



Traffic Signal Design Manual

ORIGINATOR Director, Bureau of Traffic Operations		2-3-1
CHAPTER 2	Signal Investigation Study	
SECTION 3	Traffic Signal Warrants	
SUBJECT 1	Standard Investigation Practices	

The analysis of intersection data **shall** proceed in the order indicated below, unless intersection characteristics predicate specific warrant analysis. This order permits the most commonly used warrants to be evaluated first and the more difficult, data-intensive (staff time and cost) warrants last, and only if added justification is needed or no other warrants are met. The Department has prepared Warrant worksheets for both urban and rural conditions. These worksheets are based upon the guidance provided in Section 4C of the *MUTCD* and **shall** be utilized to determine whether existing/future intersection characteristics satisfy the warrants outlined in this text.

1. The traffic volumes **shall** be evaluated against the requirements for Warrant 1, (Conditions A, B and C), and Warrant 2.
2. The traffic volumes *may* be evaluated against the requirements for Warrant 3. Meeting Warrant 3 alone is not justification for the installation of a traffic signal. At least one additional warrant **shall** also be met.
3. The crash history for the intersection(s) covering at least the past 3 years *should* be used to determine any trends. Any 12-month period (not a 3 year average) is evaluated against the requirements for Warrant 7. The volume levels necessary to satisfy this warrant must meet or exceed 80% of the established volume levels given. If conditions A and B in warrant 1 are not met, it is very important to analyze the crash history of the intersection(s) to determine which crashes are susceptible to being corrected by a traffic signal.
4. The existing and/or projected pedestrian volumes **shall** be evaluated for Warrant 4.
5. If an established school crossing is being investigated, Warrant 5 **shall** be evaluated.

6. The existing intersection characteristics and traffic volumes **shall** be evaluated against the requirements for Warrants 6 and 8. These warrants are used when it is necessary to properly control arterial or system flow. Warrant 6, Coordinated Signal System, is based upon the speed-distance relationship with adjacent signals. Warrant 7, Roadway Network, is used to complete networks on major routes.
7. If traffic signal warrants are expected to be met within 5 years of the completion of an improvement project, signals *may* be installed as a part of the project at the location being analyzed.
8. For T-intersections being analyzed for signals, side street traffic volume warrant thresholds *may* be inflated to 150 percent of the values indicated in the *MUTCD* to reflect the lack of turning movements associated with a typical full access intersection.

If new signals are proposed at an intersection that will be reconstructed as part of an improvement project, a signal warrant analysis **shall** be completed using the proposed intersection geometrics.

Guidelines for traffic signal warrants based on average daily traffic (ADT) can be found in the FDM 11-50-5, Tables 1 & 2. These *should not* be used as a justification for signals but rather *should* be used as a preliminary tool in determining if a site investigation study is needed.