

ATSPM Case Studies

TESC Workshop – December 6, 2023

Case Study 1

Background: A concern was raised by Chambersburg Hospital regarding left turns on the side street approaches at the intersection of Lincoln Way & Coldbrook Avenue in Chambersburg, PA, especially around hospital shift changes. The municipality suggested adding left turn phases to mitigate the concern.



ATSPM Investigation Activities/Questions:

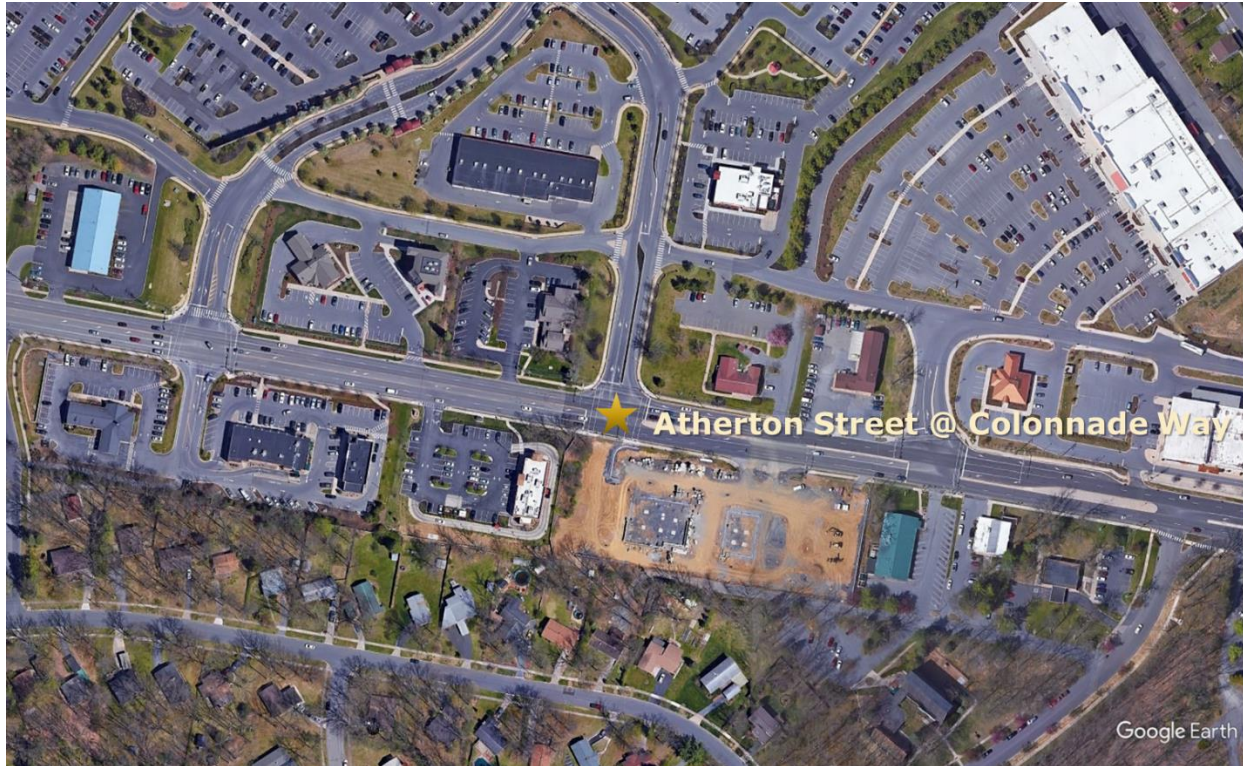
- 1) Confirm whether there is a problem for left turns on the side street approaches.
- 2) Is left turn phasing a viable solution? Are conflict factors met?
- 3) Is the signal running the correct timings according to the permit?
- 4) What is the interaction like between southbound left turns and northbound thru/right movements? Is there an opportunity for any left turns during the cycle other than “sneakers?”

Available Data:

- ATSPM data for the following dates:
 - 7/12/22 (original data submitted with request for left turn lanes)
 - 3/3/23 (original data reviewed)
 - 3/23/23 (first adjustment)
 - 3/30/23 (second adjustment)
 - 11/16/23 (8 months post-implementation)
- Permit plans for intersection and system

Case Study 2

Background: The ATSPM data logger had just been turned on for the Atherton Street Corridor and it was connected to the network to facilitate continuous data collection. Are there any unexpected operations occurring?



ATSPM Investigation Activities/Questions:

- 1) Is the signal running the correct timings according to the permit?
- 2) Why does the vehicle arrival pattern on Phase 6 change significantly at 8PM when there isn't a timing plan change?
- 3) Does the volume pattern appear to be "normal?"

Available Data:

- ATSPM data for the following dates:
 - 9/4/23 (original data reviewed)
 - 9/11/23 (after adjustment)
- Traffic signal permit plan

Case Study 3

Background: If the split times at a traffic signal running a coordination timing plan are not long enough to accommodate the pedestrian walk and clearance times, a phase will go past the designated force off time and cause the coordinator to go into transition mode. The intersection of Dekalb Pike & Henderson Road has pedestrian crossings associated with phases 3 and 6, and is part of a coordinated system with 10 other intersections.



ATSPM Investigation Activities/Questions:

- 1) What is the minimum split time to accommodate the pedestrian time on Phase 3?
- 2) How frequently do pedestrian actuations occur for Phase 3?
- 3) How long is the signal in transition to recover from a pedestrian call for Phase 3?
- 4) Which, if any, timing plans have enough pedestrians that should require the split time to always accommodate pedestrians without transition?

Available Data:

- ATSPM data for 4/6/23
- Permit plan

Case Study 4

Background: Evaluate signal timing efficiency based on demand relative to phases being served.

ATSPM Investigation Activities/Questions:

- 1) How often is the signal serving the side street (Phases 4 and 8) when there is no demand at Atherton Street/Hawbaker Industrial Drive? What is the cause?
- 2) What mitigation(s) would you suggest to reduce unnecessary cycling?
- 3) How often is the signal serving the side street (Phase 4) when there is no demand at Main Street/Lefever Road?
- 4) Has your mitigation already been implemented? Could it be improved?

Available Data:

- Atherton St @ Hawbaker Industrial Drive (344): ATSPM data for 9/2/23
- Main St @ Lefever Rd (8617): ATSPM data for 11/9/23
- Traffic signal permit plans

Case Study 5

Background: A traffic engineer's wife complained about long delays at a signal on her way to drop off their son at preschool. The traffic engineer wanted to know if the long delays on the side street when the signal was in coordination were worth it for good progression on the main street.

ATSPM Investigation Activities/Questions:

- 1) How does wait time compare during coordinated vs. free times for the side street phases (4+8)?
- 2) How does arrival on green for main street (2+6) compare during coordinated vs. free times?
- 3) What times of day do you recommend coordination? How does that compare to the current time of day plan?

Available Data:

- ATSPM data for 11/15/23

Case Study 6

Background: Exit 28 from I-83 is a diamond interchange running on a single controller. The phasing is designed for both ramps to have green simultaneously if there is demand on both ramps.



ATSPM Investigation Activities/Questions:

- 1) Does the signal timing/phasing match the approved permit? If not, what are the discrepancies?
- 2) How often does the ramp preemption get triggered?
- 3) Would alternative phasing be appropriate for this diamond interchange?

Available Data:

- ATSPM data for 10/12/23 (before adjustment)
- ATSPM data for 11/16/23 (after adjustment)
- Signal permit plan