



## Project Number

BDV27-977-14

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# Florida Department of Transportation Research Evaluation of Freight and Transit Signal Priority Strategies in Multi-Modal Corridor for Improving Transit Service Reliability and Efficiency

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## Current Situation

Cities of all sizes have become larger and more complex, with matching transportation needs, resulting in crowded roads and congestion even on large highways. The time drivers spend in traffic represents delayed services and deliveries, lost work time, increased fuel cost, and pollution. The annual cost nationally has been estimated at around \$90 billion dollars. Freight,

which relies on a vast fleet of large trucks for intercity delivery and an even larger fleet of smaller trucks for local delivery, adds to the congestion and suffers from it. Freight vehicles often have preferred routes that provide a balance of efficient flow with a direct path to destinations. Transit vehicles use assigned routes, often heavily traveled ones. Where transit and freight routes overlap, the use of Intelligent Transportation System (ITS) strategies that turn real-time data about freight vehicles into more efficient signal timing can improve traffic flows for all drivers, including public transit and freight.



*A bus, a semi, and a delivery truck mix with cars waiting for the light to change on Sunset Blvd in Ft. Lauderdale, the study corridor for this project.*

## Research Objectives

Florida Atlantic University researchers established guidelines for signal prioritization on specific corridors heavily used by freight traffic to improve freight and transit mobility, based on decision factors drawn from ITS data.

## Project Activities

To improve freight and transit mobility, the researchers studied the simultaneous use of Freight Signal Priority (FSP) and Transit Signal Priority (TSP) strategies. They evaluated the impact of FSP and TSP strategies on all vehicles and for each transport mode separately to develop strategies and guidelines to plan, design, and implement combined use of FSP and TSP.

In the first phase of the project, the researchers examined use of FSP strategies on an arterial corridor to make freight traffic the top priority under all conditions, taking into consideration the trucks' characteristics, and generalized these results to prioritize freight traffic under specific conditions. In the second phase, the researchers took the same approach to TSP strategies, prioritizing transit under all conditions and then generalizing for specific conditions.

In the third phase, the researchers focused on simultaneous use of FSP and TSP strategies on the studied corridor, first under all conditions and then under specific conditions. The interaction of FSP and TSP was assessed, and the researchers thoroughly examined the effect of FSP and TSP on network traffic conditions. Finally, in the fourth phase, variables related to freight and transit vehicles were analyzed in detail to identify the variables most significant for efficient operation of the FSP and TSP strategies on the studied corridor.

Travel time and delays for all traffic were reduced significantly on the majority of the corridor's main street segments, with exceptions on a few intersections, mostly due to road geometry.

## Project Benefits

Results of this project point to an important new use for ITS and a way to improve traffic efficiency.

*For more information, please see [www.fdot.gov/research/](http://www.fdot.gov/research/).*