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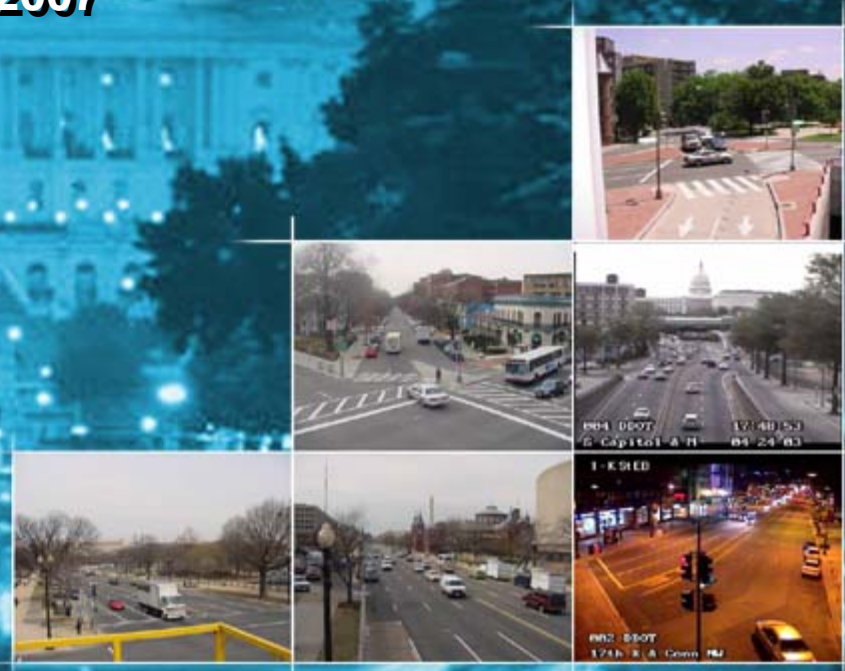
DISTRICT DEPARTMENT OF TRANSPORTATION

District of Columbia Signal System

2007 Baltimore Washington Regional
Traffic Signal Forum
March 14, 2007

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Presentation Outline

- Highlights of District's Signal System
- Major Initiatives
- Trade-Offs/Challenges





Signal System Highlights

- McCain QuicNet Traffic Signal System
 - ◆ Installed in 1999
 - ◆ Programmed for interval based control of timing
- Field Controllers
 - ◆ Type 170 Controllers
 - ◆ Additional controller upgrades needed to support transit priority and emergency preemption
- Programmatic upgrade of traffic cabinet hardware to support ITS and CCTV operations
- Twisted Pair Communications Backbone – 271 miles, 14 trunks (100 pair to 12 pair) – District owned





Signal System Highlight (contd.)

- System provides seamless control of
 - ◆ Fixed time intersections (85%)
 - ◆ Actuated intersections (15%)
 - ◆ Count stations
 - ◆ Reversible lanes
 - ◆ School Flashers (250)
 - ◆ Lane control signs
 - ◆ CCTV cameras
- Supports Two Different Actuated Control Programs (DC-215 and DC-233)





Signal System Highlight (contd.)

- 1600 signals; all but 200 have pedestrian phase
- Largest deployment of countdown pedestrian signals; funding in place for system-wide build-out
- LED conversion completed in 2005
- Robust maintenance system – high reliability
- Exceeds schedule of service requirements
- Optimized city wide signal timings





Signal System Highlight (contd.)

- Central management of local controller data
- Automatic checking of controller database
- Field controlled remote download of central database information
- Graphic displays of intersection operation
- Diagnostic display of intersection cabinet
- Powerful daily and holiday scheduler
- Flexible security configuration
- Extensive failure monitoring and notification





Major Initiatives

- Transit signal priority
 - ◆ Pilot on Georgia Avenue
 - ◆ 33 signals & 14 buses
 - ◆ Before & after analysis
 - ◆ Extended to other transit corridors
- Upgrade communication infrastructure
 - ◆ Twisted pair copper network reaching limit
 - ◆ Update communication system design
- Migrate to 2070 controllers
 - ◆ Part of programmatic controller upgrade
 - ◆ More flexibility





Major Initiatives (contd.)

- Speed activated signals
 - ◆ Pilot on Military Road
 - ◆ 2-3 other corridors based on citywide speed study
- Pedestrian signals
 - ◆ Connecticut Avenue & Morrison Street
 - ◆ Investigating “pure” pedestrian signal options
- System/Intersection Detectors
 - ◆ Developing master plan for deployment of detectors
 - ◆ Investigating suitability of adaptive type controls





Major Initiatives (contd.)

- Emergency evacuation
 - ◆ Scenario based simulation
 - ◆ 4th of July experience
 - ◆ Coordination with regional partners
- Enhance system reliability
 - ◆ Emergency back-up generators
 - ◆ Deployed 35 times in February already
- Ward-based optimization





Trade-Offs/Challenges

- Safety vs. Throughput
 - ◆ Citywide speed study indicates widespread speeding
 - ◆ Speed is a contributing factor in over 50% of the fatalities and 10% of crashes
- Vehicles vs. Pedestrians
 - ◆ Significant pedestrian vehicle conflicts
 - ◆ Increasing pedestrian fatality (as percentage of total fatalities)
- Transit vs. Vehicles
 - ◆ New metrics for measuring effectiveness
 - ◆ Person delay vs. vehicle delay
- Throughput vs. Metering
 - ◆ How do you handle downstream constraints?
- Long vs. short cycle lengths
- Protected only vs. protected/permissive phasing

