

# Adaptive Traffic Signal Technologies (ASCT): Challenges and Opportunities

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# What is ASCT? What are Benefits

- Continuously adjusts traffic signal timings to accommodate real-time changes in traffic patterns and to improve traffic flow

## Benefits

- Improves travel times through coordinated signal system
- Allows more flexibility and adjustments for sudden changes in traffic patterns.
- Reduces no. of vehicle stops and delay, thus reduces fuel consumption
- May reduce number of crashes?

# Purpose of ASCT research

- Determine if there is a reduction in crashes due to ASCT
- Develop a Crash Modification Factor (CMF)
- Determine improvements in traffic flow efficiency
- May become a test bed for future ASCT training and research

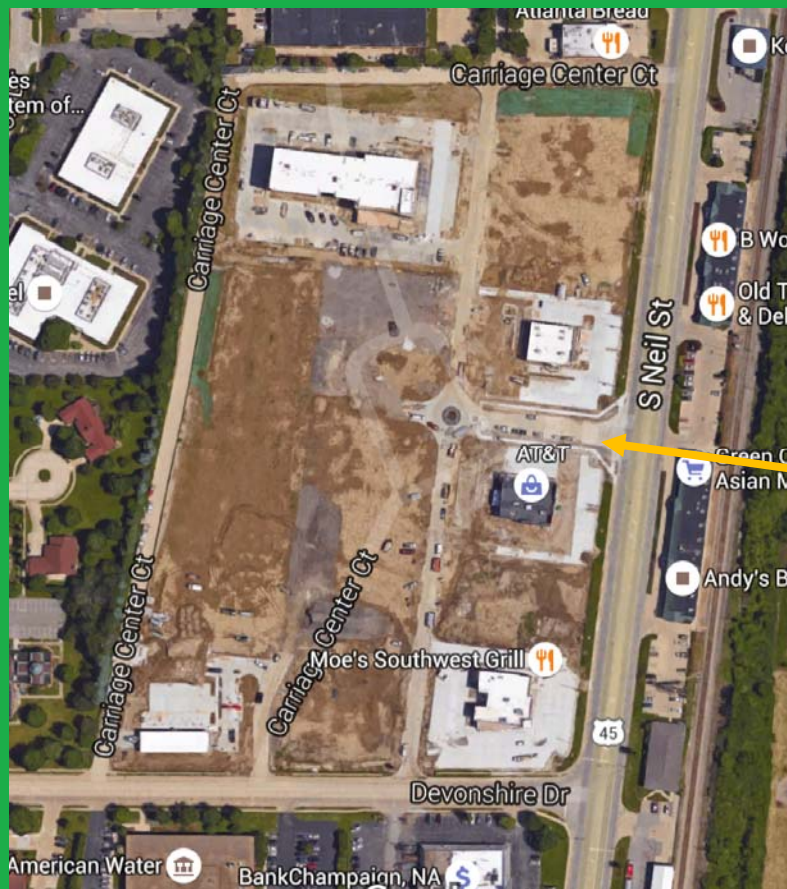
# Our ASCT System

- Installed ASCT system along Neil St. in Champaign, IL
- Trafficware SynchroGreen system selected
- Installed April 2015 with full acceptance November 2015
- System required video detection installation
- Allowed vendor to adjust detection and timing programs

# Corridor Location: Neil St., Champaign



# “Before” conditions, no plaza at Neil & Devonshire

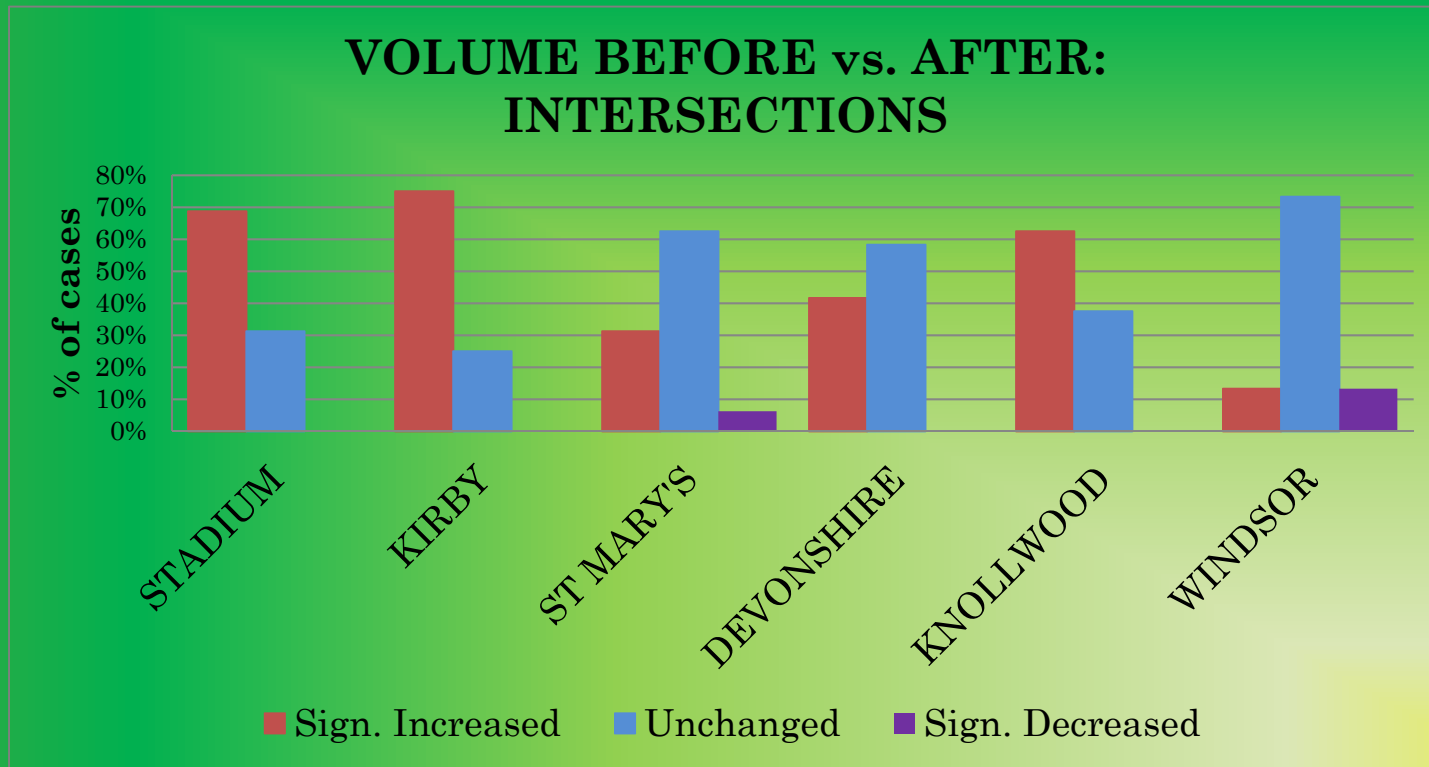


# “after” conditions

Oct 2016



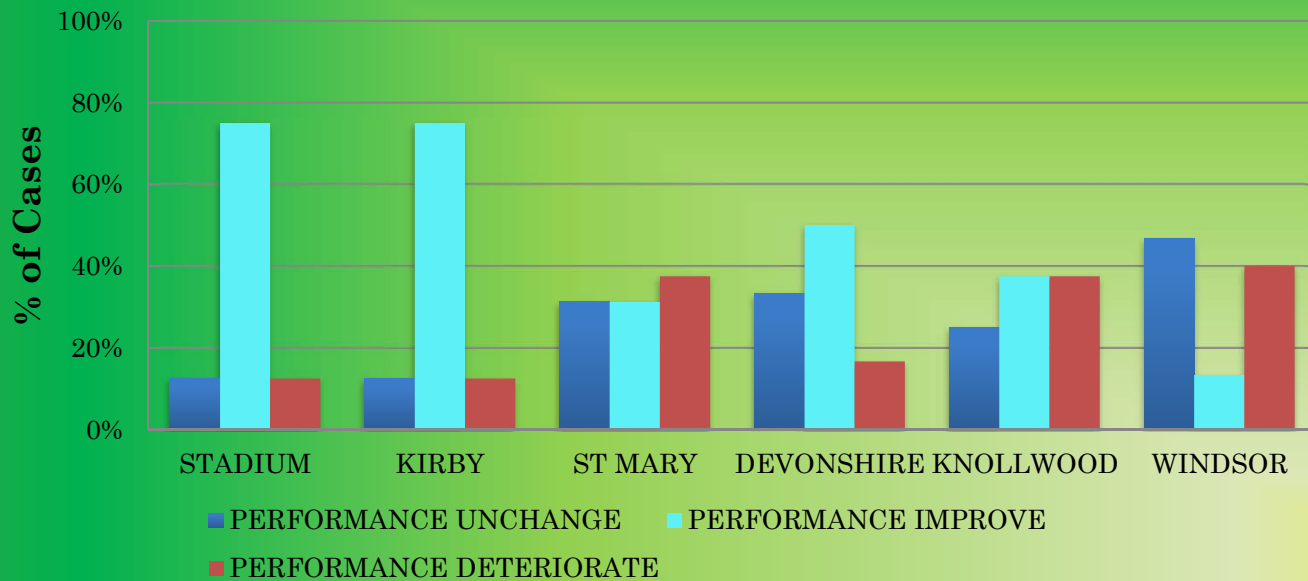
# TRAFFIC VOLUME 2013 vs. 2015





# PERFORMANCE IN 2013 vs. 2015

## DELAY & VOLUME 2013 vs. 2015: INTERSECTIONS



# Challenges (Administrative)

- Determining proposed ASCT system functionality (Systems Eng.)
  - Very technical, get traffic signal personnel involved
- Developing evaluation and scoring methods for vendors proposals
- Waiting for State procurement process, was difficult and very slow
  - Took over a year!

# Challenges unique to this project

1. Using half cycle for one of the intersection (Stadium Dr)
2. Coordination with adjacent intersection on a crossing street(Kirby at State)
3. Increased volume at Devonshire due to site developments
4. Special event traffic and heavy ped volume at Kirby/Neil



# Challenges(technical)

1. Choosing right criteria to asses system performance
  - Is bandwidth a good criteria for ASCT?
2. Dealing with perception vs reality of the system performance
3. Delivering what is promised
4. Incorporating public feedback (subjective) with objective data

# Opportunities

1. Understand “better” what the issues are
  - undersaturated vs oversaturated
2. Implementing methods/solutions that actually work
3. Avoid making too many changes/modifications to the system. Get it done right the first time

# Opportunities continued

4. Provide a simple/straightforward guide for input parameters
5. Make training based on users-need, not systems-capability
6. Make **smart/intelligent/adaptive/connected/autonomous/...**  
approach to pass the “common sense” test by a good  
“engineer”!!

# Preliminary Conclusions/Recommendation

1. ASCT works, but needs further improvements
2. Successful ASCT needs supportive and well trained staff
3. Make ASCT system easy to use and operate
4. Be realistic on what ASCT can do/deliver
5. Safety and efficiency evaluation is in progress



**Thank You!**

**Questions?**

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