



Activated Advance Warning Flashers Evaluation

NCDOT completed a safety study of 38 sites where Activated Advance Warning Flashers (AAWF) have been installed in advance of high-speed approaches to signalized intersections to alert drivers when the signal is about to turn red by utilizing dynamic flashers.

Background

AAWFs are a lower cost countermeasure that can be used to provide drivers with more information ahead of a traffic signal's decision zone to reduce both red light running crashes and rear end crashes approaching the signal.

The study, which used an empirical bayes analysis, included 38 AAWF treatment sites - 14 where AAWF was the sole treatment and 24 sites where AAWFs were combined with other countermeasures such as phasing/signal head changes, additional turn lanes, and Long Vehicle Overspeed Detection.

Various types of AAWFs were studied: "Be Prepared to Stop" signs, Signal head warning signs, "RED Signal Ahead" LED Signs, and "Prepare To Stop" LED Signs. There was also variation in when the flashers were activated: 2-5 seconds prior to end of green, beginning of yellow, and beginning of red. After this study was conducted (beginning in 2021), NCDOT standardized AAWF applications to begin flashing at 3 seconds prior to the end of green.



Top: "Be Prepared to Stop" Signs
Middle: Signal head warning signs
Bottom Left: "RED Signal Ahead" LED Sign
Bottom Right: "Prepare to Stop" LED sign
Source: Google Streetview

Results

Results from the study locations where AAWF was the sole treatment indicate a:

- 30% reduction in red light run frontal impact crashes
- 22% in mainline rear end crashes.

Key Takeaways

- Although sample sizes were small, it appeared red light run frontal impacts showed a stronger safety benefit for AAWFs activated within the green timing than those activated at the beginning of yellow. The opposite was true for mainline rear ends.