

## **Appendix C: Traffic Manual Information on Yellow and Red Lights**

According to the state of California traffic manual, section 9-04.5:

"The purpose of the yellow signal indication is to warn traffic approaching the signal that the related green movement is ending or that a red indication will be exhibited thereafter and traffic will be required to stop when the red signal is exhibited.

The length of the yellow change interval is dependent upon the speed of approaching traffic. Suggested yellow intervals are shown below:"

Approach Speed (km/hr)	Yellow interval (s)
45 or less	3.1
50	3.3
55	3.5
60	3.7
65	3.9
70	4.2
75	4.4
80	4.7
85	4.9
90	5.1
95	5.3
100	5.5
105	5.8
110	6.0

### Section 9-04.6 Red Clearance Intervals

"Generally, red clearance intervals are not required. A red clearance interval may be used following the yellow change interval, at very wide intersections, offset intersections, or at other locations where it is desirable to delay the green interval for opposing traffic. Normally, red clearance intervals range from 0.1 to 2.0 s."

**Extra:** According to Bob Johnson, traffic engineer for the city of Carlsbad, CA, "We are converting our red and green traffic signal indications to LEDs. The LED uses about 12-14 watts compared to the 150-watt bulbs in the red and green indications. This results in tremendous energy savings."

As an interesting exercise, have your students calculate the expected yearly energy savings from switching from the incandescent bulbs to the LEDs for the green and red signal indications.