

# City of Austin – Signal Assessment Program

Brian W. Craig, P.E.  
City of Austin

## Austin Overview

- 835 traffic signals under COA control
- 100+ signals within the Central Business District
- 160 closed-circuit TV (CCTV) cameras



## Austin Overview

- Traffic Management Center (TMC) opened October 2001
- 175+ miles of fiber-optic cable to 610 intersections
- 2070 signal controllers
- Nextphase local software
- Siemens i2 Central software



## Austin Overview

- 2005 Travis County population – 888,000
- Increased by 41% since 1995



## Austin Overview

- Daily volume increases on various arterials
  - Capital of Texas Highway
    - » 57,000 in 1999 vs. 65,000 in 2004
  - Parmer Lane
    - » 36,000 in 1999 vs. 42,000 in 2004
  - RM 620
    - » 22,000 in 1999 vs. 30,000 in 2004

## Why Self Assessment?

- Identify strengths and weaknesses
- Address public criticisms
- Evaluate personnel, equipment, and funding needs
- Measure level of public satisfaction
- Compare system performance with other cities

## Assessment Methods

- Open-house Forum
  - Face-to-face meeting with the public
- Self-Administered Test
  - Sponsored by National Transportation Operations Coalition (NTOC)
- Peer Group Review
  - Traffic signal professionals from other cities evaluate the operations and performance of the system
  - Submit findings and recommendations

## Peer Group Review

- Interviews with COA personnel, assessment of duties and responsibilities
- Review of City of Austin's TMC and its capabilities



## Peer Group Review

- Field evaluations of various synchronized arterials and individual intersections
- Evaluation of data collection procedures
- Review of methods of generating signal timing plans
- Evaluation of Preventive Maintenance program
- Documentation of performance measures

## Areas of Importance

- Signal Timing Operations
- Systems Operations and Management
- Impediments
- Potential Improvements

## Signal Timing Operations

- Individual intersection timing
  - Operation of left turn P/P vs. P only
  - Adequate capacity distribution
  - Vehicle and pedestrian detection
  - Split phasing
  - Amount of delay



## Signal Timing Operations

- Arterial timing
  - No. of signals in synchronized system
  - Timing plans for special events
  - No. of timing plans
  - Side street delay
  - Cycle lengths
  - Travel time



## Systems Operations and Management

- Management philosophies and policy
- Optimization/simulation software
- Data collection
- System performance evaluation
- Public communication

## Systems Operations and Management

- Maintenance program
- Central system
- Traffic signal field equipment
- Vehicle and pedestrian detection
- Time-of-day and day-of-week flexibility



## Systems Operations and Management

- Coordination of signal timing with construction activities
- Incident management and special events
- Staff experience and capability
- Staffing level



## Impediments to Efficient Signal Timing

- Inadequate capacity
- Traffic growth
- Pavement conditions
- Unwarranted traffic signals
- Malfunctioning vehicle detection





## Impediments to Efficient Signal Timing

- Emergency vehicle preemption
- On-street parking
- Construction activities
- School zones
- Bus operations



## Potential Improvements to Signal Operation

- Collision Reporting System (CRS)
- Pre-plan for incident management and special events
- Coordination with law enforcement
- Coordinate with other agencies
  - TxDOT
  - County

## Potential Improvements to Signal Operation

- Improve street name signs at intersections
- Expansion of computerized signal system
- Continued installation of CCTVs at all major intersections



## Potential Improvements to Signal Operation

- System performance evaluation and documentation
- Public communications
- Preventive maintenance program

## Special Treatments

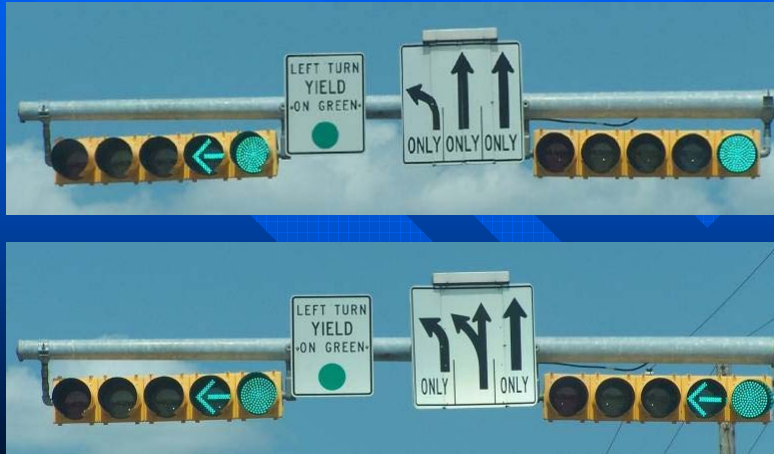
- Changeable lane assignment signs by time of day



## Special Treatments



## Special Treatments



## Special Treatments

- Changeable lane assignment signs by phase



## Special Treatments

- Prohibiting left turn by time of day



## Special Treatments

- Changing left turns from “protected only” to “protected/permitted” by time of day



## Special Treatments

- Lead/lag operation, i.e. “Arlington phasing”



## Special Treatments

- System detectors for traffic responsive mode of operation
- Double cycling
- Conditional service
- Omission of left turn phase by time of day
- Non-traditional phasing sequence



## Summary

- Improved traffic signal operation is an important strategy for addressing congestion
- Traffic signal improvements are quicker to implement than improvements through construction projects
- Periodically assess your signal operation by any method available

## Summary

- Peer group reviews
  - Offer a wealth of professional experience
  - Provide a more realistic status of your signal operation
  - Identify strengths and weaknesses
  - Assess your personnel/funding needs
  - Address public criticism



Questions?