

GUIDELINES FOR DETERMINING TRAFFIC SIGNAL CHANGE AND CLEARANCE INTERVALS

Notice of Intent to Consider for Final Adoption as an ITE Recommended Practice

Availability

The recommended practice *Guidelines for Determining Traffic Signal Change and Clearance Intervals* (RP-040A) is now available. An unformatted version of the full report will be available for review by request by sending an email to TSCI-RP@ite.org.

Summary

The final version of *Guidelines for Determining Traffic Signal Change and Clearance Intervals* (RP-040A) is moving for final adoption by the Institute of Transportation Engineers (ITE) International Board of Direction. ITE has made the recommended practice available on September 14, 2018 for review and will submit the recommended practice for adoption as of October 16, 2018 if no appeals are received. In response to the comments received on the initial proposed version of the document, the report has been revised to:

- Incorporate more recent literature citations as well as provide additional clarification and context of literature cited;
- Add discussion and guidance related to enforcement tolerances; Add discussion and guidance on restrictive vehicle codes;
- Expand discussion of perception-reaction times and modification of minimum value previously proposed for turning movements;
- Expand discussion of approach speeds for protected and permitted turning movements;
- Clarify aspects of intersection width;
- Expand discussion of timing related to bicycle movements; and
- Include other technical and editorial revisions to improve readability and clarity of the report.

Purpose and Intended Use

While municipal, county, and state jurisdictions have defined practices or procedures on the determination of change and clearance intervals at signalized intersections, historically there has been a lack of consensus best practices available in the United States and Canada. ITE's intent for the proposed recommended practice is to reflect a thoughtful balance between sound engineering theory and practical application. The underlying assumptions presented in the report should yield reasonable times for the yellow change and red clearance intervals for traffic signals that allow the profession to balance those durations while enhancing intersection safety, maintaining reasonable traffic flow, and providing for legal movement of vehicles and pedestrians. The goal of the proposed recommended practice is to create a consensus methodology for calculating and evaluating traffic signal change intervals that can be uniformly and consistently implemented by transportation agencies.

State of the Practice and Current Research

The report describes the sources of methods and values presented in the proposed recommended practice to address the goal of the engineering profession to determine the ideal duration of yellow change and red clearance intervals that provide intersection safety while retaining a high level of operational efficiency and providing for the legal movements. A broad cross section of topics affecting the timing of yellow change and red clearance intervals are addressed through discussion of the relevant literature, including the foundational work of DeGazis, Herman, and Maradudin, as well as research identified in the literature review, the current state of practice, comments received during the drafting process, and the recommendations applied in the guidance. Those topics include: calculation method, variance in vehicle codes, perception-reaction time, speed, deceleration, intersection width, vehicle length, grade, minimum and maximum intervals, rounding calculated intervals, use and calculation of red clearance interval, left-turn movements, other road users, special road conditions, implementation, safety, and driver behavior.

Recommended Methods of Determining Yellow Change and Red Clearance Intervals

The report provides a description of the recommended methods to calculate traffic signal change and clearance intervals. The calculation methodology in the report is based on the kinematic equation and is shown in both U.S. and metric units. The report provides guidance for applying the methodology and for selecting input values for both through and turning movements at signalized intersections. Input values include perception-reaction time, approach speed, deceleration rate, approach grade, intersection width, vehicle length, and conflicting movement start-up delay. The report notes application techniques for wide intersections and bicycle traffic. The application of measures of effectiveness and recommendations for monitoring and evaluation close the report.

How to File an Appeal

If you wish to appeal ITE's adoption of the recommended practice, submit a written appeal to ITE Headquarters, Attn: Douglas E. Noble, 1627 Eye Street, NW, Suite 600, Washington, DC 20006 USA, by the close of business on October 15, 2018. The written appeal shall state the nature of the objection(s) including any adverse effects, the step(s) of the ITE procedures or the section(s) of the recommended practice that are at issue and the specific remedial action(s) that would satisfy the appellant's concerns. Any previous efforts to resolve the objection(s) and the outcome of each shall also be noted.