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I-710 Corridor Project EIR/EIS

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# I-710 EIR/EIS Traffic Forecasting Methodology Overview

Corridor Advisory Committee  
November 19, 2009



# Traffic Modeling Overview

- Overview of Traffic Modeling Methodology
- Key Input Assumptions
- Approach to Traffic Operations Analysis

# Purpose of Forecasts

- Traffic operations analysis to evaluate geometric design of the alternatives
- Environmental impact analyses of the alternatives
  - Air quality
  - Noise
  - Traffic and circulation benefits and impacts
  - Energy



# Collected Traffic Count Data

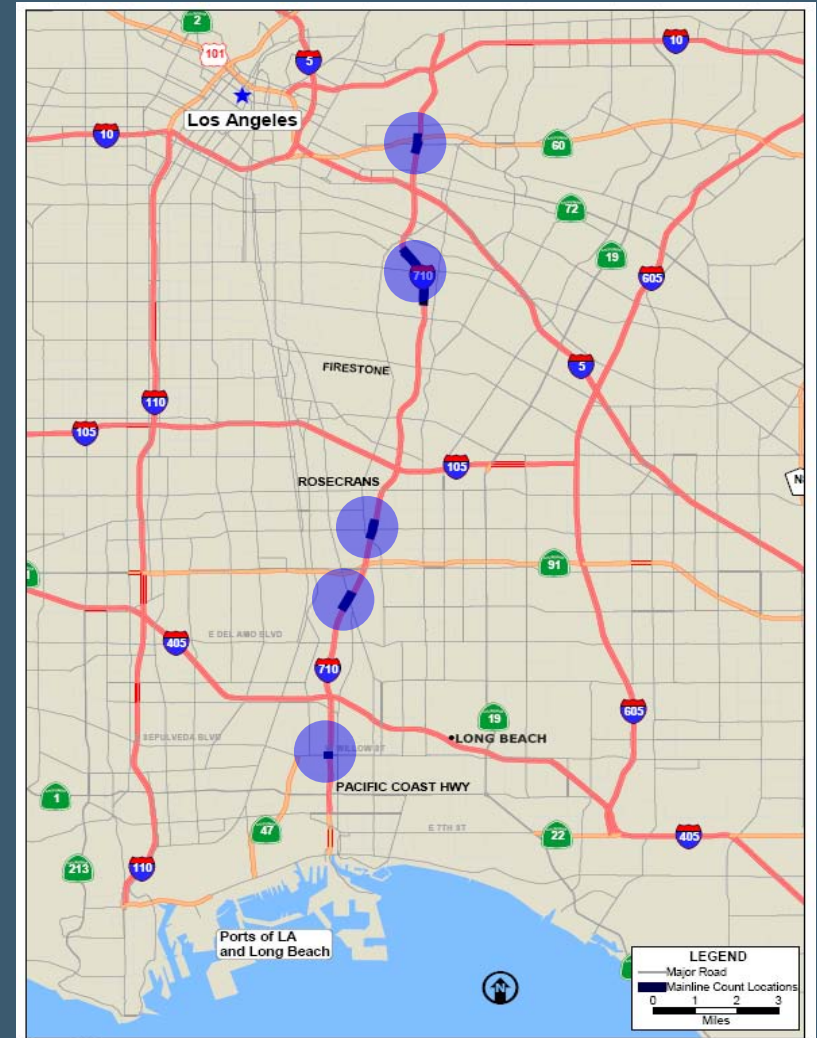
Observed Traffic Data is important to both Model Validation and Estimates of Current Year Traffic Conditions:

- I-710 Mainline Counts
  - New classification counts taken for study
  - Caltrans hourly total vehicle counts
- I-710 Ramp Counts
- Screenline Arterial Counts
- Intersection Counts (over 150 Intersections)



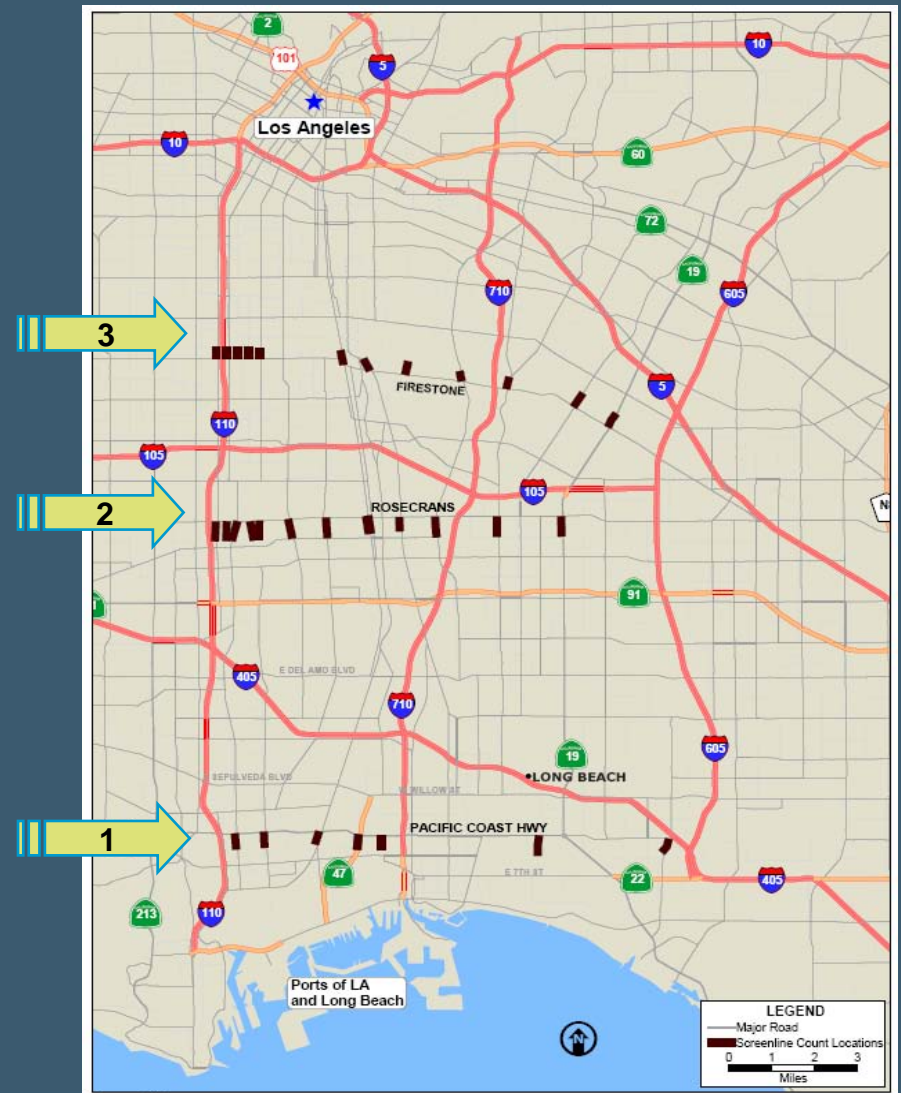
# I-710 Mainline Count Data

- 5 locations on I-710
  - By direction
- 15-min counts
  - 12 hours (7 AM to 7 PM)
- 5 classes
  - Cars, pickups, buses
  - 2-Axle trucks
  - 3-Axle trucks
  - 4-Axle trucks
  - 5+Axle trucks



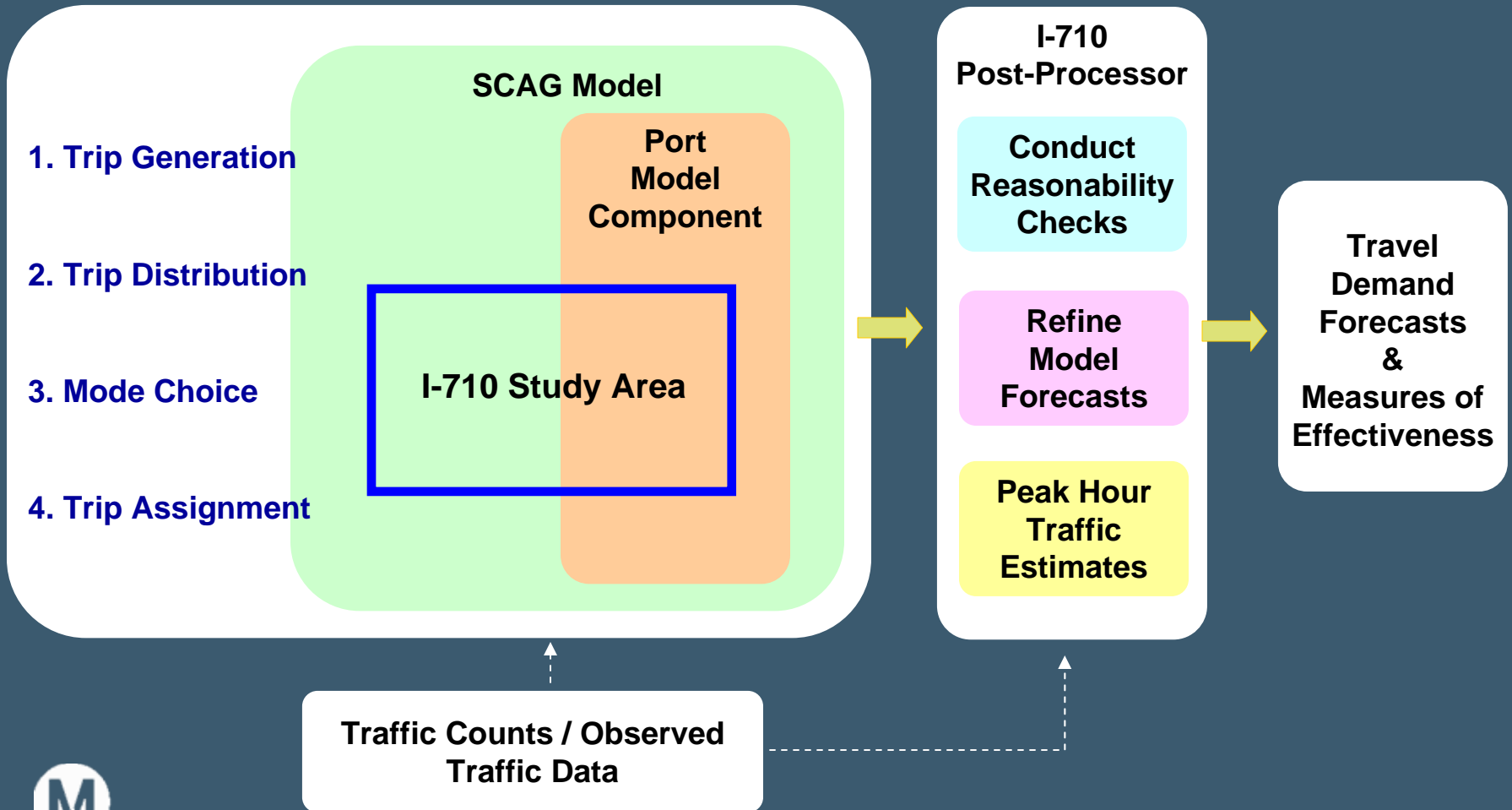
# I-710 Arterial Screenline Count Data

- 3 screenlines
- 15-min counts over 24 hours
- No vehicle classifications
- Excludes freeways



# I-710 Traffic Forecasts: Process

## I-710 Corridor Project Model Framework





# Traffic Forecasting Inputs and Assumptions

# Key Input – Socio-Economic Factors

## Population and Employment

Socio-Economic Inputs		Year 2008	Year 2035	Numeric Change	Percent Change
Population	Region-Wide	18,905,000	24,050,000	5,145,000	27%
	I-710 Study Area	1,487,000	1,653,000	166,000	11%
Employment	Region-Wide	8,115,000	10,284,000	2,169,000	27%
	I-710 Study Area	594,000	637,000	43,000	7%

# Key Assumptions – Port Activity

- Cargo Growth and Railroad Mode Share
  - 43 Million Annual Twenty-Foot Equivalent Units (TEUs)
  - 40% Direct Intermodal Rail
  - 26% On-Dock Rail
  - No Near Dock Intermodal Yard Expansion (ICTF and SCIG)

# Description of Alternatives are Additional Inputs to the Travel Demand Forecast Model

# 2035 No Build (Alternative 1)

- Consists of Planned and Committed Projects and Programs, such as:
  - Clean Trucks Program
  - Expanded Night Gate Operations at Ports
  - I-710 Pavement Rehabilitation Project
  - Added Lanes to I-5 between Orange County Line and I-605
  - Traffic Signal Coordination on Key Arterials in the I-710 Corridor Study Area

*Source: Southern California Association of Governments Regional Transportation Plan*

# Build Alternatives

- Alternative 5A: I-710 Widening and Modernization
  - 10 lanes
  - Redesign of Interchanges
- Alternatives 6A / 6B: I-710 Widening Plus Freight Corridor
  - Alternative 5A Improvements *Plus* a Freight Corridor from Ocean Blvd. to Washington Blvd.
  - Alt. 6A: Trucks on Freight Corridor
  - Alt. 6B: Zero Emissions Vehicles on Freight Corridor



# Alternatives 5A, 6A, 6B Also Include

- TSM / TDM / Transit / ITS Elements Accounted for in the Modeling Effort:
  - Study area peak period auto trips reduced 2.8% (due to Transit Improvements)
  - I-710 mainline capacity increased by 6% (due to Intelligent Transportation Systems Elements)
  - Capacity increased by 6% for 4+ lane arterials in the study area (Intelligent Transportation Systems)
  - Capacity increased another 17% for five parallel arterials in the study area (Peak Period Parking Restrictions: Arterial Congestion Relief)

# Alts 6A & 6B – Freight Corridor Diagram

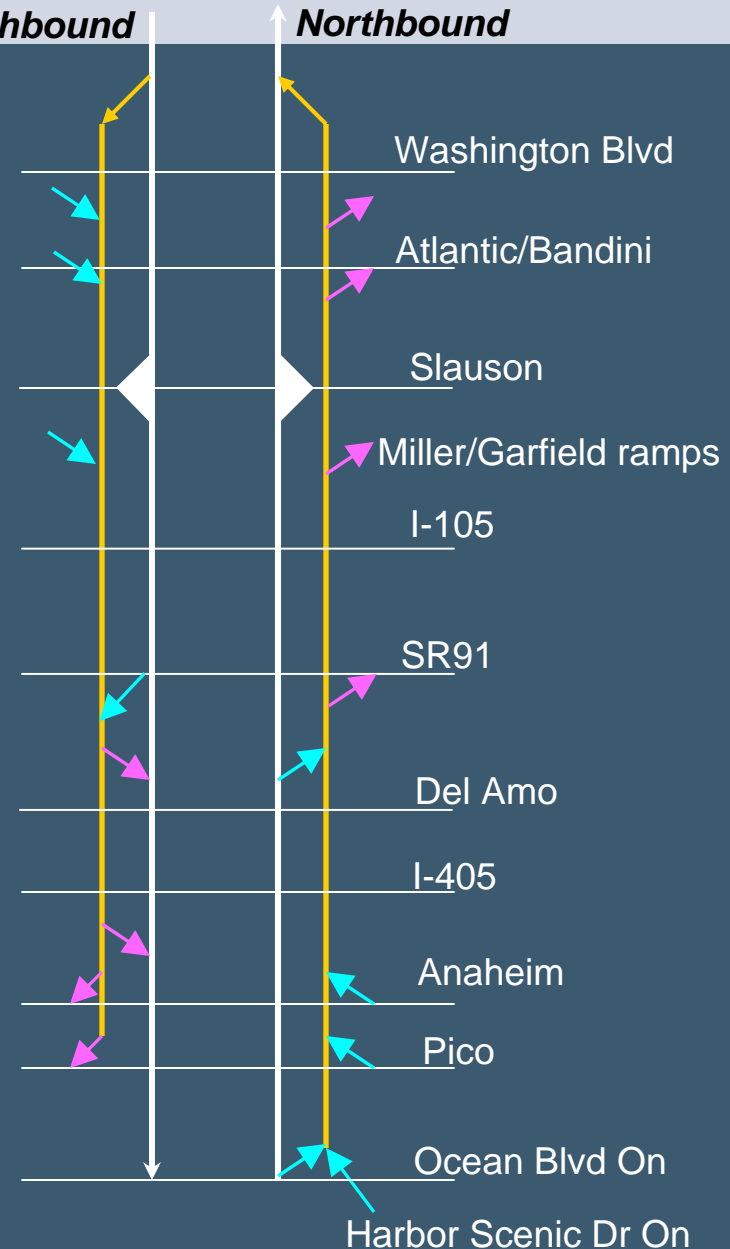
10 General Purpose Lanes  
 4 Freight Corridor Lanes  
 Freight Corridor Access Points

## Legend

-  On ramps (to Freight Corridor)
-  Off ramps (from Freight Corridor)
-  Truck Only Lanes
-  General Purpose Lanes
-  New Interchange

Southbound

Northbound



Map Not To Scale



# Travel Demand Forecasts Provide the Inputs to the Traffic Operations Analysis

# Approach: Traffic Operations Analysis

## Approach to Traffic Operations and Arterial Analysis

# Operations Analysis

- Critical to traffic operations is the performance of intersections in the study area:
  - Intersections at I-710 freeway ramps
  - Intersections throughout the I-710 Study Area where major arterials cross
- Analyzing 158 intersections

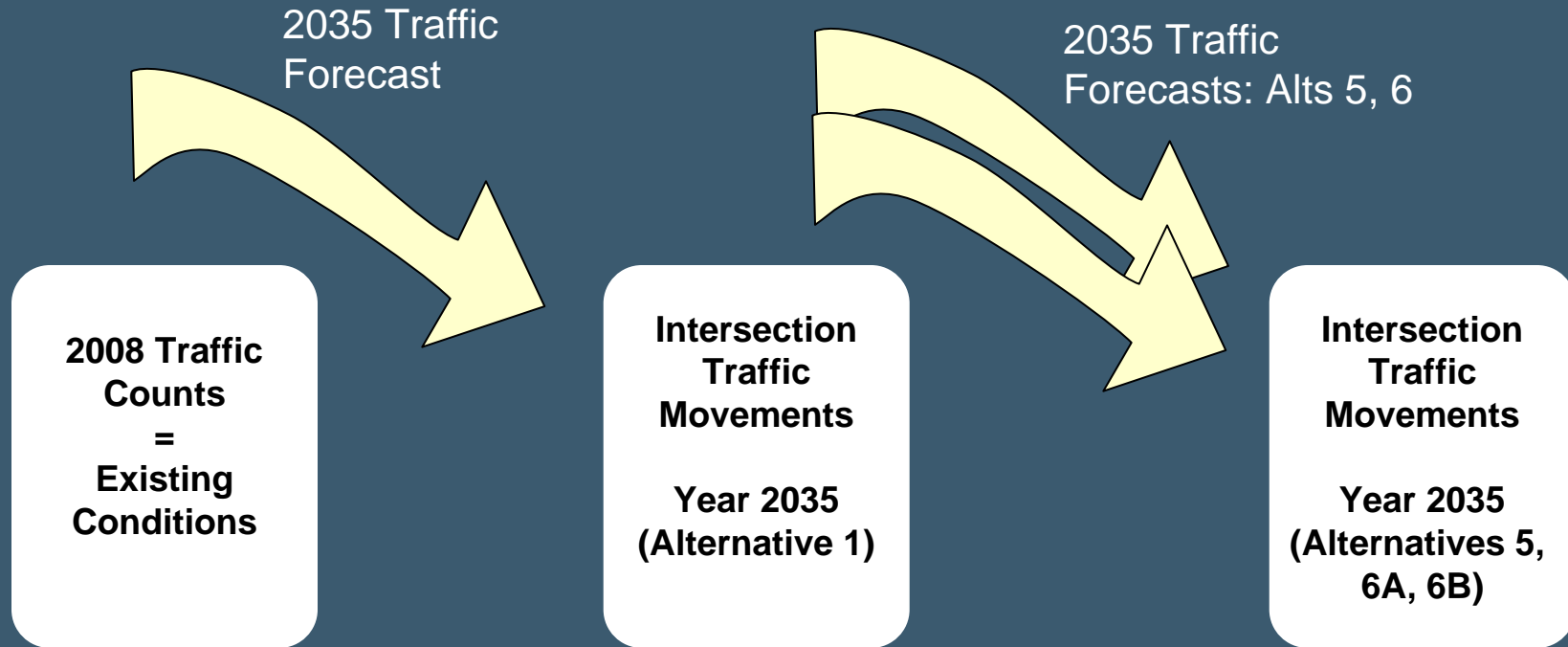
# Purpose of Traffic Operations Analysis

Several objectives:

- Inform project design (i.e., I-710 ramps and local interchanges)
- Identify arterial congestion relief projects that should be included due to future year (2035 Alternative 1) traffic.
- Identify deficient intersections due to PROJECT traffic impacts (Alternatives 5A, 6A, 6B).



# Methodology – Key Steps



**158 INTERSECTIONS UNDER STUDY**

# Intersection Analysis

AM, PM, and Midday  
Peak Hour Traffic  
Flow Estimates

## Analytic Framework

1. SYNCHRO MODELS
2. Impact Analysis using Highway Capacity Manual Operations Analysis
3. Identify Deficient Intersections for each Traffic Scenario
4. Field Review of Deficient Intersections
5. Identify Mitigation

Alternative 1  
Alternative 5A  
Alternatives 6A / 6B

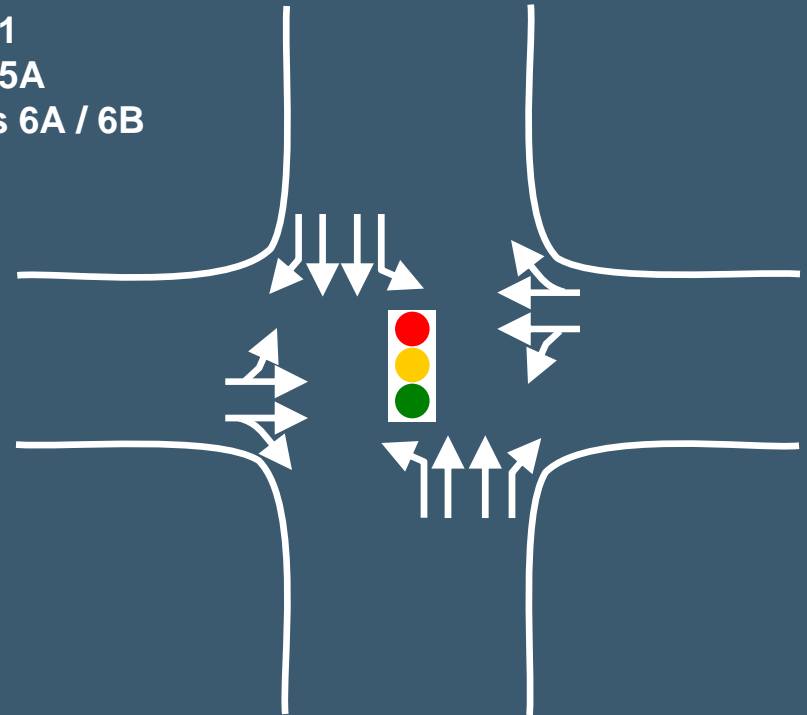


Diagram of a  
Typical Intersection

# Identifying Deficient Intersections

- Intersections that drop into level of service (LOS) E or F
- Intersections already deficient that experience a marked and measureable increase in delay as a result of the Build Alternative.
- Candidate Mitigation Measures:
  - Adjust / improve traffic signal phasing
  - Signal coordination, apply advanced technologies and access management
  - Increase (lengthen) turning lane storage
  - Intersection modification: (i.e., add turning lanes)