

# Left-Turn Phases at Signalized Intersections

UDOT 06C-52

Effective: October 1995

Revised: January 31, 2011

## Purpose

To define the process for warranting left-turn phases at existing signalized intersections and to identify the type of display used for left-turn phases.

## Policy

The following warrants have been established as criteria for left-turn phases at signalized intersections. A left-turn phase may be installed after less restrictive measures to reduce delay, congestion, and crashes have been considered. Consideration shall be made in evaluating the impacts on the overall signalized corridor/network operation. The left-turn phase shall be permissive, unless an engineering study indicates otherwise.

### Warrants for Protected/Permissive Left-Turn Phase:

#### Warrant I

A left-turn phase may be installed when the left-turn volume exceeds 100 vehicles per hour and a traffic engineering study reveals that the left-turn demand to capacity ratio is greater than or equal to 90 percent ( $v/c \geq 0.90$ ) for any one hour of the day.

#### Warrant II

A left-turn phase may be installed when a three-year average left-turn crash rate exceeds 0.80 crashes per million vehicles.

#### Warrant III

A left-turn phase may be installed when both 80 percent of the volume (80 left-turn vehicles) and capacity ratio ( $v/c \geq 0.72$ ) for Warrant I and 80 percent of the left-turn crash rate (0.64) for Warrant II is satisfied.

#### Warrant IV

A left-turn phase may be installed when left-turn volume frequently exceeds storage capacity, resulting in interruption of through traffic flow as determined by an engineering study.

**Signal Head Display for Protected/Permissive Phase:**

Specify flashing yellow arrow (FYA) signal faces where protected/permissive left-turn phase is warranted and justified at:

1. New traffic signals
2. Existing traffic signals that meet minimum infrastructure and equipment requirements.

## **Procedure**

### **Left-Turn Phases at Signalized Intersections**

**UDOT 06C-52.1**

See Procedure 06C-51.1.