

Left-Turn Traffic Signal Phasing



Guidelines

There are three options for the left-turn phasing at an intersection: Permissive Only when the left turns and the opposing through movements are presented with a circular green indication, Protected Only when left-turn phase is indicated by a green arrow signal indication, and Protected-Permissive which represents a combination of the Permissive and Protected modes. Left-turn traffic signal phasing should be evaluated on the basis of the following guidelines and engineering judgment:

1. Left-Turn Related Crashes

Intersection crash history should be reviewed and left-turn protection (Protected Only or Protected-Permissive mode) should be considered if there is a crash pattern which could be corrected by left-turn phasing.

Protected Only left-turn phasing may be considered if the number of left-turn related crashes on approach exceeds 4 or more in any 12-month period in 3 years.

Protected Only left-turn phasing should be provided on approach if there is more than one left-turn lane or more than two opposing lanes.

2. Sight Distance:

Protected Only left-turn phasing should be provided if the left-turn driver's sight distance to oncoming traffic falls short of the minimum requirement.

3. Volume Cross Product

Left-turn protection should be considered if the product of left-turn hourly volume and opposing through hourly volume exceeds:

- 40,000, if there is one opposing lane or
- 80,000, if there are two opposing lanes.

4. Other Considerations for Left-Turn Protection

- Left-turn traffic delay
- Left-turn hourly volume
- Vehicle queue & available storage
- Speed limit or 85th percentile speed of opposing approach