

## Executive Summary

### City of Valdosta Traffic Signal Timing Study

Kimley-Horn as a consultant under contract with the Southern Georgia Regional Commission (SGRC) and the City of Valdosta recently completed a project perform Signal Timing Optimization and Operational Analysis for 44 traffic signals in the City of Valdosta, GA. The study also included GIS Mapping of the City's Fiber network. The optimized signal timing plans were implemented in May 2017.

In order to determine the effectiveness of the new signal timing plans along the project corridors, travel time studies were conducted to evaluate and document the results of the timing plan development process. This report details the procedures for the development of the implemented timing plans, evaluation of existing intersection and corridor operations, recommended intersection improvements, and presents the results of the before and after studies that were conducted along the project corridors for both directions of travel.

The travel time studies were conducted on typical weekdays during three time periods of the day: AM Peak, Mid-day (MD) and PM Peak. The following summary table shows the overall project results:

Table: City of Valdosta Traffic Signal Timing Study Summary

SIGNAL OPTIMIZATION PROJECT SUMMARY				
Field Study Results		AM Peak	Mid-Day	PM Peak
Travel Time Reduced by (minutes):	Northbound/Westbound	-0.7	2.4	3.9
	Southbound/Eastbound	0.6	2.3	1.8
Stopped Time Reduced by (minutes):	Northbound/Westbound	0.1	2.5	2.5
	Southbound/Eastbound	0.9	2.0	3.1
Speed Increased by (mph):	Northbound/Westbound	-1.0	5.1	7.1
	Southbound/Eastbound	1.6	5.3	3.0
Daily Vehicle-Hours of Travel Reduced by:		770	<i>Vehicle-Hours</i>	
Daily Fuel Consumption Reduced by:		790	<i>Gallons</i>	
Daily Pollutant Emissions Reduced by:		2,120	<i>Pounds VOC, NOx</i>	
Daily Time and Fuel Savings:		\$13,425	<i>Dollars</i>	
Annual Time and Fuel Savings:		\$3,357,000	<i>Dollars</i>	
Project Cost <sup>1</sup> :		\$97,000	<i>Dollars</i>	
Average Daily Traffic:		190,000	<i>Vehicles per Day</i>	
Annual Benefit/Cost Ratio:		34.65		
3-Year Benefit/Cost Ratio:		103.96		

<sup>1</sup> Project cost was developed by determining the cost per intersection from the total signal timing project cost and multiplying it by the number of project intersections within the four travel time corridors analyzed, which includes approximately 2/3 of the total project intersections.

Delay incurs direct costs upon motorists in the form of increased fuel consumption and the value of their time wasted while waiting in traffic. Average stop time has been reduced in the City of Valdosta by **39%**. The primary directions of commuting traffic (inbound in the AM, outbound in the PM) realized **an approximate 0.6 – 3.9 minute reduction in total travel time**. Motorists using the corridors during the three peak periods will save **192,647 hours of travel time** and **196,576 gallons of gasoline each year** because of improved traffic flow due to the new timing plans. Conservatively assuming a vehicle occupancy rate of 1.1, \$13.75 per hour for the value of motorists' time and \$2.25 per gallon for gasoline, the calculated annual benefits of reduced delay is \$2,913,787 and fuel consumption is **\$442,295**. Therefore, the total annual savings to motorists due to improved signal timing plans will be **\$3,356,082**. The improved timing plans for the City of Valdosta have an annual benefit/cost ratio of **35:1**. Expressed in another way, the new timing plans **pay for themselves approximately every 7.2 workdays**.