Connected Corridors
Face-to-Face Meeting

Tuesday, October 16th , 2018
1:30 – 3:30 pm
Pasadena

Agenda

- **1:30-1:50 - Summary of program - Joe**

- **1:50-2:00 – MOU – Mort**

- **2:00-2:10 – Parsons update on Call projects**

- **2:10-2:30 – Before and After Study - Tom**

- **2:30-3:25 – Parsons presentation of I-NET**

- **3:25-3:30 – Closing**
  - Next Meeting at Duarte – November 27th
  - (County, Arcadia, Caltrans, Pasadena, Monrovia, Duarte)

Systems Engineering Next Steps

- Design Documents — Details of interfaces and implementations
- Hardware/Software — Building the system
- Integration — Subsystems will come on line this year
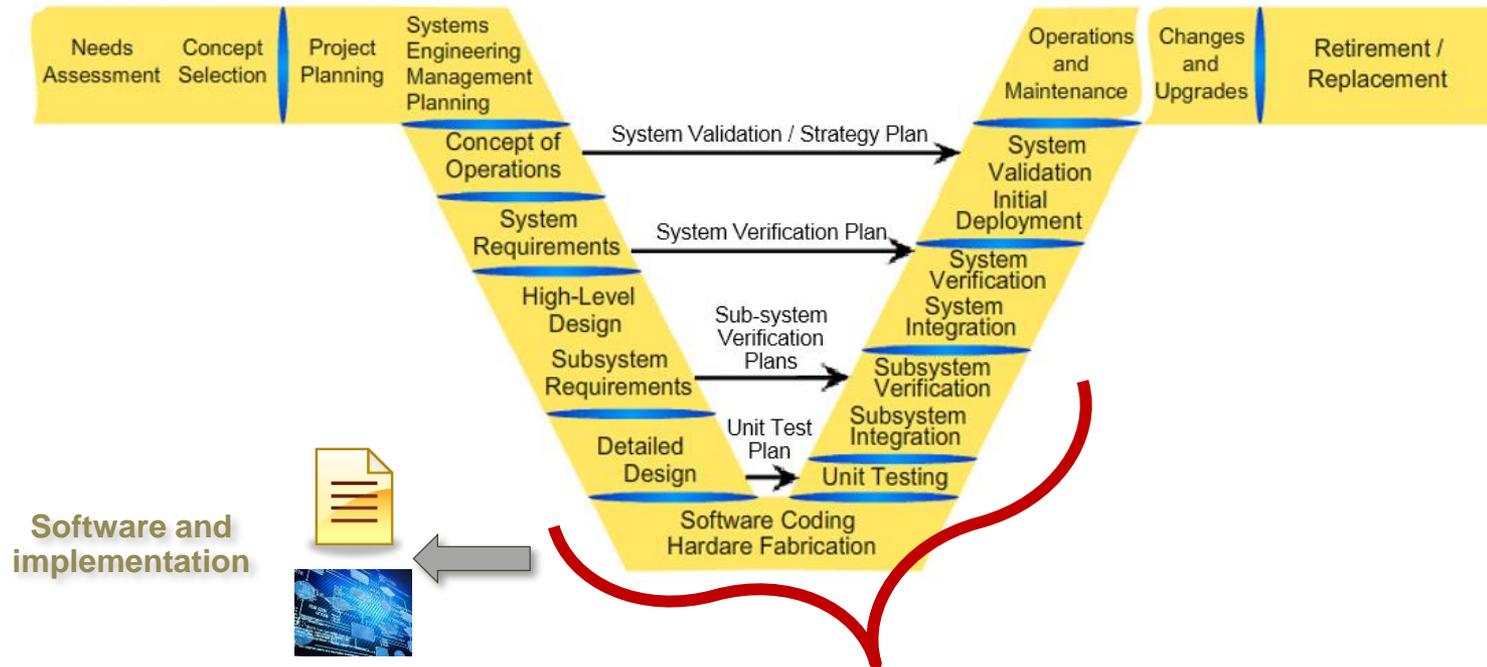
Updated Schedule

Launch July 8, 2019

Production

Start 10/1/13

2014		2015		2016		2017		2018		2019		2020		2021	
1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half

1. Project Management
10/1/13 - 6/30/20

2. Outreach & Communications
10/1/13 - 6/30/21

3. Concept Exploration / User Needs

4. Corridor Preparation
12/2/13 - 6/30/19

5a. AMS - Phase 1
1/6/14 - 5/29/15

5b. AMS - Phase 2
6/1/15 - 6/30/19

5c. AMS - Phase 3
7/1/18 - 6/30/21

6a. SEMP
1/1/15 - 6/30/15

6b. SEMP Updates
7/2/15 - 6/30/16

7. ConOps
9/12/14 - 5/20/15

8a. System Requirements
4/23/15 - 7/29/16

8b. Validation & Verification Plans
8/1/16 - 12/31/18

9. Organizational Design
9/1/15 - 12/30/16

13a. Institutional Design
1/2/17- 6/30/19

13b. Institutional Operations
7/1/19- 6/30/21

10. Technical Design
7/1/16 – 9/30/18

11. Component Development
8/15/16 - 3/31/19

11. Component Dev – Phase II
8/01/19 - 6/30/20

12. System Integration
6/1/18 – 6/31/19

14. System Deployment
1/1/19 – 6/30/19

17. System Operations and Maintenance
7/8/19 – 6/30/21

15. Training
4/1/19 - 6/30/21

16. Validation and Acceptance
5/1/18 – 12/31/20

18a. Pre Evaluation
1/1/19 - 12/31/19

18b. Post-Deployment Evaluation
1/1/20 - 6/30/21

19. Migration to Production
4/1/20 - 6/30/21

19. Lessons
1/1/21–6/30/21

20. Caltrans Operation

5 Summary

Signal Flush Plan Summary

- **All 670 Recommended Signal Flush Plans Designed, in QA and starting stakeholder review**

- **All major 34 EB routes coded**

- **All major 37 WB routes coded**

Response Plan QA and Test

- **Signal Plan QA Process**
  - Simulation of plans in Aimsun – Roughly a quarter of the way through
- **Signal Plan Review & Approval**
  - Generation of materials to communicate proposed signal flush plans to stakeholders
- **Formats for providing signal timing plan changes mostly worked out**
  - Ongoing work with Pasadena, some discussions with Caltrans
- **System Integration**
  - Exporting signal timing plans, ramp meter plans grouped for use on routes from Aimsun

Response Plan Generation (Planning Mode)

□ **Creation of Response Plan generation input spreadsheets that contain our production proposed traffic solutions for incidents**

□ **Modification of the desktop app to more closely align with ATMS incident data specification (in progress)**

□ **Will begin working with David Lau on exact CMS messages**

Communication – Kali to Comment

☐ **Pasadena VPN connection will be in place by the end of October**

☐ **LA County connection will be in place beginning of November**

☐ **RIITS and PATH working together on strategies:**

- ❑ DNS – Domain Name Servers

- ❑ Hostnames

- ❑ SSL certificates

Workflow Discussion – Meeting on Oct 24th

- 9:00 - 10:30 - Workflow

- 10:30 - 11:30 – ATMS discussion

- 11:30 - 12:00 - Brian's Design Document Schedule

- 12:00-1:00 - Working lunch provided by PATH

- 12:15-1:00 - IGC discussion

- 1:00-2:00 - Rules Engine

- 2:00-3:00 - Modeling of Response Plans

C2C Interface Implementations - Status
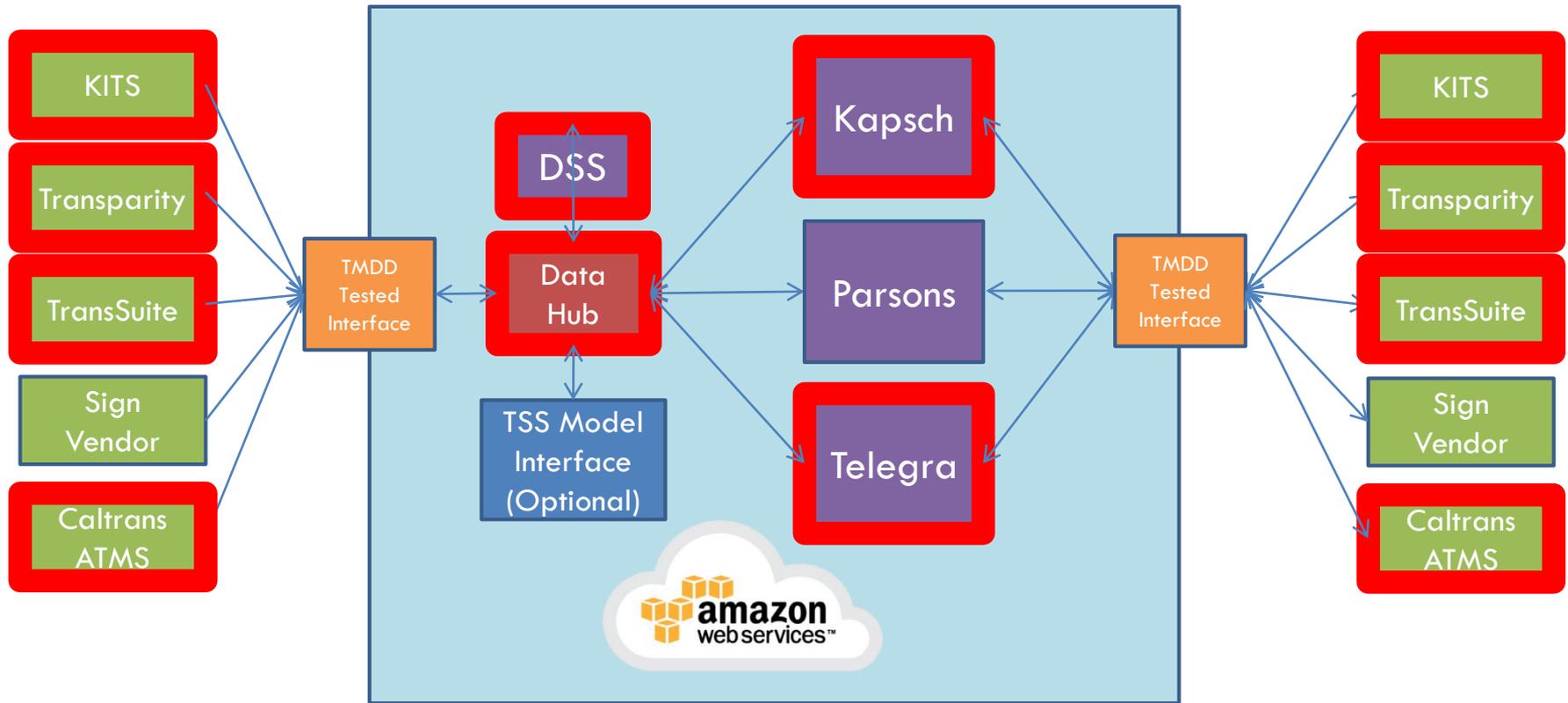
COTS (Purple Box) - ICMS

- **Kapsch**
  - Development is underway
  - Will begin to move their system into the cloud
  - Will likely present at November face to face
- **Telegra**
  - Getting ready to test ATMS interface
- **Parsons**
  - Will begin working with us in June

TMDD Interfaces to Data Hub

- **Traffic Control Systems**
  - TransCore – Arcadia and Caltrans
    - Installed in Arcadia, planned for install in Caltrans in November
    - Plan to read data from Arcadia this month
  - McCain - Pasadena
    - In design
  - Kimley Horn – LA County, Monrovia and Duarte
    - In design
    - Additional SPAT (Signal Phase and Timing) work in discussion

- **ATMS – Caltrans (CMS Signs, Ramps)**
  - Initial release delivered in July
  - We are testing out the interface and there will likely be updates needed as we work out workflow details and perform detailed testing

Systems Development and Integration

- **Cloud Infrastructure – Automating deployment for AWS**

  - Significant effort to both automate and to deploy within a private network.

  - Significant cooperation from AWS to help make this work.

  - Issues remaining with Continuous Integration setup in Dev environment, deployment of code to EMR (Spark)

- **DSS**

  - Response Plan workflow orchestration between DSS, Datahub, and Corridor Management System "Happy Path" basics in place

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MOU/Signs Mort
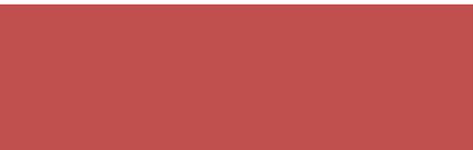
Call for Projects Parsons
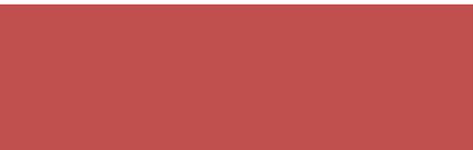
Agenda

- **I-210 CC Arterial Systems Improvement Project System Consulting Services – Scope**

- **Status of 9 procurement package**

- **30-Day Look Ahead**
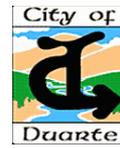
I-210 CONNECTED CORRIDORS ARTERIAL SYSTEMS IMPROVEMENT PROJECT SYSTEM CONSULTING SERVICES

SCOPE OF WORK

Project Objective

□ Assist Caltrans D7 to manage and coordinate the execution of the 9 arterial ITS improvement projects

| #	Package Description	Contract #	Contract Status
1	Bluetooth – Iteris Velocity	07A4470	Awarded
2	Bluetooth – BlueToad	07A4477	Awarded
3	New Controller Cabinets	07A4478	To be Re-advertised
4	Communication Upgrades	07A4479	Awarded.
5	Firmware/Timing Plan Updates/Controller Upgrades	07A4480	Awarded
6	Video Detection System	07A4481	Awarded
7	Data Communication Module and Video Detection Software Upgrade	07A4469	Being Re-advertised
8	Advanced Traveler Information Systems	N/A	To be advertised in 3 Parts
9	Environmental Stations with Air Quality Sensors and Open Data Systems (ODS)	07A4388	Awarded

Project Area

#	Package Description	Contract #	Metro & Caltrans	City of Pasadena	City of Arcadia	City of Monrovia	City of Duarte	LA County
1	Bluetooth – Iteris Velocity	07A4470	√		√			
2	Bluetooth – BlueToad	07A4477	√	√		√	√	√
3	New Controller Cabinets	07A4478	√	√	√			
4	Communication Upgrades	07A4479	√		√	√	√	√
5	Firmware/Timing Plan Updates/Controller Upgrades	07A4480	√	√	√	√		√
6	Video Detection System	07A4481	√	√	√	√	√	√
7	Data Communication Module and Video Detection Software Upgrade	07A4469	√	√	√	√	√	√
8	Advanced Traveler Information Systems	N/A	√	√	√	√	√	√
9	Environmental Stations with Air Quality Sensors and Open Data Systems (ODS)	07A4388	√					

Project Area (cont.)

Contracts 1-7 Site Location
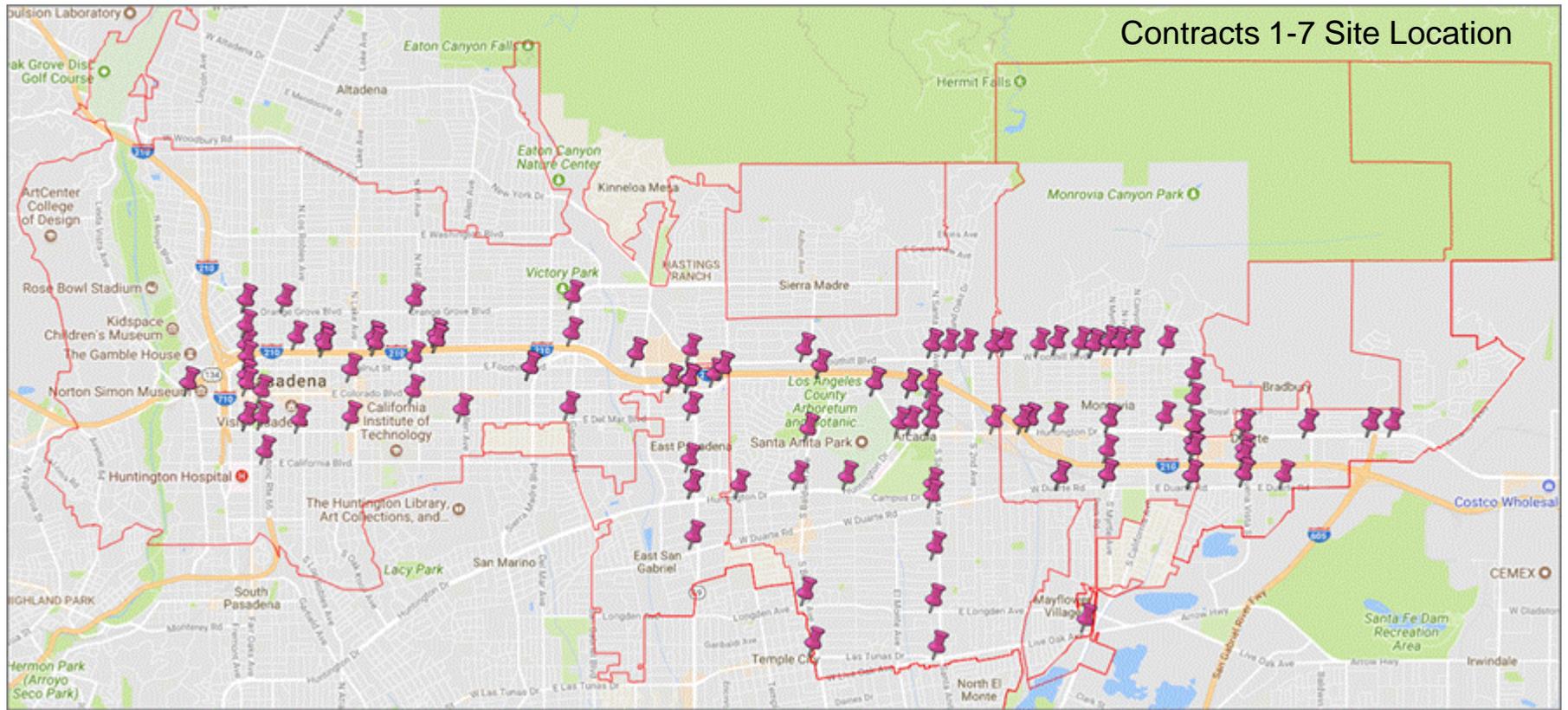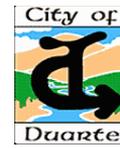
UPDATE ON

PACKAGES 1-9

Update on 9 Packages

Pkg. #	Package Name	Contract #	Project Status
1	Bluetooth – Iteris Velocity	07A4470	• Submittal Approved • Equipment Procurement Phase
2	Bluetooth – BlueToad	07A4477	• Submittal Approved • Equipment Procurement Phase
3	New Controller Cabinets	07A4478	• Disqualified: Bids came above the SB limit (314k). • Procurement Package revised per Stakeholder comments on Pkg. 5 • To be re-advertised
4	Communication Upgrades	07A4479	• Responded to Contractor's RFI • Submittal being Revised

Update on 9 Packages (cont.)

Pkg. #	Package Name	Contract #	Project Status
5	Firmware/Timing Plan Updates/Controller Upgrades	07A4480	• Submittal Reviewed and Required Equipment changed per Stakeholder Comment • Scheduling meeting with Contractor to discuss the change
6	Video Detection System	07A4481	• Submittal v3 being revised per stakeholder comments on v2 and to be re-submitted • Conducted Site Survey on 10/9/2018
7	Data Communication Module and Video Detection Software Upgrade	07A4469	• Disqualified: Bids came above the SB limit (314k). • To be re-advertised
8	Advanced Traveler Information Systems	N/A	• To be divided into 3 Parts (DMS Procurement, Static Sign Procurement, Integration) • Finalizing 3 Procurement Packages
9	Environmental Stations with Air Quality Sensors and Open Data Systems (ODS)	07A4388	• Coordinating with Caltrans & Parsons to get test data in TMDD format from D7 ATMS Test Server to feed Open Data System

30-Day Look Ahead

- **Support Caltrans to revise Procurement Packages 3 & 8**

- **Support Contractors to understand & address the submittal review comments**

- **Support contractors to schedule site investigation and get permit**

- **Collect and distribute master schedule when it is ready**

Thank You and Questions?

<u>Before</u> and After Study Tom/SMG

Before Condition Evaluation Plan

- **Before Condition evaluation period**

  - Spring 2019 (March to end of May)

- **Analyses**

  - **Recurrent congestion** *(select days with no major incidents)*

    - Average daily AM and PM Peak Period only
    - Vehicle Miles Traveled (freeway mainline and arterials)
    - Hourly Traffic Volumes (freeway mainline, ramps, and arterials)
    - Vehicle Hours Delay (60 mph threshold freeway, free-flow speed on arterials)
    - Average Hourly Travel Times (freeway mainline and arterials)
    - Hourly Travel Time Variability – Planning Time Index (freeway mainline and arterials)
    - Daily Congestion and Queueing (freeway mainline)

Before Condition Evaluation Plan

- ☐ **Analyses**
  - ◘ **Non-recurrent congestion**
    - Vehicle Miles Traveled (freeway mainline and arterials)
      - Off-peak totals and daily totals
      - One month totals
    - Hourly Traffic Volumes (freeway mainline, ramps, and arterials)
      - Off-peak hours
    - Vehicle Hours Delay (60 mph threshold freeway, free-flow speed on arterials)
      - Off-peak total and daily totals
      - One month totals
    - Average Hourly Travel Times and Variability (freeway mainline and arterials)
      - Off-peak hours
    - Crash and Incidents Statistics

Before Condition Evaluation Plan

- ☐ **Analyses**

  - ❑ **Specific Incident Analysis**

    - ■ Sample specific major incidents (period of incent impact congestion)

  - ■ Diversion Flow (off-ramps, on-ramps, and arterial volumes)

  - ■ Rate of Queue Dissipation (freeway mainline)

  - ■ Intersection LOS (impacted intersections) – if detection TMC data available

Before Condition Evaluation Plan

- **Data Needs and Sources**
  - VMT, Flow, Freeway Congestion and Queuing, Freeway Queue Dissipation
    - Caltrans PeMS (mainline and ramp detector stations)
    - Local agency detection system (arterial detection)
  - VHD, Travel Times, and TT Variability
    - Caltrans PeMS (mainline detector stations)
    - Local agency Bluetooth detection system (arterial readers)
    - INRIX data, if available
  - Crash and Incident Statistics
    - Caltrans TASAS (freeway collisions) and CHP CAD (freeway incidents)
    - Other (local law enforcement database and Metro FSP assist records)
  - Intersection LOS during Incidents
    - Local agency TMC detectors

Before Condition Evaluation Plan

- **Data Sources Assumptions**
  - Caltrans PeMS (mainline and ramp detector station) working at over 80% health between March and end of May, 2019
    - If not, may need to schedule manual ramp tube counts for multiple weeks
  - Local agency detection system (arterials and intersection) fully installed and working at over 80% health between March and end of May, 2019
    - If not, may need to schedule manual tube counts at same location as the detectors (need to know the locations), else move schedule to Fall of 2019
  - Local agency Bluetooth detection system fully installed and working at over 80% health between March and end of May, 2019
    - If not, many need to have INRIX data
  - Caltrans TASAS, CHP CAD, local law enforcement data made available during that time period, the following year when After conditions evaluated

Before Condition Evaluation Plan

□ **Evaluation Plan**

1. Make preparation – conduct preliminary analysis ahead of evaluation

2. Gather and compile data from 3/1/2019 to 5/31/2019 period; conduct field observation and video recordings of conditions

3. Process data and prepare input summary tables

4. Calculate, compute, and estimate performance measures

5. Conduct analysis of the performance measurements

6. **Conduct additional analysis as needed** (e.g. other time periods, other data, etc.)

7. **Assess and evaluate results** (prepare graphs, charts, diagrams, and tables)

8. Summarize findings

9. Draw conclusions

10. Prepare draft and final Study Report; prepare presentation

Before Condition Evaluation Plan

□ **What we need to do now**

1. Report on the current state of the existing data sources

2. Start compiling and testing some of the data for data quality

3. Review some of the data for meaningful conclusive evaluation

4. Get a feel for what additional data (different locations) may be needed

5. Prepare data (compilation and collection) plan

Parsons Demonstration of INET
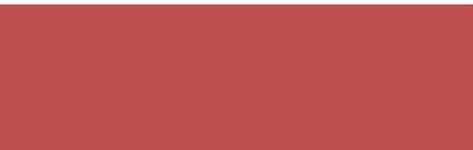
Thank You
and
Next Meeting
(Suggest November 27th at Duarte)