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# San Gabriel Valley Traffic Forum ATMS Improvement Project

## Systems Recommendation Report

(Deliverable 2.5.4.1)

Draft

Prepared by:



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An Paris Company

# **SAN GABRIEL VALLEY TRAFFIC FORUM**

## **SYSTEMS RECOMMENDATION REPORT**

### **Deliverable 2.5.4.1**

**DRAFT**

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## 1. INTRODUCTION

### 1.1 Project Overview

The San Gabriel Valley Traffic Forum (SGVTF) is one of the planned Intelligent Transportation Systems (ITS) improvement projects that the Los Angeles County Department of Public Works (County) is developing as part of the Traffic System Management (TSM) program in order to improve traffic flow and enhance arterial capacity in a cost-effective way where roadway widening is not possible. The purpose of the SGVTF Project is to design, develop, and deploy an Advanced Transportation Management System (ATMS) that can be tailored to each Agency's operational needs so that traffic signals can be synchronized and ITS systems integrated across jurisdictional boundaries. The SGVTF Project focuses on the specific needs of each Agency to manage their ATMS and recommends improvements to field infrastructure (e.g., controllers, detection systems, communications, etc.) and centralized Traffic Control Systems (TCSs) and/or Traffic Management Centers (TMCs) to meet those requirements. When the SGVTF is successfully completed, each of the Agencies responsible for traffic signal operations will have full access to an ATMS that monitors and controls the traffic signals within their jurisdiction. In addition, Agencies will be able to synchronize their signals and exchange traffic information in real-time with neighboring Agencies. This will allow the Agencies to respond to recurrent and non-recurrent congestion in a coordinated fashion across jurisdictional boundaries.

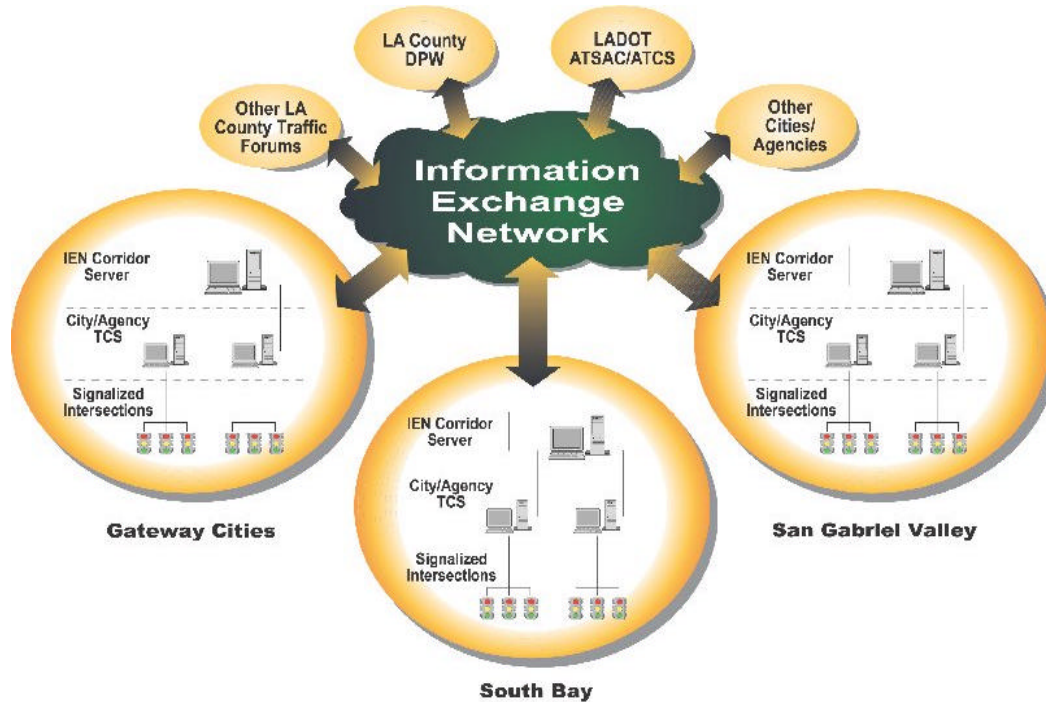
The SGVTF Project area ranges from Cities bordering the California State Route (CA SR) 110 and I-710 freeways to the west, I-210 freeway to the north, CA SR 57 freeway to the east, and the CA SR 60 freeway to the south. It encompasses 24 municipalities as well as unincorporated portions of Los Angeles County. The traffic signals in this Region are operated by many of the individual Agencies, County, and Caltrans District 7.

Developed by the County, the Countywide Information Exchange Network (IEN) is the integrated system framework that connects participating Agency ATMSs into a Regional network to support the operational goals identified above. The Countywide IEN supports traffic signal operations at the Local level, Corridor level, and Regional level. The SGVTF assumes the availability of the Countywide IEN at the Corridor and Regional levels. Therefore, the SGVTF Project is focused on the selection of TCSs and the integration of those systems to the Countywide IEN at the Local level. The eventual ATMS design for the SGVTF will take into account the interface to the IEN and its requirements at the Local level and encompass the following six (6) core components:

- ATMS and/or TCS (Individual Agency)
- Detection and Surveillance
- TMC and/or Workstation Layouts (ATMS and/or IEN)
- Communications Network
- SGVTF Participation/Coordination (City-specific and/or SGVTF-Regional integration)
- Operations and Maintenance (O&M)

As depicted in Exhibit 1.1, the Countywide IEN comprises a series of computer servers, communication networks, and software applications that integrates these components for the collection and transfer of data to support Corridor and Regional functions throughout Los Angeles County.

### Exhibit 1.1 – Countywide Information Exchange Network (IEN)



### 1.2 Agency Level Definitions

Four (4) Agency roles or “Levels” have been defined as well as a planning-related Level (Region Coordinator) for the implementation of the ATMS based upon the level of interaction an Agency will have in managing its traffic operations:

- **Level 1**
  - Agency does NOT operate its traffic signals
    - Agency wants to be “Agency B” on another Agency’s ATMS
    - Another Agency operates its traffic signals (e.g., LA County DPW)
  - Provided with an IEN W/S to monitor traffic signals & incident management activities
  - No separate ATMS W/S provided
- **Level 2A**
  - Agency passively manages its traffic signals
    - Establish initial signal timings, monitor system status daily, etc.
    - May operate on an exception/as-needed basis
    - Monitor mainly for alarms & malfunctions
  - Agency wants to be “Agency B” on another Agency’s ATMS
  - Provided with an IEN W/S to monitor traffic signals & incident management activities [Regional view]
  - Maintains a separate ATMS W/S connected to “host” Agency’s ATMS [Local view]

- **Level 2B**
  - Agency actively manages & operates its own ATMS
    - Actively manages ATMS during exceptions
    - Passively manages ATMS during AM & PM peak periods
  - Agency may operate some other ITS devices (small amount)
  - Agency may operate other Agencies’ traffic signals (Level 1)
  - Agency may “host” other Agencies’ traffic signals (Level 2A)
  - Maintains an LCCS facility to manage traffic signals & incident management activities
    - IEN W/S [Regional view]
    - ATMS W/S [Local view]
    - CDI between the ATMS & IEN
- **Level 3**
  - Agency actively manages its own ATMS & other ITS devices (large amount)
    - Typically AM & PM peak period traffic operations & incidents
    - May support 24/7 operations
  - Agency may operate other Agencies’ traffic signals (Level 1)
  - Agency may “host” other Agencies’ traffic signals (Level 2A)
  - Agency will have a TMC from which to operate its ATMS, the IEN, & other ITS devices
  - Maintains an TMC/LCCS facility to manage ATMS & incident management activities
    - IEN W/S (Regional view)
    - ATMS W/S (Local view)
    - CDI between the ATMS & IEN

Each Agency has been mapped to one of these Levels based upon the types of traffic and incident management functions and operations the Agency is proposed to be performing following the ATMS implementation and not what is being done today. Exhibit 1.2 presents the Agency/Level mapping for the SGVTF.

**Exhibit 1.2 - SGVTF Agency/Level Mapping**

Level 1	Level 2A	Level 2B	Level 3
Duarte La Puente San Marino South El Monte South Pasadena Temple City	Azusa Baldwin Park El Monte Glendora Monrovia Montebello Monterrey Park San Gabriel	Alhambra Arcadia Covina Irwindale Rosemead San Dimas West Covina	Caltrans LA County DPW Pasadena

### **1.3 Purpose of Document**

This document is Deliverable 2.5.4.1 – Systems Recommendation Report (Draft). This document summarizes the recommendations (by specific Agency and the SGVTF, as appropriate) for deployment of technology to facilitate Local and Regional traffic and incident management in the San Gabriel Valley. The recommendations include the following areas:

- Advanced Transportation Management System (ATMS)
- Communications
- Vehicle Detection
- Local City Control Site (LCCS) or Traffic Management Center (TMC)
- Sub-Regional TMC
- Systems Integration

### **1.4 Report Organization**

Following this introduction, the report is broken into the following sections:

- Section 2.1 – Overview
- Section 2.2 – Recommendations by Agency
- Section 2.3 – Sub-Regional TMC
- Section 2.4 – Integrated Systems
- Appendix A – Prioritized List of CCTV Locations

### **1.5 Referenced Documents**

The following documents have been used as reference material in the preparation of this report:

- SGVTF Operational Objectives & System Needs (Deliverables 2.1.2 & 2.2.2)
- SGVTF Integration System Requirements (Draft) (Deliverables 2.3.6.1 & 2.3.7.1)
- SGVTF Sub-Regional TMC Requirements (Draft) (Deliverable 2.3.5.1)
- SGVTF Area Architecture Definition Report (Draft) (Deliverable 2.4.1)
- SGVTF ATMS Alternatives Analysis Document (Draft) (Deliverable 2.5.1.1)
- SGVTF Local City Control Site and Computer Systems Alternatives Analysis Report (Draft) (Deliverable 2.5.3.1)
- SGVTF Communications Alternatives Analysis (Draft) (Deliverable 2.5.2.1)
- PVITS Recommendations Report (Deliverable 8.1.2)
- I-5/Telegraph Road Systems Alternatives Analysis and Recommendations (Deliverable 5.1.2)

## 2. SGVTF RECOMMENDATIONS

### 2.1 Overview

In previous tasks, the Consultant Team (TransCore and MMA) and SGVTF Agencies performed needs assessments, and developed requirements and design alternatives for various ATMS system components. The following sections discuss SGVTF recommendations for the major implementation areas resulting from the analyses and design work performed in these prior tasks.

The ATMS, communications, and LCCS recommendations are presented/summarized by Agency in the following section. The Sub-Regional TMC and Integrated Systems recommendations are Regional in scope and are presented individually, below.

### 2.2 SGVTF Agency Recommendations

This section presents recommendations for ATMS Vendor(s)/system(s), communications, and Local City Control Site (LCCS) for SGVTF Agencies. Recommendations for locating and implementing additional vehicle detection and video surveillance are also presented.

In general, the information presented herein is a summarization of the various Alternatives Analyses reports (Deliverables 2.5.1.1, 2.5.3.1, and 2.5.2.1). The potential detection and CCTV location information is based upon an analysis of data from the Operational Needs & Objectives (Deliverables 2.1.2 & 2.2.2) and interviews with the local Agencies. The CCTV locations are the union of “Problematic Intersections” and Agency recommendations. (Please note that only currently planned and Agency recommended locations have been factored into the Communications Alternatives analyses.) Appendix A provides a prioritization of potential CCTV locations utilizing the methodology described in Section 6 of the ATMS Alternatives Analysis Document.

In order to achieve the desired level of inter-Agency coordination, each Agency’s ATMS must communicate with the IEN via a CDI. To date, the only commercial ATMSs with CDIs complete or currently in development are KITS, QuicNet IV, and *TransSuite*<sup>TM</sup>. If an Agency selects an ATMS other than one of these during its selection process, a TCS CDI to the IEN will need to be developed.

Please note that the recommendations presented in the tables that follow are just that, recommendations. There is no guarantee that any or all will be funded or implemented. Changing priorities, availability of funding, etc. will directly impact which recommendations do actually get deployed.



## 2.2.1 RECOMMENDATIONS FOR CITY OF ALHAMBRA

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>Evaluate: i2TMS, KITS, MIST, and <i>TransSuite™</i> and migrate from existing Econolite Aries</li> <li>Continued use of existing NEMA and Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>No ATMS has full support for existing on-street masters (Econolite)</li> <li>Need to upgrade existing LACO firmware</li> <li>May require IEN CDI development</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>Main St @ Atlantic Bl</li> <li>Mission Rd @ Atlantic Bl</li> <li>Valley Bl @ @ Atlantic Bl</li> <li>Main St @ Garfield Av</li> <li>Mission Rd @ Garfield Av</li> <li>Valley Bl @ Garfield Av</li> <li>Fremont Av @ Valley Bl</li> </ul>	<ul style="list-style-type: none"> <li>See Appendix A for CCTV location "ranking"</li> </ul>
Communications	<ul style="list-style-type: none"> <li>Use existing twisted pair copper for F2C as possible</li> <li>Use fiber optic multi-cell conduit on Valley and Fremont for F2C as possible</li> <li>F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>Traffic Engineering Supervisor's office</li> <li>IEN workstation</li> <li>ATMS workstation</li> <li>CDI server</li> <li>TCS server</li> </ul>	<ul style="list-style-type: none"> <li>Additional ATMS workstation at Maintenance Yard</li> </ul>

## 2.2.2 RECOMMENDATIONS FOR CITY OF ARCADIA

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>Evaluate: QuicNet IV, KITS, MIST, PYRAMIDS, and <i>TransSuite™</i></li> <li>Migrate existing Multisonics 820A controllers to Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>Did not include Multisonics controllers in evaluation due to planned upgrades</li> <li>Need to upgrade existing LACO firmware</li> <li>May require IEN CDI development</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>VID at Huntington Dr @ Santa Clara</li> <li>VID at Huntington Dr @ Santa Anita Av</li> <li>Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>Santa Anita Av @ Huntington Dr</li> <li>Foothill Bl @ Baldwin Av</li> <li>Huntington Dr @ Baldwin Av</li> <li>Colorado Bl @ Huntington Dr</li> <li>Santa Anita Av @ I-210</li> </ul>	<ul style="list-style-type: none"> <li>Would also like to also get CCTV images for arterials in adjacent Agencies</li> <li>See Appendix A for CCTV location "ranking"</li> </ul>
Communications	<ul style="list-style-type: none"> <li>Use existing twisted pair copper for F2C as possible</li> <li>F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>C2C: Upgrade existing connection to LACO DPW to 1.544 Mbps via leased DSL or Frame Relay</li> </ul>	<ul style="list-style-type: none"> <li>Existing 384 Kbps Frame Relay connection to LACO DPW (SGVPP EDP)</li> <li>Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>Standard Level 2B configuration</li> <li>IEN workstation</li> <li>ATMS workstation</li> <li>CDI server</li> <li>TCS server</li> </ul>	<ul style="list-style-type: none"> <li>Would prefer wall mounted monitor</li> <li>Customized analysis not performed due to City's upcoming ITS RFP (Summer 2005)</li> </ul>

### 2.2.3 RECOMMENDATIONS FOR CITY OF AZUSA

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• ATMS workstation connected to LACO</li> <li>• Migrate existing Type 90 controllers to Type 170 controllers</li> <li>• Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>• Level 2A Agency – Signals controlled by LACO</li> <li>• Need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>• Would like to utilize to obtain traffic counts</li> <li>• Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• Foothill Bl @ Todd</li> <li>• Alost Av @ Citrus Av</li> <li>• Azusa Av @ Foothill Bl</li> <li>• Citrus Av @ 1<sup>st</sup>/I-210</li> </ul>	<ul style="list-style-type: none"> <li>• See Appendix A for CCTV location “ranking”</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Upgrade existing connection to LACO DPW to 1.544 Mbps via leased DSL or Frame Relay</li> </ul>	<ul style="list-style-type: none"> <li>• Existing 384 Kbps Frame Relay connection to LACO DPW (SGVPP EDP)</li> <li>• Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• Engineering Department offices (following relocation)</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> </ul>	<ul style="list-style-type: none"> <li>• Relocation to occur by December 2006</li> </ul>

## 2.2.4 RECOMMENDATIONS FOR CITY OF BALDWIN PARK

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• ATMS workstation connected to LACO</li> <li>• Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>• Level 2A Agency – Signals controlled by LACO</li> <li>• May need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• VIDs at</li> <li>• Ramona BI @ Francisquito Av</li> <li>• Ramona BI @ Baldwin Park BI</li> <li>• Ramona BI @ Maine Av/Pacific Av</li> <li>• Ramona BI @ Badillo St</li> <li>• Pacific Av @ Puente Av</li> <li>• Baldwin Park BI @ Francisquito Av</li> <li>• Francisquito Av @ Puente Av</li> <li>• Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>• Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• None</li> </ul>	
Communications	<ul style="list-style-type: none"> <li>• Use existing twisted pair copper for F2C as possible</li> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>• Existing 384 Kbps Frame Relay connection to LACO DPW (SGVPP EDP)</li> <li>• Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• Associate Engineer's office</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> <li>• KVM to share interface devices</li> </ul>	<ul style="list-style-type: none"> <li>• Replaces SGV EDP equipment</li> </ul>

## 2.2.5 RECOMMENDATIONS FOR CITY OF COVINA

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• Evaluate: QuicNet IV, KITS, MIST, PYRAMIDS, and <i>TransSuite™</i></li> <li>• Migrate existing Type 90 controllers to Type 170 controllers</li> <li>• Replace old/mismatched controllers (e.g., Barranca St @ Workman St) (EDO)</li> <li>• Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>• Need to upgrade existing LACO firmware</li> <li>• May require IEN CDI development</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>• Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• Arrow Hwy @ Azusa Av</li> <li>• Barranca St @ Workman St (IKEA)</li> <li>• Azusa Av @ Grand Av</li> <li>• Azusa Av @ San Bernardino Rd</li> <li>• Citrus Av @ Alostia Av</li> <li>• Citrus Av @ Arrow Hwy</li> </ul>	<ul style="list-style-type: none"> <li>• See Appendix A for CCTV location “ranking”</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• Use existing twisted pair copper for F2C as possible</li> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>• Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• Cubicle within PW office space</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> <li>• City’s communications room</li> <li>• CDI server</li> <li>• TCS server</li> </ul>	<ul style="list-style-type: none"> <li>• Additional IEN workstation in Watch Commander’s office at PD (w/ KVM to existing equipment)</li> </ul>

## 2.2.6 RECOMMENDATIONS FOR CITY OF DUARTE

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>• Level 1 Agency – No ATMS, signals controlled by LACO</li> <li>• Need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops)</li> <li>• VIDs at               <ul style="list-style-type: none"> <li>• Mt Olive Dr @ Huntington Dr</li> <li>• Buena Vista St @ Duarte Rd</li> <li>• Buena Vista St @ Huntington Dr</li> <li>• Mountain Av @ Duarte Rd</li> <li>• Mountain Av @ Huntington Dr</li> <li>• Highland Av @ Huntington Dr</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• Use VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• Do not use existing 7-conductor copper, but reuse conduit for new cable in future</li> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>• Existing cable conduit may need new pull-boxes prior to reuse</li> <li>• Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• Cubicle at Engineering Div. Manager's office</li> <li>• IEN workstation</li> <li>• KVM to share interface devices</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>

### 2.2.7 RECOMMENDATIONS FOR CITY OF EL MONTE

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• ATMS workstation connected to LACO</li> <li>• Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>• Level 2A Agency – Signals controlled by LACO</li> <li>• May need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops) and migrating to VID at new installations</li> </ul>	<ul style="list-style-type: none"> <li>• Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Installing 2 RLE systems at Peck Rd @ Ramona Bl &amp; Santa Anita Av @ Lower Azusa Rd – possible CCTV source</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>• Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• Maintenance Division office</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> </ul>	<ul style="list-style-type: none"> <li>• Not located at City Hall</li> </ul>

**2.2.8 RECOMMENDATIONS FOR CITY OF GELNDORA**

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• ATMS workstation connected to LACO</li> <li>• Migrate from existing Econolite Aries</li> <li>• Migrate from existing Traconex 390 controllers to NEMA (Econolite)</li> <li>• Continued use of existing NEMA (Econolite) controllers</li> </ul>	<ul style="list-style-type: none"> <li>• Level 2A Agency – Signals controlled by LACO</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>• Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Can currently dial-in to VIDs to get images (Autoscope)</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• Reuse twisted pair copper on Lone Hill (as possible)</li> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Upgrade existing connection to LACO DPW to 1.544 Mbps via leased DSL or Frame Relay</li> </ul>	<ul style="list-style-type: none"> <li>• Existing 384 Kbps Frame Relay connection to LACO DPW (SGVPP EDP)</li> <li>• Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• City Hall Basement</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>



## 2.2.9 RECOMMENDATIONS FOR CITY OF IRWINDALE

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>Evaluate: QuicNet IV, KITS, MIST, PYRAMIDS, and <i>TransSuite</i><sup>™</sup></li> <li>Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>Need to upgrade existing LACO firmware</li> <li>May require IEN CDI development</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>Interested in a VID pilot project along a major corridor (dust concerns) – Propose Irwindale Av and use as CCTV source</li> <li>Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>If pilot project is successful, implement VIDs along other corridors</li> <li>Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>Irwindale Av @ Foothill Bl</li> <li>Irwindale Av @ 1<sup>st</sup> St</li> <li>Irwindale Av @ Arrow Hwy</li> <li>Live Oak Av @ Speedway</li> <li>Live Oak Av @ Peck Rd/Myrtle Av</li> <li>Arrow Hwy @ I-605</li> <li>Irwindale Av @ I-210</li> </ul>	<ul style="list-style-type: none"> <li>See Appendix A for CCTV location “ranking”</li> </ul>
Communications	<ul style="list-style-type: none"> <li>Use existing twisted pair copper for F2C as possible (replace copper with fiber optic to meet additional bandwidth needs)</li> <li>Include fiber optic conduit installation on current roadwork project plans</li> <li>F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>New PW office space</li> <li>IEN workstation</li> <li>ATMS workstation</li> <li>CDI server</li> <li>TCS server</li> <li>Wall-mounted monitor</li> </ul>	<ul style="list-style-type: none"> <li>PW to relocate to current PD space after PD relocates to new facility (2006)</li> <li>Additional IEN workstation at PD</li> </ul>

### 2.2.10 RECOMMENDATIONS FOR LA COUNTY DPW

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• Continue with implementation of KITS &amp; CDI</li> <li>• Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>• Need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>• Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• Every ½ mile along 3<sup>rd</sup> St Light Rail</li> </ul>	
Communications	<ul style="list-style-type: none"> <li>• Use existing twisted pair copper for F2C as possible</li> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• Complete fiber optic conduit on Valley and Fremont &amp; link to LADOT (EDO)</li> <li>• Complete fiber optic conduit on Fremont and Fair Oaks &amp; link to Pasadena (EDO)</li> </ul>	<ul style="list-style-type: none"> <li>• Path analysis needed prior to implementing any wireless technology</li> <li>• Hub for all SGVTF C2C communications (Sub-Regional TMC)</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• TMC</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> <li>• CDI server</li> <li>• TCS server</li> </ul>	<ul style="list-style-type: none"> <li>• See Sub-Regional TMC (Section 2.3)</li> </ul>

### 2.2.11 RECOMMENDATIONS FOR CITY OF LA PUENTE

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>Level 1 Agency – No ATMS, signals controlled by LACO</li> <li>Need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>None</li> </ul>	
Communications	<ul style="list-style-type: none"> <li>F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>PW section in basement of City Hall</li> <li>IEN workstation</li> </ul>	

## 2.2.12 RECOMMENDATIONS FOR CITY OF MONROVIA

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• ATMS workstation connected to LACO</li> <li>• Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>• Level 2A Agency – Signals controlled by LACO</li> <li>• May need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Conduct Cost/Benefit Analysis using info from SGVTF ATMS Alternatives Analysis</li> <li>• Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>• Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDS.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• Huntington Dr @ I-210</li> <li>• Myrtle Av @ Huntington Dr</li> <li>• Myrtle Av @ Duarte Rd</li> <li>• Myrtle Av @ I-210</li> <li>• Myrtle Av @ Colorado Bl</li> <li>• Myrtle Av @ Foothill Bl</li> </ul>	<ul style="list-style-type: none"> <li>• See Appendix A for CCTV location “ranking”</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• Use twisted pair copper on Huntington Dr., for F2C as possible</li> <li>• F2C: USSR and/or Wireless LAN to hub; USSR, leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Upgrade existing connection to LACO DPW to 1.544 Mbps via leased DSL or Frame Relay</li> </ul>	<ul style="list-style-type: none"> <li>• Existing 384 Kbps Frame Relay connection to LACO DPW (SGVPP EDP)</li> <li>• Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• Traffic Engineering consultant workspace</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> </ul>	

### 2.2.13 RECOMMENDATIONS FOR CITY OF MONTEBELLO

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• ATMS workstation connected to LACO</li> <li>• Continued use of existing Type 170 controllers</li> <li>• Replace old controller cabinets w/ Type 332 (EDO)</li> </ul>	<ul style="list-style-type: none"> <li>• Level 2A Agency – Signals controlled by LACO</li> <li>• May need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops) and migrating to VIDs</li> </ul>	
CCTV	<ul style="list-style-type: none"> <li>• Utilize VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>	
Communications	<ul style="list-style-type: none"> <li>• Use existing twisted pair copper for F2C as possible</li> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>• Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• Engineering Department cubicle</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> </ul>	<ul style="list-style-type: none"> <li>• Should be adequate space following remodeling</li> </ul>

## 2.2.14 RECOMMENDATIONS FOR CITY OF MONTEREY PARK

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• ATMS workstation connected to LACO</li> <li>• Migrate existing Econolite 8200 controllers to Type 170, Type 2070 or NEMA controllers</li> </ul>	<ul style="list-style-type: none"> <li>• Level 2A Agency – Signals controlled by LACO</li> <li>• May need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops) and implementing VID at new installations</li> </ul>	<ul style="list-style-type: none"> <li>• Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• None</li> </ul>	
Communications	<ul style="list-style-type: none"> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>• Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• Engineering Department cubicle</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>

## 2.2.15 RECOMMENDATIONS FOR CITY OF PASADENA

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• Continue with implementation of i2TMS</li> <li>• Continued use of existing Type 170 controllers and Type 2070 (LRT) controllers</li> </ul>	<ul style="list-style-type: none"> <li>• Requires IEN CDI development</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops moving towards VID)</li> </ul>	<ul style="list-style-type: none"> <li>• Continue with VID at new installations</li> <li>• Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• Continue with current CCTV implementation</li> </ul>	
Communications	<ul style="list-style-type: none"> <li>• Continued use of twisted pair copper for F2C</li> <li>• F2C: USSR and/or Wireless LAN to hub; USSR, leased DSL or Frame Relay from hub to LCCS (until connection to copper cable network is made)</li> <li>• C2C: Upgrade existing connection to LACO DPW to 1.544 Mbps via leased DSL or Frame Relay</li> </ul>	<ul style="list-style-type: none"> <li>• Existing 384 Kbps Frame Relay connection to LACO DPW (SGVPP EDP)</li> <li>• Path analysis needed prior to implementing any wireless technology</li> <li>• Current conduit could be re-used (with upgrading) for fiber optic if needed</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• TMC</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> <li>• CDI server</li> <li>• TCS server</li> </ul>	<ul style="list-style-type: none"> <li>• Currently in temporary facility during seismic retrofit of City Hall</li> </ul>

## 2.2.16 RECOMMENDATIONS FOR CITY OF ROSEMEAD

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• Evaluate: QuicNet IV, KITS, MIST, and <i>TransSuite™</i></li> <li>• Migrate existing Multisonics Type 90 controllers to Type 170 controllers</li> <li>• Replace problematic controllers w/ Type 170 controllers (EDO)</li> </ul>	<ul style="list-style-type: none"> <li>• Need to upgrade existing LACO firmware</li> <li>• May require IEN CDI development</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>• Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDS.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• Rosemead BI @ Valley BI</li> <li>• Rosemead BI @ Marshall</li> <li>• Rosemead BI @ Mission Dr</li> <li>• Mission Dr @ Valley BI</li> <li>• Garvey Rd @ Walnut Grove Av</li> <li>• Garvey Rd @ San Gabriel BI</li> <li>• Walnut Grove Av @ San Gabriel BI</li> <li>• San Gabriel BI @ I-10</li> </ul>	<ul style="list-style-type: none"> <li>• Requires City Council approval</li> <li>• Possible use of desired RLE system as source for CCTV</li> <li>• See Appendix A for CCTV location "ranking"</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>• Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• City Engineer's office</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> <li>• CDI server</li> <li>• TCS server</li> </ul>	



## 2.2.17 RECOMMENDATIONS FOR CITY OF SAN DIMAS

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• Continue evaluation as part of PVITS</li> <li>• Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>• Member of PVITS – No analysis performed</li> <li>• Need to upgrade existing LACO firmware</li> <li>• May require IEN CDI development</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>• Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• Continue with CCTV recommendations from PVITS</li> <li>• Lone Hill Av @ Gladstone St</li> <li>• Arrow Hwy between Lone Hill Av and I-210/CA-57</li> <li>• Covina Bl @ I-210/CA-57</li> </ul>	<ul style="list-style-type: none"> <li>• See Appendix A for CCTV location “ranking”</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• Use existing twisted pair copper on Arrow Hwy for F2C as possible</li> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Upgrade existing connection to LACO DPW to 1.544 Mbps via leased DSL or Frame Relay</li> </ul>	<ul style="list-style-type: none"> <li>• Existing 384 Kbps Frame Relay connection to LACO DPW (SGVPP EDP)</li> <li>• Path analysis needed prior to implementing any wireless technology</li> <li>• Section of San Dimas Av (between Gladstone and Bonita) may be particularly difficult for wireless due to trees (additional hubs may be required)</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• Standard Level 2B configuration</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> <li>• CDI server</li> <li>• TCS server</li> </ul>	<ul style="list-style-type: none"> <li>• Member of PVITS – No analysis performed</li> </ul>

## 2.2.18 RECOMMENDATIONS FOR CITY OF SAN GABRIEL

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• ATMS workstation connected to LACO</li> <li>• Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>• Level 2A Agency – Signals controlled by LACO</li> <li>• Need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops) and plan migration to VID</li> </ul>	<ul style="list-style-type: none"> <li>• Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>• San Gabriel BI @ Valley BI</li> <li>• San Gabriel BI @ Las Tunas Dr</li> </ul>	<ul style="list-style-type: none"> <li>• See Appendix A for CCTV location “ranking”</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>• Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• Traffic Engineering consultant workspace</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> </ul>	

## 2.2.19 RECOMMENDATIONS FOR CITY OF SAN MARINO

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>Level 1 Agency – No ATMS, signals controlled by LACO</li> <li>Need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>Huntington Dr @ San Marino Av</li> <li>Los Robles Av @ Monterey Rd</li> </ul>	<ul style="list-style-type: none"> <li>See Appendix A for CCTV location “ranking”</li> </ul>
Communications	<ul style="list-style-type: none"> <li>F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>PW Director’s office</li> <li>IEN workstation</li> <li>KVM to share interface devices</li> </ul>	<ul style="list-style-type: none"> <li>Additional IEN workstation with KVM and wall-mounted monitor at PD dispatch</li> </ul>

## 2.2.20 RECOMMENDATIONS FOR CITY OF SOUTH EL MONTE

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>Level 1 Agency – No ATMS, signals controlled by LACO</li> <li>Need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>Continued use of current detection system (primarily inductive loops)</li> </ul>	<ul style="list-style-type: none"> <li>Agency should be sure to consider utilizing VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>
CCTV	<ul style="list-style-type: none"> <li>Rosemead Bl @ Garvey Av</li> <li>Durfee Av @ Peck Rd</li> </ul>	<ul style="list-style-type: none"> <li>See Appendix A for CCTV location “ranking”</li> </ul>
Communications	<ul style="list-style-type: none"> <li>F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>Office space in City Hall basement near communications room</li> <li>IEN workstation</li> <li>KVM to share interface devices</li> </ul>	

### 2.2.21 RECOMMENDATIONS FOR CITY OF SOUTH PASADENA

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>Continued use of existing Type 170 and NEMA 2000 controllers</li> </ul>	<ul style="list-style-type: none"> <li>Level 1 Agency – No ATMS, signals controlled by LACO</li> <li>Need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>Continue with VID implementation program on Fair Oaks Av (I-710 mitigation) and use of current detection system (primarily inductive loops)</li> </ul>	
CCTV	<ul style="list-style-type: none"> <li>Fair Oaks Av @ Huntington Dr</li> <li>Utilize VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>	<ul style="list-style-type: none"> <li>See Appendix A for CCTV location “ranking”</li> </ul>
Communications	<ul style="list-style-type: none"> <li>F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>Dep. Dir. PW's office</li> <li>IEN workstation</li> </ul>	<ul style="list-style-type: none"> <li>Remodeling in progress; adequate space and connectivity should be available</li> </ul>

### 2.2.22 RECOMMENDATIONS FOR CITY OF TEMPLE CITY

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>Continued use of existing Type 170 controllers</li> </ul>	<ul style="list-style-type: none"> <li>Level 1 Agency – No ATMS, signals controlled by LACO</li> <li>Need to upgrade existing LACO firmware</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>Continued use of current detection system (primarily inductive loops)</li> <li>VIDs at               <ul style="list-style-type: none"> <li>Rosemead BI at Las Tunas Dr</li> <li>Rosemead BI @ Longden Av</li> <li>Temple City BI @ Las Tunas Dr</li> <li>Temple City BI @ Longden Av</li> <li>Temple City BI @ Lower Azusa Rd</li> </ul> </li> </ul>	
CCTV	<ul style="list-style-type: none"> <li>Use VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>	<ul style="list-style-type: none"> <li>See Appendix A for CCTV location “ranking”</li> </ul>
Communications	<ul style="list-style-type: none"> <li>F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>In or near Maintenance Superintendent’s office</li> <li>IEN workstation</li> <li>KVM to share interface devices</li> </ul>	<ul style="list-style-type: none"> <li>KVM not needed if additional space becomes available</li> </ul>

### 2.2.23 RECOMMENDATIONS FOR CITY OF WEST COVINA

Area	Recommendation	Notes/Comments
ATMS	<ul style="list-style-type: none"> <li>• Evaluate: KITS, i2TMS, and <i>TransSuite™</i>; migrate from existing Multisonics VMS 330</li> <li>• Evaluate Type 170, Type 2070, and NEMA controllers and migrate from existing Multisonics 820A controllers</li> </ul>	<ul style="list-style-type: none"> <li>• May require IEN CDI development</li> </ul>
Vehicle Detection	<ul style="list-style-type: none"> <li>• Continued use of current detection system (primarily inductive loops)</li> <li>• VIDs at               <ul style="list-style-type: none"> <li>• Azusa Av @ Amar Rd</li> <li>• Amar Rd @ Nogales St</li> <li>• Nogales St @ Valley Bl</li> <li>• Sunset Av @ West Covina Pkwy</li> <li>• Sunset Av @ Cameron Av</li> <li>• Vincent Av @ Lakes Dr</li> <li>• Barranca Av @ North Garvey Av</li> </ul> </li> </ul>	
CCTV	<ul style="list-style-type: none"> <li>• Azusa Av @ I-10</li> <li>• Use VID cameras as (non-PTZ) CCTV cameras when implementing VIDs.</li> </ul>	<ul style="list-style-type: none"> <li>• See Appendix A for CCTV location “ranking”</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• Use existing twisted pair copper for F2C as possible</li> <li>• F2C: USSR and/or Wireless LAN to hub; leased DSL or Frame Relay from hub to LCCS</li> <li>• C2C: Leased DSL or Frame Relay (1.544 Mbps) to LACO DPW</li> </ul>	<ul style="list-style-type: none"> <li>• Path analysis needed prior to implementing any wireless technology</li> </ul>
LCCS/TMC	<ul style="list-style-type: none"> <li>• Miguel Hernandez’s office area</li> <li>• IEN workstation</li> <li>• ATMS workstation</li> <li>• KVM to share interface devices</li> <li>• Existing server and communications room</li> <li>• CDI server</li> <li>• TCS server</li> </ul>	

## **2.3 Sub-Regional TMC**

This section summarizes the Sub-Regional TMC-specific activities and options, and presents the recommended Sub-Regional TMC design for the SGVTF.

### **2.3.1 OVERVIEW**

The SGVTF Sub-Regional TMC (SGV TMC) will house the infrastructure (systems, communications, and personnel) to support intra- and inter-Regional traffic and incident management for SGVTF Agencies and commuters. In addition, it will also be the location where Level 1 and Level 2A Agency signal systems will be managed/operated.

### **2.3.2 RECOMMENDATION**

The SGV TMC should be co-located at the LACO DPW T&L TMC (LACO TMC) in Alhambra. This decision is the lowest cost and most efficient option and was based on several factors. First, the construction of the LACO TMC has been completed, it is *in* the SGV, and it is ready for use. Therefore, there are no additional costs related to finding, acquiring, and constructing new space for a new SGV TMC.

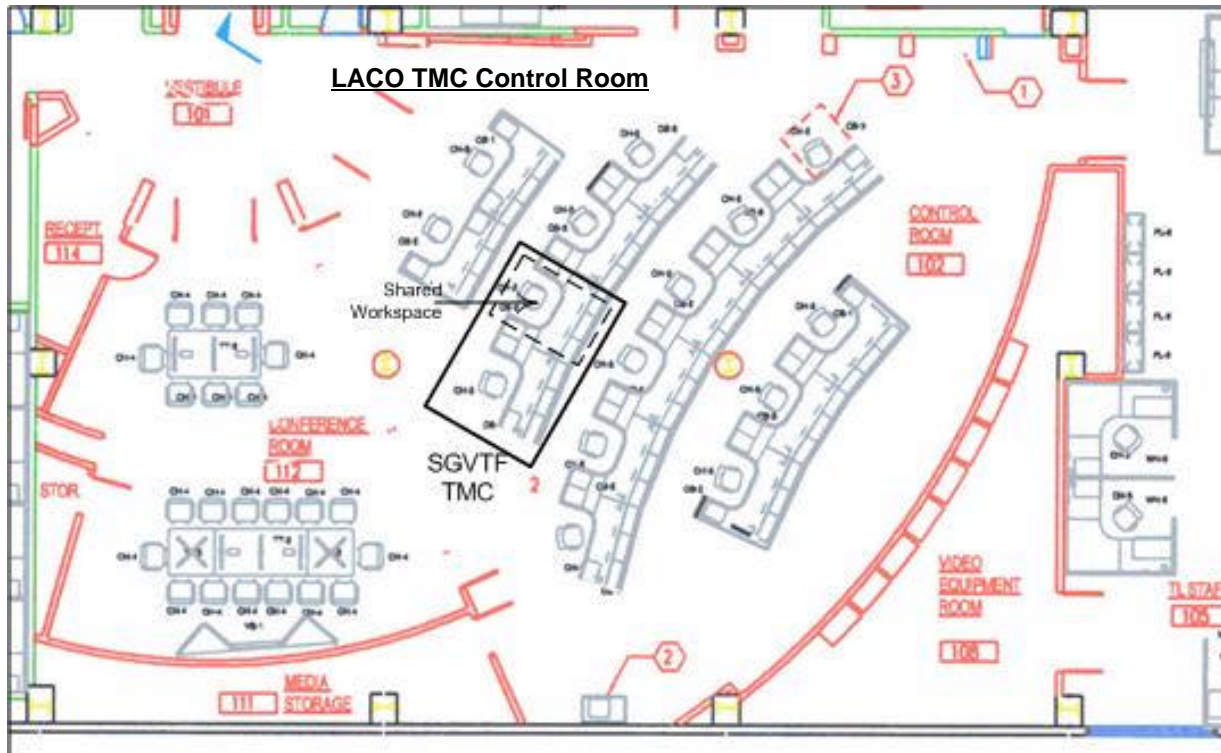
As a modern TMC, the LACO TMC already provides a wide-ranging set of tools for the SGV TMC, such as a video wall, telecommunications, ergonomic workspaces and lighting, etc. In addition, the LACO TMC was designed to support the hosting of Sub-Regional TMCs, and there are technical infrastructure and personnel already supporting the LACO TMC that can be applied to the SGV TMC, when needed.

Two (2) adjacent LACO TMC workspaces should be allocated as the SGV TMC. One workspace should be dedicated to the SGVTF. The other workspace can be shared and used for other projects, but should be ready for use for SGVTF incident management or other uses as needed.

Exhibit 2.1 depicts the floor plan of the LACO TMC. The recommended location of the SGV TMC is the area bounded by the solid black rectangle. The dashed rectangle is the shared SGV TMC workspace.



## Exhibit 2.1 – SGVTF Sub-Regional TMC Floor Plan



### 2.4 Integrated Systems

This section summarizes the systems integration activities and presents a recommended systems integration design.

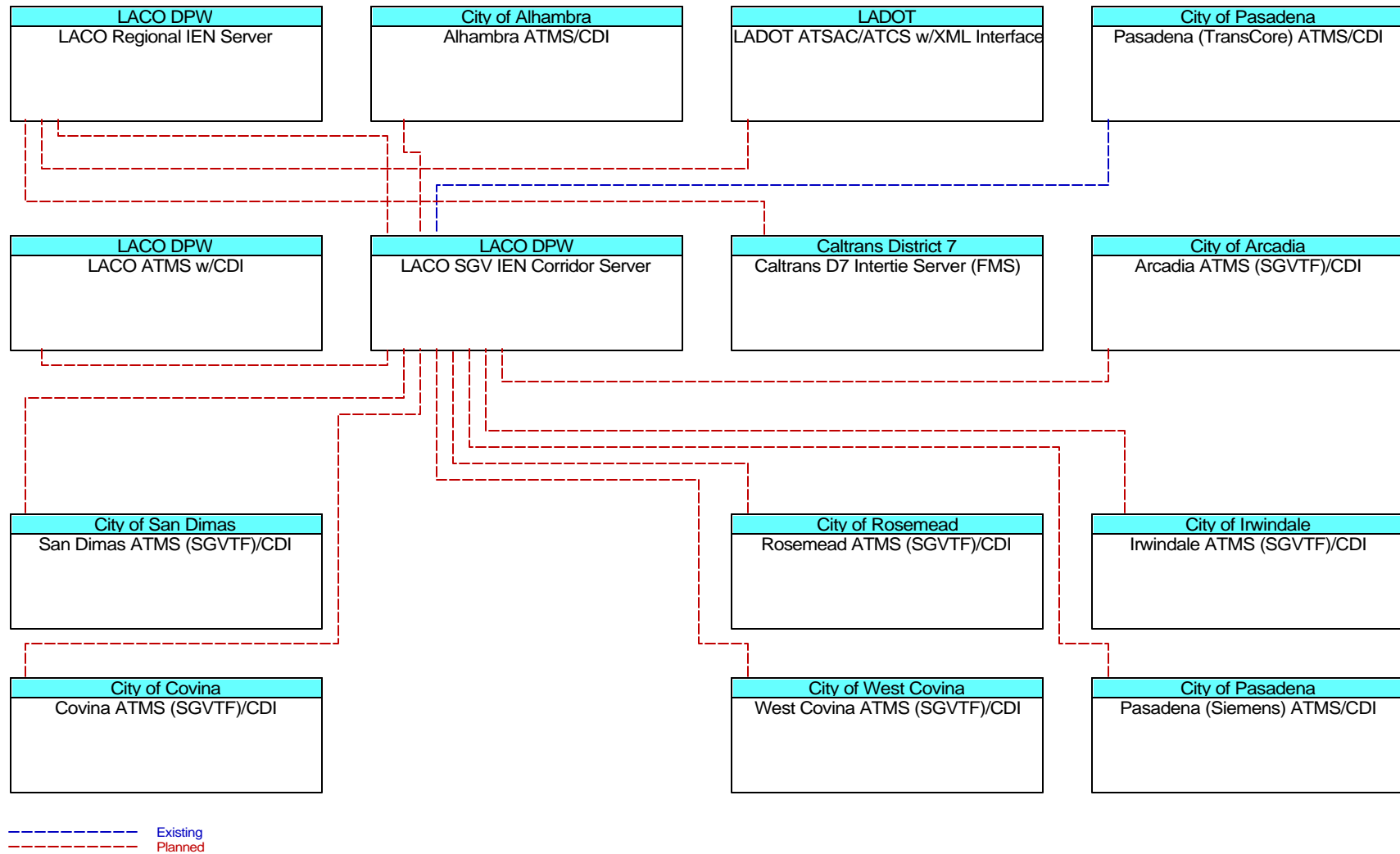
#### 2.4.1 OVERVIEW/RECOMMENDATIONS

SGVTF Level 2B and Level 3 Agency ATMSs will be integrated via the Countywide Information Exchange Network. The SGV IEN Corridor Server (housed at the Sub-Regional TMC) is the central integration point for each Agency ATMS. Each Agency ATMS will have a Command Data Interface (CDI) for integrating the ATMS/TCS with the IEN. (The CDI translates between TCS directives/data and IEN directives/data.)

Regional integration is facilitated by the Regional IEN Server. The Regional IEN Server integrates the various Traffic Forums (via their Corridor Server) as well as non-Traffic Forum Agencies, such as Caltrans and LADOT. Exhibit 2.2 illustrates the integration of systems for the SGVTF Sub-Region.

Integration of ATIS and CCTV will be done via the ATMS/CDI. At this time, the Countywide IEN supports only a subset of these data, but there are plans to expand this coverage. CDIs are written specifically for each Vendor's ATMS and each will need to be updated to implement new IEN functionality/data support.

### Exhibit 2.2 – SGVTF ATMS Integration



## ***APPENDIX A- PRIORITIZED CCTV LOCATIONS***

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## **APPENDIX A – PRIORITIZED CCTV LOCATIONS**

CCTV is a useful tool for transportation system surveillance and incident detection. The following table presents potential CCTV locations throughout the SGV. The locations are based upon Agency suggestions and an analysis of the SGVTF Operational Needs and Objectives. The score is calculated using the formula described in the ATMS Alternatives Analysis Report (Deliverable 2.5.1.1).

The data values are based upon various Agency data sources and from varying dates, but are still valid for this type of analysis. LOS entries with asterisks are estimates. The two (2) asterisked intersections in Arcadia are already funded as part of another project. TransCore was not able to acquire the data for all locations at this time. Only locations with a LOS entry have been scored and, as stated earlier, these are merely recommended CCTV locations.

Individual SGVTF Agencies have every recourse to install a CCTV camera at any location they see fit within their jurisdiction to improve traffic and incident management

## SGVTF CCTV Location Analysis

<u>Intersection</u>	<u>Agency</u>	<u>LOS (A-F)</u>	<u>AADT</u>	<u>Special Freeway</u>		<u>Score</u>
				<u>Event Usage (Y/N)</u>	<u>Detour Usage (Y/N)</u>	
Huntington Dr @ Santa Anita Av	Arcadia	F	49000	Y	Y	95
San Gabriel Bl @ Valley Bl	San Gabriel	D	64900	Y	Y	92
Huntington Dr @ Baldwin Av	Arcadia	D	61000	Y	Y	92
*Santa Anita Av @ I-210	Arcadia	E	29000	Y	Y	90
Foothill Bl @ Baldwin Av	Arcadia	D	41500	Y	Y	87
*Huntington Dr @ Colorado Pl	Arcadia	D	36100	Y	Y	82
Huntington Dr @ San Marino Av	San Marino	C	55300	Y	Y	79
Valley Bl @ Atlantic Bl	Alhambra	D*	64000	N	Y	77
Fremont Av @ Valley Bl	Alhambra	D	66000	N	Y	77
Myrtle Av @ I-210	Monrovia	F	25300	N	Y	75
Huntington Dr @ I-210	Monrovia	E	37200	N	Y	75
Foothill Bl @ Todd Av	Azusa	E	34700	N	Y	75
Valley Bl @ Garfield Av	Alhambra	D*	59000	N	Y	72
Azusa Av @ I-10	West Covina	D*	49000	N	Y	72
Rosemead Bl @ Garvey Av	South El Monte	D	44000	N	Y	72
Citrus Av @ Alostia Av	Azusa	D	40300	N	Y	72
Irwindale Av @ Foothill Bl	Irwindale	E		N	Y	70
Irwindale Av @ Arrow Hwy	Irwindale	E		N	Y	70
Irwindale Av @ I-210	Irwindale	E		N	Y	70
Citrus Av @ 1st St/I2-10	Azusa	D	35600	N	Y	67
Durfee Av @ Peck Rd	South El Monte	D	30000	N	Y	67
Myrtle Av @ Duarte Rd	Monrovia	D	22100	N	Y	67
Foothill Bl @ Azusa Av	Azusa	B	33700	Y	Y	66
San Gabriel Bl @ Las Tunas Dr	San Gabriel	F	60400	N	N	64
Myrtle Av @ Huntington Dr	Monrovia	D	15100	N	Y	62
Arrow Hwy @ Lone Hill Av	San Dimas	A	44100	N	Y	56
Main St @ Atlantic Bl	Alhambra	D*	55000	N	N	51
Mission Rd @ Garfield Av	Alhambra	D*	53000	N	N	51
Mission Rd @ Atlantic Bl	Alhambra	D*	52000	N	N	51
Main St @ Garfield Av	Alhambra	D*	48000	N	N	51
Covina Bl @ I-210	San Dimas	A	20300	N	Y	51
Lone Hill Av @ Gladstone St	San Dimas	B	13600	N	Y	46
Myrtle Av @ Colorado Bl	Monrovia	C	14400	N	N	33
Los Robles Av @ Monterey Rd	San Marino	A	21000	N	N	30
Myrtle Av @ Foothill Bl	Monrovia	B	11200	N	N	25
Valley Bl @ I-710	Los Angeles			N	Y	
Azusa Av @ Arrow Hwy	Covina			Y	Y	
Azusa Av @ San Bernardino Rd	Covina			Y	Y	
Barranca St @ Workman St	Covina			Y	Y	
Citrus Av @ Arrow Hwy	Covina			N	Y	
Badillo St @ Grand Av	Covina			N	Y	

## SGVTF CCTV Location Analysis

<u>Intersection</u>	<u>Agency</u>	<u>LOS</u> <u>(A-F)</u>	<u>AADT</u>	<u>Special Freeway</u>		<u>Score</u>
				<u>Event</u> <u>Usage</u> <u>(Y/N)</u>	<u>Detour</u> <u>Usage</u> <u>(Y/N)</u>	
Badillo St @ Azusa Av	Covina			N	Y	
Irwindale Av @ 1str St	Irwindale			N	Y	
Live Oak Av @ Speedway	Irwindale			Y	N	
Live Oak Av @ Peck Rd	Irwindale			Y	Y	
Arrow Hwy @ I-605	Irwindale			Y	Y	
Rosemead Bl @ Valley Bl	Rosemead			N	Y	
Rosemead Bl @ Marshall	Rosemead			N	Y	
Rosemead Bl @ Mission Dr	Rosemead			N	Y	
Mission Dr @ Valley Bl	Rosemead			N	Y	
Garvey Rd @ Walnut Grove Av	Rosemead			N	Y	
Garvey Rd @ San Gabriel Bl	Rosemead			N	Y	
Walnut Grove Av @ San Gabriel Bl	Rosemead			N	Y	
San Gabriel Bl @ I-10	Rosemead			N	Y	
Fair Oaks Av @ Huntington Dr	South Pasadena			N	N	