

### Improved Street Lighting

#### Description

Driving during darkened conditions is more dangerous than driving during daylight. Only 25% of all travel occurs between 7pm and 8am, however, 40% of fatal and serious injuries from motor vehicles crashes occur during this time period. The reduced visibility and increased risk strongly affects pedestrians and cyclists. Increasing the level of illumination for a roadway is known to improve the safety for all road users. However, there has been a recent trend to reduce lighting in the interest of energy savings.

#### How it Works

A streetlight/light standard is a raised source of light that is provided to help illuminate a roadway or walkway in order to help guide road users and to provide an increased level of security. Street lighting commonly use high-intensity discharge lamps, with high-pressure sodium lamps or more recently LED lighting, which can have significant energy saving benefits. There are defined standards for the level of lighting required for different roadway facilities, but the greatest benefit for lighting occurs at locations with the greatest risk of conflict (i.e., intersections, cross-walks, etc.).

#### Evidence of Effectiveness

Elvik and Vaa indicate a CRF of 42% for night-time collisions involving pedestrians at intersections. However, this CRF would be lower if it was applied to all collisions. Research has indicated that there are significant safety benefits in providing roadway lighting at locations where illumination has not been previously installed. A literature review in a report from SWOV indicated that injury crashes could be reduced by 30% on urban roads when lighting is provided. A Japanese study found a 43% reduction in night-time crashes following the provision of lighting and that higher intensity lighting provided greater safety benefits.

#### Typical Implementation Considerations

There are a number of circumstances where it is important to consider potential negative impacts from roadway lighting. This includes the loss of night vision when a driver rapidly travels from a highly illuminated area to a dark area. Similarly, if there is an abrupt shift from a darkened area to an intensely lit one, drivers' vision can become overwhelmed. This is similar to the situation a driver encounters when entering and leaving a dark tunnel on a sunny day.

Street lighting poles can be roadside hazards and as such, it is important to try to protect road users from these hazards (e.g., provide break-away bases for poles).

