PORTLAND - SOUTH PORTLAND SMART CORRIDOR PLAN

Broadway – Analysis and Preliminary Recommendations
August 2018
Portland – South Portland Smart Corridor Plan

- Comprehensive & multimodal
  - Land use – Urban design & economic development
  - Traffic operations and safety
  - Public transit
  - Pedestrian & bicycle access, safety
- Focus segments
  - Forest Avenue North – Morrill’s Corner to Woodfords Corner
  - Forest Avenue South – Woodfords Corner to Deering Oaks
  - Broadway – Knightville/Millcreek to Bug Light Park/SMCC
- Outreach with neighborhoods and community stakeholders
Study Goals & Approach

Goals

- Encourage high-quality development
  - Multi-modal access to land use
  - Improve place-making and urban design
- Improve safety in all modes
  - Address high-crash locations
  - Recommend safety counter-measures
- Improve vehicle access and traffic congestion
  - Reduce congestion and delay
  - Address bottlenecks, improve circulation
- Improve multi-modal access
  - Improve transit service, amenities
  - Promote pedestrian access & safety
  - Promote bicycle access & safety

Approach

- Existing conditions
- Issues & opportunities
- Alternatives development
  - Evaluation of alternatives
  - Preliminary recommendations

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Corridor Improvement Objectives

• **Safety**
  - High crash locations
  - Obstacles to greater multimodal use of the corridor

• **Traffic**
  - Address bottlenecks to reduce congestion
  - “Right-sizing” of roadway and intersections
  - Preserve existing curblines

• **Public transit**
  - Improved operations
  - Enhanced amenities: transfer hubs, shelters, benches, traveler info

• **Pedestrian**
  - Protected crosswalks – shorten long gaps, all bus stops
  - Better access at intersections

• **Bicycle**
  - Extend city bicycle network
  - Fill system gaps and obstacles
Safety – Proven Safety Countermeasures

**Medians and Pedestrian Crossing Islands in Urban and Suburban Areas**

*PEDESTRIAN CROSSING ISLAND*

**56%**
Reduction in pedestrian crashes

*Example of a pedestrian crossing islands*

*Source: [pedestrians.org](http://pedestrians.org) - Dan Burden*

**Road Diets (Roadway Reconfiguration)**

**4-LANE → 3-LANE ROAD DIET CONVERSIONS**

**19-47%**
Reduction in total crashes

*Road Diet project in Honolulu, Hawaii*

*Source: Lendis*

**Roundabouts**

**TWO-WAY STOP-CONTROLLED INTERSECTION TO A ROUNDABOUT**

**82%**
Reduction in severe crashes

*Example of a single-lane roundabout*

*Source: FHWA*

**Leading Pedestrian Intervals**

**SAFETY BENEFIT:**

**60%**
Reduction in pedestrian-vehicle crashes at intersections

*Source: [FHWA](http://fhwa.dot.gov)*
Broadway, South Portland – Traffic Issues

- Mill Creek congestion – 4-5 congested lanes, high volumes
- East of Cottage Road
  - 2-3 lanes of continuously flowing traffic
  - Heavy vehicles
  - SMCC traffic demand

- **Safety**
  - Significant crash history
  - High crash locations in Mill Creek
South Portland – Development Assumptions

- **Mussey Neighborhood Center**
  - 50 apartments
  - Local retail

- **Mill Creek – Ocean Street**
  - 125 apartments
  - 125 condos

- **Broadway/Sawyer Center**
  - 50 apartments
  - Local retail

- **Cacoulidis – Liberty Village**
  - 265 condos
  - Hotel
  - Retail
  - Marina
South Portland – Traffic Impacts of Development

EXISTING CONDITIONS

Level of Service
AM|PM

WITH DEVELOPMENT IMPACTS

August 2018
# Broadway/Cottage Road Intersection Movements

## Traffic

<table>
<thead>
<tr>
<th>Movement</th>
<th>Existing</th>
<th>No-Build</th>
<th>Signal Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM LOS Intersection</td>
<td>C</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>AM LOS – EB Right Turn</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>AM Queue – EB Right Turn</td>
<td>--</td>
<td>--</td>
<td>10’</td>
</tr>
<tr>
<td>PM LOS Intersection</td>
<td>D</td>
<td>E</td>
<td>E</td>
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<tr>
<td>PM LOS – EB Right Turn</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>PM Avg. Queue – EB Right Turn</td>
<td>--</td>
<td>--</td>
<td>32’</td>
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</tbody>
</table>

## Safety

- Crashes/Year (2013-15) 13
- Ped-Bike Crashes/Year 0

## Pedestrian

- Right turn control: Yield, Yield, Signal control
# Broadway/Sawyer Street – Traffic Signal Warrants

<table>
<thead>
<tr>
<th>Warrant</th>
<th>Hours Met</th>
<th>Warrant Met?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warrant 1 – 8-Hour Traffic Volumes</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>Warrant 2 – 4-Hour Traffic Volumes</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>Warrant 3</td>
<td>3A Peak Hour Delay</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>3B Peak Hour Volume</td>
<td>--</td>
</tr>
<tr>
<td>Warrant 4</td>
<td>4A – 4-Hour Pedestrian Volume</td>
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<tr>
<td></td>
<td>4B – Peak Hr Pedestrian Volume</td>
<td>--</td>
</tr>
<tr>
<td>Warrant 5 – School Crossing</td>
<td>--</td>
<td>No</td>
</tr>
<tr>
<td>Warrant 6 – Coordinated Signal System</td>
<td>--</td>
<td>No</td>
</tr>
<tr>
<td>Warrant 7 – Crash Experience</td>
<td>--</td>
<td>No</td>
</tr>
<tr>
<td>Warrant 8 – Roadway Network/Future Volume</td>
<td>--</td>
<td>No</td>
</tr>
<tr>
<td>Warrant 9 – Railroad Crossing</td>
<td>--</td>
<td>No</td>
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<tr>
<td>Overall Warrant Analysis</td>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

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Broadway – Potential Roundabout Improvements

AM: C/C to A
PM: C/F to A

AM: B/A/A/A to A
PM: B/A/A/C to A
Broadway/Sawyer – Potential Roundabout Improvements

- Dashed line indicates existing curb location
- Mountable apron allows for tractor trailer turning movements
Broadway/Sawyer – Potential Roundabout Improvements

<table>
<thead>
<tr>
<th></th>
<th>Existing</th>
<th>No-Build</th>
<th>Crosswalk Upgrade</th>
<th>Signal</th>
<th>Roundabout</th>
</tr>
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<tbody>
<tr>
<td><strong>TRAFFIC</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AM LOS (SB</td>
<td>NB)</td>
<td>C</td>
<td>D</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>AM total delay (seconds per vehicle)</td>
<td>2.7 seconds</td>
<td>11.6 seconds</td>
<td>11.6 seconds</td>
<td>18.3 seconds</td>
<td>8.2 seconds</td>
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<tr>
<td>PM LOS (SB</td>
<td>NB)</td>
<td>D</td>
<td>F</td>
<td>F</td>
<td>F</td>
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<tr>
<td>AM total delay (seconds per vehicle)</td>
<td>6.1 seconds</td>
<td>42.4 seconds</td>
<td>42.4 seconds</td>
<td>13.7</td>
<td>8.6 seconds</td>
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<tr>
<td>AM Sawyer 95th %-ile Q (SB</td>
<td>NB)</td>
<td>30’</td>
<td>25’</td>
<td>161’</td>
<td>67’</td>
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<tr>
<td>PM Sawyer 95th %-ile Q (SB</td>
<td>NB)</td>
<td>65’</td>
<td>66’</td>
<td>256’</td>
<td>188’</td>
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<tr>
<td>AM Broadway 95th %-ile Q (EB</td>
<td>WB)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
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<tr>
<td>PM Broadway 95th %-ile Q (EB</td>
<td>WB)</td>
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<td>--</td>
<td>--</td>
<td>--</td>
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<td><strong>SAFETY</strong></td>
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<td>Crashes/Year (2013-15)</td>
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<td></td>
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<td></td>
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<tr>
<td>Ped-Bike Crashes/Year</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Speed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEDESTRIAN</td>
<td></td>
<td></td>
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<tr>
<td>Broadway crossing type</td>
<td>Unsignalized</td>
<td>Unsignalized</td>
<td>RRFB</td>
<td>Signal-protected</td>
<td>Unsignalized</td>
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<tr>
<td>Broadway lanes to cross</td>
<td>3</td>
<td>3</td>
<td></td>
<td>3</td>
<td>3</td>
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<tr>
<td><strong>BICYCLE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Facility</td>
<td>Bike lane to west None to east</td>
<td>Bike lane to west None to east</td>
<td>Bike lane to west None to east</td>
<td>Bike lane to west None to east</td>
<td>Bike lanes both ways</td>
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<tr>
<td>Level of Traffic Stress</td>
<td>4</td>
<td>4</td>
<td></td>
<td>4</td>
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</tr>
</tbody>
</table>

82% reduction in severe crashes

May increase vehicle speed

Deflection reduces speed at intersection

1 at a time
Transit Issues

- Route 21 – loop route – 30 to 45 minute headways
- Inbound to Mill Creek and Portland
- Traffic congestion in Mill Creek
- Delays from Casco Bay Bridge raisings for shipping
- Limited shelters or amenities
Transit Opportunities

• Transit Tax Increment Financing (TIF) district

• Funding from Cacoulidis, other properties for transit improvements
  • Increase frequency
  • Add clockwise loop
  • Ferry connection to Portland peninsula
**Corridor-Wide Transit Enhancements – Operational Improvements**

- **Transit Signal Priority**
  - Extend green time when buses approach
  - Only needed at congested locations (LOS C or worse)

- **Queue Jump**
  - Exclusive leading signal phase for bus
  - Enables bus to get in front of other traffic
  - Requires adequate space for bus lane in advance of intersection
Broadway, South Portland – Pedestrian Issues

- Wide signalized crossings in Mill Creek
- 2-3 lane crossings on east Broadway
- Gaps between stop or signal protected crosswalks on east Broadway
- Narrow sidewalks
Eastern Broadway/Ferry Village Pedestrian Conditions

- Crosswalk
- Crosswalk w/ Flush Median
- Crosswalk w/ RRFB

- South Portland Greenbelt Path
- Sawyer Street
- Boys & Girls Club
- Small Elementary School
- Broadway
- Prable Street
- SMCC

Distances:
- 1,150 feet
- 825 feet
- 1,550 feet
- 575 feet
- 1,050 feet

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Broadway/Walnut Street – Pedestrian Conditions
Broadway
Walnut St – Mussey St
Pedestrian Conditions

1,150 feet
Broadway
Mussey Street – Harriet Street
Pedestrian Conditions
Broadway
Mussey Street – Pine Street
Pedestrian Conditions

825 feet

August 2018
Broadway
Pine Street – Spring Street
Pedestrian Conditions

1,550 feet

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Add missing crossing at Mussey Street

Add RRFB-protected crosswalks at Sawyer Street, Stanford Street

Add missing crossings at Pickett Street, Breakwater Drive
Broadway, South Portland – Bicycle Issues

- Intermittent bike lanes
  - Bike lanes on Casco Bay Bridge
  - No bike lanes in Mill Creek
  - Gap in between Sawyer and Spring
- Continuous South Portland Greenbelt Path
Broadway, South Portland – Bicycle Opportunities

- Widen South Portland Greenbelt Path
  - Currently 8’ – substandard
- Improve crossings for path
- Improve connections from Broadway bike lanes to South Portland Greenbelt Path
- Improve access through Knightville
  - Shared lane “sharrows"