that WSDOT constructed over an environmentally constrained area adjacent to an expanded segment of SR 900.
Develop a trail design concept for realizing the Greenway Trail that supports the preferred land use vision. Position the City to seek funding for completion of a more detailed “design report” that is based off of survey/mapping.

Evaluation of potential MTSG trail alignments:
- North of I-90 (16 segments) and
- South of I-90 (13 segments).
Illustrative Example #2

Pedestrian Facilities
“Lack of transportation alternatives. Would like to walk and bike and use the bus to get places, but cars are the only practical choice right now.”
Pedestrian Issues

No sidewalks on north-side of SE 36 SE east of 142 Pl SE

No sidewalks on either side of Eastgate Way west of 142 Pl SE

Narrow sidewalks on 142 Pl SE Bridge inadequate for transit serving passengers with disabilities.

Design of Sunset Village Driveway on Eastgate Way uncomfortable for pedestrians.
In 2011, the City is proceeding with construction of the 124th Avenue SE Connection; a grant funded project built on WSDOT ROW that will construct a 10’ wide paved multi-purpose trail connecting the north end of 124th Ave SE near SE 38th St to the existing Mountains to Sound Greenway trail along I-90.

Completing the trail will allow bicyclists to bypass the congestion along Factoria Blvd; improving both comfort and safety. The total project cost is estimated to be $1.2 million. $4 of every $5 in project costs will be funded through grants.
“In this future Factoria, pedestrians can stroll along streets lined with shops and services, with a planting strip or parking separating them from moving vehicles.”

- Factoria Area Transportation Study

**Making Progress:**
T-1: I-90 Trailhead and signage  
F-1: Policy to consolidate driveways  
F-5: Install countdown signals  
W-3: 124th Ave SE Trail

**To Do:**
T-2: Improve intersection  
T-3: Improve intersection  
E-1: Improve sidewalks  
E-4: Construct stairway  
F-3: Improve pedestrian crossing
**Concept:** Curb extensions, curb ramps, and bike improvements.

**Benefits:** Intersection already built out for auto capacity.

**Cost Estimate:** $220K
Illustrative Example #3

Connectivity
“We have plenty of connectivity with 405 and I-90 already. What we need is better intra Eastgate connectivity, and better flow between Eastgate and areas north of I-90 and west of 405 -- the more bridges, the better.”
“Increase connectivity across the Eastgate corridor, addressing the area’s numerous barriers such as its limited street and non-motorized (both pedestrian and bicycle) network, and stand-alone developments.” – Bellevue Council Principle

1.2 miles  vs.  450 feet

Street Connectivity
LEED ND calls out 90 intersections per square mile as an important density threshold, with densities of up to 400 intersections per square mile for maximum credits under the ND scoring scheme.
**New Street Grid**

*East of Richards Road*

- **Concept:** All roads to be three lanes (includes center turn lane), bike lanes and sidewalks both sides.

- **Benefits:** SE 30th Street and SE 32nd Street currently dead-end. Businesses along these two roads must gain access to/from I-90 from Richards Road; results in congestion @ Richards Road/SE Eastgate Way (Intersection 105) for vehicle coming to/from the south.

- **Cost Estimate:** $16.8M

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**New Non-motorized crossing over I-90**

- **Concept:** Bridge, ramps/stairwells to SE Eastgate Way and SE 36 St, trails to SE 30 St and SE 32 St.

- **Benefits:** Significant benefit to pedestrians and bicyclists by providing improved access to future growth areas, and an alternative facility away from existing congested roadways.

- **Cost Estimate:** $16.1M

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**New East-West Linkage to 156th Avenue SE**

- **Concept:** A two lane road with bike lanes and sidewalks both sides.

- **Benefits:** A future east-west road to 156th Avenue SE would provide additional access points to distribute traffic to other roads away from Eastgate Way.

- **Cost Estimate:** Option A is $2.4M, and Option B is $3.8M.
Questions or Comments on Pedestrian, Bicycle, & Connectivity Concepts?
May - August

Project Timeline

CAC
- Nov-Dec 2010: Background & Context
- Jan-Feb 2011: Issues & Opportunities Land Use, Transportation, Urban Design, Environment
- Mar-Apr 2011: Identification and Analysis of Alternatives
- May-Jun 2011: Development of Preferred Alternative
- Jul-Aug 2011: Final Report
- Sep-Oct 2011: Comprehensive Plan and Development Code Amendments

Outreach
- Community Briefings
- Open Houses

Reporting
- Regular Briefings to Transportation Commission & Planning Commission
- Regular Briefings to City Council

Eastgate/I-90 Land Use & Transportation Project
www.bellevuewa.gov/eastgate-corridor.htm

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