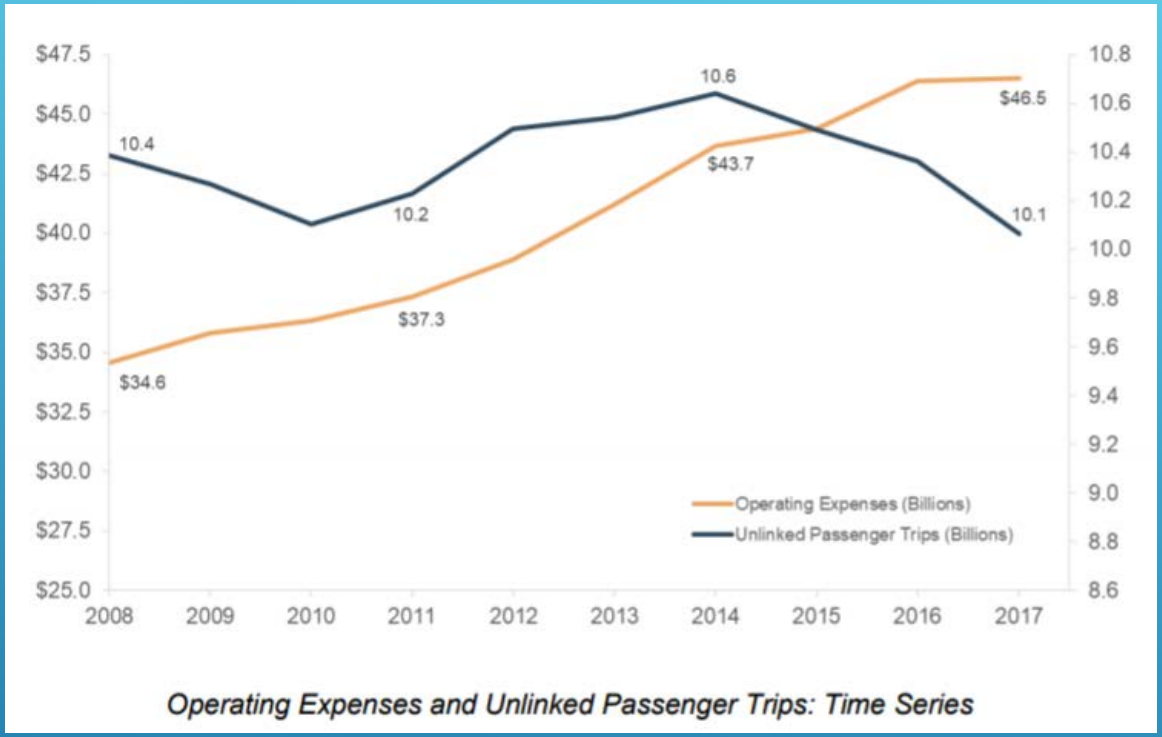
ADVANCED TRANSIT SIGNAL PRIORITY (TSP)

An Application for Metroway

TRANSIT RIDERSHIP TRENDS



Operating Expenses and Unlinked Passenger Trips: Time Series

- Nationally 5% Decrease in Ridership
- Regionally NOVA 3% Decrease in Bus Ridership
- Increases in Operating Expenses

Transit ridership is declining for a vary of reasons. Areas that have shown increases in ridership have improved service.

FACTORS IMPACTING BUS RIDERSHIP

Frequency

Travel Time

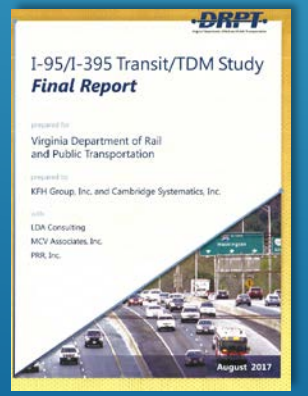
Reliability

Market surveys and public outreach from all the major studies in the region show people want more frequent, faster, and reliable bus service.

I-66 Multimodal Study Inside the Beltway

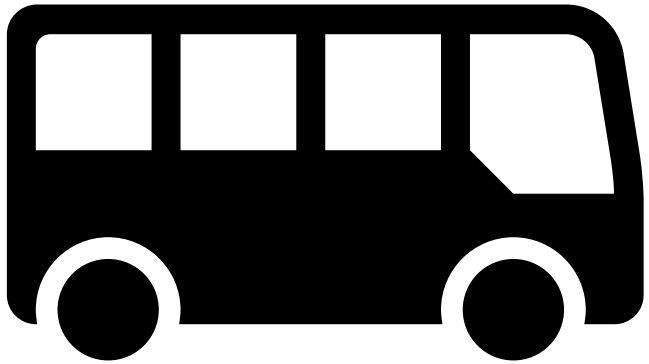
WASHINGTON AREA BUS TRANSFORMATION PROJECT

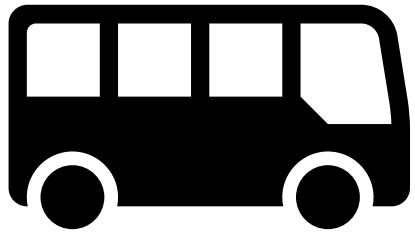
NVTA's TransAction Transportation Action Plan for Northern Virginia



OPERATIONAL STRATEGIES

- Bus lanes
- Boardings & Payment
- Stops
- Signals



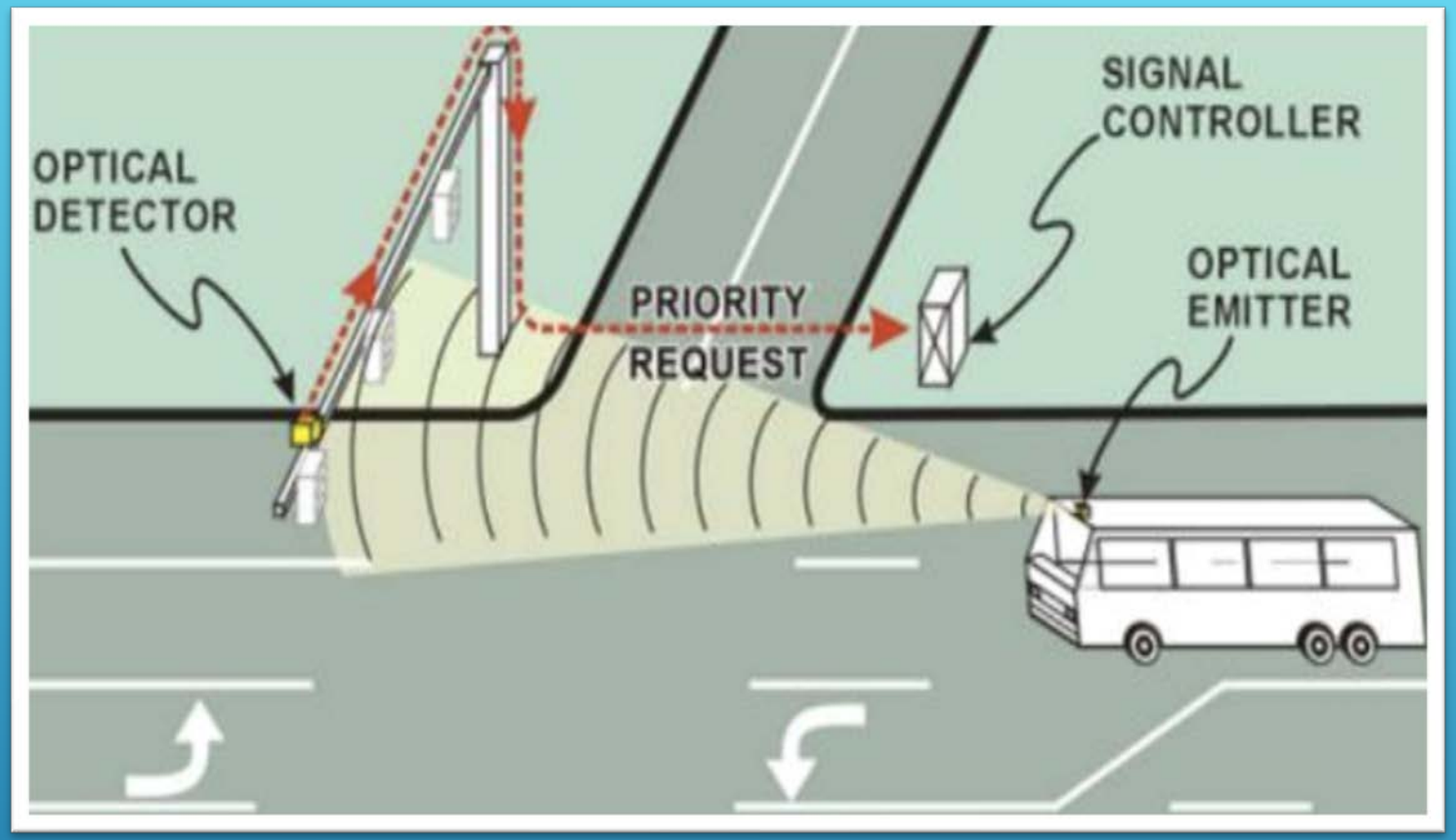


An operational strategy that facilitates the movement of transit vehicles through traffic signals controlled intersections.

Benefits include:

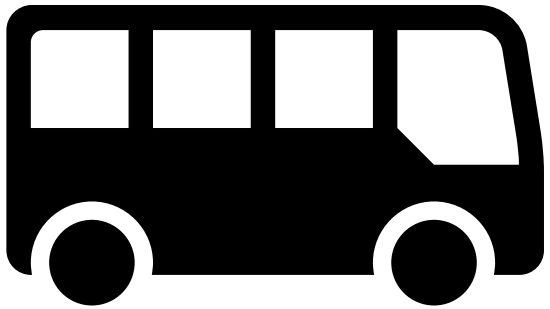
- ✓ Improved schedule adherence
- ✓ Reliability
- ✓ Reduced travel times
- ✓ Increased transit quality of service

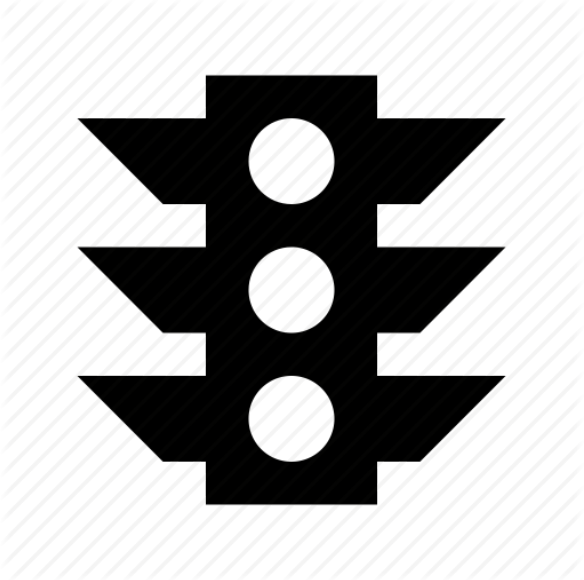
TRANSIT SIGNAL PRIORITY (TSP)



- Connection between bus and signal
- Minor adjustments in signal split times
- Hold green within a limited extension/red truncation
- Stay green longer or start green sooner

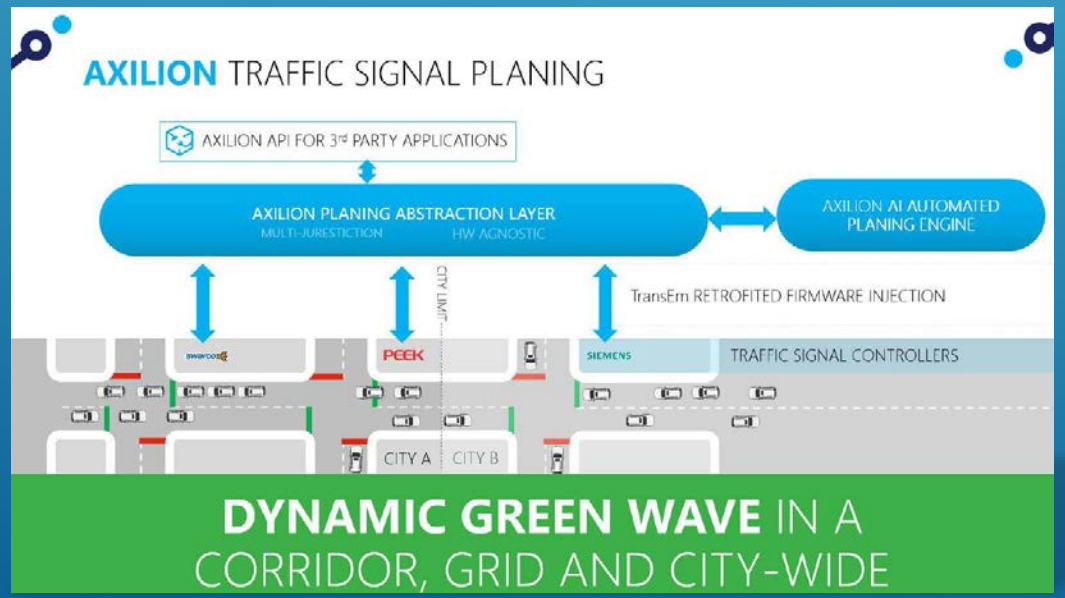
TRANSIT SIGNAL PRIORITY (TSP)





- LA Metro 20% reduction in vehicle run time – more than just TSP…
- 10 Second green extension reduces bus travel time 5%
- Field observation (South Snohomish Regional Transit Signal Priority) concluded no significant changes to average transit vehicle delay or number of transit vehicle stops
- Columbia Pike TSP simulation benefits did not off set the negative impacts to general traffic
- TCRP 83 Bus and Rail Transit Preferential Treatments in Mixed Traffic

TRANSIT SIGNAL PRIORITY (TSP) BENEFITS

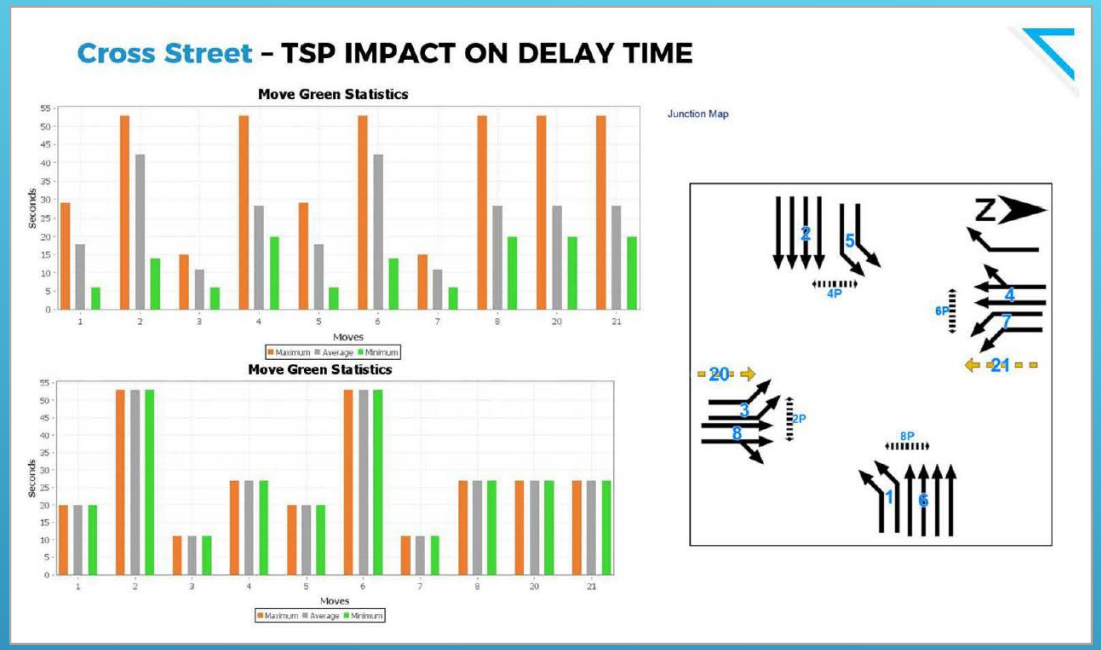


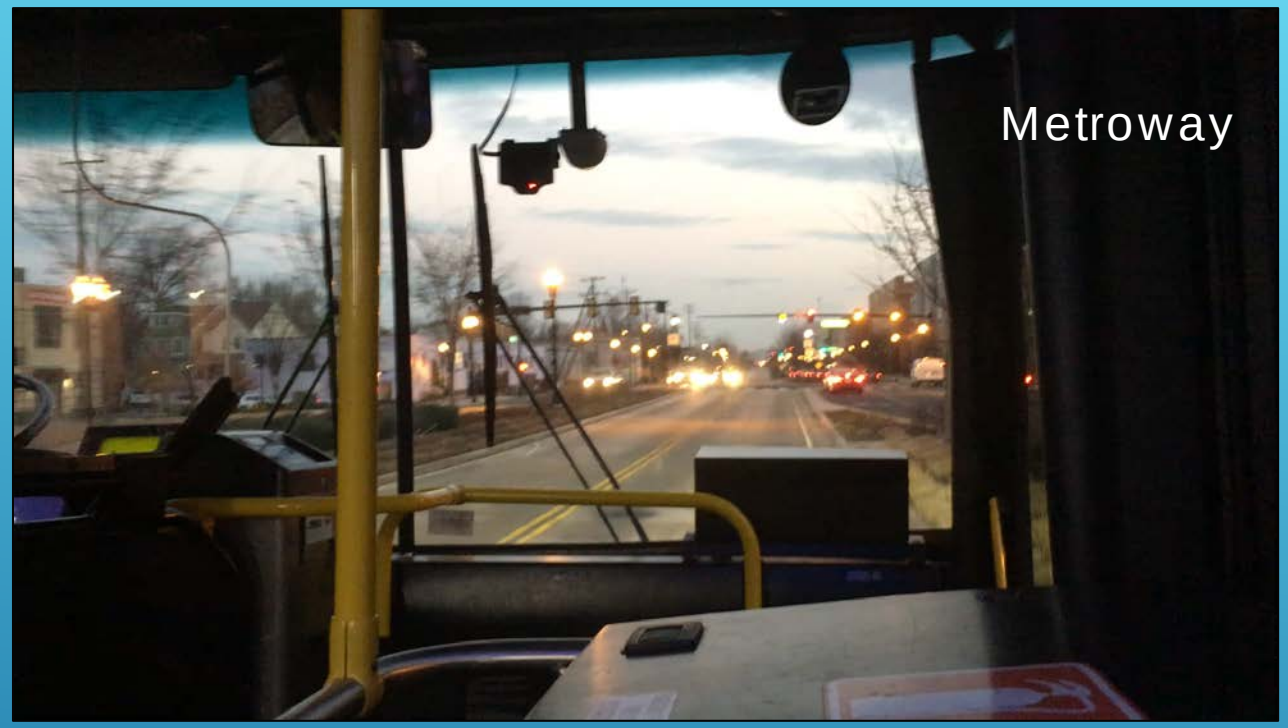
ADVANCED TSP APPLICATION

- Software Solution
- Utilizes Existing Infrastructure
- Distributed Optimization Algorithm
- Minimizes Impact by Compensating other Phases
- Coordinate Across Different Systems

ADVANCED TSP RESULTS

- Reduced Wait Time at Signals
- Improved Reliability
- Maintain Headways
- Reduce Fleet Needs
- Decreased Run Time
- Improved Ridership
- Typical TSP Shows Less Than 8% Improvements in Run Time
- Advanced TSP Solution Priority to Buses 15% to 40% Improved Run Time



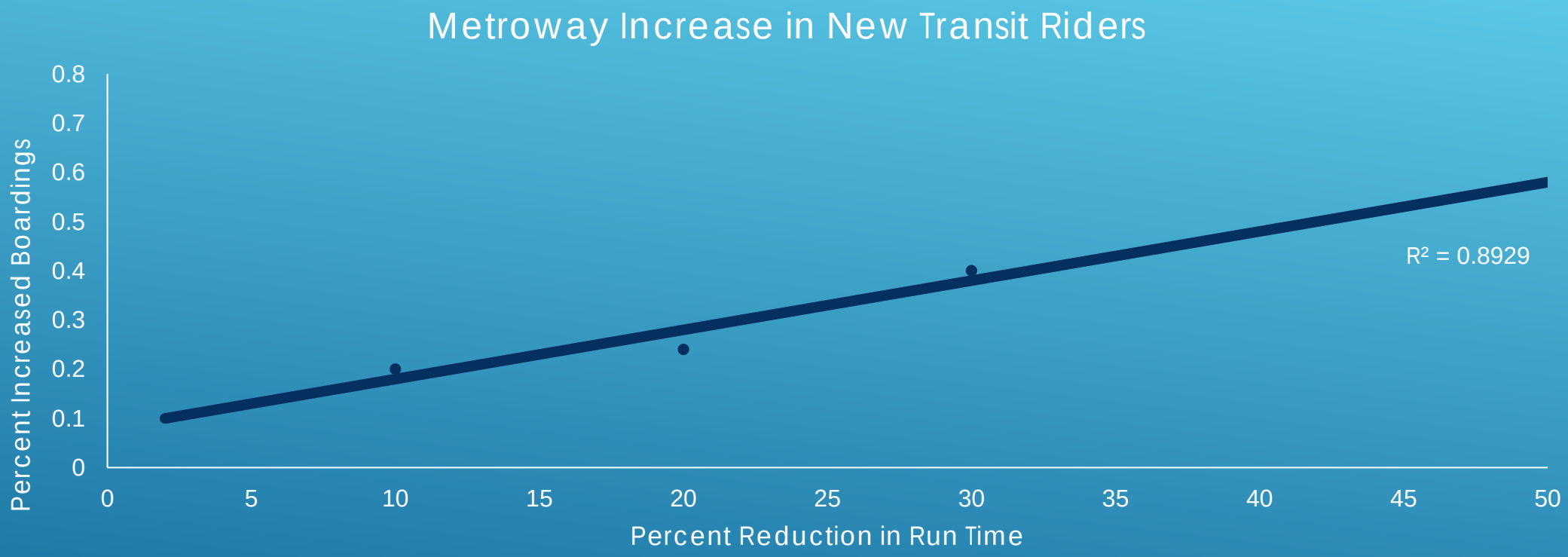


BRT & TRANSIT SIGNAL PRIORITY

- Current operations of Metroway, in the morning peak period.
- The bus approaches the intersection in fixed guideway.
- The bus waits at the signal while the cross street approach goes, then the left turn phase.
- Finally the bus gets the green signal.

- The is the BRT in Haifa, Israel. It has the full application of Axilion's advanced TSP software.
- The BRT operates in fixed guideway, shared lane, and mixed traffic.
- There are two BRT lines that align at this intersection.
- Notice the bus approaches the intersections and stops at the station.
- While passengers are exiting and boarding the vehicle, notice the second BRT line approaching from the opposite side of the intersection.
- The signal turns green to allow that bus to cross. The non-BRT bus does not get signal priority, only the BRT buses.
- Once the passengers exit and board the bus, the bus moves forward towards the signal.
- As the bus approaches the signal, it is given a green and continues through the intersection without stopping.

TSP will increase reliability and improve in-vehicle travel time. Faster buses and reliable bus service will result in additional riders.



- 10 percent travel time improvement could result in 20 percent increase in riders
- 20 percent travel time improvement could result in 25 percent increase in riders
- 30 percent travel time improvement could result in 40 percent increase in riders

Demand projections based on the TPB V2.3.70 travel demand forecast model

US 1 IMPROVED METROWAY TRAVEL TIMES USING AXILIONS NEW TSP SOFTWARE.

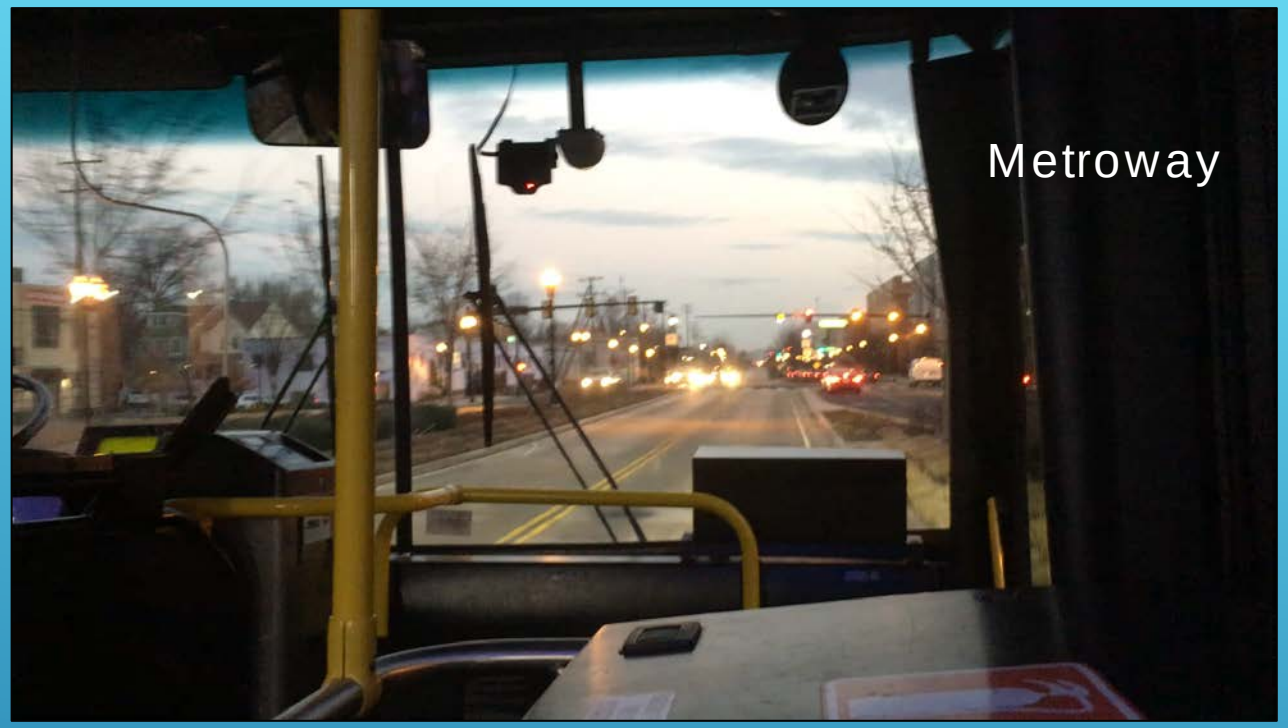
Saving seconds in a small stretch can save minutes along a corridor and improve performance reliability.

EXISTING TRANSIT SIGNAL PRIORITY

00:00

video at 2x speed

TRANSIT SIGNAL PRIORITY OPTIMIZED BY AXILION



BRT & TRANSIT SIGNAL PRIORITY COMPARISON

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