Ceccarelli PE
Expert in Traffic Engineering as Applied to Photo-Enforcement

Dear North Carolina Legislator,

Please sponsor this red-light camera legislation:

Short Title: Red Light Camera Delay Interval
A BILL TO BE ENTITLED
CLARIFY THE RED LIGHT CAMERA DELAY INTERVAL

The General Assembly of North Carolina enacts:

SECTION 1.(a) G.S. 20-158 is amended by adding a new subsection to read:

"(f) The following requirements apply to a traffic control photographic system used to enforce this section:

(1) A violation detected by a traffic control photographic system is defined as when a vehicle enters and proceeds into the intersection after the onset of the signal display of a steady circular red or steady red arrow controlling traffic approaching the intersection and the applicable red clearance interval has expired. All signals with traffic control photographic systems must be designed with an appropriate red clearance interval.
(2) The duration of the yellow light change interval and the red clearance interval at intersections where traffic control photographic systems are in use shall be no less than the yellow light change interval and the red clearance interval durations specified on the traffic signal plan of record signed and sealed by a professional engineer, licensed in accordance with the provisions of Chapter 89C of the General Statutes, and shall comply with the provisions of the most recently adopted Manual on Uniform Traffic Control Devices."

SECTION 1.(b) This section becomes effective December 1, 2025, and applies to any enforcement of G.S. 20-158 by a traffic control photographic system, including by any municipality authorized under G.S. 160A-300.1, and S.L. 2001-286, as amended, on or after that date.

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The NCDOT wrote this legislation for the 2023-2024 session. The legislation ended up in HB 198. However at the 11th hour, some pro-red-light camera lobbyist removed the legislation. I am a licensed professional engineer in North Carolina and I very much wish for you to reintroduce and sponsor this legislation in the 2025-2026 session.

The legislation requires some explanation for the non-engineer. The reason for the legislation is to prevent red-light camera programs from profiteering from NCDOT engineering standards, standards that deliberately cause *every driver* to unintentionally though safely run red lights. From red-light camera data, within a handful of years, the NCDOT standards enable red-light camera programs to issue more tickets than their cities' populations.

A red-light camera system is a camera placed at an intersection which takes videos of vehicles that run red lights, then sends tickets to the vehicles' owners. The red-light camera delay interval is a critical operating parameter of the red-light camera system. The delay is that period of time after the traffic signal light turns red to the point in time when the camera begins ticketing vehicles. This legislation requires that the red-light camera system sets its delay to that determined by licensed professional engineers such that *safe* drivers cannot be punished for unintentional incursions into red lights, those incursions caused by those same NCDOT engineers. The NCDOT has determined that this delay interval must be the same as the all-red clearance interval. The all-red clearance interval is an operating parameter of the NCDOT's traffic signal. Setting the delay to the all-red clearance interval is brilliant.

The all-red clearance interval is the time it takes for a vehicle to travel from one side of an intersection to the other side--in other words, to *clear* the intersection. After the yellow light turns red, approaching traffic coming from *all* directions see a *red* light for the duration of the *all-red clearance* interval. When the all-red clearance interval terminates, conflicting traffic gets a green light. Traffic engineers deem a vehicle *safe* when it enters the intersection *during* the all-red clearance interval. Traffic engineers deem a vehicle unsafe when it enters the intersection *after* the all-red clearance interval terminates. In simple words, it is not safe to enter the intersection when cross traffic is crossing it. Hence the wording of the legislation.

The NCDOT wrote this legislation because it wants:

1. To hold red-light camera programs true to their gimmick that "red light cameras are for safety".
2. To be fair to safe drivers entrapped by dilemma zones. The NCDOT's day-to-day practice of calculating yellow light durations creates engineering defects called *dilemma zones*. Dilemma zones cause drivers to unavoidably run red lights. A dilemma zone is a segment of roadway upstream from the intersection where if you are in it when the light turns yellow, you neither have the distance to stop comfortably nor the time to the reach the intersection before the light turns red. You must run a red light. You know you are in a dilemma zone when you ask yourself, "Should I stop or should I go?" Often our response to a dilemma zone is to beat the light. Beating the light is the engineer's directive to the driver. Over 90% of red-light running is the consequence of dilemma zones. (Most of the remaining 10% are victims of engineering failures other than dilemma zones.)
3. To make intersections safer by easing the minds of drivers so that they can concentrate on the road again instead of obsessing with an upcoming red-light camera. Cameras make drivers panic. It is this panic which causes drivers to slam on the brake, which in turn causes dramatic increases in rear-end collisions.
4. To harmonize the engineering requirement with the letter of the law so that the safe motion of traffic once again means the legal motion of traffic. (The public wrongly assumes that safe and legal motion are identical. They are not identical. They haven't been identical since 1985. In 1985 the NCDOT redefined the yellow light. That redefinition shortened the yellow light. The shorter yellow created both a legality and a safety problem. The NCDOT introduced the all-red clearance interval to correct the safety problem. Now safe = "yellow + all-red". But the NCDOT never corrected the omission that legal = safe. This legislation is that correction.

The mere appearance of HB 198 was the impetus for the City of Raleigh to terminate its red-light camera program. The Raleigh engineers understood that there is no money to operate a red-light program when the program is not allowed to ticket safe drivers entrapped by

engineering defects. Wilmington is now the only city in North Carolina using red-light cameras. Even Wilmington has made overtures to terminate its red-light camera program. You should take note that only when both cities' red-light camera revenues were put in jeopardy, did the cities confess that their programs increased crashes. The large revenue stream causes local governments to conceal such inconvenient truths.

If you are actually concerned with safety, there is a cheap engineering solution which the NCDOT can easily implement. We can discuss this.

A beauty of this legislation is that even if the NCDOT fixes its bad engineering, this legislation remains true. Another beauty is that cities can still operate red-light cameras if they want.

If you want me to lead a discussion in a committee meeting, or you want me to stand up and present to the entire legislature, I am willing and able. I have presented this topic to audiences around the world. I am told I am a good teacher. This topic is wildly interesting.

If the legislation comes under attack, give me a call immediately. I can easily defend this legislation. I will attend committee meetings as long as I know about them beforehand. I am told that the NCDOT will not object to this legislation (the NCDOT wrote it after all), but will not defend it. I surmise that the NCDOT defending its own legislation would make the NCDOT explain why for decades it has been causing drivers to run red lights. That is something the NCDOT is not ready to admit. We can discuss this too.

Sincerely,

Resources

1. https://redlightrobber.com focuses on red light cameras. The intended audience is the general public and traffic engineers. The public is concerned about being scammed and what to do with their tickets. Engineers are curious about the meaning of their yellow change interval math and how the math forces drivers to run red lights.

2. https://ceccarelli-pe.com offers my expert witness services as a licensed professional engineer. The website is for attorneys. The website introduces all the types of photo-enforcement and how each type makes money by exploiting gaps between engineering, science and law.

Recommended Videos

1. Red-Light Camera Clips. Video 5 on https://redlightrobber.com. This video shows dozens of video clips taken by red-light cameras. Many clips are from North Carolina. These clips illustrate that red-light cameras are not about punishing bad driver behavior, but about harvesting money from safe drivers. Seeing is believing.

2. The Reason why Drivers Run Red-Lights. Video 1 at https://redlightrobber.com. This is an 1 hour presentation on the mathematics which calculates the duration of the yellow light causing drivers to run red lights. This video explains why drivers are running reds in video 5. Videos 2 and 3 are the sequels to video 1.