

TRAFFIC AND SAFETY INFORMATIONAL SERIES

FREQUENTLY ASKED QUESTION #14

WHY CAN'T A MULTIWAY STOP SIGN BE PLACED TO REDUCE ACCIDENTS AT AN INTERSECTION?

Crash analysis is very complicated and usually identifies multiple causes for the crash history at a given intersection. A multiway stop sign is not always the best option for addressing these causes and reducing intersection crashes. Stop signs delay drivers, who often become impatient and whose impatience may cause crashes. Intersections with multiway stop signs are not inherently dangerous, but the multiway stop control must be warranted, and other, less restrictive options should be considered before a multiway stop sign is installed.

WHAT IS REQUIRED FOR THE INSTALLATION OF MULTIWAY STOP CONTROL?

Multiway stop control is an inconvenience to all drivers using the intersection. For this reason, three warrants for its use have been developed, as listed in the *Manual on Uniform Traffic Control Devices* (MUTCD). Multiway stop control may be considered at an intersection if any of the following conditions are present:

1. Traffic signals are justified, and a multiway stop sign is an interim measure that can be installed quickly to control traffic while arrangements are made for the signal installation.
2. Five or more crashes have occurred over a 12-month period that are correctable by a multiway stop sign. Such accidents include right- and left-turn collisions as well as right-angle collisions.
3. The intersection meets the following criteria for minimum traffic volumes: (a) The vehicular volume entering the intersection from the major street approaches averages at least 300 vehicles per hour for any eight hours of an average day; and (b) the combined vehicular, pedestrian, and bicycle volume from the minor street approaches averages at least 200 units per hour for the same eight hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but (c) if the 85th percentile approach speed of the major street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the above requirements.

A multiway stop sign should only be installed when traffic volumes on the intersecting roadways are approximately equal. However, if volumes are particularly high, a traffic signal may be more appropriate (for traffic signal warrants, see Traffic and Safety Informational Series Frequently Asked Question #15, What Is the Harm in Installing an Unwarranted Traffic Control Device?). Investigating the warrants listed above for a multiway stop sign requires an extensive traffic engineering study to determine whether installation of multiway stop control is appropriate.

WON'T CRASHES BE REDUCED IF A MULTIWAY STOP SIGN IS INSTALLED?

One of the warrants for multiway stop control is crash related. If an intersection meets this requirement (see above) and the traffic volumes on each approach are approximately equal, multiway stop control may be warranted for safety purposes. However, the overall results of the traffic engineering study and the professional judgement of the engineer should also be considered. Research has shown that under certain conditions, other traffic control measures may be more effective and safer than a multiway stop

sign. For example, improving intersection visibility by clearing sight triangles of obstructions can be effective in reducing crashes. Other options are discussed below.

WHAT CAN BE DONE OTHER THAN ADDING A MULTIWAY STOP SIGN?

A thorough analysis of the unique traffic, safety, and geometric characteristics of a given intersection is required to evaluate the validity of certain traffic control measures at that location. While a multiway stop sign is needed in certain situations, less restrictive countermeasures may be safer and more effective in other situations. The following are some of the alternatives that can be considered:

- Install warning signs and/or flashing beacons along the major roadway to warn users approaching the intersection.
- Relocate the stop line(s) to improve sight distance and visibility at the intersection.
- Install a flashing beacon at the intersection to supplement the existing stop signs and increase conspicuity.
- Add one or more lanes on a minor roadway approach to reduce the number of vehicles per lane on the approach.
- Install roadway lighting to reduce the frequency of crashes at night.
- Restrict one or more turning movements.
- Limit the number of driveways in close proximity to the intersection; unexpected and conflicting movements from these driveways could cause vehicles on the roadway to suddenly stop or swerve, resulting in crashes.

The ultimate goal of any countermeasure is to provide a safe intersection for vehicles, pedestrians, and bicyclists.