NEW YORK CITY - MANHATTAN TRANSIT

SIGNAL PRIORITY SYSTEM EVALUATION

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Introduction - New York City Select Bus Service (SBS)

- What is SBS?
- Where is it deployed?
- M15 Local Transit Signal Priority
Introduction -
Central Transit Signal Priority (TSP)

- Improvement of Select Bus Service
- Multi-mode

Note: The pie represents the SBS Program.
Introduction - Central TSP Module

Central TSP Server
Traffic Control System (NYCDOT TMC)

Bus Center
(New York City Transit)

- Controller
- Bus with GPS
- Central System

Check In (4G)
Distance
Check Out

NYCWiN

Fiber
Presentation Agenda

- Verification of the System Operation
  1. TSP Map
  2. TransSuite TSP Display
  3-4. Field Data Analysis

- Map Plotting & Analysis
  5. Overall Performance
  6-7. Individual Intersection Performance

- Travel Time Analysis
  8. Directional Travel time
  9. Comparison TSP Active with TSP Inactive
1. TransSuite - ATMS Map

- Lower Manhattan Portion of M15 Route

[Map showing TSP Active and TSP Inactive areas]
2. TransSuite TSP Display
3. Field Data Analysis (Scenario1&2)

**Scenario 1 – Main Street Normal Operation**

- Main street
- Side street
- TSP Check in
- TSP Check out

**Scenario 2 – Main Street Green Time Extended**

- Main street
- Side street
- TSP Check in
- TSP Check out
4. Field Data Analysis (Scenario 3)

Scenario 3 – Side Street Green

1st Cycle

TSP Check in

2nd Cycle

TSP Check out

TSP Active

TSP Inactive

1st Cycle

2nd Cycle
5. Overall Performance

Note: Bus 1245 one day data.
6. Individual Intersection Performance

Northbound

Southbound

Note: One day data for all the buses for one intersection – Northbound and Southbound.
7. Individual Intersection Performance

<table>
<thead>
<tr>
<th>Intersection HEX</th>
<th>Design D1</th>
<th>Field D2</th>
<th>NB AM</th>
<th>Request Location Latitude</th>
<th>Request Location Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>0FAF E/N</td>
<td>215 Ft</td>
<td>251.19 Ft</td>
<td>36.19 Ft NB AM</td>
<td>40.711901</td>
<td>-73.998613</td>
</tr>
</tbody>
</table>

Note: The time depends on ETA & Trigger Point. Assume bus speed is 30mph and trigger error is 1 second.
8. Directional Travel time

First Intersection
“Check in” T1

Last Intersection
“Check out” T2

\[ T = T_2 - T_1 \]

<table>
<thead>
<tr>
<th>BUS #</th>
<th>DIRECTION</th>
<th>TRAVEL TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1239</td>
<td>SB</td>
<td>0:16:01</td>
</tr>
<tr>
<td></td>
<td>NB</td>
<td>0:19:03</td>
</tr>
<tr>
<td>1256</td>
<td>SB</td>
<td>0:16:57</td>
</tr>
<tr>
<td></td>
<td>NB</td>
<td>0:19:28</td>
</tr>
</tbody>
</table>

Note: This is a one-way travel time calculation.
9. Comparison TSP Active with TSP Inactive

<table>
<thead>
<tr>
<th></th>
<th>TSP Active Jan 14 to 16</th>
<th>TSP Inactive Jan 28 to 30</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northbound</td>
<td>PM 20mins</td>
<td>24mins</td>
<td>17%</td>
</tr>
<tr>
<td>Southbound</td>
<td>AM 16mins</td>
<td>18mins</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>PM 16mins</td>
<td>18mins</td>
<td>11%</td>
</tr>
</tbody>
</table>

Note: NB AM Data was not valid.
The calculation was the average of three days’ data.
Conclusion

- The system is working well, as designed.
- Reducing travel time is a benefit.
- The city has the option to deploy citywide TSP.
Project Team

- U.S. Department of Transportation
- Federal Highway Administration
- New York City DOT
- MTA New York City Transit
- TransCore
- GPI Greenman-Pedersen, Inc.
- Engineering and Construction Services
- Global Traffic Technologies