



# CALTRANS' CALIFORNIA CONNECTED CORRIDORS PROGRAM

Joan Sollenberger, Chief, Office of Strategic Development  
HQ Division of Traffic Operations

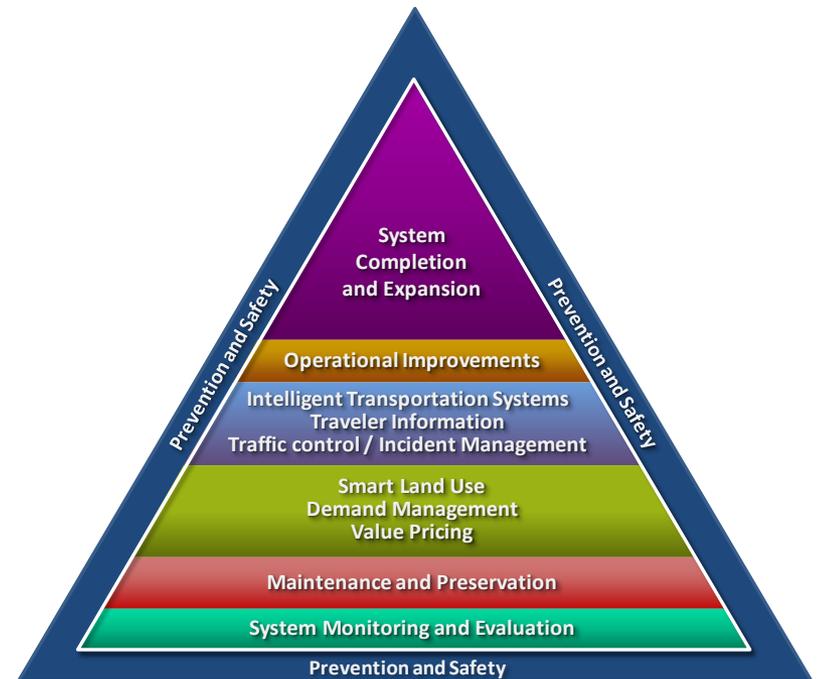
Nick Compin PhD, Chief, Advanced System Development Branch  
HQ Division of Traffic Operations

2/26/2014

# ICM California Overview

2

- **Executive Summary**
- **Integrated Corridor Management (ICM)**
- **Connected Corridors Program**
- **Connected Corridors Pilot – D7**
- **Discussion**



# Executive Summary

3

- ❑ **Federal and State programs encourage *demonstrable* transportation network *improvements* in safety, performance, reliability and environmental sustainability.**
- ❑ **Caltrans Transportation System Management (TSM) includes:**
  - ❑ ***Proactive, real time supply management***
  - ❑ ***Proactive demand management***
- ❑ **Goal: Caltrans to lead - 50 “ICM” segments in California over the next 10 years.**

# Executive Summary

4

- ***Connected Corridors Pilot*** – The first *Caltrans-lead* ICM effort.
- ***Connected Corridors Program*** – The multi organizational statewide program.
- ***Next Step: Connected Corridors*** – Positions Caltrans for autonomous/connected vehicles, social network coordination, and more.

# ICM – Integrated Corridor Management

5

- **Existing ICM Components/Efforts - existing management systems already support the ICM concept, particularly ITS applications**
- **Keys to ICM - integrating existing ITS elements & systems and management efforts**

# California's Progress Towards ICM ...

6

- 2004 Transportation Management System (TMS) Master Plan
- \$20B Proposition 1B transportation bond of 2006
  - \$4.5B for Corridor Mobility Improvement (CMIA)
  - Corridor System Management Plans (CSMPs) required on all CMIA corridors
    - CSMPs developed for over 50 freeway corridors
    - 31 using microscopic traffic simulation to assess impacts of improvements
    - Simulations and scientific assessments point to ITS elements as being among most cost effective investments
- Recent Initiatives
  - California Transportation Investment Priorities (CTIP)
  - Caltrans Strategic Plan Update
  - Demand for science/performance based reasoning for project selection
  - Requirement to consider technology as a cost effective investment strategy

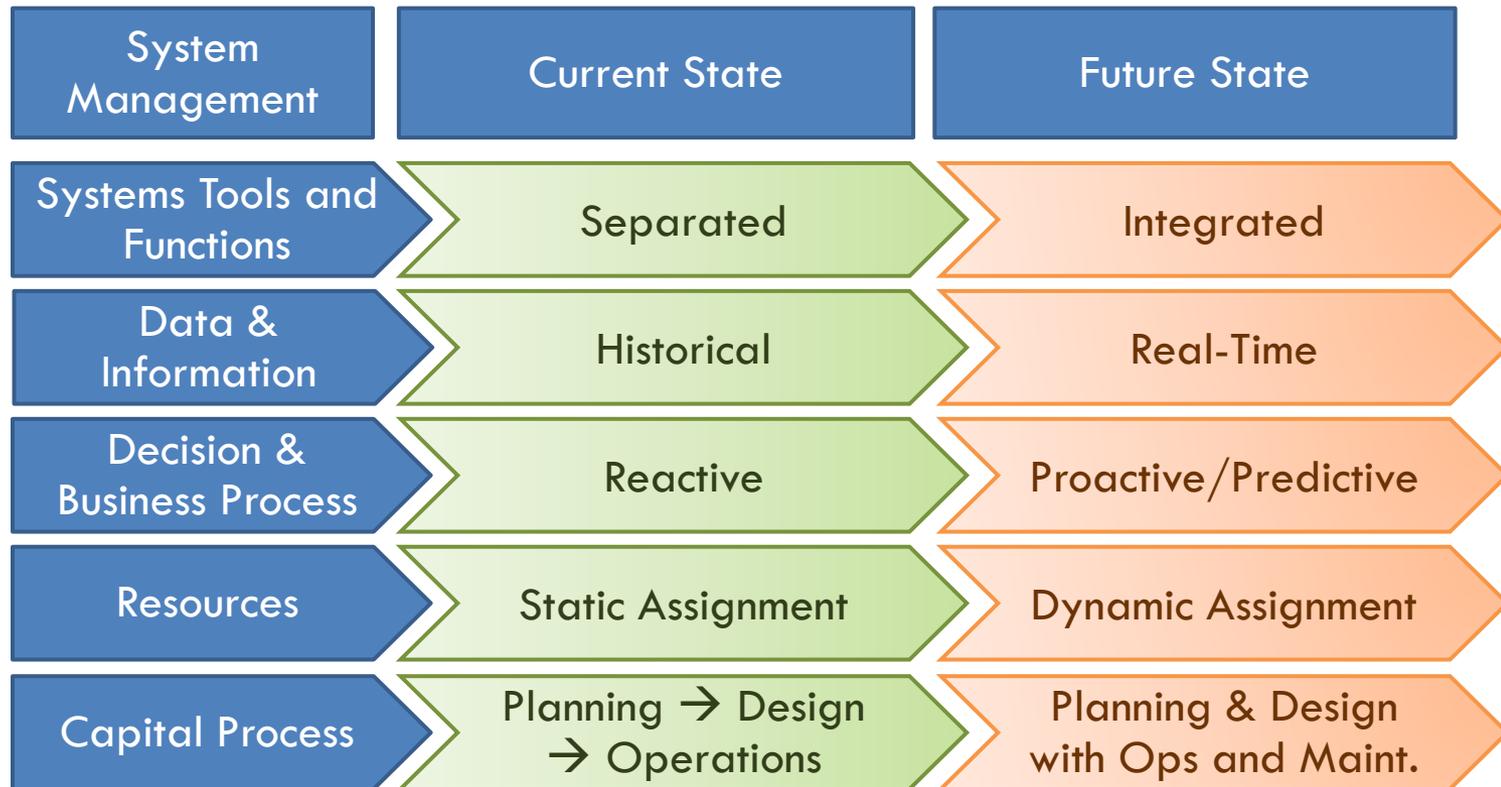
# Caltrans System Management Goals

7

1. Create a system management culture
2. Performance-based framework for all Transportation System Management (TSM) work activities and funding prioritization
3. Establish a well-maintained and high-performing Transportation Management System (TMS) infrastructure that supports real-time traffic management
4. Cooperatively develop and implement real-time (active) traffic management to optimize flow, safety and aid regions and the State to meet greenhouse gas reduction (GHG) targets from transportation
5. Renew consensus on and adhere to critical statewide standards

# System Management Vision

8



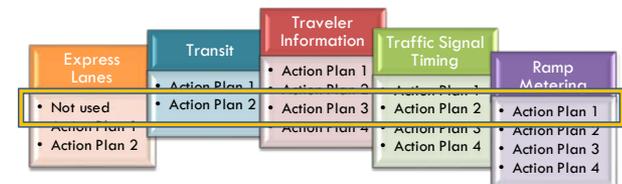
# ICM Projects – World Wide

Corridor	Corridor Type	Lead Agencies	Activities
I-15 San Diego	Suburban	SANDAG	<ul style="list-style-type: none"> <li>• ConOps and System Requirements developed in 2008</li> <li>• Simulation evaluation in 2009-2010</li> <li>• System launched in spring 2013</li> <li>• Currently in evaluation phase</li> </ul>
US-75 Dallas	Suburban/urban	DART	<ul style="list-style-type: none"> <li>• ConOps and System Requirements developed in 2008</li> <li>• Simulation evaluation in 2009-2010</li> <li>• System launched in spring 2013</li> <li>• Currently in evaluation phase</li> </ul>
I-80 Bay Area	Suburban/urban	MTC / Caltrans	<ul style="list-style-type: none"> <li>• ConOps developed in 2010</li> <li>• Project groundbreaking in October 2012</li> <li>• Project expected to be completed summer 2015</li> </ul>
I-95 / I-395 Virginia	Rural, Suburban & Urban	Virginia DOT	<ul style="list-style-type: none"> <li>• ConOps development initiated in 2012</li> <li>• Currently developing deployment plan &amp; partnerships</li> </ul>
M1 Freeway, Melbourne (Australia)	Suburban/urban	VicRoads	<ul style="list-style-type: none"> <li>• Deployment of traffic management and traveler information systems along the freeway and freeway ramps</li> </ul>
M42 Freeway, Birmingham (UK)	Suburban	UK Hwy. Agency	<ul style="list-style-type: none"> <li>• Deployment of traffic management and traveler information systems along the freeway and freeway ramps</li> </ul>

# ICM Tools - Examples

10

- ❑ Enhanced traffic monitoring systems
- ❑ Enhanced communication
- ❑ Freeway operations
- ❑ Arterial operations
- ❑ Enhanced traveler information
- ❑ Decision support system



# California Connected Corridors Pilot

11

- ❑ Enable coordination of existing transportation infrastructure and vehicles
- ❑ Deliver improved corridor performance (safety, mobility, reliability)
- ❑ Improve accountability
- ❑ Evolve Caltrans to real-time operations and management
- ❑ Enhance regional , local and private sector partnerships



# Integration

12

## Institutional Integration

Coordination to collaboration between various agencies and jurisdictions that transcends institutional boundaries.

## Operational Integration

Multi-agency and cross-network operational strategies to manage the total capacity and demand of the corridor.

## Technical Integration

Sharing and distribution of information, and system operations and control functions to support the immediate analysis and response.

# State, Regional and Local Partnerships

13

## □ **Connected Corridors Pilot – Overview**

- Caltrans/PATH/Regional collaborative effort to select the most suitable corridor
  - Corridor's Infrastructure readiness
  - Least impacted by planned construction
  - Cities' relative infrastructure/ technological advancement
  - Significant Congestion
  - Number of Incidents and Events
  - Parallel arterials
  - Top Priority Corridors for Investment – I-110 and I-210 in Los Angeles and the SR-57/SR-91 / I-5 triangle in Orange County

# Jurisdictional Environment

## Segment 1

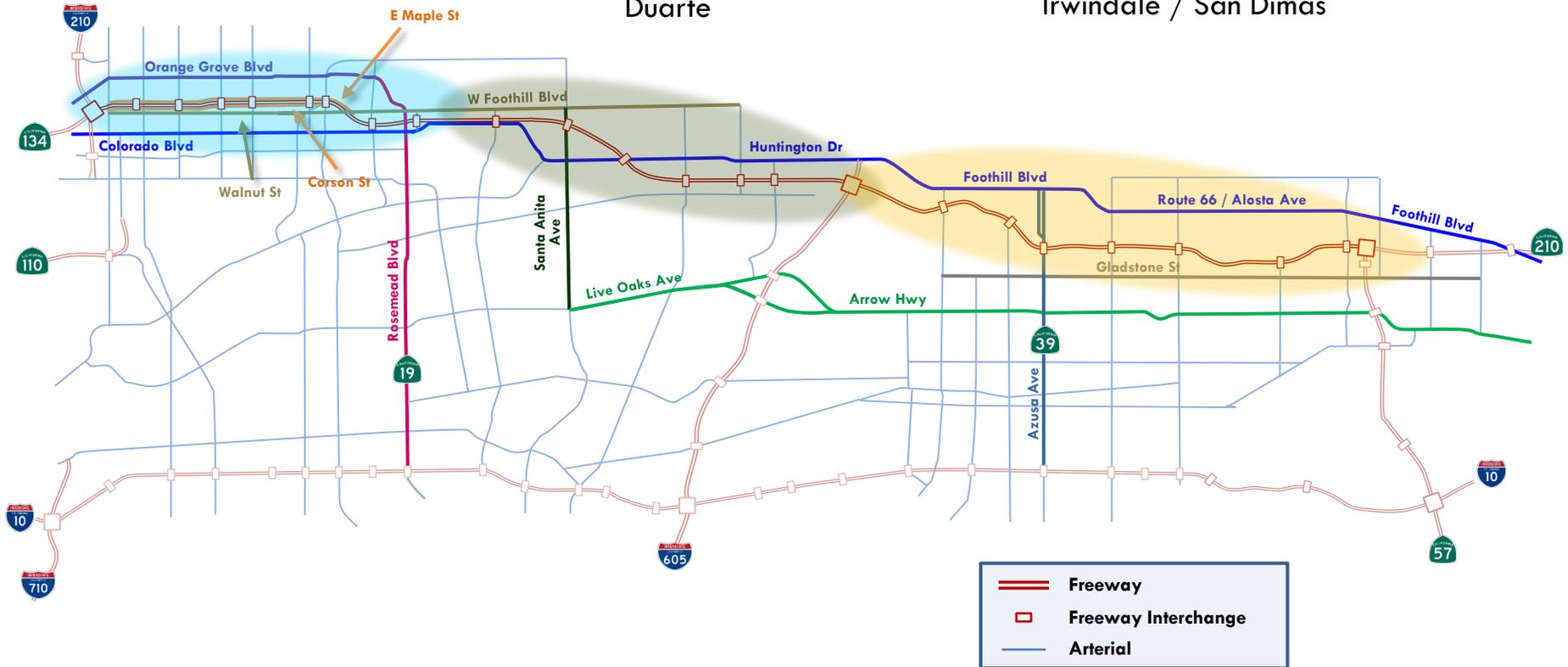
Pasadena

## Segment 2

Arcadia / Monrovia  
Duarte

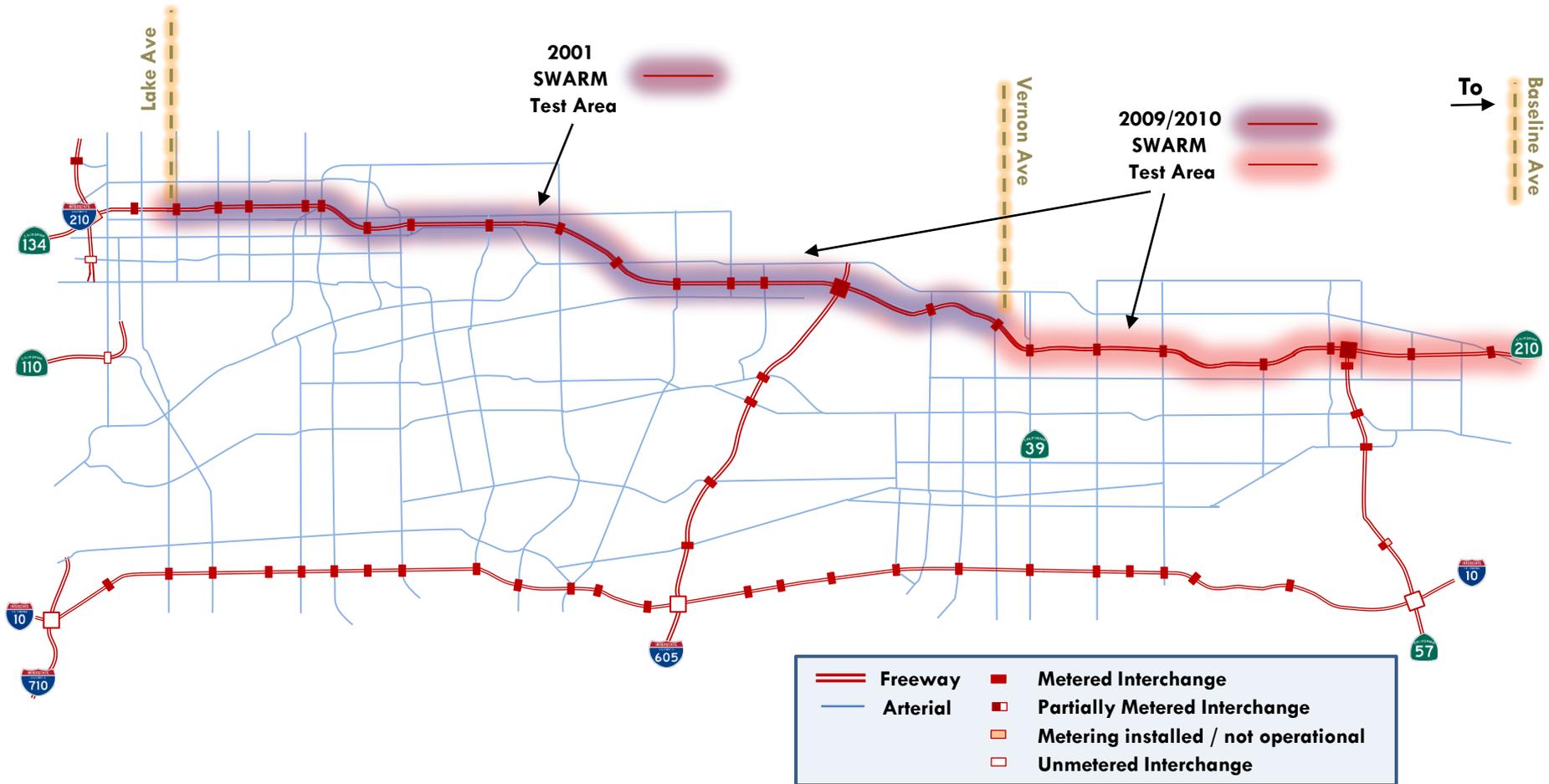
## Segment 3

Azusa / Glendora / Citrus  
Irwindale / San Dimas



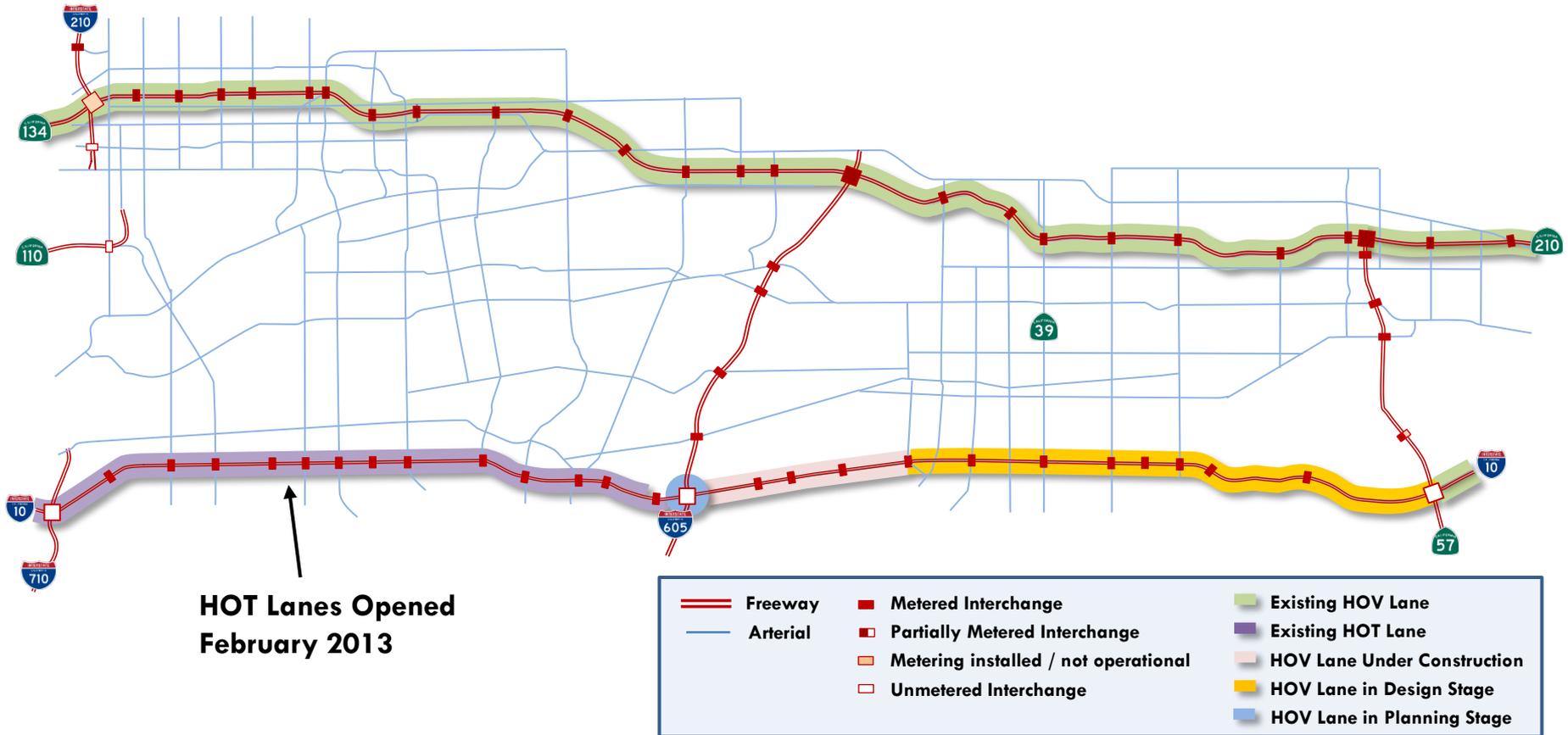
# Freeway Control – Ramp Metering

15



# Freeway Control – HOV/HOT Lanes

16



# Arterial Control – Signal Density

## Segment 1

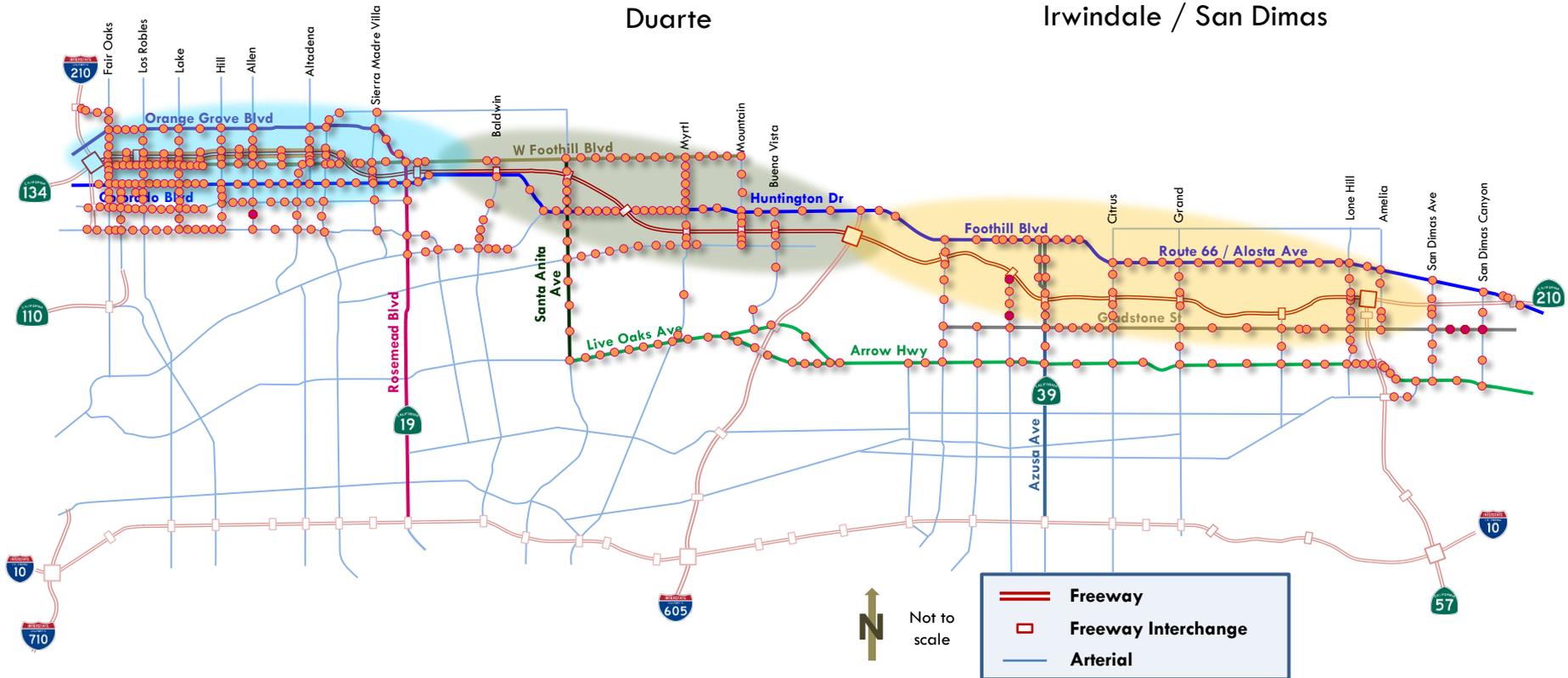
Pasadena

## Segment 2

Arcadia / Monrovia  
Duarte

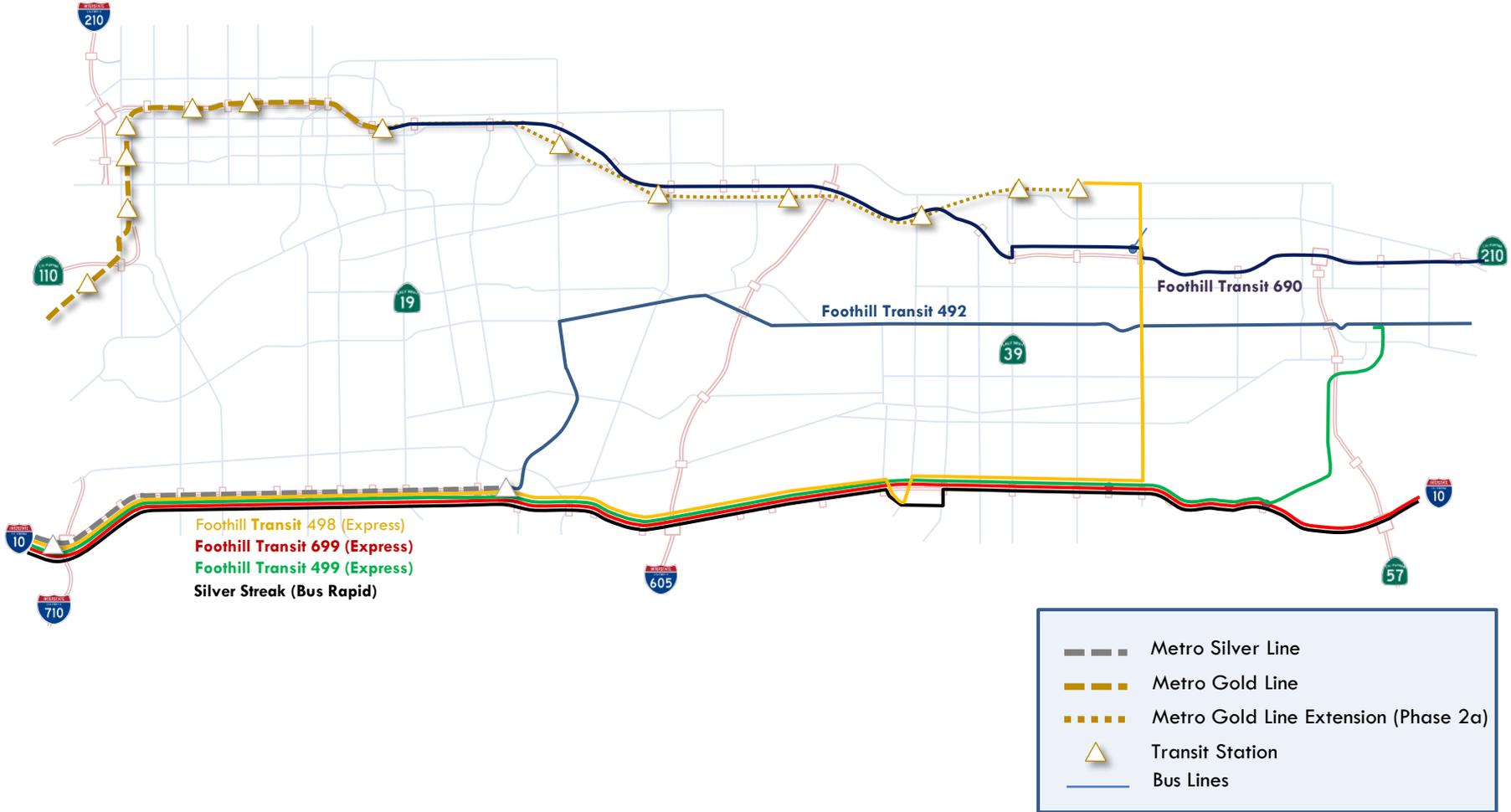
## Segment 3

Azusa / Glendora / Citrus  
Irwindale / San Dimas

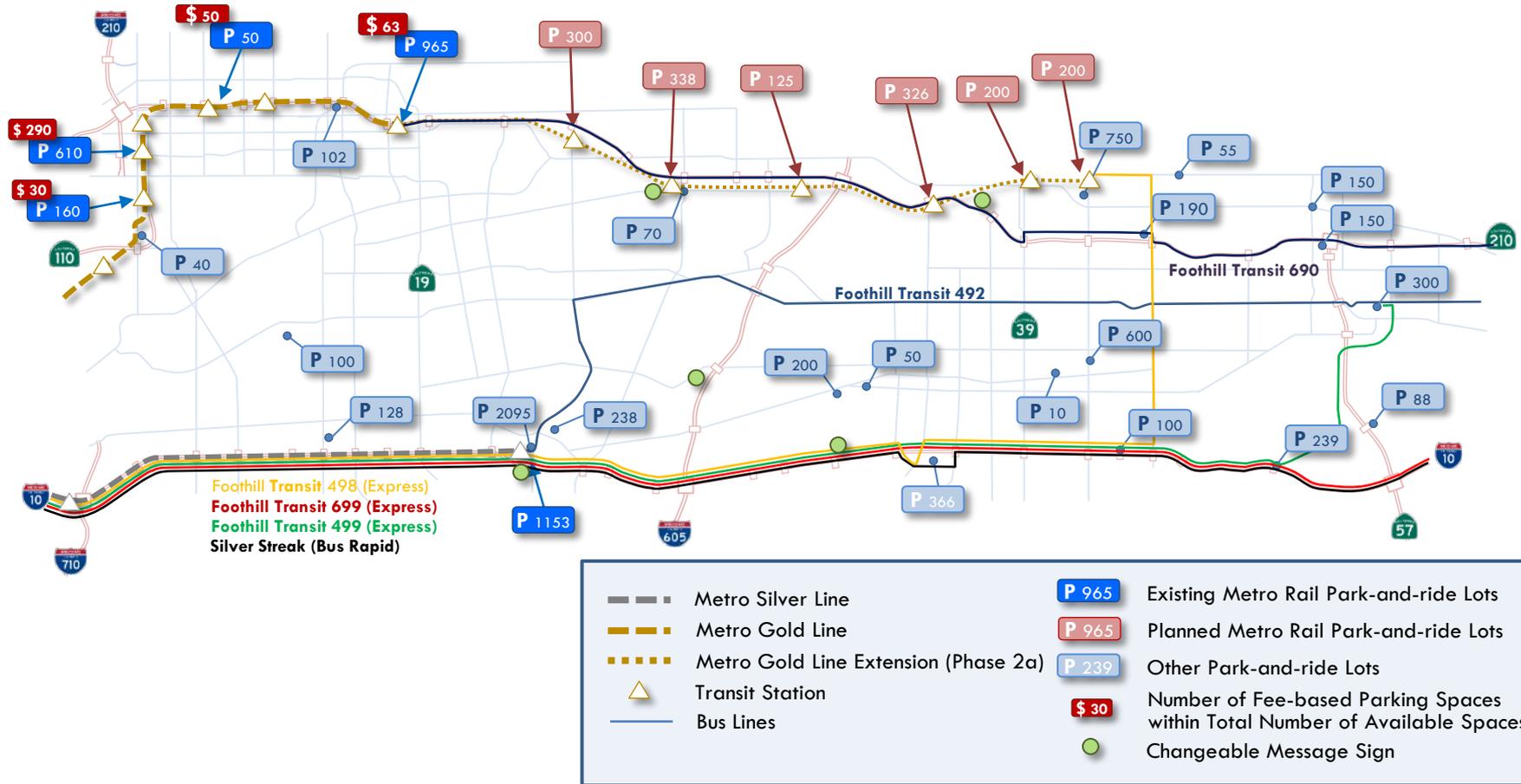


# Transit Services – Light Rail & Bus Lines

18



# Park & Ride/Changeable Message Signs



# Congestion Analysis

20

- Annual Vehicle Hours of Delay
- Freeway Travel Times
- Observed Speeds
- Peaking – AM and PM Peak Periods
- Intersection V/C Ratios
  
- Truck Volumes – on the mainline and at fwy to fwy Interchanges
- Location of Warehouses and Distribution Centers

# Incidents

21

- Incidents
  - Location
  - Frequencies
  - Rates
  - Time of Day, Day of Week, Month of Year
  - Duration

# ITS Element Health

22

- Signals
- Cameras
- Changeable Message Signs (CMS)
- Highway Advisory Radio (HAR)
- Detectors
  - On-Ramp
  - Off-Ramp
  - Mainline

# Important Notes



23



Pilot Site selection not official, but we are working on it.



No official announcement yet



However, current partners believe there is a good chance of cities and county participation, assuming a balanced, corridor-wide approach is taken

# Moving Forward

24

## ❑ **Look Ahead Tasks**

- ❑ Partnership being reinforced; CT/PATH/Regional/Local/Modal
- ❑ Continue Corridor's Needs Assessment (freeway, arterials, transit, rail, other modes)
- ❑ Begin the System Engineering Process in Collaboration with our Partners

## ❑ **Other Initiatives Consistent with the Paradigm Shift**

- ❑ Operations re-org to Support Corridor Management
- ❑ D7 Organizing for Corridor Management Pilot
- ❑ D-7 Dynamic Corridor Congestion Management (DCCM) Project
- ❑ DP-08-R1
- ❑ DD-70-R1

# What Makes Connected Corridors Different?

25

**Caltrans Leadership (DOT)**

**New Organizational Paradigm**

**Statewide Program**

**Building Upon Recent Successes in ICM**

**New Technologies**

- ❑ New Data
- ❑ New Models

# Summary

26

- **Initial efforts going well**
- **Caltrans assuming responsibility for corridor wide transportation management**
- **Integration with Federal and State efforts proceeding**
- **Caltrans capable of world leadership in active traffic management**
- **However, still early on in our efforts**

# Planning for Operations

27

Operations  
Concept

State Highway  
System  
Concept of  
Operations

1. System Management
2. Arterial Management
3. Incident Management
4. Traveler Information
5. Operational Improvements/strategies
6. Alternative Modes

ITS/Operational Improvement Plan/ Ramp Metering Development Plan, etc.

Operations  
Planning  
Process

TCRs & CSMPs

District System Management Plan

SHOPP programming, Regional Transportation Plan, & other local agency plans

PIDs, Programming, Project Development & Construction, Performance Measurement

# Planning for Operations

28

**Transportation  
Corridor Report  
(TCR) Guidelines**

Operations Concept or Concept of  
Operations (ConOps)

**District System  
Management  
Plan (DSMP)  
Guidelines**

System management needs Identified

**Capability  
Maturity Model  
(CMM)**

Self-Assessment tool used to determine  
ability to manage transportation networks.

Thank you....

29

Questions?

Thoughts?