Regional Operations Forum
Safety and Operations

Accelerating solutions for highway safety, renewal, reliability, and capacity
Linking Safety and Operations

• State DOTs facing numerous challenges
• Prior to ISTEA, DOTs focused separately on
  – Construction
  – Maintenance
  – Operations
  – Safety
• Limited resources has shifted focus
  – Operating and maintaining system
Why Link Safety and Operations?

- Highway fatalities and serious injuries at unacceptable levels
- 29,757 fatalities in 2011
  - Press coverage not significant for highway fatalities
  - Boeing 747-400 carries 520 passengers
  - 2011 highway fatalities = 56 airline crashes
U.S. Fatal Crash Trends

Source: NHTSA FARS Data
VMT Trends

Vehicle Miles Traveled
1994-2011

Source: NHTSA FARS Data
Fatal Crash Rate Trends

Fatalities per 100 million Vehicle Miles Traveled

Source: NHTSA FARS Data
U.S. Injury Crash Trends

Crashes Resulting in Injury
1994-2011

Source: FARS/GES
Injury Crash Rate Trends

Crashes Resulting in Injury per 100 million Vehicle Miles Traveled

Source: FARS/GES
Traffic Congestion

• Congestion continues to plague our transportation system
  – 2.9 billion gallons of wasted fuel
    • Enough to fill 4 superdomes
  – 5.5 billion hours of wasted time
• Significantly impacts communities
  – Quality of life
  – Safety
  – Health
Types of Traffic Congestion

- Recurring congestion
  - Predictable in cause
    - Location
    - Time of day
    - Duration
  - Surge overwhelms roadway’s capacity
  - Examples
    - Lane drops, grades, narrow lanes
    - Poorly timed traffic signals
Types of Traffic Congestion

- Non-recurring congestion
  - Unpredictable in nature
    - Location
    - Time of day
    - Duration
  - Examples
    - Crashes, disabled vehicles, weather
    - Work zones and planned special events
- Dramatically reduces capacity and reliability
MAP-21 Requirements

• Creates national goals and performance management measures
  – Safety
  – Congestion reduction
  – System reliability

• Performance targets currently being developed
Safety and Throughput

• Low cost operational improvements can create significant improvements in traffic flow
  – Equate to having safer roads
• Low cost operational improvements
  – Signal phasing (permissive vs. protected)
  – Signal timings and progression
  – Appropriate clearance intervals
  – Pavement markings, signing, and delineation
  – Installation or extension of turn lane
Opportunities to Affect Safety and Operations

DETERMINING WHERE SAFETY AND OPERATIONS ARE MOST EFFECTIVE
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6/29/2013

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Real Time Data Acquisition
Real Time Data Acquisition
Real Time Data Acquisition
Real Time Data Acquisition
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Opportunities to Affect Safety and Operations

ANALYSIS TECHNIQUES
Crash Locations Through GIS
Intersection Crash Analysis
Crash Density Maps
Peak Hour Travel Time Index
Crash Density with AM Peak Travel Time Index
Project Examples
Median/Pedestrian Refuge
Road Diets
Access Management
Turn Lanes
Signal Timing and Improvements
Ramp Metering
Variable Speed Limits
Adaptive Signal Timing
Advanced Traveler Information Systems
Incident Management
End of Queue Detection Systems
Advanced Traffic Management
Group Discussion