Expanding Networks to Seattle’s Job Centers

Dongho Chang, City Traffic Engineer
September 23, 2015
Presentation overview

- Background on Seattle
- Vision Zero
- Bicycle Master Plan
- Questions/discussion
SDOT Mission, Vision, and Core Values

**Mission**: deliver a high-quality transportation system for Seattle

**Vision**: connected people, places, and products

Committed to **5 core values** to create a city that is:

- Safe
- Interconnected
- Affordable
- Vibrant
- Innovative
Seattle is growing. A lot.

Seattle tied with Fort Worth, Texas, for the third-fastest rate of growth among the 50 largest U.S. cities from 2013 to 2014. Last year, Seattle ranked No. 1.

Seattle

Denver

Fort Worth

Austin

Miami

GROWTH RATE — +2.9%

NEW RESIDENTS — 25,667

Source: U.S. Census Bureau

KELLY SHEA / THE SEATTLE TIMES
$2.3 Billion Residential Developments
$2.3 Billion Residential Developments

Table 1. Largest active residential projects (June 2012)

<table>
<thead>
<tr>
<th>Name</th>
<th>Units</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIA6</td>
<td>654</td>
<td>$200,000,000</td>
</tr>
<tr>
<td>Stadium Place Phase I</td>
<td>514</td>
<td>$255,000,000</td>
</tr>
<tr>
<td>Insignia Phase I*</td>
<td>335</td>
<td>$180,000,000</td>
</tr>
<tr>
<td>901 Dexter Ave N</td>
<td>284</td>
<td>$41,000,000</td>
</tr>
<tr>
<td>Stack House</td>
<td>278</td>
<td>$33,000,000</td>
</tr>
</tbody>
</table>

*Condominiums

Photo: Seattle Times

DSA 2013
Continued Interest in Large Developments

5th and Columbia – 43 story tower

Amazon Rufus 2.0 – 37 story tower

9th and Stewart Hedreen Hotel - 43 story tower
200 people can fit in...

- 177 cars
- 3 buses
- 1 light rail train
- on their bikes

2nd Avenue in Seattle
Street Right of Way

- Public Space
- Used for Transportation Utility
- Serve our Community’s Diverse Needs
Accommodate Modes Efficiently
Why is Downtown Important
South Lake Union

Fastest Growing Area in Seattle

- 35,000 Jobs
- 71,500 Amazon Employee Space by 2019
- 3,500 Existing Housing Units
- 10,000 Housing Units Planned
- Transit Service Demand
Seattle’s plan to eliminate traffic deaths and serious injuries

- Street designs that prioritize safety
- Public education and engagement
- Targeted enforcement patrols

www.seattle.gov/visionzero
City with Zero Traffic Fatality

Safest, deadliest cities for walking and biking

Cities where many people walk or bike to work are among the safest. Seattle ranks second, based on a formula to determine the overall fatality rate for bike and pedestrian commuters.

Traffic Fatalities on Seattle Streets

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Pedestrian</th>
<th>Cyclist</th>
<th>Motorcycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>30</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2005</td>
<td>40</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2006</td>
<td>30</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2007</td>
<td>20</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2008</td>
<td>10</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2009</td>
<td>0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2011</td>
<td>0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Citywide Collision Rate

<table>
<thead>
<tr>
<th>Year</th>
<th>Collisions per Million AADT Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>80.0</td>
</tr>
<tr>
<td>2006</td>
<td>75.0</td>
</tr>
<tr>
<td>2007</td>
<td>70.0</td>
</tr>
<tr>
<td>2008</td>
<td>65.0</td>
</tr>
<tr>
<td>2009</td>
<td>60.0</td>
</tr>
<tr>
<td>2010</td>
<td>55.0</td>
</tr>
<tr>
<td>2011</td>
<td>50.0</td>
</tr>
<tr>
<td>2012</td>
<td>45.0</td>
</tr>
<tr>
<td>2013</td>
<td>40.0</td>
</tr>
<tr>
<td>2014</td>
<td>35.0</td>
</tr>
</tbody>
</table>

Source: Benchmarking Report, Alliance for Biking & Walking, 2014

GARLAND POTTS / THE SEATTLE TIMES
City with Zero Traffic Fatality

Bicycle Collisions

Bicycle Collisions Rate per Bicycle Commuter*

Bicycle Collision Rate

Linear (Bicycle Collision Rate)
Bike Counters

Fremont Bridge Bike Counts

City of Seattle

Permanent Bike Counters

- Bike Display Totem
- Bike and Pedestrian
- Bike

Fremont Bridge Trail

Elliott Bay Trail in Myrtle Edwards Park

Mountains to Sound Trail west of I-50 Bridge

26th Ave SW Greenway at SW Oregon St

Chief Seattle Trail north of S Thistle St

SDOT

Seattle Department of Transportation
Neighborhood Traffic Calming

A lot has been done already
• 1,500 Traffic Circles (1,127 inventoried in asset management)
• Reduce injury collision by 97%, all collisions by 90%
• 1,343 Volunteers just for our circles! (1 to 4 volunteers per circle)
• Curb/Planter strip gardening – raised structures requires no-fee permit (sand boxes!)
Enforcement

- 24 camera locations. 20 with 3 year before/after data
- Angle collisions reduced by 46%
- **Pedestrian collisions reduced by 32%**
- Rearend collisions reduced by 15%, all collisions reduced by 23%
Bicycle Master Plan

- 20 year plan
- Updated in 2014

<table>
<thead>
<tr>
<th>Generalized Bicycle Facility Designation</th>
<th>Bicycle Facility Types</th>
<th>Posted Speed Limit (mph)</th>
<th>Average Daily Traffic (ADT) per day</th>
<th>Street Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighborhood greenway</td>
<td>Neighborhood Greenway</td>
<td>20</td>
<td>1,500 or less</td>
<td>Non-arterial</td>
</tr>
<tr>
<td>Shared street</td>
<td>Shared lane pavement marking (sharrow)</td>
<td>25 - 30</td>
<td>To be used due to ROW constraints or topography</td>
<td>Non-arterial and Collector/Minor arterials</td>
</tr>
<tr>
<td>In street, minor separation</td>
<td>Bicycle lane; Climbing Lane</td>
<td>30</td>
<td>8,000 or less</td>
<td>Collector arterial</td>
</tr>
<tr>
<td></td>
<td>Buffered bicycle lane</td>
<td>30</td>
<td>15,000 or less</td>
<td>Collector/Minor arterials</td>
</tr>
<tr>
<td>Cycle tracks (protected bicycle lanes)</td>
<td>Physically separated (raised or with barrier on-street facility)</td>
<td>30 and greater</td>
<td>15,000 and above</td>
<td>Minor/Principal arterials</td>
</tr>
<tr>
<td>Off-street*</td>
<td>Multi-use trail</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Existing Network*</th>
<th>Proposed Network Improvements</th>
<th>Total Network</th>
<th>Percent of Total Network</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing Bicycle Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Off Street</td>
<td>46.9</td>
<td>0</td>
<td>32.0</td>
</tr>
<tr>
<td>Cycle Track (protected bicycle lane)</td>
<td>3.2</td>
<td>52.1</td>
<td>49.5</td>
</tr>
<tr>
<td>Neighborhood Greenway</td>
<td>10.3</td>
<td>0</td>
<td>238.6</td>
</tr>
<tr>
<td>In Street, Minor Separation</td>
<td>44.4</td>
<td>17.9</td>
<td>75.6</td>
</tr>
<tr>
<td>Shared Street</td>
<td>30.0</td>
<td>0</td>
<td>7.8</td>
</tr>
<tr>
<td>Total</td>
<td>134.8</td>
<td>70.0</td>
<td>403.5</td>
</tr>
</tbody>
</table>
Bicycle Master Plan

- 5 year Implementation Plan
- Mostly local levy funding

<table>
<thead>
<tr>
<th>COST ESTIMATE</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>5 YEAR TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost Estimate (1)</td>
<td>$19.5</td>
<td>$12.8</td>
<td>$17.6</td>
<td>$13.8</td>
<td>$14.8</td>
<td>$78.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PROJECTS AND PROGRAMS</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>5-YEAR TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected Bicycle Lanes</td>
<td>7.5</td>
<td>9.4</td>
<td>6.1</td>
<td>5.8</td>
<td>7.8</td>
<td>36</td>
</tr>
<tr>
<td>Neighborhood Greenways</td>
<td>12.6</td>
<td>4.1</td>
<td>15.6</td>
<td>10.9</td>
<td>9.5</td>
<td>52</td>
</tr>
<tr>
<td>Education (schools reached)</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>Bike racks</td>
<td>225</td>
<td>200</td>
<td>175</td>
<td>150</td>
<td>125</td>
<td>875</td>
</tr>
<tr>
<td>Bike corrals</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>35</td>
<td>125</td>
</tr>
<tr>
<td>Wayfinding (miles)</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Spot improvements</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>50</td>
</tr>
</tbody>
</table>
Protected bike lane benefits

- Risk of injury drops 90 percent* on protected bicycle lanes
- Encourage ridership, particularly ‘willing but weary’ bike riders
- Reduce door crashes
- Add level of bike predictability

* December 2012, Vol 102, No. 12 | American Journal of Public Health
Cherry St
NE 65th St

familyride
Dexter Avenue North

- 2011 Paving Project
- 1.5 Miles in Length
- 5 lanes to 2 lanes
- Bus and Bike Improvements
- Community Concerns
19% increase in traffic volume
11,800 AWDT Before
14,100 AWDT After
19% decrease in collision rate
~40% increase in bus ridership
Bus travel time
approximately same (+0.4 seconds)
Dexter Avenue North

- Sales index is trending at a positive 5% annual growth rate
Dexter Avenue North

- Bicycle ridership increased by 39%
Dexter Ave

Existing/Interim Section

Typical Design Section

Typical Design Section - Metro Bypass
Mercer Street
Mercer Street
May 7 – Mayor Murray Announce 2nd Avenue Demonstration Project (9/8/14)

Pike Place to Pioneer Square (0.71 miles)

In time for Bike Share Launch (10/14/14)
21nd Avenue

- Aggressive Schedule – 2 years to 4 months
- Challenging and Visible Corridor
- High Risk / Tremendous Safety Concerns

2013 Annual Traffic Report

<table>
<thead>
<tr>
<th>Year</th>
<th>SR99</th>
<th>Alaska</th>
<th>Wester</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>108200</td>
<td>13600</td>
<td>9400</td>
<td>22900</td>
<td>16200</td>
<td>12700</td>
<td>20800</td>
<td>15300</td>
<td>14400</td>
</tr>
<tr>
<td>2002</td>
<td>106600</td>
<td>12100</td>
<td>9200</td>
<td>23200</td>
<td>15900</td>
<td>12100</td>
<td>20100</td>
<td>14900</td>
<td>14600</td>
</tr>
<tr>
<td>2004</td>
<td>105900</td>
<td>12600</td>
<td>8000</td>
<td>21700</td>
<td>15100</td>
<td>11800</td>
<td>18700</td>
<td>13500</td>
<td>13800</td>
</tr>
<tr>
<td>2006</td>
<td>109300</td>
<td>12100</td>
<td>7700</td>
<td>22200</td>
<td>15800</td>
<td>8100</td>
<td>19700</td>
<td>14400</td>
<td>14500</td>
</tr>
<tr>
<td>2008</td>
<td>108200</td>
<td>12500</td>
<td>7500</td>
<td>21300</td>
<td>15200</td>
<td>8500</td>
<td>19300</td>
<td>12700</td>
<td>13400</td>
</tr>
<tr>
<td>2010</td>
<td>108600</td>
<td>12300</td>
<td>6300</td>
<td>21100</td>
<td>15100</td>
<td>7900</td>
<td>18600</td>
<td>13800</td>
<td>14600</td>
</tr>
<tr>
<td>2012</td>
<td>62000</td>
<td>12300</td>
<td>6300</td>
<td>20400</td>
<td>15200</td>
<td>7600</td>
<td>19300</td>
<td>13500</td>
<td>13300</td>
</tr>
<tr>
<td>2013</td>
<td>NA</td>
<td>12400</td>
<td>6300</td>
<td>20400</td>
<td>15200</td>
<td>7600</td>
<td>19300</td>
<td>8100</td>
<td>14300</td>
</tr>
</tbody>
</table>
2nd Avenue at Pike

- Aggressive Schedule – 2 years to 4 months
- Challenging and Visible Corridor
- High Risk / Tremendous Safety Concerns

Thursday, May 1, 2014
5-6 pm
1107 total vehicles
3288 total pedestrians
108 bicycle riders
2nd Avenue

- 15,200 ADT – one way SB, 272 bicycle riders
- 61 bicycle collisions in 4 yr period (50% left turn at crosswalks)
- Off peak parking on Bus lane (6-9 am, 3-7 pm)
- 30 mph
- 90’ ROW, 18’ sw, 11’ bus, 3- 10’ gp, 5’ bike, 8’ parking
- Old post mounted signal poles, cabinets, controllers
2nd Avenue

2nd Ave Before, SNG

2nd Ave After, Toole
2nd Avenue
2nd Avenue

PIKE STREET EXISTING

11' 12'

Drive Lane

Drive Lane

Looking West

PIKE STREET PROPOSED

11' 2' 5' 5'

Drive Lane

Buffer

Protected Bike Lane

Looking West
2nd Avenue
2\textsuperscript{nd} Avenue – Art Museum
2nd Avenue – Art Museum
2nd Avenue – Art Museum
2nd Avenue

Southbound Travel Time (Weekday PM Peak) on 2nd Ave from Stewart St to James St

Average PM Travel Time With PBL
Mon 10/20 - Fri 10/24

Southbound PM Travel Time Comparison

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>4PM</th>
<th>5PM</th>
<th>6PM</th>
<th>7PM</th>
<th>8PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg Weekday Travel Time Without PBL (Min)</td>
<td>6:45</td>
<td>8:15</td>
<td>7:45</td>
<td>5:45</td>
<td>6:00</td>
</tr>
<tr>
<td>Avg Weekday Travel Time With PBL (Min)</td>
<td>7:30</td>
<td>9:00</td>
<td>9:30</td>
<td>5:45</td>
<td>6:15</td>
</tr>
<tr>
<td>Difference in Travel Time (Min)</td>
<td>+ 0:45</td>
<td>+ 0:45</td>
<td>+ 1:45</td>
<td>0:00</td>
<td>+ 0:15</td>
</tr>
<tr>
<td>Difference in Travel Time (%)</td>
<td>+ 11%</td>
<td>+ 9%</td>
<td>+ 23%</td>
<td>0%</td>
<td>+ 4%</td>
</tr>
</tbody>
</table>
NE 40th Street
NE 40th Street

Brooklyn Ave NE Before
15th Ave NE Before
NE 40th Street
NW 45th St
Stone Way
Paint and Posts
Questions?

http://www.seattle.gov/transportation