Connected Corridors:
Integrated Corridor Management (ICM)
Site Selection Summary

LA Metro / Caltrans Meeting
Outline

- ICM Objectives
- Potential Corridors
- I-710 Corridor Evaluation
ICM Objectives
Integrated Corridor Management

- A key ICM objective is to achieve operational improvements along transportation corridors through:
  - **Operational integration** of available transportation systems
    - Freeways
    - Arterials
    - Transit services
    - Bikeways/pathways (were relevant)
  - **Enhanced coordination** among corridor stakeholders
    - Caltrans
    - Local transportation jurisdictions
    - Transit agencies
    - California Highway Patrol / Local law enforcement / First responders
    - Information service providers
5

Corridor Selection Parameters
Key Corridor Selection Criteria

- **Traffic Detection**
  - Real-time traffic data from freeway mainline?
  - Real-time traffic data from on/off ramps?
  - Real-time traffic data from surrounding arterials?

- **Freeway control capabilities**
  - Ability to dynamically change ramp metering rate?

- **Arterial control capabilities**
  - Ability to control signal timing plan in effect or to dynamically adjust signal timing parameters?
Key Corridor Selection Criteria

- **Rerouting opportunities**
  - Ability to use CMS message to influence routing decisions?
  - Ability to use transit as an alternate transportation mode? (available carrying capacity? Parking availability?)
  - Ability to use parallel arterials as diversion routes? (available spare capacity?)

- **Collaboration opportunities**
  - Number of jurisdictions involved?
  - Potential for collaboration among corridor stakeholders?
I-710 Corridor Analysis
Corridor Geometry

Corridor boundaries proposed by LA Metro
I-710 – Congested Sections

AM Peak

PM Peak

CALIFORNIA PATH
I-710 – Speed Contours

Mar 2012

Oct 2012

50% observed

58% observed

49% observed

49% observed

Average, Weekdays Only
Major bottleneck created by truck traffic from Atlantic on-ramp on I-710 North

- Need for trucks to change 3 lanes in less than 1 mile to access I-5 North
- Ramp grade and tight curves result in low truck entry speeds

Likely difficult to change truck traffic pattern
I-710 – Accident Statistics

- Average number of accidents per day
  - All days in 2012
  - Long Beach to I-5

**I-710 N**
- 10.8 accidents/day

**I-710 S**
- 9.6 accidents/day
Time of occurrence

Predominantly during the afternoon peak hour (1 PM to 6 PM)
**I-710 – Accident Statistics**

- **Predominant locations**
  - Between SR-91 and Florence
  - Around Atlantic on-ramp
I-710 – Surrounding Congestion

Observed Speeds
Monday, February 11, 2013, 6:00 PM

Observed Speeds
Tuesday, February 12, 2013, 8:00 AM

Current Speed (mph)
Most ramps north of SR-91 metered

I-710/I-105 Interchange Metered
I-710 – Mainline Detector Health

### North

**Table 1:**

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**Legend:**
- **Good**
- **Line Down**
- **Clr Down**
- **No Data**
- **Insufficient Data**
- **Card Off**
- **High Val**
- **Intermittent**
- **Constant**
- **Feed Unstable**
I-710 – Ramp Detector Health

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<th>Lane</th>
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North

![Image of I-710 Ramp Detector Health Table]
Arterials – Signalized Intersections

788 signalized Intersection on map
275 signalized intersection in shaded area
Arterials – Traffic Signal Controllers

- **Atlantic Avenue**
  - South Gate: ASC/2 at Salt Lake, Michigan, Firestone
  - ASC/3 at Tweedy
  - ASC-8000 at Southern
  - Lynwood: LACO-4E (Pending)
  - Compton: ASC/3
  - LA County: LACO-4E

- **Long Beach Boulevard**
  - South Gate: LACO-4E at Tweedy
  - ASC/3 at Willow Place, Liberty St, Firestone
  - ASC/2 at others
  - Lynwood: LACO-4E (Pending)
  - Compton: ASC/3

- **Garfield Avenue**
  - South Gate: ASC/3 at Firestone Blvd, Firestone Place, Target Store
  - ASC/2 at others
Arterial – Congestion Assessment

Intersection Capacity Utilization (ICU) / Level of Service (LOS)
AM Peak

Results based on Synchro optimized timings based on 2008/2009 flow data
Analysis assumptions:
- 60-s cycle at ramp signals
- 100-s cycle at all other intersections

Not to scale
Intersection Capacity Utilization (ICU) / Level of Service (LOS)
Midday Peak

Results based on Synchro optimized timings based on 2008/2009 flow data
Analysis assumptions:
- 60-s cycle at ramp signals
- 100-s cycle at all other intersections

Not to scale
Traffic Detection - Arterials

- Limited traffic detection on arterials within central section of corridor
- Sensys sensors being deployed along Long Beach Blvd
Park and Ride / Information Services

Freeway
Arterial
Metro Blue Line
Metro Green Line
Light Rail Stop
Parking Facility and Number of Spaces
Parking Facility Average Occupancy
Metro Rapid Bus Line
Signal Priority Equipped
Changeable Message Signs (CMS)

Not to scale
Positive Aspects

- **Corridor of national/regional significance**
- **Traffic sensors**
  - Presence of multiple PeMS stations along freeway mainline
  - PeMS stations already installed on most on/off ramps
- **Ramp metering**
  - Ramp meters on almost all interchanges north of I-405
  - Fully metered freeway-freeway interchange (I-105), with potential of metering two additional freeway-freeway interchanges (SR-91 and I-405)
- **Arterial Traffic signal control**
  - Existing Traffic Management Centers in the cities of Southgate and Compton
  - Efforts under way to implement centralized traffic signal status monitoring within local jurisdictions (expected completion sometime in 2014)
  - Sensys traffic sensors currently being deployed along a section of Long Beach Boulevard (anticipated completion in summer 2013)
Positive Aspects

- **Transit**
  - Corridor parallel to Metro Blue Line and crossed by Metro Green Line
  - Two Metro Rapid bus lines within corridor, one going to downtown Los Angeles and the other to Pasadena
  - Transit signal priority currently active or available on some arterials within the corridor

- **Other**
  - Significant sections of the I-710 freeway have recently been rehabilitated
Negative Aspects

- **Freeway traffic sensing**
  - PeMS stations health along ramps (based on February 2012 data)

- **Freeway congestion**
  - Congestion on surrounding freeways makes it difficult to develop effective alternate routes
  - Truck traffic is currently growing faster than the general traffic and is expected to nearly triple by 2035. This creates an environment in which the ideal traffic management strategies are likely to change over time
  - Some of the bottlenecks are due to causes that may be difficult to address (for instance, congestion along I-710 North in the AM peak)
  - Portion of congestion likely attributable to the high frequency of accidents along I-710

- **Arterial traffic control**
  - Limited real-time traffic detection along arterials within the central portion of the corridor
  - Not all cities may have the ability to centrally monitor and control traffic signal operations
  - Cities to the north of the corridor may not have the necessary resources to support the deployment and operation of an ICM system
Negative Aspects

- **Rerouting opportunities**
  - Lack of available capacity at many key intersections, particularly close to the freeway, may create significant difficulty in using the arterials as detour routes.
  - High density of traffic signals along surrounding arterials (typically, 4 to 5 signals per mile) may impose long travel times and reduce their attractiveness.
  - Motorists may not be willing to travel 2 to 4 miles along congested arterials to reach a light-rail station along the Metro Blue line.
  - Political difficulty of rerouting truck traffic through residential areas.

- **Transit**
  - Limited parking availability at most light-rail stations along the corridor (particularly along the Blue Line) will limit mode transfer opportunities.

- **Jurisdictional environment**
  - Implementation of traffic management strategies on arterials surrounding the corridor will require coordination of activities among multiple local jurisdictions.
Negative Aspects

- **Uniqueness of corridor**
  
  The high volume of trucks and high number of accidents involving trucks make the I-710 an atypical corridor. As a result, an ICM deployment on I-710 may have limited replication capability elsewhere.
Remaining Questions

- **Traffic detection and control capabilities**
  - Traffic signal control and detection in City of Long Beach?
  - Ability to communicate will all controllers along an arterial?
  - Availability of real-time traffic counts (when? where?)

- **Accuracy of URS intersection capacity analysis**
  - 2008/09 data
  - Analysis based on single-day traffic flow counts
  - Changes in signal timing/controller since analysis?
  - Intersection geometrical changes since analysis?
Alternate Corridor Options
Potential Alternate Corridors

District 7

District 8

District 12

- Corridor with potential parallel arterial and alternate transit
- Corridor with potential parallel arterial