UPPER MERION
ROUTE 202 CORRIDOR PENNSYLVANIA

VALIDATION STUDY BRIEF

PROJECT DESCRIPTION
InSync is installed in Upper Merion Township, Pennsylvania along a 1,800 foot portion of an arterial corridor with two traffic signals on Route 202 at Gulph Road and Mall Boulevard. This study compares the operation of the Route 202 corridor under its previous timing schemes with its operation using the InSync adaptive traffic control system.

OBJECTIVE
Reduce saturation- and coordination-induced congestion, high travel times and high delay negatively impacting local businesses and residents.

CHALLENGE
The major challenges of coordinating the signals on Route 202 are the high traffic volume from nearby King Of Prussia Mall, heavy commuter traffic from Interstates 76 and 276, as well as unexpected fluctuations in traffic volume. The corridor was previously coordinated by a fixed timing plan installed in 2008.

SOLUTION
Rhythm Engineering deployed the InSync adaptive traffic signal system at two intersections along the 1,800 foot corridor in April 2010. Immediately thereafter, Rhythm Engineering configured the system, monitored its performance and made the appropriate adjustments to the system to optimize traffic flow.

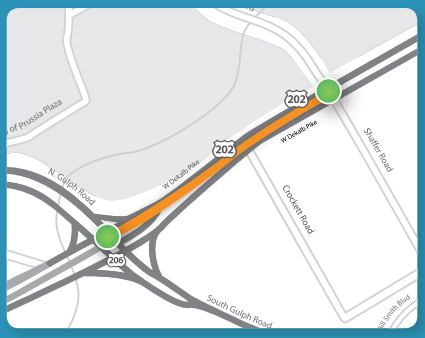
DATA COLLECTION
Data was collected in May 2010 after the InSync system was installed and had been in operation for several weeks. Field data was collected again along the study corridor in June 2010 after the InSync system was temporarily reverted to the previous timing plans. The data collected during this period was used as the baseline for comparing measures of effectiveness.

The travel time runs were conducted through the corridor in both directions during three time-of-day periods (AM Peak, Midday Peak, PM Peak). The drivers conducting the travel time study used the "floating car method," in which the drivers attempt to travel with the flow of traffic, changing lanes so as to pass as many cars as they are passed by. This method is used so that the travel times collected are representative of the travel time of the average vehicle traveling through the corridor.

Data was gathered by driving the corridor utilizing GPS equipment and software, collecting data, then processing the data using PC-Travel software.

BENEFITS
Estimated benefit calculations are based on an ADT of 47,000 vehicles and an assumption that the change impacts 34% of the ADT. The 34% multiplier was used as that portion of the ADT is present on the corridor during the days and times studied; actual benefits are likely far greater as more than 34% of motorists experience the benefits of InSync.

	PEAK-TIME DAILY BENEFIT	PEAK-TIME ANNUAL BENEFIT
Vehicle Hours of Travel (reduction)	142 hours	36,900 hours
Fuel Consumption (decrease)	106 gallons	27,563 gallons
Stops (eliminated)	6,246 stops	1,623,870 stops
Total Economic Benefit (fuel • $2.89 + stops • $0.10 + time • $15.00)	**$3,059**	**$795,405**



The green markers indicate the intersections where InSync is deployed. The Route 202 corridor is highlighted in orange.

> InSync is a traffic engineer's dream... the intersection works fully actuated and accommodates all movements in an efficient manner while also maintaining progression along the corridor, it's the best of both worlds.
>
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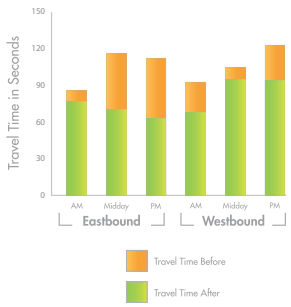
RESULTS

The study evaluates and compares the travel time, number of stops, speed, delay, hydrocarbon emissions, and fuel usage before and after the implementation of the InSync system. The full independent study is also available.

Travel Time Reduction



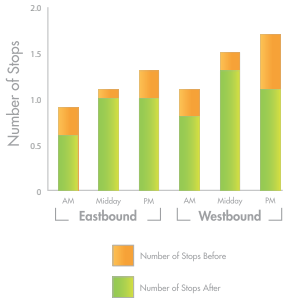
Eastbound

AM Peak	9.2 secs	11% reduction
Midday Peak	45.6 secs	39% reduction
PM Peak	49.2 secs	44% reduction

Westbound

AM Peak	24.3 secs	26% reduction
Midday Peak	10.3 secs	10% reduction
PM Peak	29.0 secs	24% reduction

Stop Reduction



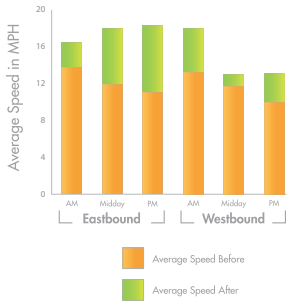
Eastbound

AM Peak	0.3 stops	33% reduction
Midday Peak	0.1 stops	10% reduction
PM Peak	0.3 stops	23% reduction

Westbound

AM Peak	0.3 stops	27% reduction
Midday Peak	0.2 stops	13% reduction
PM Peak	0.6 stops	35% reduction

Average Speed Increase



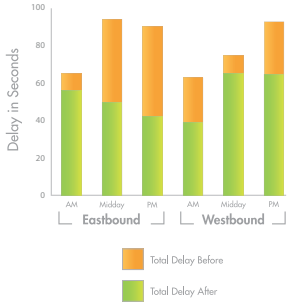
Eastbound

AM Peak	2.7 mph	12% increase
Midday Peak	6.0 mph	64% increase
PM Peak	7.2 mph	79% increase

Westbound

AM Peak	4.7 mph	36% increase
Midday Peak	1.3 mph	11% increase
PM Peak	3.1 mph	31% increase

Delay Reduction



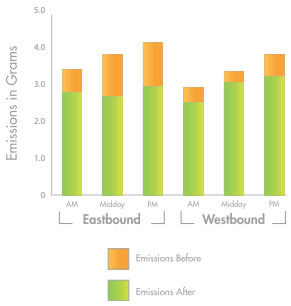
Eastbound

AM Peak	9.3 secs	14% reduction
Midday Peak	45.4 secs	47% reduction
PM Peak	47 secs	53% reduction

Westbound

AM Peak	24.2 secs	38% reduction
Midday Peak	10.0 secs	13% reduction
PM Peak	28.2 secs	30% reduction

Hydrocarbon Emissions Reduction



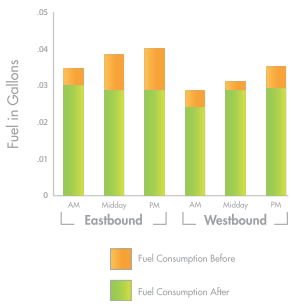
Eastbound

AM Peak	0.61 grams	18% reduction
Midday Peak	1.14 grams	30% reduction
PM Peak	1.22 grams	29% reduction

Westbound

AM Peak	0.42 grams	14% reduction
Midday Peak	0.28 grams	8% reduction
PM Peak	0.62 grams	16% reduction

Fuel Usage Reduction



Eastbound

AM Peak	0.005 gallons	13% reduction
Midday Peak	0.010 gallons	25% reduction
PM Peak	0.011 gallons	28% reduction

Westbound

AM Peak	0.005 gallons	16% reduction
Midday Peak	0.003 gallons	8% reduction
PM Peak	0.006 gallons	17% reduction

Data collected by Pennoni Associates Inc, King of Prussia, PA, 2010.

MOST NOTEWORTHY IMPROVEMENTS:

- 35% reduction in stops
- 53% reduction in delay
- 79% increase in average speed
- 30% reduction in emissions
- 28% reduction in fuel usage
- 44% reduction in travel time

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