This report reviewed evidence concerning acceptable delays in switching between a primary and a secondary light source in distributed lighting. The specific question posed was as follows: The industry considers a delay of 100 ms technically achievable, but is it acceptable from the human factors point of view? The evidence considered included consequences for the quality of driver performance and possible startle effects. In discussing the quality of driver performance, the following aspects were considered: eyeblinks, voluntary occlusions of vision during driving, fixations away from straight ahead (on rearview mirrors, vehicle controls and displays, and navigation systems), and time-to-collision and time-to-lane-crossing measures. Possible effects of different implementations of the secondary light source (high-intensity discharge and incandescent) were also briefly discussed.

Based on the available evidence concerning the quality of driver performance (excluding startle effects), a delay of 100 ms or less is unlikely to create safety problems. Furthermore, although little evidence exists on the likelihood and nature of startle responses, it is unlikely that a delay of 100 ms or less will lead to major negative startle consequences.