

# L.A. County Transit Signal Priority



# Project Objectives

- Reduce delay at signalized intersections for Metro Rapid & Metro Orange Lines
- Help maintain headways between buses
- Minimize adverse impacts on cross street traffic
- Transit Signal Priority (TSP) does not eliminate red lights, it simply reduces the amount of time buses spend at red lights

# TSP Implementation

- TSP first implemented in June 2000 on two demo lines:
  - Wilshire/Whittier
  - Ventura



# Priority Operation

- GREEN LIGHT EXTENSION

- Extends green light (up to 10 seconds) past normal green cycle time
- Reduces stop time at signals by keeping the signal green until the bus is through the intersection
- Granted only when buses can clear the intersection within that additional 10-second window
- Subsequent phases (cross traffic & left turns) are shortened to make up for extended green time given to buses

# Priority Operation

- EARLY GREEN
  - Existing red light shortened (up to 10 seconds) to minimize delays to stopped or approaching buses
  - Conflicting signal phases (cross traffic & left turns) are shortened to provide early green without violating pedestrian or safety minimums

# Performance Evaluation

- L.A. City analyzed more than 1000 bus trips and run time data
- Metro Rapid Buses achieved an average 25% reduction in total travel time
- Transit Priority contributed to about 1/3 of the total travel time savings
- Bus delays at signalized intersections were reduced by 33-39%
- Minimal impacts to cross street traffic

# Signal Priority Features

- Buses given only enough additional green to clear the intersection (if 5 seconds needed, 5 seconds given)
- No two consecutive priority cycles allowed (only 1 bus every 2-3 minutes can request & receive priority)
- Buses must be eligible for priority
  - If over half the scheduled headway early, the bus will not be eligible for priority
  - If over half its headway late, it will be eligible for priority

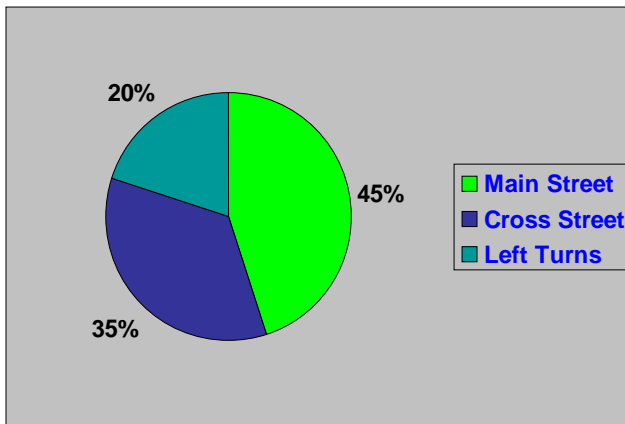
# Signal Priority Features, cont'd.

- System seeks to minimize bus bunching and impacts to cross traffic

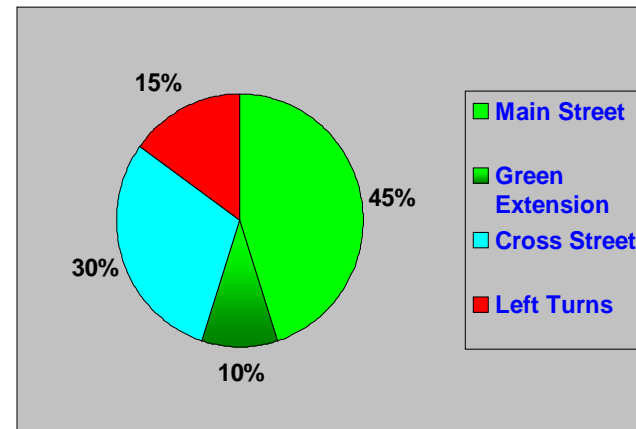


# Traffic Signal Cycle

Normal Traffic Signal Cycle

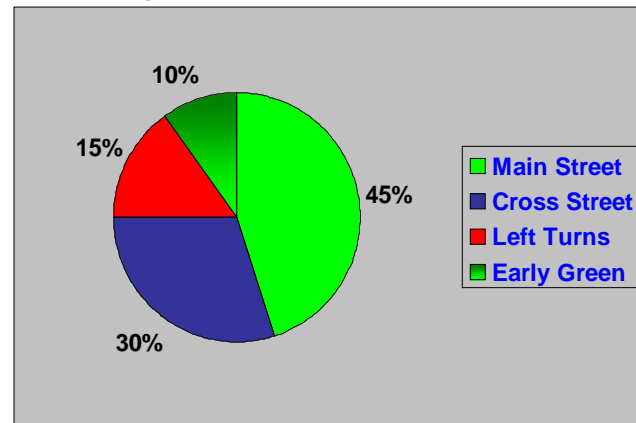


With Signal Priority - Green Extension



- Additional seconds given to buses must be taken from other traffic within that same traffic signal cycle at the same intersection

With Signal Priority - Early Green



# Types of TSP System

- Metro employs two separate signal priority systems
- Main system uses loops and transponders (City of L.A.)
- Second system (other cities in County) uses an onboard processing unit
  - Requests for priority are transmitted via wireless communications technology

# On Bus Transponder



# In-Street Loop Detector



# Advance Loop



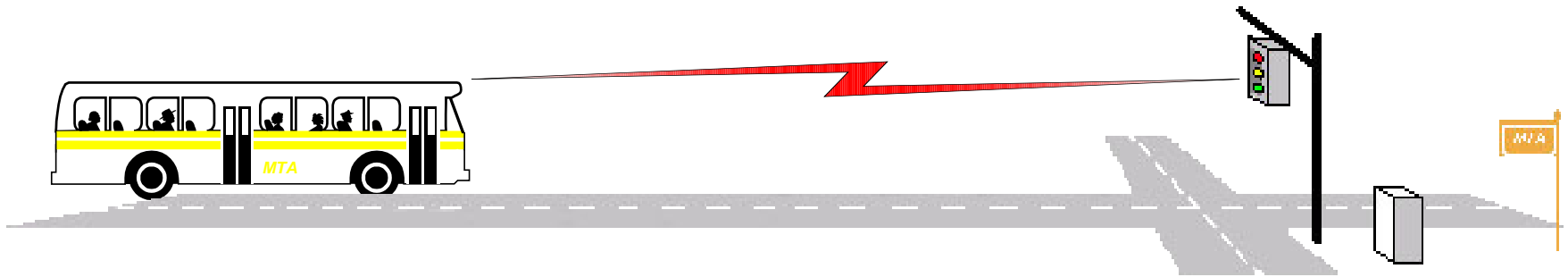


# Release Loop



# Bus Priority - Wireless

- Uses an onboard processing unit
- Request transmitted via wireless communications technology



# Bus Priority - Wireless

Processing Unit, GPS & Communications Equipment





# Bus Priority - Wireless

- Metro funded cities (through two federal grants) to construct and implement TSP along Rapid corridors, including the City of West Hollywood
- Approximately \$1.6 million is going to City of West Hollywood for TSP on the Santa Monica, Beverly, Hollywood–Pasadena, and La Cienega corridors within their city limits
- Project scheduled to be completed by June 2015
- Currently funding the City of L.A approximately \$6.2 million for Venice TSP (scheduled to be complete late 2014)



# Questions

