Transit Signal Priority Update

Cambridge Transit Advisory Committee
April 6, 2016
Agenda

- Overview of Transit Signal Priority
- Challenges of TSP in Cambridge
- Status of Projects
  - MBTA TSP pilot
  - Signal communication
  - Participatory Budgeting
- Next Steps
Types of Signal Priority
Simple

- Green extension

<table>
<thead>
<tr>
<th>Normal (no bus detected)</th>
<th>Bus arriving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Red</td>
</tr>
<tr>
<td>Yellow</td>
<td>Red</td>
</tr>
<tr>
<td>Red</td>
<td>Yellow</td>
</tr>
<tr>
<td>Yellow</td>
<td>Red</td>
</tr>
<tr>
<td>Bus detected</td>
<td></td>
</tr>
</tbody>
</table>

- Early green/red truncation

<table>
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<th>Normal (no bus detected)</th>
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<tr>
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</tr>
<tr>
<td>Bus detected</td>
<td></td>
</tr>
</tbody>
</table>
Types of Signal Priority Complex

- **Phase skipping**

  - Normal (no bus detected)
  - Bus arriving

- **Phase rotation**

  - Normal (no bus detected)
  - Bus arriving

  Bus detected
Signal Priority ≠ Signal Preemption
Transit Signal Priority
Direct Communication
Transit Signal Priority
Center-to-Center Communication
Challenges of TSP in Cambridge

- Maintaining safe pedestrian crossings
- Limited parallel routes
- Crossing bus routes
- Signal communications
Maintaining Safe Pedestrian Crossings

<table>
<thead>
<tr>
<th>Pedestrian Signal Display</th>
<th>Pedestrian Intervals</th>
<th>Walk Interval</th>
<th>Pedestrian Change Interval</th>
<th>Buffer Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steady</td>
<td>7 seconds MIN.**</td>
<td></td>
<td>Calculated pedestrian clearance time***</td>
<td>3 seconds MIN.</td>
</tr>
<tr>
<td>Steady</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Flashing with countdown

** Steady for 7 seconds Minimum

*** Calculated pedestrian clearance time

“Zero’’ point of countdown display
Challenges of TSP in Cambridge

- Maintaining safe pedestrian crossings
- Limited parallel routes
- Crossing bus routes
- Signal communications
Status of Related Projects

MBTA TSP Pilot

- Upgrading/restoring TSP in Boston (Green Line and buses)
- Pilot TSP in surrounding communities
- Draft Concept of Operations developed
- Conceptual system architecture in development
- Pilot implementation: Massachusetts Avenue
  - Hancock Street
  - Brookline Street
Status of Related Projects

Signal Communications

- Massachusetts Avenue
  - Hancock Street
  - Inman Street
  - Prospect Street
  - Essex Street
  - Brookline Street
- Prospect Street
  - Bishop Allen Drive
  - Harvard Street
  - Broadway
- Broadway
  - Inman Street
Status of Related Projects

Participatory Budgeting

- $250,000 approved for FY17
- Massachusetts Avenue
  - Putnam Avenue
  - Hancock Street
  - Brookline Street
  - 77/MIT
  - Amherst Street
- Quincy Street/Broadway
Next Steps

- Complete inventory of traffic signal controllers
- Install pilot wireless communications network
- Complete planning documents for TSP pilot
- Install pilot TSP locations
- Expand TSP to additional locations on Massachusetts Avenue