CONGESTION
MANAGEMENT PRACTICES
in the CHICAGO
METROPOLITAN REGION
Presentation Contents

- **Congestion Causes**
  - Traffic
  - Facility Limitations
  - Incidents
  - Construction

- **Operational Solutions**
  - Signal Coordination
  - Message Boards
  - Ramp Metering
  - Accident Investigation
  - Reversible Lanes
  - Emergency Traffic Patrol
  - Lane Closure Restrictions
  - Public Notification
CONGESTION Statistics

- 240 centerline miles of freeway
- 2200 miles of arterial highways
- 2519 state traffic signals, 4373 total
- 17.4 million vehicle miles traveled on freeways daily
- >140,000 interstate “incidents” annually
- >7 million people / 6 county
- O’Hare
CONGESTION due to Traffic Demand

- ½ million trips into downtown on expressways
  - Commuters
  - regional freight
  - tourists

- Typical commute (AM) from O’Hare to Loop peaks at 45 minutes (16 miles) – 20mph
CONGESTION

**due to Facility Limitations**

- Complex road network
- Limited ability to improve facilities based on established development and ROW and CTA tracks
CONGESTION due to Incidents

- Incidents with Lane Blockage
  - One lane or more, 27%
    - Min 50% capacity impact
- Gapers block
- Potential Secondary Incidents
CONGESTION due to Construction

- Major construction
  - Bishop Ford (I94) Expressway
  - Kennedy (I90/94) Expressway
  - Eisenhower Expressway/ Congress Pkwy

- CTA Improvements
  - Blue Line (along Kennedy and Eisenhower)

- Maintenance work
  - “Stimulus”/ ARRA projects
  - Electrical Maintenance
  - Sweeping Contracts
Congestion Management Solutions

US DOT Congestion Relief Strategies

1. Improve Signal Timing
2. Incident Management
3. Work Zone Management
4. Traveler Information
Congestion Management Solutions

- Signal Coordination
- Traffic Systems Center/Com Center
- Emergency Traffic Patrol
- Accident Investigation Sites
- REVLAC
- Lane Closure Restrictions
- Public Information - GCM
Signal Coordination

- # of signals 1998 vs. 2009
- # of coordinated systems
- CLMS
- TMC/ central system model
- Capacity, techniques for maximizing – ramp meter affect
- Work Zone timings/ Optimization
Signal Coordination

1999

- 2250 signals
- 213 Closed Loop Systems
- 1417 system intersections
- 63% coordinated

2009

- 3169 signals
- 327 Closed Loop Systems
- 2338 system intersections
- 75% coordinated
Signal Coordination

Closed Loop monitoring System

- 327 master controllers w/ dial up modems
- Traffic Responsive Programming
- Semi-actuated during system op’s
- Fully actuated when free
- 24/7 Electrical Maintenance Contract
Signal Coordination

Central Systems

- Lake County Passage (TMC)
  - 103 state intersections
  - 53 Lake County intersections & others
  - 127 new IDOT signals added by end 2009
- Full time operators AM peak to PM peak
- Automated incident response plans
- CCTV, HAR, DMS
Signal Coordination

Central Systems - planning

“Schaumburg Central System”
- IDOT, CCHD, Village of Schaumburg

250 signals within 6 x 6 mile region
- (Barrington Rd – Arlington Ht’s Rd
  IL Route 19 – IL Route 62)

KDOT – ITS Strategic Plan similar to LCDOT
Traffic Systems Center

- Travel Times
- Dynamic Messages Signs (DMS)
  - Arterial DMS
- Ramp Metering
  - Operates from rush to rush (14-15 hours)
  - DMS control by Com Center after hours
Traffic Systems Center

Travel Times

- 2400 vehicle sensors create a closed system
- Detectors spaced at ½ mile intervals
- Volume and occupancy gathered at TSC
- Travel times provided to DMS, GCM, HAR, and Media
Traffic Systems Center

Dynamic Message Signs (DMS)

- 38 Interstate DMS
  - Travel Times
  - Congestion and/or Work Zone information
  - Incident information
  - Amber Alerts

- 15 Arterial DMS
  - Alternate routing options
Traffic Systems Center

Ramp Meters

- 113 Ramp Meters
- Direct control from TSC
- Operation TOD or TRP capable
- Delay reduced 33% (Caltrans/ Minn.)
Traffic Systems Center
Communications Center
Highway Advisory Radio

SPECIAL ALERT WHEN FLASHING

TRAFFIC INFO
TUNE RADIO TO
1610
Highway Advisory Radio

- Began 1979 – Edens Rehab project
  - Construction, traffic, incidents, detours, 24/7
- 11 transmitters in District One
- Routine updates every 5 min
  - Travel times gathered from TSC
- Com Center computer allows 24/7 input of incidents
Kennedy REVLAC
# Reversible Lane Schedule

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<th>Change to</th>
<th>Day of the Week</th>
<th>Will occur sometime between</th>
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<td>MONDAY THRU FRIDAY</td>
<td>11:30 AM &amp; 1:00 PM</td>
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<td>INBOUND</td>
<td>SUNDAY THRU FRIDAY</td>
<td>11:00 PM &amp; 1:00 AM</td>
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<td>SATURDAY</td>
<td>2:00 PM &amp; 3:00PM</td>
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<td>SATURDAY</td>
<td>3:00 PM &amp; 5:00 PM</td>
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<tr>
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<td>OUTBOUND</td>
<td>SUNDAY &amp; HOLIDAYS*</td>
<td>2:30 PM &amp; 4:30 PM</td>
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Emergency Traffic Patrol

Reduce impact to facilities to improve safety and capacity

- Motorist Assists
- Relocation of vehicles
- Respond to lane blockage
- Clear commercial vehicle incidents
Emergency Traffic Patrol

- Block 1 lane of 3 = 50% capacity reduction
- 2 of 3 = 80% capacity reduction
- 1 min of blockage = 4 min of congestion
- Incidents account for 25% of total delay nationally
- Chance of secondary crashes increase 2.8%/ min due to lane blockage
Emergency Traffic Patrol

1999
- 94,000 incidents
- 27% Lane blockage
- Time to Clear
  - Shoulder: 9 min
  - 1 lane: 12 min
  - 2 lane: 23 min

2009
- 140,000 incidents
- 25% Lane Blockage
- Time to Clear
  - Shoulder: 9 min
  - 1 lane: 10 min
  - 2 lane: 19 min
Emergency Traffic Patrol

- Automated Vehicle Location (AVL) System – currently enabled
- Emergency Traffic Operations System (ETOS) - testing
  - Key pad entry of critical incident data
  - Remote camera images
  - Automated incident notification to DMS
Accident Investigation Sites

2000 (10)
- 8 Kennedy Exp Way
- 1 Edens Exp Way
- 1 Dan Ryan Exp Way

2009 (31)
- 8 Kennedy Exp Way
- 1 Edens Exp Way
- 5 Dan Ryan Exp Way
- 2 Kingery Exp Way
- 4 Stevenson Exp Way
- 3 I-55
- 7 Interstate 57
- 1 Bishop Ford
Lane Closure Restrictions

- Arterial Highways
  - Permit Closures: 9AM-3PM Only
  - IDOT contracts: 9AM-3PM when practical

- Freeways
  - IDOT contracts: Based on Traffic Volumes—*usually night time for lane closures*

- Work Zone Mobility Policy Impacts
Work Zone Mobility

- Safety Engineering Policy 3-07 (23 CFR 630 Subpart J)
- Reduce crashes and fatalities in work zones
- Mitigate congestion due to work zones
- State roads identified by “significant routes”
- Delay < 5 min/mile & queue < 1.5 mile
Significant Routes
Work Zone Mobility

- Exceptions to Policy must be given for projects on significant routes not in compliance.
- <35,000 ADT approved by District Traffic Engineer.
- >35,000 ADT approved by Safety Engineering and FHWA.
- Largest D-1 impact on arterial routes.
Lane Closures – Freeways

Plan Review

- Selecting traffic control
- Selecting allowable hours (~1500 vphpl)
  - Based upon lane capacity through a work zone

Daily Closure Requests

- All shoulder, ramp, and lane closures must be submitted by Noon for review and approval
- Full Stop and Staging requires at least 72 hour notice (assuming prior plan approval)
Lane Closures – Freeways

Lane Closure Review & Approval

– Potential Conflicts
  - Must be > 3 miles if on left vs. right sides
  - Connect if within a mile on same side
  - Special Events (Sports, Concerts, Etc.)

– Proper Starting Point
  - Do not start in a curve, at a gore, across from a lane drop, etc.

– Adherence to Specs
  - Follow allowable hours
  - Maximum length
Lane Closures – Freeways

- **Lane Closure Tracking**
  - Requests entered into Database
  - Summary Report generated Daily

- **Lane Closure Distribution**
  - ETP and ComCenter, State Police
  - Traffic Systems Center
  - Traffic Control Companies
  - Media (radio, web)
Lane Closures – Freeways

Lane Closure Monitoring

– Contractors not on Report will be kicked off
– Adherence to Contract

- Deficiencies for improper setup/operations
- Failure to Open Lanes to Traffic
  - ~$1500 to $3000 per lane per 15 minutes over
  - Calculated on traffic volume affected and hourly rate of
    pay theoretically lost
  - Could be $20,000 in an hour for a 2-lane closure
Lane Closures – Freeways

- Lane Closure Monitoring (cont.)
  - Surveillance Pay Item
    - Every 4 hours or continuous
    - 3rd Party Service Patrols Outside of ETP area

- State Police
  - Hirebacks for patrols
  - Photo Enforcement
Other Restrictions

– No closures during adverse weather
– Full Stops and Stage Changes 1-5AM
Public Notification

**GCM Website (IDOT, ISTHA, Skyway)**
- Traffic Alerts (incidents, travel times, etc)
  - Onsite
  - via e-mail (ENS)
    - [www.iltrafficalert.com](http://www.iltrafficalert.com)
    - 4300 subscribers

- Travel Times – *media, HAR, DMS, etc.*
- Construction information - Daily/ Long Term
- Major Incident Information
- Historical Data
Public Notification