Victory Boulevard: Transit Signal Priority

Purpose

- Improve travel times for bus riders and make transit a more attractive option
- Reduce traffic congestion and improve intersection operation
- Reduce fuel consumption and vehicle emissions
- Test Transit Signal Priority (TSP) in New York City

Outreach

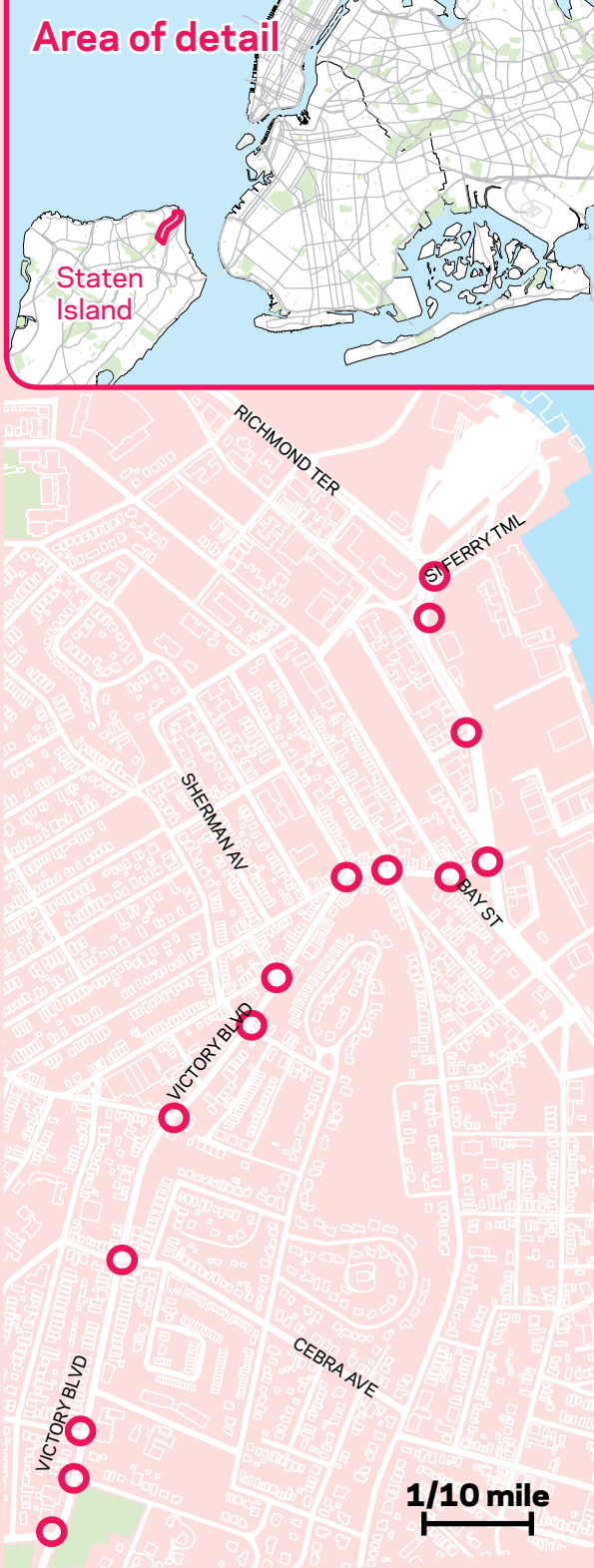
- Victory Boulevard selected as a pilot location for TSP in order to make transit improvements in Staten Island
- Developed with the Mayor's Staten Island Transportation Task Force

Approach

- New York City Transit (NYCT) equipped 300 buses with TSP emitters mounted on dashboard
- DOT installed TSP optical detectors in traffic signals at 14 intersections along the corridor
- DOT and NYCT developed new software capabilities for TSP equipment

Results

- Improved bus travel times by 16% during the morning peak and 11% during the evening peak
- Extra "green time" for buses along Victory Boulevard caused little or no queuing on side streets



Victory Boulevard is a major arterial roadway on Staten Island that runs south and west from Bay Street, St. George in the northeastern part of the island. Victory Boulevard has a mix of residential and commercial uses that make it both an important transportation route and a popular destination. The road is a major bus route, serving both local and express buses. The Transit Signal Priority (TSP) section is the 1.25 miles from Forest Avenue to Bay Street and along Bay Street to St. George Ferry Terminal.

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The Victory Boulevard corridor provides an important connection to the St. George Ferry Terminal for North Shore and Mid-Island communities. A heavily traveled bus corridor, Victory Boulevard is used by 10 bus routes between Forest Avenue and Bay Street. An additional seven bus routes travel on the Transit Signal Priority (TSP) section of Bay Street. Victory Boulevard in this area has one traffic lane in each direction and a lane of parking along the curb; the parking lane is used as a bus only lane during peak hours (in-bound in the morning and out-bound in the evening). The high volume of general traffic as well as buses, and narrowness of the street, slows bus service, particularly during rush hour.

The project was developed collaboratively by DOT and MTA New York City Transit (NYCT). The objectives for this demonstration project were to develop, design and deploy a TSP system as the basis for a larger-scale citywide deployment of TSP. The project was funded by the Federal Transit Administration under the Staten Island-Brooklyn Mobility Program.

The pilot was discussed by the Mayor's Staten Island Transportation Task Force. Since there were no changes to the physical roadway, the street network or parking regulations, the pilot was not officially presented to the community board.

TSP systems use technology aboard buses and at key intersections to detect when buses are approaching a traffic signal and, in specified situations, either extends the green phase or returns early to green with the objective of reducing the amount of time the bus spends at red lights. To accomplish this, 300 buses that operate on local routes serving the ferry terminal were equipped with TSP bus emitters, and the 14 key intersections along the corridor were equipped with TSP detectors connected to the traffic signal controller. The TSP system is activated when a TSP detector receives a request from a bus prompting the controller to extend green time or return early to green, provided that there is no ongoing pedestrian phase at the time. The lengthened green signal provides the bus additional time to pass through the intersection without stopping at a red signal.

The evaluation involved collection of bus travel times and traffic volumes along the corridor. The traffic volumes increased considerably between the "Before" and "After" periods, yet reductions in delay and speed improvements were achieved using TSP

TSP bus emitters were installed in 300 NYCT buses that serve the ferry terminal.

Optical detectors mounted on the traffic signal mast arms at 14 intersections along the study area receive requests form approaching buses.

The Victory Boulevard project demonstrated the effectiveness of Transit Signal Priority to safely speed buses along a heavily-used transit corridor.

without compromising pedestrian safety. Overall travel times improved by 16% during the morning peak hour and by 11% in the evening peak period. Although side street delay increased slightly, the overall corridor vehicle delay decreased.

Analysis of the NYPD crash data shows that there were no significant changes in the number of crashes involving injuries at the intersections where TSP was implemented.

This demonstration project showed the effectiveness of TSP in safely speeding buses along a heavily-used transit corridor. A larger TSP program is under development that will bring similar benefits to additional bus routes throughout the city, including Select Bus Service (SBS) routes that are currently under development.

Crashes with Injuries along Victory Boulevard and Bay Street

	Before* (three previous years)			After
Total Crashes with Injuries	14	29	23	22.2
Number of Crashes with Injuries to:				
Motor Vehicle Occupants	7	15	15	14.3
Pedestrians	7	13	6	7.4
Bicyclists	0	1	2	0.9

* Before columns show the crash history for each of the three years immediately prior to project implementation. After column shows number of crashes since implementation (through November 2009) at annual rate. See page 72 for further information on crash data source and analysis methodology. The sum of the three specific categories may not equal "Total Crashes with Injuries" because some crashes involved injuries in multiple categories.

Victory Boulevard: Transit Signal Priority Travel Time

	Before	After 1	After 2	% Change
Morning Peak: To Ferry	11:48	11:00	9:54	-16%
Evening Peak: From Ferry	12:00	11:38	10:42	-11%

After 1 shows time w/ signal optimization. After 2 shows both signal optimization and Active TSP. Project implemented in September 2007.