# RIVERSIDE COUNTY REGIONAL CAD-TO-CAD ANALYSIS





P.O. Box 235530 Encinitas, CA 92023

nevillewoodgroup@cox.net

# **DECEMBER 2013**

# **Table of Contents**

Project Overview	1
The Analysis Report (Format)	2
Region Overview	
CAD-to-CAD Benefits	4
Resource Sharing Agreements	6
Impediments to the Success of CAD-to-CAD Projects	7
Conclusion	9
Agency Profiles	10
Observations Noted	21
Project Recommendations	23
Attachments	
Attachment "A"	24
Acknowledgements	31

## XRI CAD Gap Analysis Report

#### Project Overview:

The Riverside County Fire Chiefs Association has in the recent past considered the need to share specific pieces of information between the various Computer-Aided Dispatch (CAD) systems that are deployed within the various agencies and entities found in Riverside County that collectively provide dispatching services to the Fire and Emergency Medical Service agencies of the region. A proposal was developed and delivered during 2011 seeking funds from a grant to provide a means to connect together the disparate CAD systems operated by Public Safety agencies within Riverside County. This attempt was not successful in obtaining such funds however it did bring awareness to decision makers within the Fire Service of the need and benefits of sharing specific information with cooperating agencies.

The goal of this report is to provide relevant information that portrays the current situational readiness of the CAD systems and their ability to support the current or expanded use of shared resources and information in future years by the Fire and EMS agencies. The report outlines areas where each agency can experience benefits by participating in a CAD-to-CAD (C2C) project.

Note that the information found in this report only covers those Fire and EMS agencies in Riverside County that participated in the project. Specifically, the City of Hemet and the City of Blythe did not respond to the requests for information and were not reviewed as part of this project.

In addition to researching, cataloging and analyzing the information called for in the project surveys, it was determined that the role of the Operational Area Coordinator for Riverside County might also see benefits from a C2C project. A separate survey was designed and provided to the Op Area Coordinator and the Alternate Op Area Coordinators. The results of that survey can be found at the end of this report in "Attachment A."

Participating Agencies in this project:

- Riverside County Fire Department / CALFIRE Perris
- Riverside City Fire Department
- City of Corona Fire Department
- American Medical Response Riverside
- City of Cathedral City Fire Department
- City of Murrieta Fire Department
- City of Palm Springs Fire Department

### The Analysis Report:

The information obtained in the research phase of this project is provided in the following seven (7) main topics:

- Region Overview
- CAD-to-CAD Benefits
- Resource Sharing Agreements
- Impediments to the Success of CAD-to-CAD projects
- Conclusion
- Recommendation
- Attachments

### **Region Overview:**

The public safety providers and contract agencies in Riverside County provide a wide array of services to a population of over 2.2 million people, arranged in a mixture of urban, suburban and rural settings over 7,208 square miles. In addition, the lands within Riverside County range from low desert to high mountain areas, and then drop again into inland valleys for the dense population centers. This becomes a challenge for Fire and EMS agencies to serve as the population increases and development stretches into the Wildland Urban Interface. Agencies often find it difficult to keep pace with this growth in providing even and timely emergency response to such a setting. It is not unusual in Riverside County, similar to most of developed California, to rely upon adjacent jurisdictions to assist in providing needed resources through pre-existing agreements.

Riverside County has only one dispatch center that operates for Fire and EMS agencies only (RVC). All other fire agencies receive their dispatch services from their own Law Enforcement (LE) agencies. AMR provides its own EMS dispatch service for its transport ambulances in cooperation with all fire agencies.

During 2012 the agencies participating in this project responded to more than 190,000 incidents. In addition to these responses, there were nearly 2300 occasions in which agencies provided resources to other agencies within Riverside County. In each of these 2300 cases, one dispatch center would contact another participating dispatch center to coordinate these responses. In a great number of these cases, the call requesting assistance was made by telephone.

AMR logged more than 150,000 incidents in which they provided ALS transport for medical emergencies to the population within Riverside County. In each of these episodes, a public safety Primary Public Safety Answering Point (PSAP) received the initial call for assistance, determined there was a medical emergency, and notified AMR to respond along with the local fire agency.

The information gathered in the surveys revealed that Riverside County is experiencing approximately the same ratio of medical emergencies to fire and fire-related emergencies as the rest of this state, as 80% of the 190,000 incidents required a medical response.

Other facts found for the Riverside region:

- Each day, there are at least 16 Battalion or Duty Chiefs ready to be dispatched to incidents;
- There are a total of 78 Chief Officers who are equipped with a Mobile Computing Device (MDC) or Tablet that can access information;
- There are 107 Type 1 Engines, 25 Type 3 Engines, 16 Truck Companies, 119 Transport Ambulances and 13 Rescues/Squads also equipped with MDCs;
- However not all of these have access to CAD information, nor can all of them be located with an Automatic Vehicle Location (AVL) component, a necessity if an agency is attempting to rapidly locate the closest appropriate resource for any incident.
- Additional staff and miscellaneous resources also have MDCs deployed, such as Training Officers, Prevention staff, Dozers, Handcrews, Water Tenders and Repair staff;
- There are seven (7) Fire and EMS dispatch points among the agencies surveyed, utilizing a total of five(5) disparate CAD vendors.

### CAD-to-CAD Benefits:

The potential benefits seen with C2C system deployments are many. These benefits can be placed in four categories:

- <u>Day-to-Day</u> Generally referring to the amount of time saved, tasks reduced and improved coordination on local agency responses, when such a response includes one or more resources controlled by another dispatch agency. This sharing of resource data usually leads to a reduction in response times to incidents. Through Automatic Aid the use of closer resources can be used for such a reduction, however without the inclusion of a C2C solution the improvement may not be realized or maximized if the process of searching and requesting the closest appropriate resource is not in itself reduced to meet both the need and intent. The actual amount of time delay that exists in utilizing the current methods in adjacent agency notifications can be anywhere from 30 seconds to 4 minutes. This delay can increase with an increase in dispatch agency call volume or resource allocation.
- <u>Large Incident</u> A large incident may be defined locally, and differ greatly in its definition. Certainly it can be viewed that when a single incident draws fifty percent or more of an agency's resources, this becomes a major concern. This type of event and commitment will usually then require outside assistance either with resources committed to the incident or through a "move up and cover" situation. By deploying a C2C solution, this allows all agencies affected (and those yet unaffected but concerned), potential resources and decision-makers to keep abreast on the progress and potential impacts of a single or multiple events. Through the use of elaborate Automatic Aid agreements, getting to the point of committing fifty percent or more of your overall agency resources may occur less often. However, a single complex incident may require a large commitment of one or more *types* of resources (i.e.: Chief Officers, Truck Companies, etc.) and therefore have an overall impact on the *readiness* of not only the individual agency, but those surrounding also. In such a scenario, the use of a C2C system enables and induces participants to communicate at greater levels, thereby providing better quality and timely information to all concerned.
- <u>Situational Awareness</u> The situational awareness obtained through the use of a C2C system is dependent upon both the operational design and the allowed and expected use of such a system. To begin with, each of the dispatch operations connected to the system can "see" any agency's activity level, locations of incidents and resource information if configured to do so. A neighboring agency may notice increased activities of a certain type and either anticipate a request for resources or perhaps tracking the activities to anticipate same type incidents occurring within their own area. A dispatcher might also use the system to reveal a similar incident occurring in a border area when the incident is received, and thereby avoid creating a duplicate incident. For field units the SA is increased when they become aware of the availability and location of resources included in their response. If AVL data is shared, they can also avoid possible collisions with other emergency vehicles either responding with them or in the vicinity of their response route.
- <u>Operational Area Coordination</u> This task is always difficult for an urban area that experiences large numbers of incidents, whether occurring as simply multiple separate simultaneous incidents, incidents that cross boundaries, a single large-scale incident or multiple large incidents with potential to grow. In simplified terms, the task of the Operational Area

Coordinator (OAC) is to obtain intelligence on incidents of importance, anticipate and coordinate resource requests and to distribute the intelligence on both incidents and resources to the decision makers. Additional tasks would be to coordinate all out-of-county responses and resource requests. These tasks become very difficult and time consuming due to the need to "dig" for the information from a multitude of sources within each participating agency. Once information is obtained it may now be old and outdated, so this task is constantly repeated. If a C2C system is deployed and includes in its configuration an ability to provide information (status, deployment, availability, needs) *in real time* across all agencies. This reduces the time spent on this task, reduces the number of persons needed to accomplish the task and enables the OAC to then provide up-to-date information back to the decision makers through the established means and patterns.

• <u>Enhanced Dispatch Operation Back-up</u> – With appropriate configuration, the C2C project could provide an enhancement for dispatch operations when one center is negatively impacted by either environmental or infrastructure issues. As long as the host CAD system is running and the connectivity remains intact for the C2C environment, if dispatchers need to be evacuated from any center an adjacent center that takes the 9-1-1 calls could continue to operate and control the local resources through the connected CAD systems. In certain situations, when a local center is over-run with local traffic an appointed center could "pick up the slack" and process some of the incidents appropriately.

### **Resource Sharing Agreements:**

The agreements discovered in this project revealed multiple agency-to-agency documents allowing the sharing of resources in different patterns and for different reasons. The California Master Mutual Aid Agreement (MMA) is a historical document that serves as the basis for sharing resources up and down this state. The multiple Automatic Aid agreements were put in place to allow for the day-to-day sharing of resources without the encumbrances of exercising Mutual Aid. However these Automatic Aid agreements were enacted for different reasons in many of the participating agencies. In some instances a resource may be used instead of a local resource, in others an outside resource is used to augment a response plan. Many of these response plans are geographically limited in nature (i.e.: covering the west side of a city only, etc.). There are apparently no instances in which a "Boundary Drop" arrangement is exercised (response plans where the closest, most appropriate resource responds without regard to agency ownership or political boundaries). It is not known if any of the existing Automatic Aid agreements would allow this arrangement, if desired. Further research is needed in this area if any agency desires to pursue Boundary Drop agreements.

As with most areas in the western United States, it appears that the existing Automatic Aid agreements were created years ago as a means of obtaining assistance more rapidly than going through the Mutual Aid channels. The Fire and EMS services are dynamic in nature, modifying their operations most often to reflect the imposed needs of the area. To work within an agreement that no longer has the flexibility that may be needed to modify the responses is neither wise nor desirable.

### Impediments to the Success of CAD-to-CAD Projects:

As with any project or program introduced into an existing service delivery model, there may be issues or items that might C2C projects are:

- <u>*Financial*</u> Implementation of a C2C solution is not inexpensive. Due to the complex nature of the needed configuration such as multiple CAD vendors, operation and support considerations and equipment purchases or upgrades, the costs may appear as prohibitive. When the price of the system is measured in a true cost-benefits analysis, support for the project can be found among all sectors of Public Safety, including decision makers of the participating cities and districts. The difficulty will come in discovering an adequate source of funds. Often federal or state grants are pursued as a source. In some circumstances, local funds are made available as the overall need is thought to be of such importance as to take priority.
- <u>Political</u> In certain situations officials outside of the Fire and EMS agencies might show concern in the support of a project that in their view could lessen the control they have over the commitment of local resources. In most cases, this is not a valid concern as most C2C solutions can be configured to support existing Business Rules of any agency. In other cases, some may be concerned that the additional use of outside resources my cause the delay to an agency in providing the appropriate level of resources to certain areas on a permanent basis. A solution to this is to adopt an Operating Agreement or Plan that addresses the "permanence" of such a response plan and incorporate in the Business Rules. Care should be taken to educate all decision makers on the flexibility of the solution prior to introducing the project.
- <u>Operational Influences</u> There can be many impediments found under this heading, but in all a concerted effort in education prior to deployment of a C2C system is the solution. The deployment will in most cases necessitate some small operational changes (Engine 3 has always been second in to that area) or implementation of modified tasks (Dispatcher accepts the suggested CAD response that includes an outside resource rather than an "in-house" resource). During periods of elevated activity in the dispatch center and in the field, there may be a tendency to revert back to old habits in order to "get things done" and bypass the "new" solution. This will be counterproductive and eliminate the benefits that can be found in the solution. Training for large incidents can be useful in learning to use C2C as a tool.
- <u>Lack of Universal Support for Project</u> Because the benefits of the C2C solution are different for each agency, there will be varying levels of support. In some circumstances in other areas it was determined that the project would begin with just the willing participants thinking that the "build it and they will come" approach was best. While this is one option, project proponents must make certain that the success of the project (and hence the long-term support) must be able to demonstrate continued success with just those connected. Outside influences (such as financial opportunities, change in political will etc.) will occur that may allow or disallow other agencies to connect in the future despite the demonstrated capabilities
- <u>Lack of Project Planning and Coordination</u> Care must be taken in planning a project to insure that the project infrastructure is in place. Items such as "who will oversee the implementation, support and oversight" are questions to be answered before the need. A well thought-out plan takes the project from idea to installation, testing, acceptance, training, support and maintenance to a point 5 years from acceptance, and analyzes equipment and software upgrades and replacement, and associated costs. In most cases, the successful implementation of a C2C

solution results in the need to maintain the solution as an on-going program. Identify which agency will be best suited to maintain the integrity of the program, and include that agency in the ground floor decisions. Develop a plan for governance, program growth and future funding as part of the initial project.

### Conclusion:

Southern California with its dense population, commerce and industrial models, residential development, recreation habits and weather patterns combine to regularly exercise perhaps the most complex and frequently used Mutual and Automatic Aid systems in North America. Fire and EMS agencies frequently share resources in order to provide the best service to the protected public at large. This is accomplished by abiding by the established agreements in place. The majority of these agreements stem from the original master Mutual Aid plans of the 1950's. During the 70's, 80's and 90's many fire agencies recognized that there could be a mutual benefit in modifying the plan locally and began the implementation of Automatic Aid plans. These plans became popular in most of the urbanized areas and were seen as vast "improvements" over the standard Mutual Aid plans. However, there really were no simultaneous improvements made to the request and order plans to obtain the resources needed.

In Riverside County there exists an interest in improving the system of obtaining needed resources. Each of the agencies participating in the survey could find benefit in the participation of a C2C solution.

A regional approach to researching a C2C project is not only possible but suggested by some of the agencies interviewed. Due to the challenges cited in the section of this report entitled "Impediments to the Success of CAD-to-CAD Projects" a reasonable approach would start with a planning committee comprised of representatives of not only the potentially involved agencies, but also representatives of the dispatch centers, field operations level people, Emergency Management and information services experts.

All agencies reviewed in this study would benefit from the implementation of a CAD-to-CAD project, each perhaps for a different reason. Therefore, in a cost-to-benefit analysis, it will become clear to each agency what their cost brings in benefits.

# **Agency Profiles**

### • American Medical Response (AMR)

- Type of Center: EMS (Private)
- CAD: TriTech Software Systems VisiCAD (v. 4.5.10)
- Connections with:
  - RVC = 1 way CAD
  - RIV = 1 way printer
  - COR = 1 way printer
  - MUR = via phone
  - PSP = via radio
  - CDR = via phone
- Number of Mobile Data Devices
  - 110 MDCs in Transport Ambulances (w/AVL)
- Annual Incidents within jurisdiction (2012)
  - 150,194
- o Mutual/Auto Aid sent
  - 0
- Benefits to be seen with a C2C solution:
  - Day-to-Day: AMR would see a reduction in telephone and radio traffic. If C2C is introduced, request from another agency could appear as call in queue, reducing processing time (45 to 90 seconds for call from radio/pager; up to 3 minutes for telephone transfer per request)
  - Large Incident: During large incidents, AMR is impacted in two ways: first, with requests for ambulances on the incident; secondly, with delays experienced in calls from impacted agencies. C2C solution would rapidly process requests for additional resources as it does single requests, and also eliminate the delays almost completely from busy centers as the other agency dispatchers process the requests "as normal".
  - Situational Awareness: If configured so, field units could "see" other responders in the field and eliminate danger of collisions with emergency vehicles. Dispatchers could view escalating incidents in other jurisdictions and move resources appropriately for best coverage.
  - Operational Area Coordination: Due to AMR providing medical transport resources, the only benefit that C2C would bring in this area is the expanded awareness of emergent situations and movement of resources to fill overexposed areas.
  - Dispatch Back-up Currently AMR enjoys a robust back-up radio, phone and IT infrastructure. Their facility can be evacuated and operations remain intact from the field.

# **Agency Profiles (con't.)**

#### • Cathedral City Fire (CDR)

- Type of Center: PD/Fire
- CAD: Cyrun Alliance (v4..025x)
- Connections with:
  - AMR: via phone
  - RVC: via phone
  - PSP: via phone
- Number of Mobile Data Devices
  - 1 (B/C) no CAD connection
- Annual Incidents within jurisdiction (2012)
  - **4**,818
- Mutual/Auto Aid sent
  - 166
- Benefits to be seen with a C2C solution:
  - Day-to-Day: With a C2C solution, CDR could see a reduction in both telephone and radio traffic when contacting a cooperating agency when initiating or receiving a request for resources. Since all contacts are currently telephonic, this could result in reducing the call processing time by 3 minutes or more *for each incident*. In areas where an adjacent resource is placed on the call, this could add to the reduction of total response time (for all units committed to an incident). As with other agencies, reducing telephone and radio traffic in the dispatch center equates to making the dispatcher available for other tasks more often.
  - Large Incident: On the rare occasion that CDR experiences a large-scale incident, the request, fulfillment and coordination of outside resources, along with provision of coverage units would be greatly enhanced.
  - Situational Awareness: Minimal effect for CDR currently. Dispatch center could increase their SA by being aware of adjacent area activity and movement. Benefits in field would be maximized if resources have MDCs with AVL.
  - Operational Area Coordination: Benefit to CDR would be primarily better and faster coordination when outside resources are sent to CDR. Processing a request from outside agencies for a CDR resource would be enhanced, lessening the impact on the CDR dispatcher. CDR chief officers could become aware of incidents and resource movement on a larger scale and take local actions if necessary.
  - Dispatch Back-up: PSP is the alternate dispatch center, however it does not have an ability to alert CDR stations. If configured appropriately, a C2C project could effectively give PSP the ability to operate fire operations seamlessly in the event the CDR dispatch facility is evacuated (and CAD remains up).

# **Agency Profiles (con't.)**

- Corona Fire (COR)
  - Type of Center: PD/Fire
  - CAD: West Covina Services Group (v.7.1.5)
  - Connections with:
    - AMR via printer
    - RVC via phone
    - RIV via phone
  - Number of Mobile Data Devices

**1**8

- Annual Incidents within jurisdiction (2012)
  - 10,000 (Approx)
- o Mutual/Auto Aid sent
  - 1,000 (Approx)
- Benefits to be seen with a C2C solution:
  - Day-to-Day: COR could benefit greatly in this area. Dispatchers could see a decrease in telephone and radio time on each incident (medical and any others that require outside resources). Ambulance response time could be reduced by eliminating the need at AMR to enter the duplicate incident information into their CAD. New agreements could be entered into with adjacent agencies to provide a Boundary Drop environment, thereby reducing response times to those areas where adjacent resources are closer than the COR resources.
  - Large Incident: As with other agencies, a C2C system would be a dual advantage to COR both when resources are requested and when COR resources are sent. Automating the request process would cut processing time while removing the telephone task from the dispatch floor. During a large scale operation in COR, often the request process and the coordination of outside resources is handled between the Incident Command and the Operational Area Coordinator (OAC), leaving the COR Dispatch Center out of the loop. Deploying a C2C could bring them back into the information loop and record actual times of requests, etc.
  - Situational Awareness: The SA would be improved for both Dispatch and field operations. Dispatchers would enjoy increased awareness of adjacent operational events, enabling better preparation for impacts on COR. Field units would also benefit from this increased awareness, in addition they could observe shared resource AVL for collision avoidance opportunities on any response.
  - Operational Area Coordination: There will be benefits seen by COR in this area. First, in obtaining up-to-date views of incidents and resources of all agencies continues to enhance preparedness at all levels. Secondly, the COR Fire Chief serves as an Alternate OAC. In this position, he could obtain core and relevant information at a glance enhancing his ability to perform this task and assist in providing quality intelligence back to the region's Fire Chiefs.

 Dispatch Back-up: Currently RVC provides the back up for the fire/ems dispatch function, although RVC is unable to provide station alerting or CAD data to COR units. A C2C solution would deepen the abilities of every agency to provide "near normal" services in the event that any one dispatch center becomes uninhabitable (if CAD system remains operational).

# **Agency Profiles (con't.)**

• Murrieta Fire (MUR)

0

- Type of Center: PD/Fire
- CAD: Cyrun (v.1.0.101)
- Connections with:
  - AMR via phone
  - RVC via phone
- Number of Mobile Data Devices

**•** 10

• Annual Incidents within jurisdiction (2012)

• 7,151

- Mutual/Auto Aid sent
  - 189
- Benefits to be seen with a C2C solution:
  - Day-to-Day: With a C2C solution, MUR could see a reduction in both telephone and radio traffic when contacting a cooperating agency when initiating or receiving a request for resources. Perhaps most importantly, since all contacts for outside resources are currently telephonic, this could result in reducing the call processing time by 3 minutes or more *for each incident*. In areas where an adjacent resource is placed on the call, this could effect a reduction of total response time (for all units committed to an incident). As with other agencies, reducing telephone and radio traffic in the dispatch center equates to making the dispatcher available for other tasks more often.
  - Large Incident: As with other agencies, a C2C system would be a dual advantage to MUR both when resources are requested and when MUR resources are sent. Automating the request process would cut processing time while removing the telephone task from the dispatch floor. During a large scale operation in MUR, sometimes the request process and the coordination of outside resources is handled between the Incident Command and the Operational Area Coordinator (OAC) in order to expedite the requests and not overburden the local dispatch center, leaving the MUR Dispatch Center out of the loop. Deploying a C2C could bring them back into the information loop and record actual times of requests, etc.
  - Situational Awareness: Minimal effect for MUR currently. Dispatch center could increase their SA by being aware of adjacent area activity and movement. Benefits in field would be maximized if resources have MDCs with AVL.
  - Operational Area Coordination: Benefit to MUR would be primarily better and faster coordination when outside resources are sent to MUR. Processing a request from outside agencies for a MUR resource would be enhanced, lessening the impact on the MUR dispatcher. MUR chief officers could become aware of incidents and resource movement on a larger scale and take local actions if necessary.

 Dispatch Back-up: A back up facility was not identified in the survey, however MUR does maintain an unstaffed EOC identified to provide dispatch functions.. A C2C solution would deepen the abilities of every agency to provide "near normal" services in the event that any one dispatch center becomes uninhabitable (if CAD system remains operational).

# **Agency Profiles (con't.)**

- Palm Springs Fire (PSP)
  - Type of Center: PD/Fire
  - CAD: Cyrun Alliance (v4.0)
  - Connections with:
    - AMR via radio
    - RVC via phone and radio
  - Number of Mobile Data Devices

• 6

- Annual Incidents within jurisdiction (2012)
  - 8,458
- o Mutual/Auto Aid sent
  - **5**
- Benefits to be seen with a C2C solution:
  - Day-to-Day: Largest benefit to PSP is in this area. Dispatchers could see a decrease in telephone and radio time on each incident (medical and any others that require outside resources). Ambulance response time could be reduced by eliminating the need at AMR to enter the duplicate incident information into their CAD. Other outside resource response times could also be reduced. New agreements could be entered into with adjacent agencies to provide a Boundary Drop environment (if desired) thereby reducing response times to those areas where adjacent resources are closer than the PSP resources.
  - Large Incident: As with other agencies, a C2C system would be a dual advantage to PSP both when resources are requested and when PSP resources are sent. Automating the request process would cut processing time while removing the telephone task from the dispatch floor. During a large scale operation in PSP, sometimes the request process and the coordination of outside resources is handled between the Incident Command and the Operational Area Coordinator (OAC), leaving the PSP Dispatch Center out of the loop. Deploying a C2C could bring them back into the information loop and notate actual times of requests, etc.
  - Situational Awareness: The SA would be improved for both Dispatch and field operations. Dispatchers would enjoy increased awareness of adjacent operational events, enabling better preparation for impacts on PSP. Field units would also benefit from this increased awareness, in addition they could observe shared resource AVL for collision avoidance opportunities on any response
  - Operational Area Coordination: Benefit to PSP would be primarily better and faster coordination when outside resources are sent to PSP. Processing a request from outside agencies for a PSP resource would be enhanced, lessening the impact on the PSP dispatcher. PSP chief officers could become aware of incidents and resource movement on a larger scale and take local actions if necessary.

 Dispatch Back-up: CDR is the alternate dispatch center, however it does not have an ability to alert PSP stations. If configured appropriately, a C2C project could effectively give CDR (or other dispatch center) the ability to continue fire operations seamlessly in the event the PSP dispatch facility is evacuated (and the CAD and communications lines remain operational).

# **Agency Profiles (con't.)**

- Riverside City Fire (RIV)
  - Type of Center: PD/Fire
  - CAD: Motorola Premier CAD
  - Connections with:
    - AMR via printer
    - RVC via telephone
    - COR via telephone
  - Number of Mobile Data Devices
    - **•** 24
  - Annual Incidents within jurisdiction (2012)
    - **29,000**
  - o Mutual/Auto Aid sent
    - **2**13
  - Benefits to be seen with a C2C solution:
    - Day-to-Day: RIV would see benefits in this area. Dispatchers could see a
      decrease in telephone and radio time on each incident that includes outside fire
      resources, reducing the processing time for those resources. New agreements
      could be entered into with adjacent agencies to provide a Boundary Drop
      environment (if desired), thereby reducing response times to those areas where
      adjacent resources are closer than the RIV resources.
    - Large Incident: As with other agencies, a C2C system would be a dual advantage to RIV both when resources are requested and when RIV resources are sent. Automating the request process would cut processing time, reducing response time of committed resources, while removing the telephone task from the dispatch floor. During a large scale operation in RIV, the request and order process becomes automated also and improves the incident record keeping. Deploying a C2C would also be a beneficial tool for the FD personnel assigned to the center during large operations.
    - Situational Awareness: The SA would be improved for both Dispatch and field operations. Dispatchers would enjoy increased awareness of adjacent operational events, enabling better preparation for impacts on RIV. Field units would also benefit from this increased awareness, in addition they could observe shared resource AVL for collision avoidance opportunities on any response.
    - Operational Area Coordination: There will be benefits seen by RIV in this area. First, in obtaining up-to-date views of incidents and resources of all agencies continues to enhance preparedness at all levels. Secondly, the RIV Fire Chief serves as an Alternate OAC. In this position, he could obtain core and relevant information at a glance enhancing his ability to perform this task and assist in providing quality intelligence back to the region's Fire Chiefs.
    - Dispatch Back-up: Minimal impact for RIV. Currently RIV has redundant systems and facilities.

# **Agency Profiles (con't.)**

- Riverside County Fire (RVC)
  - Type of Center: Fire and EMS
  - CAD: Northrop Grumman Altaris
  - Connections with:
    - AMR via CAD connection
    - RIV via telephone
    - CDR via telephone
    - COR via radio and telephone
    - MUR via telephone
    - PSP via radio and telephone
  - Number of Mobile Data Devices
    - 198
  - Annual Incidents within jurisdiction (2012)
    - **129,742**
  - o Mutual/Auto Aid sent
    - 931
  - Benefits to be seen with a C2C solution:
    - Day-to-Day: Due to RVC's size and area covered, they are uniquely situated to be in contact and assist all other Fire and EMS agencies in the region. RVC would experience the benefits of a C2C solution each day resulting in reduced response times for all incidents involving outside resources and reducing the number of tasks dispatchers must perform which then results in a reduced workload. A minimum time reduction in call processing of 45 seconds in some cases, to a reduction of 3 minutes of processing time in others. With the volume of incidents processed by this center, the time savings is quite substantial. Since a part of the staffing requirements for dispatch centers is based on *incident potential*, this may not result in a saving of labor costs, but does result in future cost offsets by allowing for incident growth.
    - Large Incident: Like the other agencies, a C2C system would be a dual advantage for RVC both when resources are requested and when RVC resources are sent. Automating the request process would cut processing time while removing the telephone task from the dispatch floor. During a large scale operation in RVC, often the request process and the coordination of outside resources is handled between the Incident Command and the Operational Area Coordinator (OAC). The C2C solution could be configured to allow the order and request tasks to be fulfilled either by the local dispatch center or at the Incident Command Post (ICP). In either case, this would allow the timely recording of incident milestones and be available to all participating agencies.
    - Situational Awareness: The SA would be improved for both Dispatch and field operations. Dispatchers would enjoy increased awareness of adjacent operational events, enabling better preparation for impacts on COR. Field units would also

benefit from this increased awareness, in addition they could observe shared resource AVL for collision avoidance opportunities on any response.

- Operational Area Coordination: Large benefits will be seen by RVC and the OAC in this area. First, in obtaining up-to-date views of incidents and resources of all agencies will continue to enhance preparedness at all levels. Secondly, for the RVC Fire Chief as OAC and the others that serve as an Alternate OAC. In this position, it becomes possible to obtain core and relevant information at a glance enhancing his ability to perform this task and assist in providing quality intelligence back to the region's Fire Chiefs.
- Dispatch Back-up: RVC currently has double redundant systems and facilities. A C2C would bring only minimal advantages to RVC. However, a C2C solution could lessen the impact on RVC dispatch personnel and operations in the event that any of the agencies that depend on RVC for back up operations actually need those services.

### **Observations** Noted

<u>Observation #1: Value of a CAD-to-CAD Solution</u> – There is sufficient data existing that provides proof of value in the solution for each of the following areas:

- Day-to-Day Operations and Incidents
- Large Scale Incidents
- Enhanced Situational Awareness
- Operational Area Coordination
- Enhanced Dispatch Center Back-up Operations

<u>Observation #2: Connections Between Dispatch Centers</u> - There are several agencies that share resources daily in the Riverside Operational Area through Automatic and Mutual Aid agreements. In addition the arrangement with AMR as the ALS Transport provider for most of the County causes a need to pass information between their communications center and individual fire communications centers many times throughout the day. This is accomplished via monitored radio transmissions, telephone calls and for others there is a 1-way link from the public agency CAD to AMR's center.

**Observation #3: Requesting Mutual and/or Automatic Aid** - There appears to be in some agencies a "work around" situation at play when it comes to the Order and Request process on larger incidents. Specifically, tasking the Incident Command structure with placing the requests directly to the Operational Area Coordination Center (OACC) rather than going through the local dispatch center is common. Most often this is done in order to relieve burden and strain on the smaller centers and to expedite the order. While this may achieve the objective of expedition, it introduces a noticed void or delay in information sharing. Many examples exist of where the local centers are not aware of complex orders or expanding incidents even though there may exist financial obligations in the local government. Perris ECC and the local IC are tasked with keeping the local centers current with requests and orders as is convenient, but it does introduce a delay in keeping decision makers current. Additionally, in the initial stages of a growing incident this can be burdensome on a IC if the command structure is not fully staffed.

<u>Observation #4: Enhancing Responses Through Auto Aid and Boundary Drop Arrangements</u> – It was observed in this project that several agencies recognized the need to adjust and modify some of their response plans due to the changing nature of the areas protected. Station openings, closings and in some cases moving fire stations will affect the response plans. If the local CAD system is configured for static plans, this does not adjust automatically for these events. If configured for dynamic response plans, this can take into consideration these change but only if adjacent agencies are aware of the changes in a timely fashion.

Additionally noted there is a variance among the agencies in the region when it comes to the parameters of the Automatic Aid agreements. Some were observed to be limited to certain geographic areas while others were either agency-wide or limited to specific resource types. The agreements have not changed drastically over the years while response models have.

At least two of the agencies interviewed are interested in researching Boundary Drop agreements with neighboring agencies. Some would "entertain" the idea, while at least one found no reason to explore this option.

<u>Observation #5: Lack of Existing Standardized GIS Base Map and Public Safety Layers</u> – For those agencies that have deployed some automation in call handling between cooperating agencies (eg: RVC, AMR, COR, RIV) there does not exist a shared GIS base map. This can cause a delay in response, as the

relayed incident information may need to be corrected prior to a dispatcher sending resources (eg: one CAD may have a street as Main St. when the other CAD lists it as Main Str.). While there may be a move to standardize the base map, this has not been accomplished within each of the CAD systems.

<u>Observation #6: Enhancing the Tools for the Area Coordinator Role</u> – Discussion took place with regard to the role and abilities of this function. The Riverside region currently employs a method of obtaining daily information for regional capabilities and resources. Developed locally, the *DSR* is utilized by the agencies participating in the survey and relied upon for a view of what resources are available. However, currently configured it is a snapshot of what was available at 8 AM that day. It was discovered that with rare exception it is not modified throughout the day as resources change their status and availability.

The Fire Chiefs of the region enjoy a close working relationship in this arena. When needed, the OAC or his/her alternate can instigate a conference call with all other Chiefs to share resource, weather or incident information effectively. Assembling updated information prior to the conference call remains a challenge.

Please refer to the document in the Attachments portion of this report for details and recommendations relative to the OAC function.

### **Project Recommendations**

Based on the collected information obtained through surveys, interviews and observations, the following recommendations are made:

<u>Recommendation #1: Adopt the Project</u> - The Riverside County Fire Chiefs Association adopt a resolution to pursue the feasibility of a CAD-to-CAD Data Sharing project among the Fire and EMS agencies of Riverside County. Further it is recommended that the Association establish a sub-committee comprised of the appropriate representatives of each participating agency and including subject matter experts from the field operations, dispatch centers, emergency management and communications/information sections to research the parameters of such a project, including but not limited to project design, performance requirements, governance and support requirements. This planning committee should also consider how a scaled-down, phased approach might be designed should total project funding be inadequate.

<u>Recommendation #2: Identify Funding for Project</u> - The Riverside County Fire Chiefs Association establish and delegate a separate committee to research possible funding sources for such a project, once the planning sub-committee establishes an adequate initial project design. A search for grant sources should include not only typical State and Federal sources, but also include local and private sector offerings, including those that may be classified as Public/Private Partnerships (if allowed). There are many stakeholders in the success of such a solution.

<u>Recommendation #3a: Enhance Existing Automatic Aid Agreements</u> – As a whole, the existing agreements should be reviewed to ensure that they meet current and future needs. Agreements should remove limiting restrictions such as geographical boundaries and reflect how aid is currently offered and requested in today's fire service, and anticipate how that may change with growth in the future. If agreements limit sharing of resources by type, verify that this restriction is still warranted. Use caution when reviewing agreements for "reciprocity". This requirement may not occur over a short period when measured apples-to-apples, but in a wider view may actually exist between all agencies.

<u>Recommendation #3b: Consider a Master Automatic Aid Agreement</u> – Many agencies when faced with maintaining multiple agency agreements have implemented a Master agreement for all agencies. Within this agreement, local restrictions or limitations can be handled through a referenced "Operational Plan" between specific agencies. In this manner keeping an agreement fresh and updated is made easier, as is adding additional agencies (if needed).

<u>Recommendation #4: Boundary Drop Agreement</u> – It was discovered during this project that certain agencies are desirous of such an agreement. It is recommended that these agencies begin discussions on how this agreement could be approached. While not all agencies would see benefit to such an agreement, this arrangement between two or more agencies would not have a deleterious effect on other agencies. Care must be given in the planning of such an agreement to discover all resultant and side-effects of such an arrangement prior to operating under these conditions. Boundary Drop agreements are in place and are being considered in many other areas across the nation and it is suggested that these agencies be contacted to obtain background information and planning strategies.

### Attachment "A"

### Riverside Operational Area

### Coordinator's Interviews

#### **OVERVIEW**

As part of the XRI Regional CAD Analysis project, during April 2013 interviews and discussions were held with and among the Operational Area Coordinator and the Alternate Op Area Coordinators. Questions were posed to these participants in order to assess whether or not persons acting as the Operational Area Coordinator (OAC) could benefit from information obtained through a future CAD-to-CAD project implementation.

The questions were designed to elicit information from participants in six (6) specific areas:

- Resource Knowledge at-hand
- Trust and Timeliness of Resource Information
- Updating Resources
- Requesting Assistance
- Requesting Out of Op Area Assistance
- Op Area Coordination Center Operations

#### PARTICIPANTS

Fire Chief John Hawkins (RRU/RVC) as Operational Area Coordinator Fire Chief John Medina (COR) as Alternate OAC Fire Chief Steven Earley (RIV) as Alternate OAC

Interviews were facilitated by Denny Neville, President of the Nevillewood Group, Inc., contractor for the XRI Regional CAD Analysis.

#### **OBSERVATIONS**

Originally the intent was to conduct interviews with the participants individually. After the first interview was held the group requested a single teleconference involving all participants. This proved to be a very valuable modification to the structure of this phase, as it allowed for open discussion and universal understanding of the line of questions posed to the group.

Prior to these interviews, the author of this report was unaware of a valuable tool currently in use in the Riverside Operational Area called the "DSR" (Daily Staffing Report). This is custom software designed to receive inputs at least daily from each of the participating fire agencies with regard to resource status and overall availability outside each local jurisdiction. This information is then available to each of the OACs at any time, along with the Perris Emergency Command Center (ECC) acting in the capacity of the Operational Area Coordination Center.

Chief Hawkins requested to make it clear that in his opinion the Riverside Operational Area enjoys deep levels of cooperation among the various fire and EMS agencies, and this was corroborated by both Chief Medina and Chief Earley. No singular instance or historical evidence of individual agency weaknesses or hesitation to contribute to mutual aid requests were noted or described. This appears to be a valid observation as witnessed by the daily changes made by each agency to the DSR as the single most useful tool in planning for resource movement and sharing.

There are daily examples of cooperation among the fire and EMS agencies in this Op Area, and historical evidence exists as to the Op Area's ability to assemble and dispatch resources within the area in a cooperative fashion. No complaints were noted of excessive delays, overuse or under-use of local agency resources when fulfilling in-county requests.

After discussion on the subject, Chiefs Hawkins, Medina and Earley concurred that the position of OAC is important to the effectiveness of the mutual aid system, and it is likely that the need for and tasks of this role will increase over time. At the same time, the responsibilities placed upon both the OAC and the OACC can be overwhelming. As Chief Hawkins described it, "It's one hell of an obligation."

Relative to the six (6) specific areas of questioning, the following was observed:

- **Resource Knowledge at-hand:** By incorporating the use of the DSR daily, this provides a snapshot of resource commitment and availability to the ECC.
  - Perris ECC does not utilize the DSR for RVC and RRU resource status, instead relying upon CAD for a dynamic profiling of resource status and location.
  - Concurrence exists among the interviewees that when the CA Multi-Agency Coordination (MACS) Group convenes, that the Riverside Op Area representative has adequate communications with both the OAC and the ECC.
- **Trust and Timeliness of Resource Information:** The ECC trusts information entered into the DSR, but acknowledges that this information was only 100% valid at the time of posting.
  - Few, if any local agencies update this information throughout the day as resource status changes.
  - Currently the OAC can request a conference call involving the local Fire Chiefs in order to brief the group on the situation(s) and/or request further resource commitments.
  - As described by the interviewees, the current method of assembling resource and incident information is "mechanical" in nature.
  - Doubt was expressed that the local agencies universally updated the ECC as often as they could with regard to resources and incident information.
- **Updating Resources:** Each agency is responsible for its own resource information and any modifications thereto.
  - Each agency contacts the individual that created the software in order to add/delete resources in the DSR.
  - Each agency submits personnel qualifications information to be placed into the Resource Order and Status System (ROSS) via an established course of action through the local area California Incident Command Certification System (CICCS).

- It appears as though the current methods of updating resource information are adequate for use within the current systems.
- **Requesting Assistance:** *Relative to the role of the OAC*, no concern was expressed on the ability of any local agency to participate in Automatic or Mutual Aid requests. Interviewees concurred that all local agencies are "eager to play" and cooperation "is at the highest level".
  - Concern was identified that any automation of this role needed to be carefully and completely understood in order to prevent the OAC from "overacting" and usurping the local Fire Chief's responsibilities.
- Requesting Out of Op Area Assistance: Concern was expressed in these areas:
  - Region VI's only ability to "see" Op Area resources is through ROSS. Most if not all of the other Region offices in California operate under the same constraints.
  - ROSS maintains three (3) separate databases (Local, State and Federal) which are not connected, which may affect resource requests both in and out of the Op Area.
  - Region VI does not have access to any CAD, therefore the resource information may be stale.
  - When activity in the Region escalates, resource requests get delayed. This can lead to additional dependence on local Riverside County resources as an alternative to obtaining timely outside resources.
- **Op Area Coordination Center Operations:** All expressed satisfaction with current OACC operations, including access to the facility and its information by the Alternate OACs. The Alternate OACs both felt that cooperation and assistance from staff at the ECC was of the highest level. Corona was identified as the Alternate OACC by a previous arrangement.
  - Agreement exists that the role of OACC can be a burden on any dispatch center and its staffing.
  - Concern was expressed that Corona may not have the staffing or access to the tools currently in order to rapidly take over the OACC responsibilities and functions.

In a separate interview with Perris ECC staff, similar questions were posed to them. Very similar answers to the above were obtained. Of note were:

- Great cooperation and involvement by the Alternate OACs is seen.
- Participation in Mutual Aid by all fire and EMS agencies is noted.
- Most often, local fire dispatch centers contact the ECC with resource requests via phone.
- When a local dispatch center contacts the ECC with resource requests, it is often unclear to the local dispatcher as to how the resources are being requested (local mutual aid, master mutual aid, etc). While this may not delay the resource assignment, it requires the ECC to make subsequent phone calls.
- On occasion, these resource requests are made directly to the ECC by the Incident Commander in the field if the local dispatch center is busy or the order is complex, adding another task for the IC.
- Perris ECC, as the OACC, retains the responsibility to enter the local resources into ROSS. Therefore it is imperative that the local agencies keep Perris abreast of resource changes.
- If local agencies are already cooperating under Automatic Aid and assigning resources, Perris may not be aware of resource movement or local agency resource depletion until a request is made for RVC or RRU resources.

- When an incident is being handled with the Next-generation Incident Command System (NICS), the ECC is only then able to visualize resource location information when assigned.
- ECC is not able to view Automatic Vehicle Location services on fire and EMS resources unless a resource is so equipped with AVL *and* has subscribed to NICS.

#### FINDINGS

- A. Overall, the Riverside Operational Area exercises mutual aid between fire and EMS agencies effectively, and on a frequent basis. Their resource allocation and movement is made according to established agreements and rules, with some flexibility given to the OAC for variance when appropriate.
- B. The Perris ECC performs well in its role as the OACC. There is high confidence among local agencies and the OACs that ECC staff knows their tasks well, and staffing escalates appropriately according to need. There were no known deficiencies noted with regard to this facility or the infrastructure in place. It is reasonable to assume that this facility and staff can also accommodate growth in the role of OACC.
- C. The development and use of the DSR can be seen as a very good example of appropriate resource planning and use. The effectiveness of the DSR is wholly dependent upon frequent evaluation and input of resource information at the local level. Given that currently this document is submitted in the morning and not frequently updated throughout the day, the DSR becomes a snapshot of a best-case scenario for resource availability.
- D. As currently used, DSR is a static tool used to make decisions in very dynamic settings. This then requires additional tasks by the ECC to ensure that resources can be committed as planned.
- E. At times large resource commitments can be made between local agencies without the knowledge of the OACC.
- F. The OAC and the Alternates are keenly aware and sensitive to the needs of the local Fire Chiefs.
- G. Individual Fire Chiefs and their staffs have expressed concerns both for and against increased use of Automatic Aid and Boundary Drop agreements. While the increase in use of either type of agreement can reduce the lag time in ordering resources, it can also lead to real or perceived "over-use" of resources from other agencies.
- H. Great concern exists in the Riverside Op Area on the Region VI's ability to view resource information in a real-time setting.
- I. There exists concern in the Riverside Op Area that the existence to two distinct ROSS databases (one for federal resources, one for state and local) without any coordinated link between them produces delays in resource deployment.

- J. There remains some concern with regard to utilizing the Corona dispatch center as the back-up OACC. While this use has never occurred, there is some doubt that the facility could accommodate the tasks, and that appropriate staff is not present at the facility. The requirements to successfully execute the role of the OACC can be likened to a two-part adhesive epoxy and catalyst. A facility and infrastructure designed for the task can only be successful if it is operated by a trained and available staff. Without both ingredients, the role cannot be adequately executed. It should be noted that there exists two back-up facilities to the Perris ECC (at the County Administrative Center in Riverside and in Indio). These locations are reported to have near identical capabilities in infrastructure to the ECC.
- K. In order to obtain a Common Operational Picture (COP) of an incident or Op Area resource commitment and strength (or both), the OAC is reliant upon the ECC staff to develop this product. If the ECC is not hosting the incident, there is a delay in obtaining the relevant information for the COP. Should the ECC be experiencing a high volume of incidents itself, it may be delayed in producing the COP until sufficient staffing is brought in. This same reliance relationship is repeated in most OACCs, and Riverside is not unique.
- L. In order for local Fire Chiefs and decision-makers to accept the arguments and reasoning for further commitment of resources or to understand a common threat, a COP is extremely important as the underpinnings for such a decision.
- M. The OAC can call for an Op Area conference call among the Fire Chiefs or their designees in order to provide a COP and briefing, or to discuss and request the need for further resource commitment. Given enough lead time, this COP could be a visual product (faxed documents, internet-available maps, DSRs, Power Points, etc), or could just be verbally shared via the conference call. Set up time for this type of call is reported to be a minimum of 30 minutes, possibly longer if there needs to be production time for a COP.
- N. With access to incident intelligence and resource commitment/availability, agencies uninvolved or peripherally involved can take a proactive role in area readiness.
- O. The Riverside Op Area agencies can and do provide a higher level of Situational Awareness (SA) to participants in incidents at all levels through the deployment of NICS. Utilized mainly on wildland incidents, NICS can also be used as an All-Hazard tool.

#### **RECOMMENDATIONS:**

- 1. Establish defined trigger-points for inputs to the DSR. For instance, create standard procedures for local fire agencies as to when to update their resources, such as an incident escalating to  $2^{nd}$  Alarm, adding staff to a reserve engine, etc. (*Findings C, D and E*).
- 2. Consider retention of the DSR as a basic tool, however automate the inputs into the DSR by connecting each CAD system to the DSR. This will undoubtedly require additional modifications to the DSR program itself (*Findings C, D and E*).
- 3. Define standard procedures for all local agencies describing when to notify the ECC of either increased activity or increased commitment of resources (*Finding E*).
- 4. Develop a minimum expectations list for the back-up OACC, to include facility needs, infrastructure minimum requirements, personnel training and deployment methods (*Finding J*). If the presently designated center cannot fulfill the need, consider making one or both of the current Perris ECC back-up centers the Alternate OACC (*Findings K, L, M and O*).
- 5. Develop an "ingredients" list for a standardized COP. Ascertain what the expectations are among the local Fire Chiefs for an Op Area COP, and create a standard procedure or guideline for its creation by the ECC. Determine among the expectations noted what would be the content of both a verbal and a graphic depiction of the COP (*Findings K and L*).
- 6. Should the Riverside Op Area decide to go forward with a CAD-to-CAD project, include the needs of both the OAC and OACC in the design of the system requirements, prioritized accordingly (Findings *A*, *B*, *C*, *D*, *E*, *F*, *J*, *K*, *L*, *M*, *N* and *O*).
- 7. Consider the automated connection to the DSR as part of a CAD-to-CAD design. It may replace the need to connect each CAD to the DSR (*Findings C, D and E*).
- 8. After receiving the XRI Regional CAD Analysis report, consider holding a workshop among the Fire Chiefs to further explore the impacts of expansion of Automatic Aid and/or Boundary Drop agreements. These concepts are complex and will have varied meanings and impacts to each individual agency (*Finding G*).
- 9. Discussion needs to take place at the Regional level with regard to the current static portrayal of resource status and availability, and the Region's inability to view real-time status and location data. Additionally, create discussions at this level on the need to provide automated views for decision makers at the Region and State levels. Other Op Areas will be willing to join in this discussion (*Findings H and I*).
- 10. Development of an "OAC Dashboard" would be a valuable tool for both the OAC and the OACCs in addition to any interested Chiefs. This type of tool can be deployed and updated either manually or in an automated fashion, thereby relying less on the manual labors of the OACC. It

can also be a tool used in the EOCs of the participating agencies. It can be created to include both resource commitment levels and availability levels, along with Incident data (Findings K, L and M).

11. Data sharing is a very powerful tool for the Fire Chief, particularly when shared across boundaries. Along with the basic concepts of Mutual Aid, the sharing of data can strengthen the resources of an area while at the same time decreasing the time needed to request, assemble and deploy said resources. Consider including data sharing (where appropriate) as a value to the mission statement of the Riverside County Fire Chiefs Association.

## Acknowledgements

The author wishes to express his appreciation to the participating agencies within the Riverside County Operational Area for their cooperation and support for this project. Often in a project of this type progress on the collection of data can be stymied by agencies and individuals that are suspicious of the true intent of the project and protective of their own agency's information. For this project, I found *all* participants to be welcoming and helpful. Therefore, the information contained in this report can be construed as true and valid, without any perceived bias toward or against any one agency.

Additionally, there are individuals that should be singled out for their interest and participation in the CAD2CAD Analysis Project. These true professionals not only offered cooperation above and beyond that which was requested by the author, they also provided thoughtful and meaningful ideas on the importance of sharing data and how that could influence improved public safety performance for the Riverside area. These people are truly engaged in the idea of taking data sharing to the next level.

Thank you and deep appreciation to these individuals:

*Captain Andreas Johansson, Corona FD* – Without his interest and determined efforts, this project would not have existed.

*Fire Chief John Medina, Corona* FD – His leadership and willingness to engage his department for the good of all Riverside agencies is an example of how the combined strengths of individual agencies can be pulled together to make a stronger regional approach.

*Fire Chief John Hawkins, CALFIRE/Riverside County Fire* – A refreshing openness and willingness to look at existing policies and procedures in order to gauge their effectiveness for today's demands. True leadership is always noted and appreciated by all.

*Fire Chief Steven Earley, Riverside City FD* – His historic perspectives and willingness to ask questions made this project look into areas that were not originally thought to be necessarily relevant to the objectives.

To all who participated, thank you for the opportunity to view, analyze and comment on your operations!