Seattle Rapid Ride
Aurora Ave E Line

Summary Findings
Presentation Topics

- Corridor Background
- Study Approach
- Comparison to Actual Results and Findings
- Anticipated Issues vs Outcomes
- Design & Implementation: Enhancing the Rider Experience (Mike Hendrix)
Corridor: Starting Point

- About 14 miles
- 3 Lanes Peak Direction
- 12,000 daily transit trips
  - #358 – 10-20m frequency
- Existing BAT Lanes: NB north of 115th; SB south of 50th to 38th
- State Highway 99 with strip development
- Parking Allowed near businesses
Corridor Starting Point

- 30,000-70,000 ADT
- 35 mph
- Very Congested
  - 145th Street
  - 130th Street
  - 105th Street
  - 85th Street
  - 80th Street
Goals for Improvement

**Operational**
- Improve Travel Times for Transit and Reliability
- Enhance Frequency of Transit
- Improve Rider Experience

**Community**
- Unify Corridor and Improve Social Fabric
- Provide Better Access to Low Income Households
What DKS was Tasked To Do

- Model the implementation of a new BAT Lane on Aurora Ave from 38th St to 115th St
- Identify the benefits of implementing the BAT lane + Transit Signal Priority (TSP)
- Identify any impacts with implementation
  - Parking Impacts
  - Side Street Delay
### BAT Lane Implementation Benefits - VISSIM

<table>
<thead>
<tr>
<th></th>
<th>Projected Bus Travel Time Savings w/ BAT Lane (min)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full Priority</td>
<td>Partial Priority</td>
<td>Partial Priority</td>
</tr>
<tr>
<td></td>
<td>AM</td>
<td>PM</td>
<td>AM</td>
</tr>
<tr>
<td>NB</td>
<td>2.4</td>
<td>2.5</td>
<td>0.5</td>
</tr>
<tr>
<td>SB</td>
<td>4.3</td>
<td>4.5</td>
<td>3.8</td>
</tr>
</tbody>
</table>

- **Bus Travel Time Savings: AM + PM**
- **Improved Transit Service and Schedule Reliability**
# Transit Travel Time Results Before/After

<table>
<thead>
<tr>
<th></th>
<th>Minutes Saved</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NB</td>
<td>SB</td>
</tr>
<tr>
<td>BAT Lane &amp; Signal Retiming</td>
<td>4.0</td>
<td>5.2</td>
</tr>
<tr>
<td>E Line Improvements</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>Total Compared to Baseline</strong></td>
<td><strong>7.8</strong></td>
<td><strong>8.2</strong></td>
</tr>
</tbody>
</table>

*20+% Savings*
Corridor Transit Travel Time Results

NB Aurora Ave Travel Time; N 76th to N 200th St

- AM:
  - Baseline: 3.1 minutes
  - 358 w/ Bus Lane: 6.1 minutes
  - RR w/o TSP: 2.6 minutes
  - RR w/ TSP: 2.7 minutes

- MD:
  - Baseline: 9.0 minutes
  - 358 w/ Bus Lane: 19.9 minutes
  - RR w/o TSP: 2.9 minutes
  - RR w/ TSP: 3.0 minutes

- PM:
  - Baseline: 4.8 minutes
  - 358 w/ Bus Lane: 7.6 minutes
  - RR w/o TSP: 3.4 minutes
  - RR w/ TSP: 3.4 minutes
What Happened to Auto Travel Time?

<table>
<thead>
<tr>
<th>Travel Time Segment</th>
<th>Peak</th>
<th>Base Operation (Minutes)</th>
<th>BAT Lane Optimized (Minutes)</th>
<th>% Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>NB Bridge Way to N 145th St AM</td>
<td>13.7</td>
<td>12.8</td>
<td>-6%</td>
<td></td>
</tr>
<tr>
<td>SB N 145th St to Bridge Way AM</td>
<td>13.2</td>
<td>14.9</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>NB Bridge Way to N 145th St PM</td>
<td>17.2</td>
<td>15.9</td>
<td>-8%</td>
<td></td>
</tr>
<tr>
<td>SB N 145th St to Bridge Way PM</td>
<td>14.0</td>
<td>14.7</td>
<td>-5%</td>
<td></td>
</tr>
</tbody>
</table>

Greater green time on Aurora for transit contributes to better auto travel times.
Frequency of Service Enhanced

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Route 358</th>
<th>Rapid Ride E-Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM &amp; PM Peaks</td>
<td>10-15 min</td>
<td>5-10 min</td>
</tr>
<tr>
<td>Mid-day</td>
<td>20 min</td>
<td>15 min</td>
</tr>
<tr>
<td>Evenings</td>
<td></td>
<td>30 min until 2 AM</td>
</tr>
</tbody>
</table>

> More frequent transit provides greater access opportunities

> Improved travel time performance reduced the amount of equipment to service corridor
End Result = More Riders
Challenges

- **On-Street Parking Removal**
  - Impact to convenience not capacity or access
  - Trade off with enhanced transit performance

- **Side Street Delays**
  - Tested with VISSIM
  - Refined timings
BAT Lane Implementation

Increase in PM Side Street Delay

Westbound

80th St
85th St
105th St
130th St

Eastbound

Winona Ave

Seconds

Partial TSP
Full TSP
Increased Side Street Green Time

Seconds
BAT Lane Implementation

PM Diversion

- Worst case Diversion on Aurora Ave NB is approx 20%

- Diversion is spread over many parallel Streets

- Largest increases in vol occur on Greenwood and Green Lake Way

- Actual volume increase on parallel roadways is small

- But this is manageable!
Social Media Score
Design of an Improved Rider Experience

- Enhanced Stops
Design of an Improved Rider Experience

- Enhanced Stops
  - Extra Bench
  - Trash Can
  - Information Kiosk
Design of an Improved Rider Experience

- Information Kiosk
- Maps
- Next Bus Alerts
- ORCA Card Reader
Design of an Improved Rider Experience

- ADA Ramps and Upgrades
Design of an Improved Rider Experience

- Crosswalks
- New Signal
Design of an Improved Rider Experience

- New Sidewalk & Bike Lane Connections
  N 125th St
  - 1,500 Lineal Feet
  - 19 ADA Ramps
  - Bike Signal Detection
  - Built on former landfill
  - Detention under an unimproved road
Design of an Improved Rider Experience

- New Sidewalk & Bike Lane Connections
  - N 143rd St
  - 1,800 Lineal Feet
  - 10 ADA Ramps
  - Connections to bike and senior citizen facilities
Challenges on the Rapid Ride E Line Design

- Drainage
- Utility Relocations
- State Highway Standards
- Permitting
Questions

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