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# Traffic Control Signal Needs Study

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## A. General

The MUTCD states that “A traffic control signal should not be installed unless an engineering study indicates that installing a traffic control signal will improve the overall safety and/or operation of the intersection.” The first question that must be answered is whether a traffic control signal is justified or is the most effective treatment option. It is the responsibility of the Engineer or agency to make this determination with serious consideration given to MUTCD [Section 4B](#).

## B. Data Collection

The engineering study should be based upon current site and traffic data (vehicle, pedestrian, etc.) pertaining to the candidate location. The following studies may be helpful in assessing and demonstrating the need for a signal:

- Volume studies, including approach volumes, turning movements, and peak hour detail counts
- Pedestrian counts, including any unusual numbers of children, handicapped, and elderly
- Traffic gap studies
- Speed studies
- Crash studies
- Intersection delay studies

Procedures for completing various traffic studies are found in the ITE Manual of Transportation Engineering Studies.

MUTCD [Section 4C.01](#) provides a detailed description of engineering study data which may be needed to conduct a warrant analysis.

## C. Warrants

MUTCD [Section 4C.01](#) “Studies and Factors for Justifying Traffic Control Signals” states, “An engineering study of traffic conditions, pedestrian characteristics, and physical characteristics of the location shall be performed to determine whether installation of a traffic control signal is justified at a particular location.

Ohio DOT’s Traffic Engineering Manual [Part 4-Signals](#) provides additional guidance for consideration of the reduction of minor approach right turning volume for traffic signal warrants to account for minor approach lane configurations, the proportion of right turns to other traffic, and the conflicting through volumes on the major street.

Guidelines regarding the installation of pedestrian hybrid beacons (HAWK signals) are provided in MUTCD [Chapter 4F](#). These guidelines consider vehicular and pedestrian crossing volumes, crosswalk length and traffic speeds.

Mn/DOT’s Traffic Signal Design Manual Section 9-4.02.03 provides additional guidance for advance warning flashers consideration.