

FAQ – Frequently Asked Questions

Signal Design

Will a traffic signal reduce crashes at an intersection? Traffic signals may not reduce **all** types of crashes at an intersection, but that is the ultimate goal. Traffic signals may result in a decrease in the more serious, right-angle type of crashes, but sometimes there may be an increase in rear-end crashes which are typically less severe. Rear-end crashes are typically caused by drivers following too closely and not paying attention.

Does a traffic signal control speed? No. In some cases where speeding is a problem, citizens may believe a traffic signal is necessary to slow traffic down. However, a traffic signal may sometimes result in greater speeds because drivers accelerate to try to "beat the light" before it goes red. Two or more adjacent traffic signals are usually timed to display green indications and progress traffic at the speed limit on the higher volume roadway (street). In these types of signal systems, not only is it unsafe, but it is counterproductive to exceed the speed limit.

So how does the NCDOT decide whether a traffic signal should be installed at an intersection? NCDOT receives many requests for traffic signals. All of these requests are investigated and many are denied even when a citizen feels one is needed. NCDOT follows national minimum standards to determine if a traffic signal is warranted. These standards are in the Manual on Uniform Traffic Control Devices which is published and maintained by the Federal Highway Administration. Using these standards, traffic engineers perform a detailed study of existing conditions to determine if a traffic signal is warranted at the location. They study the number of pedestrians, traffic flow, crash history, vehicle and pedestrian delay, and the presence of school children. Engineers use this information to determine if a traffic signal is the best method of controlling traffic at the location. During the study, the engineer may determine that other traffic control methods may be more beneficial such as speed limit signs, increased law enforcement, improved regulatory or guidance signs, improved pavement markings, geometric improvements, or other innovative techniques.

How can I request a traffic signal? You can request a traffic signal by writing to the State Traffic Engineer at:
NCDOT Transportation Mobility & Safety Division
1561 Mail Service Center
Raleigh, NC 27699-1561

Once your request is received, a detailed study will be conducted.

Why does it take so long for NCDOT to install a traffic signal? When an engineering study indicates a traffic signal is warranted, it is placed on a needs list where it must compete with other roadway improvements. To establish a traffic signal's priority on the needs list, the NCDOT determines a cost-to-benefit ratio to ensure available funding is spent efficiently. Once funding has been successfully established for a traffic signal, detailed plans and construction specifications for the improvements must be prepared. Fieldwork must be conducted to account for utility conflicts such as those posed by overhead electrical lines and underground sewer or water lines. Sometimes, arrangements must be made with the utility provider to have these relocated. Once the plans and specifications have been developed, equipment must be procured for NCDOT personnel to install the traffic signal or a contract must be developed by NCDOT and bid on by traffic signal contracting firms for installation of the signal.

How much does a typical traffic signal cost? Depending on the features required at a specific location, a traffic signal could cost anywhere from \$50,000 to over \$100,000. In addition, the NCDOT is responsible for paying monthly electrical bills.

Why can't I get a left-turn green arrow installed at a traffic signal? Although left-turn green arrows benefit turning vehicles, they may also increase the waiting time for other motorists and pedestrians at the intersection. The NCDOT has established criteria for determining where left-turn green arrows may be warranted. These criteria includes such factors as how many vehicles are turning left versus how many vehicles they are opposing, how well the traffic signal is operating without the left-turn green arrow, sight distance at the intersection, and the crash history of the intersection.

Why aren't some traffic signals put in flashing operation late at night? In one word: "safety". This has been the subject of much research within NCDOT. Studies have shown that collisions may increase at locations where traffic signals operate in late night flash. With today's modern traffic control signal equipment, wait times at sparsely traveled roadways late at night should be minimal. The NCDOT has criteria to evaluate if a traffic signal may safely operate in late night flash. If the traffic signal meets these criteria, it is monitored on a regular basis to make sure crashes do not increase during the hours of late night flash.

What do I do if the signal indications are blank such as during a power outage? First, you should slow down as you approach the intersection and stop when you get to the intersection (unless law enforcement are directing traffic). If law enforcement personnel are present, always obey their directions. If there are no law enforcement personnel present, drivers should approach the intersection with extreme caution as if it were controlled by a stop sign on all approaches and proceed through only when safe to do so.

How do pedestrian signals work? A pedestrian signal allows a safer opportunity for pedestrians to cross the street at signalized intersections. When activated, the pedestrian signal provides time for the pedestrian to enter the street on a steady "Walk" or symbolic walking person and to finish crossing the street on a flashing "Don't Walk" or upraised hand indication. Where there are push buttons, you must press the push button to get the "Walk" signal. You may not immediately get a "Walk" indication. However, the traffic signal knows there is a demand for the "Walk" indication and is working a pre-programmed sequence to safely transition to the "Walk" indication.

Safety Tips

- When possible, cross within a marked crosswalk only at an intersection or mid-block location.
- Make eye contact with drivers before you step in front of their vehicle.
- Always watch for turning vehicles, especially where right turns on red are allowed. Drivers may not see you.
- Cross quickly and be alert. Minimize your time in the street.
- Hold small children by the hand when crossing.

WARNING:

Though signals and crosswalks assign a pedestrian's legal rights in the intersection, always use caution when crossing the street. Painted lines do not stop cars.

Where there are pedestrian indications, why is there not enough pedestrian walk time to cross the street? For signalized pedestrian crossing approaches, the "Walk" will allow pedestrians to step off the curb to start their walk across the street. The flashing "Don't Walk" is to warn pedestrians who have not yet entered the intersection that it is too late to safely get across the street before the traffic signal will change to allow vehicles to proceed. Most pedestrian signals now have countdown timers to let pedestrians know how much time is left before the steady "Don't Walk" indication is displayed. A steady "Don't Walk" or upraised hand indication means you should not be in the intersection.

Why do some traffic signals take so long to change? The length of your wait depends on the traffic signal cycle length. The traffic signal cycle length is determined based on traffic volumes and traffic patterns specific to each site. Heavily congested major corridors may require longer cycles to accommodate higher volumes of traffic. Though these longer cycle lengths may move more vehicles through an intersection in a given time frame, they may increase delays for some drivers.

Then why isn't there enough green time at a traffic signal to get the traffic through all approaches? The amount of green time for each movement at a signalized intersection varies according to vehicle demand. When there is not enough green time for each movement to get through the intersection it is often because the intersection is over capacity and has more vehicles than it was designed to handle. The NCDOT attempts to time these traffic signals to minimize overall delay for the majority of motorists at the traffic signal. Therefore if you are on a minor approach or a side street, you may experience significant delay where the main movement is along a heavily congested corridor.

So how does NCDOT time its traffic signals? The objective of traffic signal timing is to alternate the right-of-way between traffic in such a manner as to minimize average delay to all traffic while ensuring a safe operation.

The majority of traffic signals in North Carolina are designed to be either traffic responsive actuated or part of a traffic signal system. Actuated traffic signals are designed to extend green displays up to a preset maximum time limit based on traffic demand. Typically, NCDOT will use traffic counts that have been taken at the intersection to model the traffic signal operation and determine the preset maximum time. Timing for two or more closely spaced (usually within a half mile or less) traffic signals that are part of a traffic signal system is typically designed to progress groups of vehicles along a corridor. The department uses traffic modeling software along with traffic counts to determine appropriate traffic signal timings to progress these groups of vehicles along a corridor. Once timing has been programmed for the traffic signal, engineers will observe traffic flow and further adjust the traffic signal timing to accommodate site-specific issues as needed.

Why doesn't NCDOT install more (or less) Red Light Photo Enforcement Cameras? The NCDOT does not have legal authority to install red light photo enforcement cameras. The use of red light photo enforcement cameras by individual municipalities is currently authorized through legislation passed by elected officials in the North Carolina General Assembly. The operation of these systems is currently the responsibility of the local municipality.

What am I supposed to do at a traffic signal controlled with the Flashing Yellow Arrow (FYA)? Whenever the Flashing yellow arrow is being displayed you are to use caution and only make the movement indicated by the FYA when the right-of-way is clear and there are no opposing vehicles or pedestrians in or approaching the intersection. Most FYA indications are used for controlling left turns but there are some being used for right turns as well.

What are the new types of signal lights I'm seeing at pedestrian crossings or emergency access driveways and what am I supposed to do? These are called hybrid beacons and will remain dark until activated by pedestrians or emergency response personnel. Once activated, the beacons will flash yellow for a few seconds, then go steady yellow and steady red for a few more seconds to allow moving vehicles to safely stop. Once vehicles have stopped, the beacons will remain steady red while pedestrians begin crossing or the emergency response vehicles begin exiting their facility. After several seconds, the beacons will begin flashing red, during which time vehicles are to remain stopped until the pedestrians or emergency response vehicles have cleared the intersection. After the pedestrians or emergency response vehicles have cleared the intersection, and after first coming to a complete stop, vehicles may begin moving even while the beacons are flashing red. After the beacons have "timed out" they will go dark again until the next activation.