### Use LED Units Within a Regulatory or Warning Sign

The embedding of light emitting diodes (LEDs) within a sign’s symbol, legend, or border to increase its conspicuity.

#### Targeted Crash Types
- Right-angle
- Rear-end (major road)
- Rear-end (minor road)
- Pedestrian
- Bicyclist

#### Problems Addressed
- Inadequate visibility of intersection or intersection traffic control devices
- Non-compliance with intersection traffic control devices
- Vehicle conflicts with non-motorists
- Speeding

#### Conditions Addressed
- Crash history or observed vehicle conflicts caused by non-compliance with traffic control device or lack of awareness of intersection traffic control.
- Existing sign is not conspicuous in its current surroundings.
- Poor sign visibility during low-light conditions.

#### Considerations
- LEDs can be set to flash or steady mode.
- LEDs have low power requirements and are typically powered by standalone solar panel units.
- Can be activated by vehicles or be on continuously throughout the day.
- Take care not to overuse LEDs in signs, as drivers may become accustomed to their presence and fail to respond as desired.
- Can be applied in conjunction with other treatments to increase sign conspicuity.
- LEDs must be red or white if used with STOP (R1-1) or YIELD (R1-2) signs, white if used with other regulatory signs, and white or yellow if used with warning or school signs

#### Select Examples
- Ohio 303 & Indian Hollow Rd., LaGrange, OH
- Eber Rd. & US 20A, Monclova, OH

#### Other Resources
- Embedded LEDs in Signs, FHWA
- Innovative Operational Safety Improvements at Unsignalized Intersections, Florida DOT

#### Industry Standard
- MUTCD
  - Section 2A.07: Retroreflectivity and Illumination
  - Section 2A.15: Enhanced Conspicuity for Standard Signs