Public Works and Environmental Services Department
TRAFFIC ENGINEERING DIVISION
2300 W. Commercial Boulevard • Fort Lauderdale, Florida 33309 • 954-847-2600

SUBJECT: Traffic Engineering Division Technical Policy Memo #TPM-25-001

Left-Turn Phase Methodology

EFFECTIVE DATE: October 1, 2025

CONTACT POSITION: Studies Section - Engineering Unit Supervisor

PURPOSE:
Provide guidelines for warranting the installation of left-turn signals to closely resemble the Institute of Transportation Engineers' (ITE) recommendations published in the Manual of Traffic Signal Design.

AUTHORITY:
ITE Manual of Traffic Signal Design

POLICY:
The need for the installation of a left-tum signal at a signalized intersection approach is determined based on peak hour volumes, failed cycle, crash pattern, or a combination of all.

PROCEDURE:

Guidelines for Selecting Left-Turn Phasing

A variety of guidelines exist that have been developed to indicate conditions where the benefits of a left-turn phase typically outweigh its adverse impact to intersection operation. Many of these guidelines indicate that a left-turn phase can be justified based on consideration of several factors that ultimately tie back to the operational or safety benefits derived. These factors include:

- Left-turn and opposing conflicting volumes
- Number of opposing through lanes
- Failed Cycle for left-turn vehicle
- Speed of opposing traffic
- Sight distance
- Crash history

Protected/Permissive Left-Turn Phasing:

Protected/permissive operation may be used when any of the following conditions are met:

1. The product of the left-turning and opposing (through plus right-turn) volumes during any one peak hour exceeds a value of 50,000 when opposing traffic has one through lane.
2. The product of the left-turning and opposing (through plus right-turn) volumes during any one peak hour exceeds a value of 100,000 when opposing traffic has two or more through lanes.
3. If the traffic signal at the intersection operates with a protected/permissive left-turn mode for the opposing approach, the volume warrant criteria is reduced by 20 percent for the left-turn phasing analysis as follows:

    a. 40,000 when opposing traffic has one through lane and
    b. 80,000 when opposing traffic has two or more through lanes.

4. The number of correctable left-turn crashes equals or exceeds five or more for a 12-month period.
5. The peak-hour failed cycle rate exceeds 50 percent. A failed cycle is when at least one queued left-turning vehicle cannot complete the maneuver in a single full cycle.

If a protected/permissive mode is warranted, a four-section Flashing Yellow Arrow (FYA signal) should be used and consistently installed on all intersection approaches with protected/permissive left-turn movements.

Protected Only Left-Tum Phasing:

Protected Only left-tum phasing shall be installed, in either of the following cases:

a. The intersection has multiple left turn lanes.

b. There are more than four opposing through traffic lanes.

Protected Only left-tum phasing may be installed, if any of the following conditions are satisfied:

1. Permissive left turning traffic may pose a danger for pedestrians in a crosswalk, e.g. school signals, and a flashing yellow arrow cannot be considered; or
2. Five or more crashes involving left turns reported within a 12-month period during which the left-turn signal operated in the protected/permissive mode and flashing yellow arrow treatment cannot mitigate some of these vehicular or pedestrian crashes during selected time periods; or
3. Consideration will be given to individual intersection conditions, such as posted speed limits in excess of 45 mph and emerging crash patterns with increasing severity involving left-turning traffic.

SUBJECT: Traffic Engineering Division Technical Policy Memo #TPM-25-001
Left-Turn Phase Methodology

DOCUMENTATION

Each left-turn phasing warrant analysis shall include and document the following:

1. Any study submitted to the Broward County Traffic Engineering Division (BCTED) shall include a BCTED approved methodology.
2. Turning movement counts for a minimum of six hours to include two hours for each of the standard peak periods; morning, midday and afternoon peaks.
    a. If a school is nearby, ensure the turning movement counts include arrival and dismissal times of the school(s).
3. Document the analysis of product of the left-turning and opposing (through plus right-turn) volumes with the comparison of the thresholds shown provided in the Technical Policy Memo
4. Document crashes for the most recent 3-year time period as well as providing a crash diagram:
    a. Document the conflicting crashes the left turn versus the opposing through movement.
    b. Document the dates and times of the crashes and severity of the crashes.
    c. Include short form/long crash reports in an appendix.
5. Document the posted speed limit and provide the 85th percentile speeds for the opposing through movement(s).
6. Document the failed cycle:
    a. Percentage of cycles that vehicles fail to clear the cycle.
    b. Percentage of cycles that vehicles fail to clear on the yellow+red clearance time.
7. Document of the sight distance for the left-turn.
8. Engineering judgment and recommendations must be clearly noted.

APPROVALS:

Division Director: Rasem Awwad Digitally signed by Rasem Awwad Date: 2025.10.15 08:32:14 -04'00' Date: 10/15/25