EVALUATION OF TRUCK SIGNAL PRIORITY: A MICROSCOPIC SIMULATION APPROACH

By
Festo Mjogolo

October, 2018
INTRODUCTION

- Trucks have limited dynamic characteristics, resulting in traffic operational challenges.
- More noticeable at signalized intersections, where traffic stream operates in stop-and-go conditions.
METHODOLOGY

- Traffic Microscopic simulation using VISSIM
- TkSP algorithm developed from the Vehicle Actuated Programming (VAP).
RESULTS

Overall intersection Delay and LoS

<table>
<thead>
<tr>
<th>Intersection name</th>
<th>Control delay (s/veh), No TkSP</th>
<th>Control delay (s/veh), TkSP</th>
<th>Level of Service, No TkSP</th>
<th>Level of Service, TkSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pritchard and Bulls Bay Highway</td>
<td>14.1</td>
<td>8.8</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>Pritchard and Imeson Rd</td>
<td>27.4</td>
<td>19.6</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td>Pritchard and Sportsman Club Rd</td>
<td>24.0</td>
<td>8.9</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td>Pritchard and Old Kings Rd</td>
<td>20.7</td>
<td>17.8</td>
<td>C</td>
<td>B</td>
</tr>
</tbody>
</table>

Average Corridor Travel time before and after implementing TkSP
FINDINGS

Vehicle travel time reduction

Vehicle delay reduction
RECOMMENDATIONS FOR FUTURE RESEARCH

- The maximum additional green time provision when two or more trucks follow each other.
- Effects of unnecessary green time extension for left-turn-trucks in the case the truck dilemma zone is longer than the exclusive left-turn lane and the truck communication based on infrastructure element (detectors embedded on the road pavement).
Thank You