



### The Coves Cities Sub-Zone

The Coves Cities Sub-zone contains the incorporated cities of Rancho Mirage, Palm Desert and Indian Wells, combined population of 70,621. The Abaris Group has not received any data regarding the response volume or response time compliance of the provider for this sub-zone.

### The Coves Cities Zone Determination – Exclusive (Grandfathered)

Springs Ambulance Service provided emergency ambulance service to this area prior to 1981. The cities of Rancho Mirage, Indian Wells and Palm Desert combined to form the Cove Communities Services Commission in order to provide municipal emergency ambulance service to these three cities. Prior to 1981, the Cove Communities Services Commission contracted with Riverside County Fire Department in order to provide municipal emergency ambulance services. In 1984, Springs Ambulance Service filed a lawsuit claiming the Cove Communities Services Commission violated federal antitrust laws. Springs Ambulance Service lost the lawsuit.

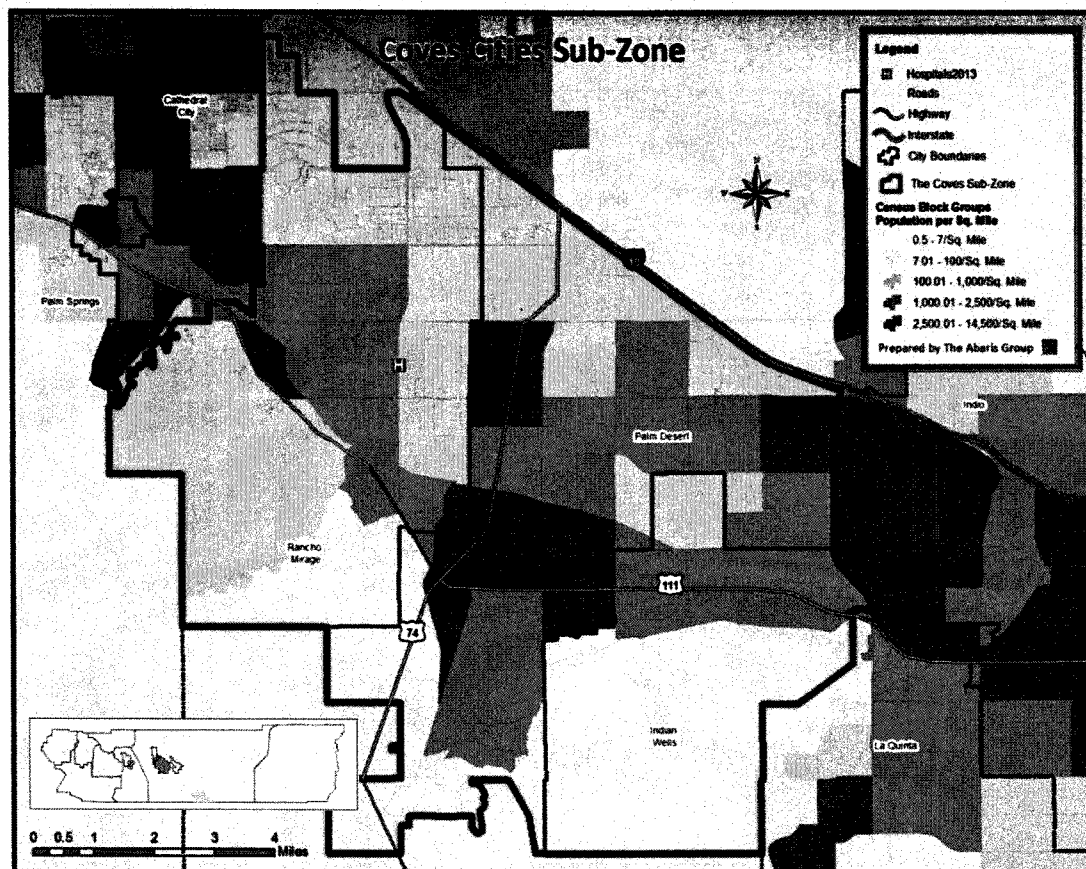


Figure 74 - Cove Cities Sub-Zone



## Response Times

Among the most highly scrutinized components of any EMS system are the ambulance response-time standards. Response time includes time from unit alerted to unit on scene, turnout time is included. The Riverside County ambulance response times are generally consistent with those reviewed from other systems and industry-accepted standards. The only exception is the metro/urban ALS transport time of 9:59 minutes for emergencies; most systems have adopted the National Fire Protection Association (NFPA) guideline of 7:59 minutes. Variances are typically seen in systems where first responders are ALS trained, which can extend the response time by two to six minutes.

The extended transport response times, when there is ALS first response, are supported because early defibrillation is one of the few proven benefits of a short response time. In fact, the Seattle EMS system, which has one of the highest cardiac arrest survival rates, only has EMT/firefighters with automated external defibrillators (AEDs) as first responders.

The Abaris Group also contrasted the current response time requirements against the population density within existing Riverside County 2010 Census Block Groups, and found that the currently expected response-time allocations (e.g., urban, suburban, rural, etc.) are appropriate, given the underlying population base and density. However, it does not appear that Riverside County is currently using a specific density/mile standard for determining response time standards, which becomes important as populations shift.

## Current Response Zones & Time Standards

Response Times – Emergency					
Region	Metro	Urban	Suburban	Rural	Wilderness
Population Density/Sq. Mile	> 2,500	1,000-2,500	100-1,000	7-100	< 7
Current Required Response Standard					
Transport	9:59	13:59	19:59	59:59 or Best Effort	
Transport with 1 <sup>st</sup> Resp. ALS	11:59	None	None	None	None
1 <sup>st</sup> Response ALS	None/9:59*	None	None	None	None

Source: NFPA Standard (2009), CA EMS Authority Guidelines & The Abaris Group experience (unit alert to ambulance on scene)

Notes: \* Riverside and Corona have a 9:59 standard, but response times are not reported to REMSA.

Figure 75 - Response Times - Emergency



In addition, The Abaris Group evaluated the actual required EMS performance standard with other industry standards and found the current standard is not consistent with national (e.g., NFPA) standards and state guidelines adopted by the California EMS Authority (EMSA).

Response Times – Non-Emergency					
Region	Metro	Urban	Suburban	Rural	Wilderness
Density/Sq. Mile	> 2,500	1,000-2,500	100-1,000	7-100	< 7
Current Response Standard					
Transport	None	None	None	None	None
Transport with 1 <sup>st</sup> Resp. ALS	None	None	None	None	None
1 <sup>st</sup> Resp. ALS	None	None	None	None	None

Figure 76 - Response Times - Non-Emergency

### Other Response Standards/Penalties

Riverside County currently dispatches all ambulances as an emergency and does not have a non-emergency response time standard established in its ambulance contracts. While the majority of communications centers stated they utilize EMD, it is unclear how this is translating into prioritizing medical calls. Most EMS systems have adopted both emergency and non-emergency standards when EMD is available. This reduces the risk of an accident, which provides for a safer EMS system. All jurisdictions that provide EMD in Riverside County offer pre-arrival instructions.

Taking advantage of the high degree of first responder training that has developed in the last 15 years, allows an EMS system to better allocate resources. By relaxing the response times of ambulances, the system can fund other priorities; this can include a Countywide training program, consolidated CQI program, standardized equipment, common ePCR data platform, dispatch nurse triage, alternate transportation, community paramedics, and other innovative best practices. Key to this practice should be an underlying and documented ALS first response standard, which is not in place within the County at this time. Care should be taken when extending response times as this could reduce the total number of available ambulances during a disaster.

Contemporary EMS system agreements include financial penalties when transport response times exceed the predetermined thresholds established in the contract. The objective is to create a financial incentive to mitigate late response times and deliver a high-performance system. Response time outliers, typically defined as 150 percent of the defined standard, should have a significant financial penalty above and beyond a per-minute penalty. With a substantial fiscal impact, such as \$1,000-5,000 per call, the provider is highly incentivized to eliminate outlier responses.



## Response Time Requirements

The current response time requirements are reasonably consistent with industry standards. The only exception would be the most stringent response time standard, which is assumed to be for the major urban areas with the highest population density. Schedule E, Section II (A) of the current agreement defines the response time:

*“Response times shall be calculated from the time of the 9-1-1 call notification by City, County or other approved dispatch center to the ambulance or ambulance provider (clock will not begin until the ambulance or ambulance provider has received a verifiable address, nature of call and 15 seconds dispatch processing time) until the time that an ambulance notifies the City or County or other approved dispatch center of its arrival at the scene of the emergency medical service call or staging area or until the ambulance is canceled by the dispatch center. If an ambulance response is downgraded by the dispatcher, the response time will include the time from its initial dispatch until the time it is downgraded.”*

The Abaris Group is unaware of what the official “time-stamp” event would be for the clock to start, given this somewhat vague definition. From the quote above, the time stamp event would appear to be the “unit alert” time, as there would be no reason to delay the unit alert once that time frame and activities were concluded.

The California EMSA “System Standards and Guidelines” document, Section 4.05 defines the recommended response-time standard for ALS transport units as “not greater than 8 minutes” from the receipt of the call at the primary PSAP to on-scene for metro/urban areas. While few systems have the ability to track EMS calls from primary PSAP to on-scene, using this standard, the minimum standard for response times for metro/urban areas would not likely be greater than 8 minutes from unit alert to on-scene.

The current response time standard for the metro/urban areas is 9:59 or better, from unit alert to on-scene. For those cities under contract for ALS first response enhancement (i.e., Riverside and Corona), that response time is extended by two minutes, to 11:59 or better.

There is considerable growing interest across the country to re-evaluate “response times” as the sole measure of system performance. Studies on increasing or decreasing response time demonstrate that responses time are a poor indicator of performance.<sup>25,26,27</sup> Movement away from response times may never occur but other “outcome” measures will continue to emerge and will likely supplement or even take precedent over actual response times for the performance marker to community EMS systems.

<sup>25</sup> Myers JB, Slovis CM, Eckstein M, et al. Evidence-based performance measures for EMS systems: A model for expanded EMD benchmarking. A statement developed by the 2007 Consortium U.S. Metropolitan Municipalities’ EMS Medical Directors. Prehosp Emerg Care. 2008;12(2):141–151;

<sup>26</sup> Blackwell TH, Kline JA, Willis JJ, et al. Lack of association between pre-hospital response times and patient outcomes. Prehosp Emerg Care. 2009;13(4):444–450;

<sup>27</sup> Pons PT, Haukoos JS, Bludworth W, et al. Paramedic response time: Does it affect patient survival? Acad Emerg Med. 2005;12(7):594–600





One cannot understate the community and public sentiment for response times though and thus some anchor on response times will likely remain. However, future system design should entertain other outcome measures in developing and holding their local EMS system accountable for performance.

The maps on the following page reflect the current response time requirements within the various zones in Riverside County.

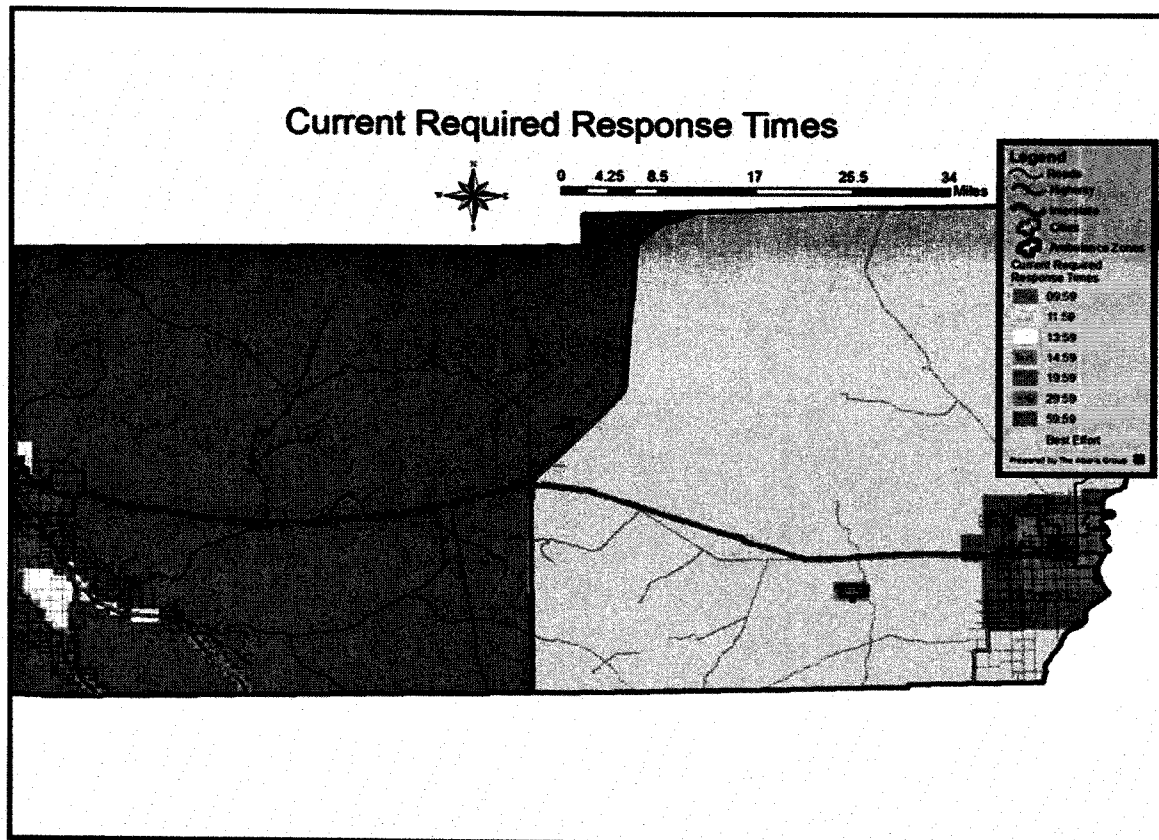
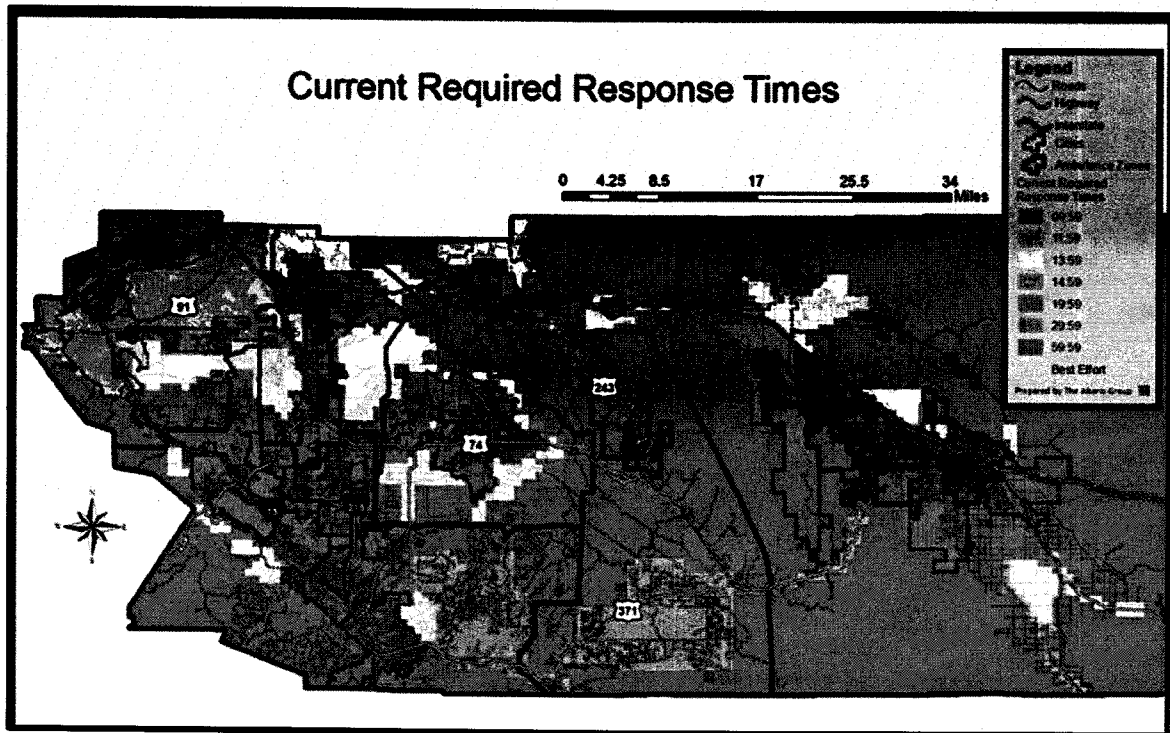


Figure 77 - Current Required Response Times



## **Emergency Medical Services Patient Receiving Hospitals**

There are a total of 16 General Acute Care Hospitals within Riverside County that receive patients from the pre-hospital EMS system. These 16 hospitals are designated as Pre-hospital Receiving Centers (PRC) by REMSA. REMSA is responsible for designating Base Hospitals that assist the EMS Medical Director with the provision of medical control via on-line medical direction to pre-hospital personnel in the field. Additionally, REMSA has established a network of specific hospitals that specialize in the care of trauma, ST-elevated myocardial infarction (STEMI) and pediatric trauma patients. REMSA incorporates state and national guidelines into specialty center requirements (e.g., Society of Chest Pain Centers Accreditation for STEMI Receiving Center Designation). REMSA policies require pre-hospital personnel to be trained and equipped to identify patients who will benefit from specialized care. Pre-hospital personnel collaborate with specialty care Base Hospitals to assure ambulance transport to the closest, designated specialty care hospital. The entire County EMS system is managed through oversight by REMSA.



## Specialty Hospital Care

### Trauma Centers

Currently, REMSA has identified two areas of specialty care – trauma and STEMI. Stroke destination protocols are planned for implementation by mid-2014. REMSA policies designate specialty receiving hospitals and require ambulance providers to transport 9-1-1 patients only to these specialty centers when applicable. Three Level II trauma centers were established in Riverside County in 1994 – Desert Regional Medical Center, Riverside Community Hospital, and Riverside County Regional Medical Center. Inland Valley Medical Center became a Level III trauma center in 1996 and has announced that it will seek Level II accreditation this year. Riverside County Regional Medical Center also became a Level II pediatric trauma center in 2009, and was verified by American College of Surgeons (ACS) in 2012. Some concerns were raised during the interview process regarding surgical on-call coverage being shared with the other regional pediatric trauma center and the inconsistency of accepting patients to the pediatric intensive care unit (PICU). There have been occasions where pediatric cases are transferred to Riverside County Regional Medical Center and then transferred again to another pediatric trauma center.

The County and its trauma centers have also enjoyed a strong relationship with the two trauma centers in San Bernardino County accredited in 1981 – Arrowhead Regional Medical Center, a Level II trauma center, and Loma Linda University Medical Center, a Level I adult and pediatric trauma center (pediatric trauma designated in 2004). Trauma patients are taken to the closest trauma facility, regardless of where the patient is in either county. Due to the close working relationship, there is one trauma program manager group and one trauma advisory committee (TAC); each meets quarterly to discuss issues and define standardized policies for the trauma systems in both counties. The trauma triage criteria were reviewed in 2010 and closely resemble the ACS; the major difference was a senior age of 65 (versus 55). In reviewing the trauma data (see Figure 78), the incident rate per 1,000 people and percentage of patients discharged from the ED are consistent with other trauma systems in California. The current trauma system plan was written in 2001; there may be opportunities to review and enhance the plan. However, with close to 20 years of experience, the pre-hospital and hospital approach to trauma care in Riverside County has matured into a well-run system.

Trauma System Volume					
Year	2012	2011	2010	2009	2008
Trauma volume	6,257	5,041	4,353	5,343	4,705
Discharged home (%)	35%	23%	17%	30%	23%
Pediatric (%)	10%	13%	14%	13%	13%
Incident rate per 1,000 population	2.81	2.29	1.99	2.50	2.24

Source: REMSA

Figure 78 - Trauma System Volume



### ST Elevation Myocardial Infarction (STEMI) Centers

In 2008, four hospitals became designated receiving centers for STEMI patients. Three of the receiving centers are in the Desert Zone leaving only one for the majority of the county's population. As such, there are STEMI receiving centers in Loma Linda, Upland, and Escondido that are recognized to receive Riverside County STEMI alerts due to their closer proximity. Loma Linda Medical Center-Murrieta is applying for designation, which will significantly improve capability within the County. STEMI patients are typically identified by the 12-lead EKG interpretation performed by the pre-hospital staff's heart monitor and transmitted to the receiving centers.

Based on data managed by REMSA, the system has an over-triage rate of 20 percent and door-to-balloon interval times are less than 90 minutes at least 90 percent of the time (see Figure 79), which surpasses the American Heart Association (AHA) recommended guideline. The *Journal of Emergency Medical Services* (JEMS) 200-City Survey identified only 31 (16 percent) systems that are tracking STEMI performance and roughly half are achieving the AHA guidelines.<sup>28</sup> The percentage of catheterization lab alerts is increasing as the

system matures, which will further improve interval times as the minimum system savings is 12 minutes when the catheterization lab team is called prior to patient

STEMI System Volume				
Indicator	2012	2010	2009	2008
Total STEMI alerts called	413	349	367	238
False alerts (%)	18%	21%	20%	32%
D2B average (minutes)	63	60	58	68
D2B within 90 minutes	93%	91%	93%	91%

Source: REMSA, 2011 missing due to lack of provider data and REMSA staff time to compile

Notes: D2B = door to balloon

Figure 79 - STEMI System Volume

arrival. The STEMI committee meets bimonthly; one area identified for improvement is the policy education of pre-hospital staff to bypass local hospitals and transport patients to STEMI receiving centers immediately in order to decrease door-to-balloon interval. This specialty committee is specifically focused on STEMI care and does not currently review cardiac-related events, such as cardiac arrest. Some EMS systems have broadened the scope to include more cardiac events and track return of spontaneous circulation (ROSC) rates and cardiac arrest survivability following the uniform standards established by the Cardiac Arrest Registry to Enhance Survival (CARES)<sup>29</sup> and the Utstein Style.<sup>30</sup>

### Stroke Centers

REMSA is currently working with local hospitals to establish a stroke program and has been meeting regularly to determine policies, protocols, data registry, and an estimated volume with an ultimate stroke destination protocol by the spring of 2014. Four hospitals have achieved external accreditation as primary stroke centers and two have attained comprehensive stroke center status. REMSA staff estimates that the stroke specialty center designation will be active within the next year.

<sup>28</sup> Michael Ward, "Forecast of the Future," *Journal of Emergency Medical Services* (JEMS), Vol. 38, No. 2 (February 2013): 28.

<sup>29</sup> <https://mycares.net>

<sup>30</sup> Cummins RO, Chamberlain DA, Abramson NS, Allen M, Baskett PJ, Becker L, Bossaert L, Delooy HH, Dick WF, Eisenberg MS, et al, "Recommended Guidelines for Uniform Reporting of Data From Out-of-Hospital Cardiac Arrest: The Utstein Style," *American Heart Association Journal*, Vol. 84, No. 2 (August 1991) 960-975.



## Continuous Quality Improvement and Clinical Care

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### Continuous Quality Improvement (CQI)

#### Background

The concept of CQI traces its roots back to W. Edwards Deming, considered by most as the “father of CQI.” His substantial work in Japan with the auto industry following World War II is legendary. Unfortunately, most of the activities in CQI have been focused on the manufacturing of products, not the delivery of services. Only in the last 15-20 years has there been a concerted effort to move the products-based CQI process into the service delivery arena. Nonetheless, healthcare has fully embraced the concept of CQI and proving the value of an organization’s services is a cornerstone of Health Reform. The Riverside County EMS system was introduced to CQI in 1994 through the California EMS Quality Improvement Project funded by a state grant.

#### Current CQI Summary

REMSA has an established CQI plan, as required by California Code of Regulations, Title 22, Chapter 12, et seq. It defines the system participants, expectations, policies and procedures of REMSA and key performance indicators. The plan describes what the providers will be expected to submit to REMSA, the frequency of that collection, and the REMSA staff reviewing those submissions. The plan also describes the feedback that will be provided to the system participants.

The REMSA CQI plan was developed in 2007, which also established the CQI committee for on-going collaborative input and direction. Since that time the Countywide CQI focus has been on assuring specialty care programs are producing good patient outcomes, use of Helicopter EMS (HEMS) and assisting provider agencies and Base Hospitals with focus on their individual CQI programs. This includes assisting the fire departments with the successful implementation of the County electronic patient care report (ePCR) system. Also during this time, REMSA developed and implemented a comprehensive set of Clinical Skills Performance Standards as a model for consistency in education/training, concurrent performance evaluations and clinical performance improvement. With this different focus and limited staffing, the CQI Technical Advisory Group (TAG) has not been meeting. The topics of system-wide CQI and advancement of related protocols have been vetted through the Pre-hospital Medical Advisory Committee (PMAC). PMAC has consistently met quarterly since 2004.

It should be noted that two current ambulance companies still do not have an approved CQI plan and there is a requirement that all provider plans should be submitted annually to REMSA, which is not the case as of the preparation of this report.



REMSA staff stated a desire to identify existing and new stakeholders to represent the different provider types, e.g., first response, 9-1-1 transport, inter-facility transport, HEMS, and base hospitals to reestablish the CQI TAG meetings. The priority would be to:

- Establish a collaborative effort to decide what to measure
- Start with the perceived problems until evidently identified through data analysis
- Create one CQI template
- Trend data
- Define specific indicators including the eight mandated by California Title 22
- Eliminate fragmentation of different CQI plans and indicators
- Publish CQI data regularly to system stakeholder



## Clinical Care

### Protocols and Innovation

The current clinical protocols are overseen by the REMSA Medical Director, which is a part-time position (approximately 0.25 FTE) contracted to a physician licensed in emergency medicine.<sup>31</sup> Protocols are reviewed and updated annually. Changes are released in December and are effective in April of the following year; this provides three months to educate staff. Currently, the protocol manual is provided electronically and in hard copy. While there are smartphone applications that offer the Riverside protocols, none is endorsed due to concerns about how they are translated into the application and whether users are notified of changes. Some EMS systems have selected a particular application and partnered with the vendor to ensure their protocols are compliant with their needs; this level of access is considered a best practice.

During the review process, it was mentioned that REMSA recently collaborated with system stakeholders to completely redesign their Policy, Protocol and Procedures Manual. This endeavor was widely viewed as a positive and progressive step forward for the EMS system. The collaborative focused on rebuilding policies, protocols and procedures based upon available medical evidence, expert opinion and consensus of the local medical community toward the goal of optimal patient care. This redesign resulted in protocols that now cite the clinical basis for the protocol. While this is not necessarily evidence-based, it is a step towards developing data-driven protocols based on local, regional, or industry clinical studies and outcomes, which is the ideal solution for improving clinical care. Additionally, the collaborative paid attention to operational and financial impacts that would be felt by all system partners. While this process resulted in many improvements, the collaborative was challenged by the lack of robust clinical data from within the County EMS system. This lack of data, in particular patient outcome data, limited the academic level discussions based upon an incomplete view of what is going on within the system. This dynamic was frustrating to the collaborative and prevented full exploration of innovative care opportunities that have been adopted in other EMS systems. A subsequent benefit of the project is that all system participants have committed to focus quality improvement efforts on the cooperative development and implementation of a single, robust County wide ePCR system. The goal of the County's data collection program include future integration with hospital electronic medical records (EMR) and two-way data sharing for "real time" and outcome information. Excellent progress has been made in the ePCR implementation since the protocol updates, particularly by the fire departments.

It was mentioned during the ride-alongs and interviews that the Riverside protocols are fairly moderate, not progressive and not significantly behind compared to other EMS systems. Several advanced life support (ALS) providers mentioned that the new protocol algorithms are well done and easy to follow. Some of the concerns mentioned include the lack of protocol modeling around the 2010 American Heart

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<sup>31</sup> As of the publishing date, the EMS Medical Director position is transitioning to a new 0.5 FTE County employee position.





Association (AHA) guidelines for cardiac care as well as the lack of hypothermic resuscitation. In general, the air ambulance providers are moving forward with a tranexamic acid (TXA) protocol, which has shown to reduce the risk of death from bleeding in traumatic patients and is under review by Riverside County.<sup>32,33,34</sup>

Many EMS and trauma innovations have been discovered during military combat medicine. A recent innovation has been the use of hemostatic agents within bandages; a 2009 combat trauma study published by the National Institutes of Health identified decreased or stopped bleeding with hemostatic bandages versus a traditional field bandage.<sup>35</sup> EMS systems in other areas have included these bandages as either an ALS or basic life support (BLS) skill. Continuous positive airway pressure (CPAP) has been available for the last two years; however, it is limited to only congestive heart failure (CHF) treatment. A January 2011 article in the *Journal of Emergency Medical Services* (JEMS) shared studies and clinical findings for using CPAP to treat asthma/chronic obstructive pulmonary disease (COPD), drowning, carbon monoxide poisoning, and pulmonary infections; some systems have added it as a BLS skill.<sup>36</sup>

The Trauma Advisory Committee (TAC) is currently advising updates to the determination of death protocol for trauma full arrests in the field; there is an apparent long history of support for this in other systems that have adopted this protocol in the last ten years. The current medical full arrest protocol also requires two rounds of resuscitative medications even if it is an unwitnessed arrest. Other counties have reviewed these cases and determined that checking for a rhythm with a heart monitor in two leads is sufficient to pronounce these patients. Another challenge faced by pre-hospital providers is the patient who has do not resuscitate (DNR) or physician orders for life sustaining treatment (POLST) directives, such as hospice care, but the family is unable to produce DNR/POLST paperwork. Historically, these patients must be treated until the paperwork is produced or death is determined after resuscitative efforts. In 2007, Los Angeles County (in partnership with University of California-Los Angeles) implemented a policy that family members could verbally request DNR in accordance with patient wishes as well as not resuscitating patients found without a heartbeat and at least 10 minutes have elapsed before CPR starts.<sup>37</sup> EMS personnel reported considerable satisfaction with the new guidelines; there were no reports of adverse consequences attributable to them. The policy is flexible and allows first responders or ambulance crews to perform resuscitative efforts if there is any concern about the DNR's veracity. Other counties have adopted this policy with similar positive results.

<sup>32</sup> <http://www.ncbi.nlm.nih.gov/pubmed/21795884>

<sup>33</sup> <http://drugtopics.modernmedicine.com/drug-topics/news/modernmedicine/modern-medicine-news/txa-reduces-death-bleeding-trauma-patients>

<sup>34</sup> <http://www.jems.com/article/patient-care/role-tranexamic-acid-ems-preoperative-tr>

<sup>35</sup> <http://www.ncbi.nlm.nih.gov/pubmed/19954487>

<sup>36</sup> <http://www.jems.com/article/patient-care/many-benefits-cpap>

<sup>37</sup> <http://www.chcf.org/publications/2010/04/in-a-heartbeat-new-resuscitation-protocol-expands-ems-options>



TAC is also advising changes to the spinal immobilization protocols, which, if approved, is a very progressive step. A recent article in JEMS cited a number of studies that indicates there is no evidence of benefit and even some findings that it can cause more harm than good.<sup>38</sup> Alameda County (CA) implemented a more liberal immobilization procedure in 2012 that no longer requires spinal immobilization for reliable patients with a normal spine exam and normal motor/sensory findings.<sup>39</sup> Other EMS systems have already eliminated immobilization for patients who have self-extricated following a vehicle collision and have no abnormal findings upon spinal exam.

Regardless of which protocols, skills, and equipment are approved, there is a need for uniform training materials and standards to be disseminated to all EMS providers. Having a consistent training approach will elevate the training Countywide and ensure all providers receive identical, reliable education.

#### Clinical Data and Trending

Riverside County has taken significant strides in developing a standardized data platform. All ALS first responders and transport providers are using ePCRs currently. The County has selected Sansio to be the software platform and all ALS providers must be using it by July 2015 per REMSA Policy 7701. AMR will be migrating to the Sansio vendor by early 2014 and it is expected that Blythe Ambulance (now AMR), Cathedral City, and Palm Springs will do so by the 2015 deadline. Moving to a single data platform for all first responder and transport providers is an industry best practice; this will allow greater access to clinical information to develop data-driven protocols, training, and system decision-making.

#### Medical Control

Medical Control is maintained by the REMSA Medical Director via standing order protocols and through authorized Base Hospitals for on-line medical direction. REMSA's medical control model utilizes Base Hospitals to assist the REMSA Medical Director with establishment of medical control over the EMS system pursuant to the California Health and Safety Code, Division 2.5. Each Base Hospital is required by REMSA policy to have a Base Hospital Physician Director and a dedicated full time Paramedic Liaison Nurse (PLN). These two positions are responsible for coordinating activities of the Base Hospital within REMSA policies. The PLNs in particular play a very active role in the EMS system, including provider feedback on clinical care, policy and protocol development, participation on REMSA committees and coordination of education/training opportunities within their respective catchment areas. The primary function of the Base Hospitals is to provide on-line medical direction to EMS personnel in the field via two-way voice communication. Six of the 16 General Acute Care Hospitals within Riverside County are authorized by REMSA to function as Base Hospitals. This is a large number of Base Hospitals based upon the demonstrated system need. During focused interviews some stakeholders relayed incidents of inconsistency between Base Hospitals for medical direction thereby creating an environment where field personnel "shop" for a Base Hospital due to this known variation. It is an inherent challenge when so many hospitals within a singular system are designated as Base Hospitals and share overlapping

<sup>38</sup> Jim Morrissey, "Spinal Immobilization, Time for a Change," Journal of Emergency Medical Services (JEMS), Vol. 38, No. 3 (March 2013): 28.

<sup>39</sup> [http://acgov.org/ems/OFM\\_2011/field\\_manual/PROCEDURES/SPINAL\\_IMMOBILIZATION.pdf](http://acgov.org/ems/OFM_2011/field_manual/PROCEDURES/SPINAL_IMMOBILIZATION.pdf)



geographical areas. A particular system observation followed by concerns expressed by stakeholders was the current policy for patient distribution during Multiple Casualty Incidents (MCIs). This function is currently performed by any one of the six authorized base hospitals. This practice presents a challenge to innovative opportunities for development of a comprehensive, integrated and coordinated regional medical control and patient distribution model.

### **Emergency Medical Services Committees**

The Riverside County EMS system maintains ten committees that are staffed by a combination of system stakeholders and REMSA staff. This is a large array of committees requiring considerable County resources and staff to maintain. There is also overlap for policy review between some of the committees and the potential for missing communication between these committees. Most of these committees are either directly or indirectly involved in some aspect of EMS system review and related quality assurance/improvement activities.

A large sample of the EMS committee meetings were attended by the project consultants and appeared to have well-defined agendas, were managed effectively, and decisions were made in a collaborative manner. However, The Abaris Group noted large attendances at some committees, e.g., the Pre-hospital Medical Advisory Committee (PMAC), and much overlap of stakeholders at most others. It is understood that this level of committee structure also requires substantial REMSA staff engagement in the planning, staffing and post meeting follow up. It was noted that many of the attendees at meetings were the same EMS stakeholders meeting on different topic issues.

The structure for the different REMSA committees includes:

- Pre-hospital Medical Advisory Committee (PMAC) – PMAC serves as an advisory body to the REMSA Medical Director. This stakeholder group is comprised of ED medical directors, ED nurse managers, pre-hospital liaison nurses, first response and transport providers, police representative, EMS training program, and designees from other committees. The size of the committee is quite large as the voting membership is in excess of 45 people with the hospital staff alone comprising 32 members and a total invitee list over 100. The size and predominantly hospital-based membership could impact the effectiveness of the committee.
- Emergency Medical Care Committee (EMCC) – EMCC serves in an advisory capacity to the Riverside County Board of Supervisors (BOS) and REMSA concerning all aspects of emergency medical care within the County. EMCC reports its observations and recommendations on the various aspects of the emergency medical care within the County, including the feasibility and content of emergency medical care in Riverside County. There are 17 voting members and 66 invitees on the EMCC mailing list. The voting membership includes representatives from EMS, fire, law, hospital, physician, city management, PMAC, and a representative from each of the five BOS districts.



- Policy Review Forum (PRF) – The forum allows each organization, as well as each individual system participant, to participate in and observe the annual policy review process. The PRF was formalized in 2011, and was developed during REMSA’s 2010 review of the treatment protocols. It performs a systematic annual review of REMSA policies, protocols, procedures, and standards, and builds a current and consistent basis for regulation of the EMS system via REMSA’s policy manual. It was noted by one of the attendees that the REMSA Medical Director does not attend these meetings.
- Trauma Audit Committee (TAC) – This committee is comprised of various trauma center stakeholders and the EMS medical directors for the region (i.e., REMSA and Inland Counties EMS Agency - ICEMA). Major responsibilities include trauma system performance review and providing recommendations to REMSA and ICEMA. Pre-hospital providers are not currently represented on the committee or invited to attend.
- Trauma Program Manager Committee – This group of trauma program managers and pre-hospital liaison nurses handles many of the day-to-day operational needs of the trauma systems in REMSA and ICEMA. This includes uniform trauma patient criteria, registry data standardization for REMSA needs, chart audit filters, and ensuring effective pediatric care and tracking diversions by adult trauma centers. The meeting is chaired by an elected hospital representative with an elected secretary taking notes; this is considered a best practice when committees are self-governing with the EMS specialists providing support as needed.
- STEMI System Technical Advisory Group – This is a multidisciplinary committee comprised of various system stakeholders. Major responsibilities include STEMI system performance review and providing recommendations to REMSA. Other than some challenges in 2011, the STEMI data is excellent for the last five years and demonstrates an effective program.
- Stroke System – REMSA is close to implementing its stroke program. This committee of hospital stakeholders has been meeting bimonthly to determine the program logistics; it is using the ICEMA stroke program as a template.
- Helicopter EMS (HEMS) Committee – The hospital and air ambulance stakeholders perform a retrospective quality improvement on all transports to ensure proper utilization of air resources. REMSA currently audits 100 percent for not only appropriateness, but also landing zone safety, care and documentation, accurate estimate arrival times, and on scene times. For 2013, it is beginning to review extended ground transport times and inter-facility transfers following a ground ambulance transport to a local ED for possible opportunities to use HEMS more effectively. The objective is to transport the patient the first time to definitive care and not burden a local ED with a complex patient who is going to inevitably require a tertiary center.
- Multi-Casualty Incident (MCI) Committee – This committee has evolved over the last decade as the fire service now plays a significant role in MCI medical operations. The EMS and fire stakeholders are currently reviewing the MCI policy to ensure it is in compliance with the California Emergency Operations Manual (EOM) and identify any necessary improvements. The



committee reviews MCIs submitted by field providers; however, there is no check and balance process to ensure a review form is completed after each MCI.

- Continuous Quality Improvement (CQI) – Originally created in 2005 following the CQI plan rollout, this group is responsible for on-going input and direction to the county EMS CQI plan. However, CQI TAG has not met in the last three years due to competing priorities of REMSA staff. There is a plan to reform the committee, but no meeting date or representatives have been identified.

### EMS Zone Meetings

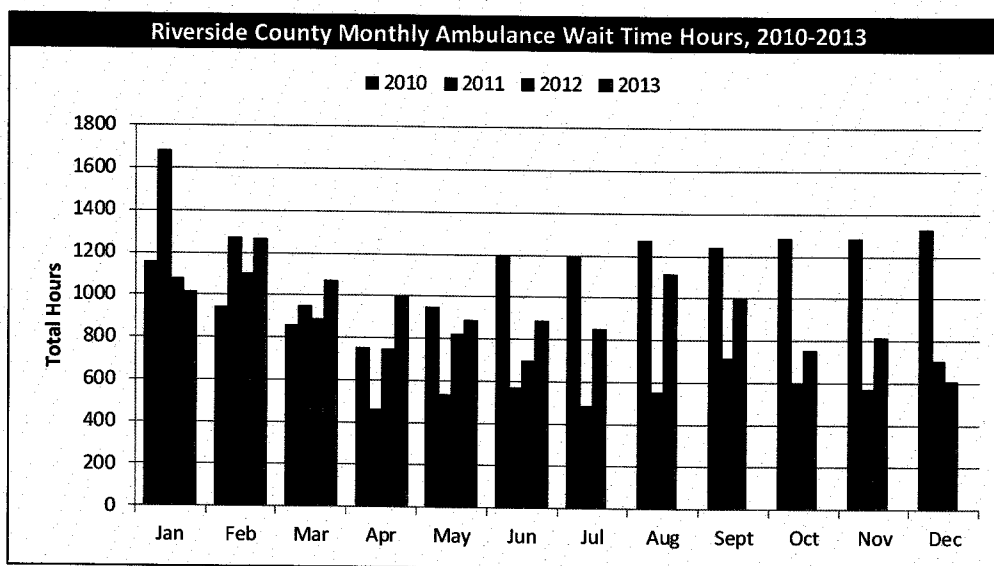
In addition, REMSA staff meets with the first responder and transport stakeholders from each EMS zone two to four times a year as determined by the group. During the meeting, REMSA shares transport compliance information, outliers, penalties assessed, hospital wall times (i.e., off-load delays at the ED), as well as an update on REMSA activities. Stakeholders have an opportunity to ask questions about the reports and other EMS topics that may be pertinent to them. The meetings attended by The Abaris Group were professionally managed, had clear agendas, and the reports provided were excellent. There were few concerns or issues raised during the meetings. However, these meetings seemed excessive and primarily served to reinforce the consistent performance of the private ambulance contractor.



## Ambulance Wait Times

Ambulance wait times, or more correctly, ambulance patient off-load delay, occurs when an ambulance transports a patient to the hospital and remains on the ambulance gurney for greater than 30 minutes. This phenomenon can lead to delays in returning ambulances to service, depletion of EMS system resources, delayed ambulance response times and delayed transport of patients to the hospital. In Riverside County, it is not uncommon to have patients remain on the ambulance gurney in the ED for more than an hour. Extreme occurrences have been documented where patients have remained on the ambulance gurney for up to six hours, receiving their entire course of ED care and discharge from the ED while still on the ambulance gurney. REMSA has been tracking and reporting ambulance wait time data since 2005. REMSA recently established a policy stipulating a goal of transferring the patients off the ambulance gurney within 30 minutes of arrival at the Hospital.

As depicted in Figure 80, ambulance wait time for Riverside County continued to vary over the past three years. Increased wait time hours during the fall and winter months may be due to the flu season.



Note: Total hours do not include the first 25 minutes of each "bed delay" occurrence (30 minutes for 2013)  
Source: Riverside County EMS Agency, Department of Public Health, 2013

Figure 80 - Riverside County Monthly Ambulance Wait Time Hours, 2010-2013



## Ambulance Wait Time Compliance

Figure 81 plots Riverside County ambulance wait time compliance against total ALS transports and the number of bed delay incidents occurred at each hospital. Compliance was generally high with all but five hospitals falling below 75 percent.

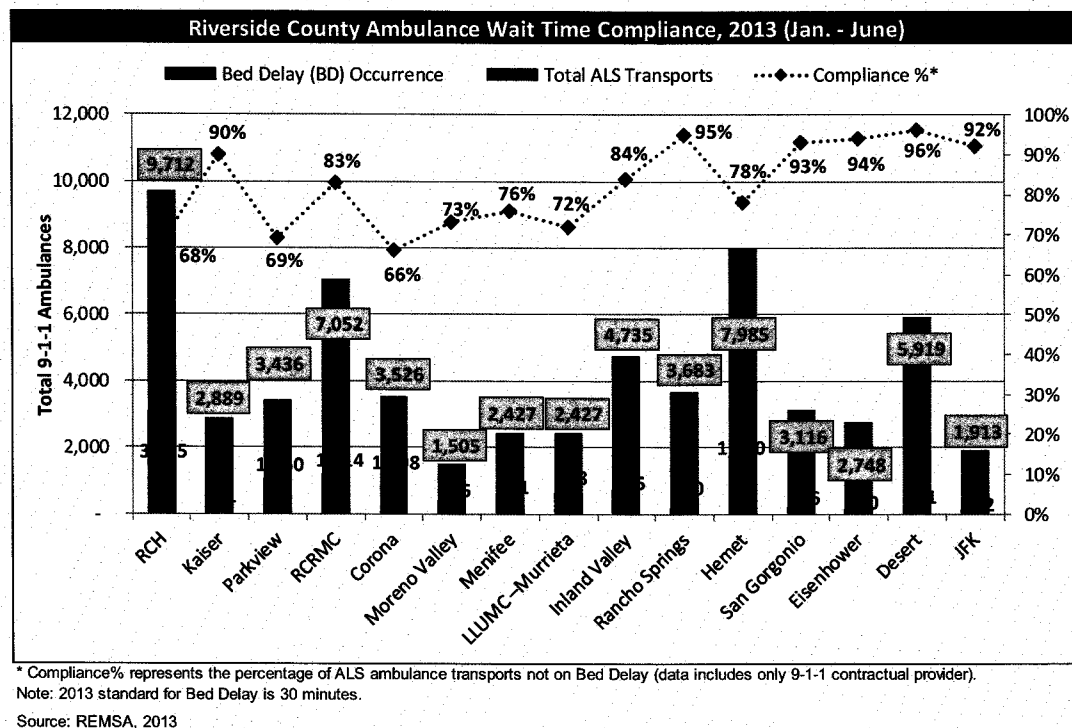


Figure 81 - Ambulance Wait Time Compliance, 2013 (January - June)



## System Benchmarks

### Overview

As part of the evaluation process, The Abaris Group compared the current Riverside County ambulance performance contracts with similar EMS systems in California. Figure 82 provides the demographic information for the comparable EMS contracts. Overall, the Riverside County contract is consistent with most parameters found in other contracts.

Ambulance Contract Comparison - Area					
Area	Riverside County*	Santa Clara County	San Diego City	Alameda County	Contra Costa County
Population, 2010	2,244,399	1,781,642	1,307,402	1,510,271	1,049,025
9-1-1 Responses, 2010	172,700	95,092	98,021	89,606	78,580
EMD Coverage (%)	93.2%	100%	100%	100%	100%
Response Time Zones	8	5	4	5	5

Sources: US Census, EMS agencies

Note: \* Riverside population and responses are 2012

Figure 82 - Ambulance Contract Comparison - Area

### Ambulance Contract Fees

The majority of current EMS agreements require some level of fees for cost recovery. Common subsidy requirements include first responder, dispatch, and compliance monitoring. Contra Costa County has the only contract not requiring any fees; however, it is the oldest agreement included in this benchmark process. Riverside County fees are typically lower than the EMS agreements awarded in the last three years. Figure 83 provides a breakdown by EMS system of the current fees required.

Ambulance Contract Comparison - Fees					
Fees	Riverside County	Santa Clara County	San Diego City	Alameda County	Contra Costa County
First Responder	\$1,880,216	\$5,000,000	Consolidated Operational Fee	\$4,600,000	
Dispatch/Communications	\$125,000	\$1,500,000		\$1,500,000	
Compliance Monitoring	\$350,000	\$1,500,000			
Data Management	\$420,000				
Total	\$2,775,216	\$8,000,000	\$10,000,000	\$6,100,000	\$0

Source: Provider/REMSA agreements

Figure 83 - Ambulance Contract Comparison - Fees





## First Responder Response Times

While REMSA does not track first response performance, some of the fire departments interviewed indicated that their goal is to meet the National Fire Protection Association (NFPA) guideline of 5:00 minutes at least 90 percent of the time (includes 60-second turnout time and 240-second travel time).<sup>40</sup> Some EMS systems, such as Santa Clara County and the City of San Diego, have taken the initiative to establish response time (as well as other) standards with the first responder partners and extend the transport response times. A comparison of large EMS systems with ALS first response standards is included as Figure 84.

ALS First Response System Comparison										
Service Area	Riverside County	Santa Clara County	San Diego City	Phoenix (AZ)	Travis County (TX)	Houston (TX)	Memphis (TN)	Fairfax (VA)	Pinellas County (FL)	NFPA
1st Responder ALS	9:59*	7:59	8:00	5:00	5:00	5:00	5:00	8:00	7:30	5:00
Transport ALS	11:59**	11:59	12:00	10:00	10:00	8:00	8:00	8:00	10:00	8:00
1st Responder Notes	Riverside & Corona	Non-compliance impacts fees							Funds available if compliant	Includes 60-second turnout time

\* For City of Corona only, pursuant to their subcontracts with AMR

\*\* Applicable in City of Riverside and Corona only. 9:59 everywhere else based in AMR contract.

Source: Riverside and Santa Clara County EMS contracts, 2007 Abaris Group interviews, NFPA-Fire Service Performance Measures, 11/09, pg. 28

Note: Emergency response times based on 90th percent fractile standard in metro/urban area

Figure 84 - ALS First Response System Comparison

## Ambulance Response Times

One of the most highly scrutinized components of any EMS contract is the ambulance response time standards. A number of high-performance EMS systems within California and nationwide have adopted the National Fire Protection Association (NFPA - 2010) guideline of 7:59 minutes; this is also the California EMS Authority response time guideline. These same systems have well-developed medical first-responder programs. Variances are typically acceptable in systems where first responders are ALS trained and have defined response times allowing the ambulance response time to be extended by two to six minutes. This is the case in this County (Cities of Riverside and Corona), San Diego, Phoenix, Travis County (TX), and Pinellas County (FL). These systems now rely on these first responder resources when determining ambulance response times. It is more difficult to compare one ambulance contract to another without valuing the first responder standard within the service area. The two examples in the local EMS system are the agreements with Riverside City and Corona fire departments to provide ALS first response that enables an 11:59 transport response time standard.

<sup>40</sup> NFPA, Fire Analysis and Research, *Fire Service Performance Measures*, 11/09, pg. 28, 2010 Standards



The extended transport response times, when there is ALS first response, are clinically supported as early defibrillation is one of the few proven benefits of a short response time (along with citizen CPR). In fact, the Seattle EMS system, which has one of the highest cardiac arrest survival rates, only has EMT/firefighters with automated external defibrillators (AEDs) as first responders.

The current Riverside County agreement does not have a non-emergency (9-1-1, but ambulance not needed urgently) response-time standard and the current practice is to dispatch all calls as an emergency. While the majority of communications centers stated they utilize EMD, it is unclear how this is translating into prioritizing medical calls. As depicted in Figure 85 below, this is unique for the EMS systems compared and most EMS systems have adopted both emergency and non-emergency standards when EMD is available. This reduces the risk of a responder collision, which lowers the risk of response for an EMS system.

Most EMS systems use a fractile standard of 90 percent compliance with penalties associated when standard is not met. Similar to Santa Clara and Contra Costa counties, Riverside County has agreed to extend ambulance response times when there are ALS first responders who have contracted to meet their own response time standard. Alameda County has taken the further step to breakdown response times by dispatch priority. All EMS systems reviewed have different response times based on population density, from urban to wilderness. A complete breakdown of response time standards for medical calls is included as Figure 85.



Ambulance Contract Comparison - Response Times					
Response Times	Riverside County	Santa Clara County	San Diego City	Alameda County	Contra Costa County
<b>Emergency</b>					
Metro/Urban*	10:00/12:00	7:59/11:59	12:00	Echo 8:30 Delta 10:30	10:00/11:45 NLT 15:00
Suburban*	14:00	16:59	Urgent 15:00	Echo 14:00 Delta 16:00	
Rural	20:00	21:59	Not Applicable		20:00 NLT 30:00
Wilderness	30:00, 60:00 or Best Effort	21:59	Not Applicable	Echo 18:00 Delta 22:00	Not Applicable
<b>Non-Emergency</b>					
Metro/Urban*	None	16:59 Omega 59:59	30:00	15:00 Alpha 30:00	30:00
Suburban*	None	21:59 Omega 89:59		25:00 Alpha 40:00	30:00
Rural	None	41:59 Omega is best effort	Not Applicable		45:00
Wilderness	None		Not Applicable	28:00 Alpha 40:00	Not Applicable

Source: Provider/REMSA agreements

Notes: \* If there is no ALS first responder contract, then more stringent response standard applies, BE = best effort,  
NLT = non-life threatening

Figure 85 - Ambulance Contract Comparison - Response Times

## Exemptions

All EMS systems reviewed allow the ambulance provider to request exemptions when it takes longer than the allocated response time to reach a patient due to no fault of the provider. Figure 86 provides a breakdown of the allowable exemptions for each contract entity; a detailed exemption list is included as Appendix A. Common exemptions include incorrect address, dispatch/radio system failure, and multi-casualty incidents (MCIs). Others include staging, trains, and off-road locations. Riverside County and San Diego City both allow exemptions for “unusual system overload” (i.e., when the number of calls exceeds a certain number.) This is less common in large systems as there is sufficient call volume for providers to accurately predict and staff for system demands. A disturbing new trend is permitting exemptions due to prolonged ED hospital off-load (i.e., ED “wall time”) delays. While beyond the control of the ambulance crew, hospital partners are now being asked to be actively engaged to prioritize getting the patient turned over in order to keep the EMS system running smoothly. Locally, this has become by far the most common exemption request.



Ambulance Contract Comparison - Exemptions					
Exemption Types	Riverside County	Santa Clara County	San Diego City	Alameda County	Contra Costa County
Dispatch/Communications e.g., incorrect address, incorrect dispatch information, disrupted voice/data radio transmission, CAD failure	✓	✓	✓	✓	✓
Off-Road Locations	✓	✓	✓		✓
Unusual System Overload e.g., not to exceed 1% of zone volume, ≥ 12 simultaneous calls, delays due to ED diversion or bypass	✓		✓		✓
Hospital Off-Load Delays	✓	✓			
Train Delays	✓				✓
Staging	✓				
MCI e.g., based on MCI level, EMS director/contractor discretion		✓		✓	✓
Local Disaster/ Emergency Proclamation		✓	✓		
Good Cause e.g., non-existent address, patient left scene, accident-related traffic, road construction, inclement weather			✓		✓
Multiple Ambulances e.g., 2nd ambulance or more exempted					✓

Source: Provider/REMSA agreements

Note: Examples provided are available in at least one county, but are not necessarily in every county

Figure 86 - Ambulance Contract Comparison - Exemptions



Many EMS systems are reducing or eliminating exemptions. There is a significant labor cost for both the provider and the EMS agency to capture, compile, review, negotiate, and approve/deny each exemption request. Most exemptions are very infrequent, such as train delay or MCI, with minimal impact on overall system performance. Other exemptions can be eliminated for staging, off-road locations, and incorrect addresses by establishing an on-scene time based on defined protocols and standard response times to apply. The Santa Clara County agreement allows the contract manager to suspend penalties; this could include a local disaster or emergency proclamation.

As part of the evaluation phase, the exemptions claimed in Riverside County were analyzed for the last eight years. Overall, AMR would be in compliance in most zones and nearly compliant for all others if no exemptions existed. Figure 87 shares a breakdown of responses and exemptions claimed and the response time compliance without the exemptions.

Exemptions Claimed								
Year	2012	2011	2010	2009	2008	2007	2006	2005
<b>Central Zone</b>								
Total Responses	22,211	20,822	20,071	20,230	19,368	19,134	18,934	18,261
Exemptions Claimed	346	271	204	91	237	236	225	397
Exemptions (%)	1.6%	1.3%	1.0%	0.4%	1.2%	1.2%	1.2%	2.2%
Compliance w/o Exemptions								89.8%
<b>Southwest Zone</b>								
Total Responses	29,829	28,337	27,480	26,456	24,902	24,216	23,706	21,776
Exemptions Claimed	398	450	560	229	356	428	350	520
Exemptions (%)	1.3%	1.6%	2.0%	0.9%	1.4%	1.8%	1.5%	2.4%
Compliance w/o Exemptions		89.8%	89.2%			89.8%		89.0%
<b>Northwest Zone</b>								
Total Responses	46,644	43,726	43,159	42,342	42,606	43,136	42,919	42,716
Exemptions Claimed	1,210	777	749	287	868	846	617	997
Exemptions (%)	2.6%	1.8%	1.7%	0.7%	2.0%	2.0%	1.4%	2.3%
Compliance w/o Exemptions	89.4%		89.9%					
<b>San Jacinto Zone</b>								
Total Responses	20,894	20,181	18,932	18,655	18,184	18,493	18,219	17,414
Exemptions Claimed	-	-	6	18	192	223	207	310
Exemptions (%)	0.0%	0.0%	0.0%	0.1%	1.1%	1.2%	1.1%	1.8%
Compliance w/o Exemptions								
<b>Pass Zone</b>								
Total Responses	8,996	8,547	8,129	7,839	7,588	8,112	7,775	7,678
Exemptions Claimed	1	-	1	14	43	89	117	145
Exemptions (%)	0.0%	0.0%	0.0%	0.2%	0.6%	1.1%	1.5%	1.9%
Compliance w/o Exemptions								
<b>Desert Zone</b>								
Total Responses	21,548	20,622	20,033	19,067	19,029	19,048	18,520	17,978
Exemptions Claimed	22	21	12	37	153	120	44	249
Exemptions (%)	0.1%	0.1%	0.1%	0.2%	0.8%	0.6%	0.2%	1.4%
Compliance w/o Exemptions								

Source: Riverside EMS Agency

Figure 87 - Exemptions Claimed



## Penalties/Fines

All systems reviewed create a financial incentive for providers to meet response times by assessing penalties or fines when the standards are not met (see Figure 88). All systems require penalties when the provider does not meet the 90<sup>th</sup> percentile standard within an EMS zone; the amount varies per system from \$2,500 up to \$50,000 per zone and how far below 90 percent. Riverside County calculates the penalty differently by multiplying the per-call penalties by two, three, or four depending on the severity. Riverside is also unique in that it offers a performance credit when the provider exceeds 91 percent in a zone (or all zones); and again at 95 percent where all penalties are waived. All contracts reviewed identify non-compliance as a “material breach” of contract; Riverside and Santa Clara counties specify a certain number of months while the remainder only state “repeated failures.”

Riverside and Alameda counties utilize a sliding penalty scale based on the number of minutes in excess of the agreed upon response time. Three of the five systems also track and penalize outlier responses, i.e., those that exceed a certain higher threshold. While Riverside County does not increase the penalty amount, any zone performance credit does not apply to outliers. Typically, the desired contract objective is to eliminate outliers through significant financial penalties. “Per call” penalties are assessed by some systems which include failure to respond, sending a BLS ambulance, not reporting on-scene time, and vehicle failure while transporting a patient.

EMS systems are consistently reviewing penalty models for not only frequency, but also the labor involved to track and enforce. In some instances, the labor cost involved to track exceeds the penalties for infrequent events, such as vehicle failure. Other systems use the next radio transmission when crew’s failure to report on scene time.

It should be noted that following stakeholder input received for the 2009 AMR contract extension, REMSA doubled the fine structure for all response greater than five minutes late. Additionally during this process, REMSA added a sub-zone to the Northwest zone and changed all sub-zone response time criteria for fractal compliance from 89 percent on a three-month rolling average, to 90 percent monthly.



Ambulance Contract Comparison - Penalties					
Penalties	Riverside County	Santa Clara County	San Diego City	Alameda County	Contra Costa County
Zone Compliance	2x fines 88-89%, 3x fines 86-87%, 4x fines < 86%	\$10,000 per zone, per 1% fractile between 90-85%	\$5,000-50,000 based on zone & 0.5% under compliance	\$5,000-50,000 between 90-89% based on MPDS priority	\$2,500-50,000 based on zone & 0.5% under compliance
Performance Credit	15-100% credit for 91-95% (per zone & overall)				
Call Compliance	\$5-2,000 per call	\$250-15,000 per call			
Failure to Respond			Up to \$25,000 per call	\$25,000 per call	
BLS Ambulance Response	\$500 per call		\$500 per call	\$500 per call	
No At-Scene Time	\$360 per call		\$500 per call	\$500 per call	
Loaded Mech. Failure	\$500 per call				
Outlier Times	>10:00 tracked, fines are not subject to any credit		≥ 200% time, Priority 1 only, \$5,000 per call	≥ 150% time \$1,000-5,000/ call based on MPDS priority	
Performance Breach	3 consecutive months or 5/12 months	3 consecutive months or 2/6 months	Repeated failures to meet response times	Repeated failures to meet response times	Repeated failures to meet response times

Source: Provider/REMSA agreements

Figure 88 - Ambulance Contract Comparison - Penalties



## Performance Indicators

Whether they are called key performance indicators (KPIs), core measures, quality indicators, clinical reports, or system benchmarks, most high performance EMS systems monitor certain variables in order to determine the current level of performance. These may be mandated within a 9-1-1 provider contract, but the specific indicators tracked are most often developed, defined, and regularly updated by a CQI committee. A list of the current KPIs for Riverside County and comparable EMS systems is available in Figure 89.

In 2012, the California EMS Authority (EMSA) received a grant from the California HealthCare Foundation to define and publish a set of core measures that describe the coordination and effectiveness of EMS utilizing regional and local information for California. The purpose of the EMS system core measures project is to increase the accessibility and accuracy of pre-hospital data for public, policy, academic and research purposes to facilitate EMS system evaluation and improvement.<sup>41</sup> Figure 89 shares which metrics EMSA selected to track quality in an EMS system.

REMSA reported its core measure data to EMSA as requested and is determining whether REMSA has the staffing and technical capacity to continue to monitor and report the core measures annually. A number of other KPIs are being tracked by individual agencies, but not collated at a County level at this time.

Key Performance Indicators (KPIs)					
KPI	Riverside County	Santa Clara County	Alameda County	Contra Costa County	CA EMS Authority
<b>Response times</b>					
Ambulance	✓	✓	✓	✓	✓
Quick Response Vehicle				✓	
First Responders		✓			
Call time increments/time on task			✓		
<b>Clinical indicators</b>					
Bystander CPR				✓	✓
Cardiac arrest survival rate			✓	✓	✓
End-Tidal CO <sub>2</sub> post intubation	✓		✓		✓
First defibrillation			✓		✓
Heart Attack	✓	✓	✓	✓	✓
Intubation success rate	✓		✓		✓
IO success rate	✓	✓			
IV success rate			✓		
Pain management	✓		✓		✓
PCR data compliance	✓		✓		
Pediatric					✓
Protocol/procedures/medication compliance	✓	✓	✓	✓	✓
Respiratory	✓		✓		✓
Stroke		✓	✓	✓	✓
Trauma	✓		✓	✓	✓
<b>Non clinical indicators</b>					
24-hour shift workloads			✓		
Collisions per 100,000 miles			✓	✓	
Critical vehicle/equipment failure per 100,000 miles			✓	✓	
Customer complaints	✓	✓	✓	✓	
Dispatch vs. field impression	✓			✓	
Employee injuries				✓	
Employee satisfaction			✓	✓	
Employee turnover			✓	✓	
Financial statement	✓	✓			
Hospital off-load hours	✓	✓	✓	✓	
Mutual aid requests	✓		✓		
Surveillance data evaluation	✓	✓			

Source: County EMS agencies

Notes: Most agreements include language for additional reports as requested

Figure 89 - Key Performance Indicators (KPIs)

<sup>41</sup> [http://www.emsa.ca.gov/systems/Core\\_Measures.asp](http://www.emsa.ca.gov/systems/Core_Measures.asp)





## Current System

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### Data Collection and Reporting

REMSA has created a robust data action plan that includes adopting the vendor Sansio progressively throughout the County. Riverside County Fire Department has been phasing in Sansio's HealthEMS Electronic Patient Care Report (ePCR), Corona and Pechanga Fire Departments have been using the ePCR system since 2011. Sansio's XchangeER product allows EDs to view pre-hospital patient care reports and has been adopted by most hospitals in 2012. Actual commitment for adoption of the Sansio's product has not been universally confirmed by all providers in writing. The goal is to have full implementation of the ePCR system by the end of calendar year 2013. One key missing link will be to achieve patient outcome data from the EDs and hospitals receiving EMS patients. REMSA has this as a goal for this project.

A beta-test, patient wait-time dashboard has been under study at some EDs to help better understand the impact and extent of patient off-load times in the County's EDs.

REMSA's trauma system registry has been in place since 1992 but does not meet the state or other credentialing body's data collection standard. A new registry began implementation in 2012 and full implementation is pending.

### Operational Integration and Cooperative Relationships of System Participants

There are many indications of an operational role of integration and cooperation amongst the system stakeholders not the least of which is the significant and collaborative nature of the REMSA's committee structure as witnessed with the recent extensive protocol revision effort. Few reports were heard or witnessed of communication challenges between ambulance and first responder personnel which was a problem historically. The strong cooperative role between the cities of Corona and Riverside on EMS response times and the integration through contract terms of those two models (ambulance plus first response working in tandem) cannot be understated. In fact, overall, the first response and ambulance delivery system enjoys a level of collaboration and cooperation that is substantial and should be recognized.

There are a number of areas that present improvement opportunity to be addressed in the recommendations report. Key areas not fully integrated to date include:

- Case management and cost reduction strategies
- Citizen cardiac arrest survival initiatives
- Continuous Quality Improvement (CQI)
- Dispatch functions (CAD-to-CAD linkages), EMD and dispatch CQI
- Integration of training and retraining programs
- Public education and prevention programs



- Other collaborative initiatives designed to improve outcomes, timeliness and cost appropriate care models

### **Medical Equipment and Supplies**

Medical supplies in the County are not standardized and there is concern from the fire departments about the lack of cost reimbursement for first responders. These two topics are necessarily linked and thus will enhance the ability to provide a sustainable cost recovery system and limit unnecessary redundancies and variation on the supply and equipment side of the delivery model.

### **Emergency Medical Services Education and Training**

REMSA policies are reviewed and revised annually. Any changes are updated by January 1<sup>st</sup> and public and private agencies have 90 days to train their providers before the policies go live on April 1<sup>st</sup>. REMSA provides “train-the-trainer” classes to roll out the updates to approved training centers, which includes some of the provider agencies, local colleges, and private ambulance providers.

Other courses are left up to the individual agencies to offer or field providers must find them in the community. The current 9-1-1 ambulance provider has no requirement to offer EMS training. There is no coordinated, standardized training program for Riverside County; however, the County does have a best practice training program with a centralized, regional training center for fire and public safety services. A number of interviewees expressed an interest in developing an equivalent EMS training center to benefit all field providers, ensure standardized training, and allow first responder and transport providers to train side-by-side.

### **Patient Satisfaction and Customer Service**

Patient satisfaction and customer service measures have not been a part of ambulance performance contracts in the past as is true in many contemporary EMS delivery systems. In addition, these parameters are not prevalent with first responders as well and thus no measure can be found for the Countywide satisfaction or other measure of “service” within the EMS delivery system.<sup>42</sup>

The Abaris Group is working with AMR to conduct focus groups in regard to patient satisfaction. Further details to will be provided.

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<sup>42</sup> A separate customer-service survey through user focus groups will be completed and the results will be available under separate cover.



## System Review

Overall, the EMS delivery and support systems for Riverside County operates at a credible level with system performance at or close to the level of performance that most stakeholders indicated they have historically desired for the system. The ambulance delivery system operates within the performance levels set for the County contracted ambulance (AMR) using objective response-time measures and is stated to operate well for the four other public agencies although their responses are not reported or independently reviewed publicly. System clinical protocols, recently updated, have not embraced all of the care opportunities adopted by other populated EMS delivery systems. There are no system initiatives around public integration on awareness, appropriate use of EMS and on focused initiatives (e.g., witnessed cardiac arrests, injury prevention, etc.).

The County's ambulance contract itself is in need of significant modification to include any assumptions adopted on ambulance zones, communication and dispatch, CQI, data interfaces and response times. Other system initiatives under consideration (e.g., community paramedics, case management, care innovations, etc.) will also necessarily need to be incorporated in the County contract. The current contract does not encourage or reward the current provider to provide leadership around system modernizations particularly around education, CQI, best practice hospital capacity innovations, data leverage (e.g., publications, research, etc.) or system initiatives (e.g., public engagement initiatives). Missing from the contract are key disincentive strategies that would enhance system stakeholder understanding and assure County monitoring (e.g., approval for ambulance system resource changes, audited and other detailed financial statements, more precise penalties and elimination of exceptions, etc.).

A sample of key strengths and improvement opportunities of the current system are as follows:

### Riverside County EMS System – Key Strengths

- AMR is meeting current expected response-time compliance
- Excellent working relationship amongst all stakeholders
- Exceptionally engaged fire first-response system
- Most first responders are ALS
- Ambulance providers have been serving the same community for decades
- Renewed system CQI focus
- Single contracted ambulance provider
- Specialty hospital network (i.e., trauma, cardiac and upcoming stroke protocols)



### Riverside County EMS System – Improvement Opportunities

- All ambulances are dispatched as an emergency response (i.e., lights and siren), regardless of need
- All EMS providers conduct training independently
- Ambulance off-load delays at EDs is a persistent and rising problem
- Current ambulance contract lacks language for innovation, service excellence and outcome initiatives
- EMD coverage is not countywide (~93 percent) with an industry expectation of 100 percent
- EMD is not fully deployed as a tool in many communities including call resource tiering
- ePCR system implementation is occurring but potential barriers exist
- Historical Countywide CQI focus remains a resource challenge
- Lack of EMS equipment standardization and cost-reimbursement systems for fire ALS first responder providers
- Limited contractual obligation for first responders to provide information, including response times, data reporting or guaranteed involvement in with county-wide initiatives
- Permissive list of response-time exemptions (6)
- Response time requirements are not generally consistent with industry-accepted standards (i.e., metro/urban)
- The system lacks a culture of advancement and thus has not benefited from many innovations across the country
- There are a number of fire department and ambulance mutual-aid issues
- Advisory committee process is too complex



## Glossary of Acronyms

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**ACA/PPACA**

Affordable Care Act/ Patient Protection and Affordable Care Act

**ACO**

Accountable Care Organization

**AED**

Automated External Defibrillator

**AEMT**

Advanced EMT

**ALS**

Advanced Life Support - the services provided by paramedics for life-threatening medical emergencies

**AMR**

American Medical Response

**AQUA**

Advanced Quality Assurance

**BH**

Base Hospitals

**BLS**

Basic Life Support - services provided by Emergency Medical Technicians

**CAD**

Computer Aided Dispatch

**CAHF**

California Association of Healthcare Facilities

**CCT**

Critical Care Transportation

**CHP**

California Highway Patrol

**CMS**

Centers for Medicare and Medicaid Services

**CPR**

Cardiopulmonary Resuscitation



**CQI**

Continuous Quality Improvement

**CVAG**

Coachella Valley Association of Governments

**DHCS**

California Department of Health Care Services

**DOPH**

Department of Public Health

**DTMF**

Dual Tones – Multi-Frequency

**ECC**

Emergency Communications Center

**ED**

Emergency Department

**EMCC**

Emergency Medical Care Committee

**EMD**

Emergency Medical Dispatch

**EMSA**

State EMS Authority

**EMS**

Emergency Medical Services

**EMT**

Emergency Medical Technician

**EOA**

Exclusive Operating Area

**HASC**

Hospital Association of Southern California

**HEMS**

Helicopter Emergency Medical Services



**IFPD**

Idyllwild Fire Protection District

**IFT**

Inter-Facility Transfer

**LEMSA**

Local EMS Agency

**LMT**

Lifecare Medical Transport

**LOU**

Letter of Understanding

**MCI**

Multiple Casualty Incident

**MPDS**

Medical Priority Dispatch System

**NAED**

National Association of Emergency Dispatch

**OSHDP**

Office of Statewide Health Planning and Development

**PLN**

Paramedic Liaison Nurse

**POST**

Peace Officers Standards and Training

**PRC**

Pre-hospital Receiving Hospitals

**PSAP**

Primary Public Safety Answering Point (can be primary or secondary)

**PSEC**

Public Safety Enterprise Communication

**RCFCA**

Riverside County Fire Chiefs Association

**RCLEAA**

Riverside County Law Enforcement Administrators Association



**RCMA**

Riverside County Medical Association

**RCRMC**

Riverside County Regional Medical Center

**REMSA**

Riverside EMS Agency

**RFP**

Request for Proposal

**SCC**

Specialty Care Centers

**SSC**

System Status Controllers

**STEMI**

ST-elevated Myocardial Infarction

**WRCOG**

Western Riverside Council of Governments





## Appendices

### Appendix A: Ambulance Contract Comparison – Exemptions Detail

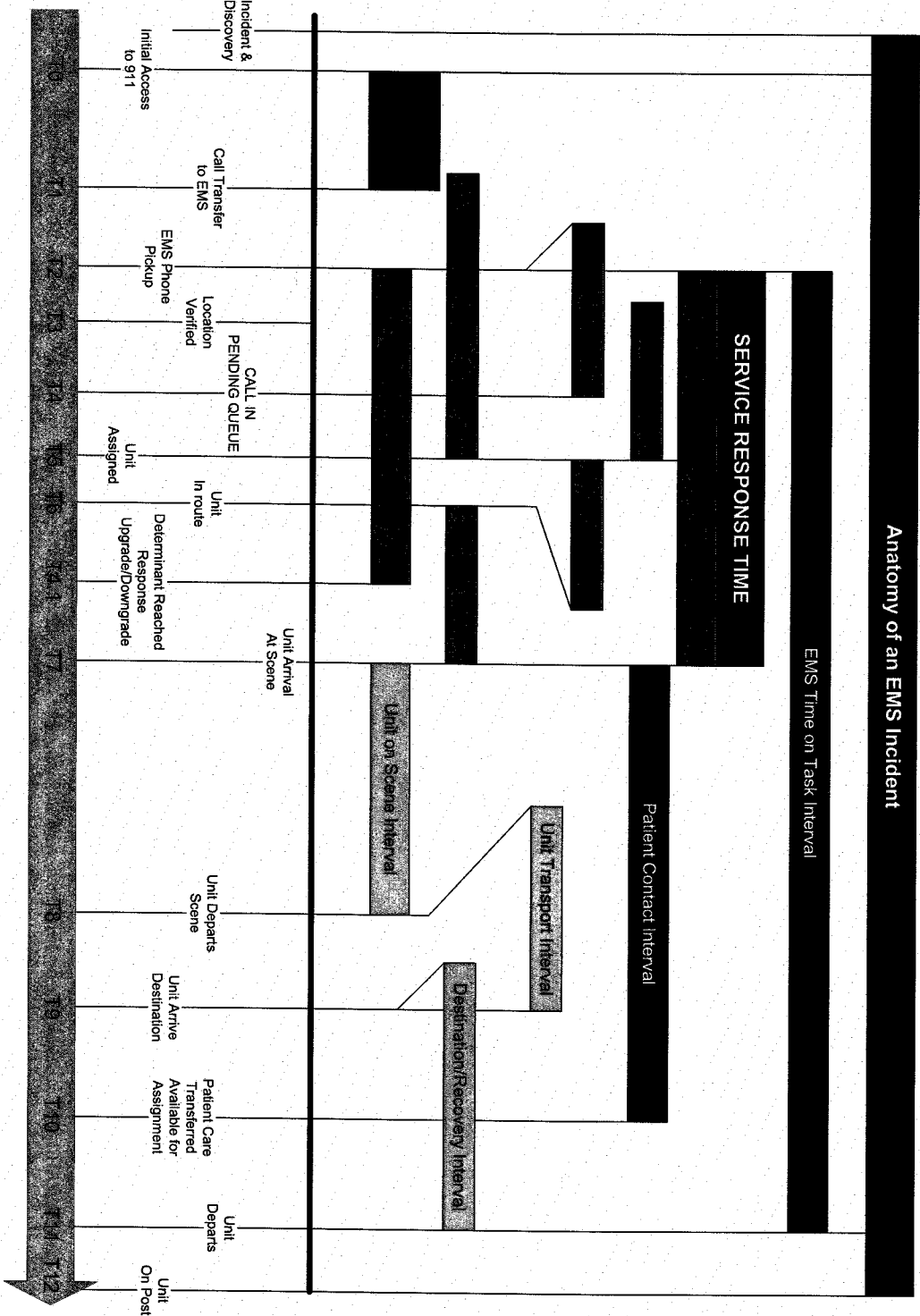
Ambulance Contract Comparison - Exemptions					
Exemption Types	Riverside County	Santa Clara County	San Diego City	Alameda County	Contra Costa County
Dispatch/ Communications	Incorrect Address	Substantiated delays will be exempt at County's sole discretion	Incorrect dispatch information, disrupted voice/data radio transmission, CAD failure, unavoidable telephone communications failure	Substantially incorrect info preventing compliance	Incorrect dispatch information, disrupted voice/data radio transmission, CAD failure, unavoidable telephone communications failure
Hard to Serve Areas	Off-road locations	Defined waypoints determine compliance	Off-road locations		Off-road locations
Unusual System Overload	Not to exceed 1% of monthly volume per zone		≥12 simultaneous calls		Delays due to depletion of resources due to ED diversion or trauma center bypass
Hospital Off-Load Delays	Permitted	Permitted			
Train Delays	City of Riverside only				Permitted
Staging	When, due to safety, required to stage prior to arrival on scene				
MCI		Level II or higher and exceed 90 <sup>th</sup> fractile by 120% compared with prior year; only 30 minutes unless County extends		EMS director discretion	Contractor manager discretion (includes mutual aid to another county)
Local Disaster/ Emergency		County has sole discretion to waive requirements	Declared disasters (includes mutual aid to		
Good Cause			Non-existent address, patient left the scene, traffic delays related to accident, unavoidable delays by extreme inclement weather (e.g., fog)		MDT failure, non-existent address, patient left the scene, traffic delays related to accident, unavoidable delays by construction, weather (e.g., fog),
Multiple Ambulances to same scene					2 <sup>nd</sup> ambulance or more is exempt

Source: Provider/EMSA agreements

Figure 90 - Ambulance Contract Comparison - Exemptions



Appendix B: Anatomy of an EMS Incident – Used for Fire First Response Survey





## Appendix C: Riverside County EMS Financial Analysis

The Abaris Group was asked to conduct a financial analysis with regards to the EMS system in Riverside County. The Riverside County EMS financial analysis includes current and projected payer mix and revenue with regards to the Affordable Care Act (ACA). This report uses population projections from the California Department of Finance, ED visit data from the Office of Statewide Planning and Development (OSHPD), financial data from American Medical Response (AMR) for 2012, and transport volume from Riverside County EMS.

### Population and Utilization

Table 1 shows the current and projected population and utilization. The population of Riverside County is projected to grow from 2,268,783 in 2012 to 2,554,697 by 2019. Emergency department (ED) visit volume is also projected to continue to grow from a utilization rate of 325.4 ED visits per 1,000 people in 2012 to 370.1 ED visits per 1,000 people by 2019. The EMS volume projection assumes that 18.5 percent of all ED visits will be transported via EMS through 2019.

Riverside County EMS/ED Volume Population & Utilization			
	2012	2014	2019
Population	2,268,783	2,351,228	2,554,697
Transports	136,271	146,885	174,544
ED Visits	738,164	795,658	945,487
Transports/1,000	60.1	62.5	68.3
ED Visits/1,000	325.4	338.4	370.1
<i>Estimated Percentage of ED Visits transported by EMS</i>	18.5%	18.5%	18.5%

Sources: Population projections from the California Department of Finance, ED visit data from the Office of Statewide Planning and Development (OSHPD), and transport volume from Riverside County EMS

Table 1 – Riverside County EMS/ED Volume Population & Utilization

### Current EMS Payer Mix

The payer mix of EMS transports was estimated using data collected from AMR, Cathedral City, Idyllwild Fire Protection District, and Riverside County Fire, and all 9-1-1 ambulance providers in Riverside County. Table 2 below uses data received, “Managed Care” and commercially insured (MCO/Commercial)<sup>43</sup> patients make up about 25.2 percent of the EMS total transports and produce the highest net revenue per patient at \$1,070.51, whereas Medicare made up 32.9 percent but only \$440.55 per transport. Medi-Cal and the uninsured (self-pay), representing just less than 40 percent of all EMS transports, generate revenue of \$159.11 and \$94.14 per call respectively.

<sup>43</sup> MCO/Commercial does not include Medicare or Medi-Cal managed care plans.

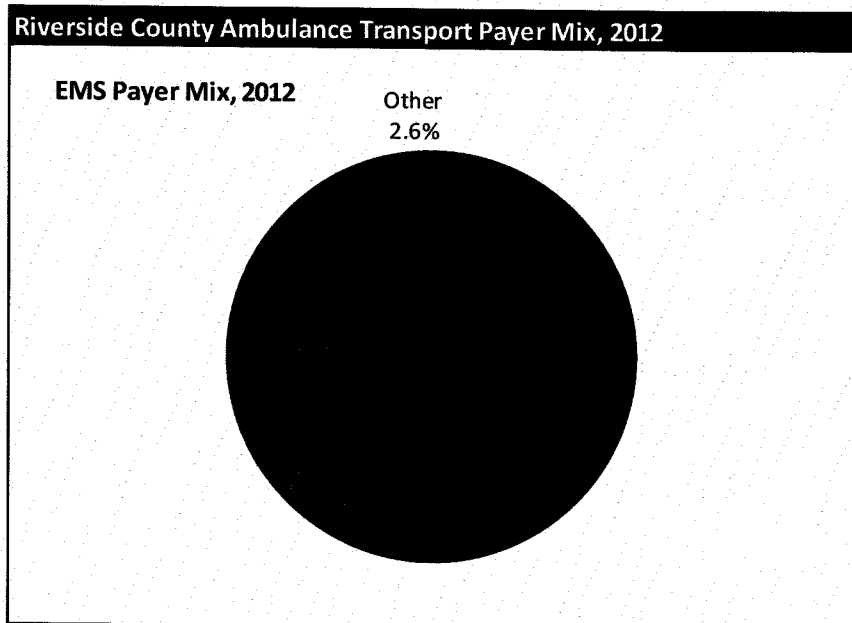


Riverside County Payer Mix/Collections, Current - 2012			
	Transports		Avg Revenue/ per Transport
	Total	Percent	
MCO/Commercial	34,273	25.2%	\$1,070.51
Medicare	44,887	32.9%	\$440.55
Medi-Cal	26,624	19.5%	\$159.11
Self-Pay	26,915	19.8%	\$94.14
Other	3,572	2.6%	\$266.48
<b>Total</b>	<b>136,271</b>	<b>100.0%</b>	<b>\$471.02</b>

Avg. revenue is calculated from cash/trip reported in AMR financials - Jan-Dec 2012

Table 2 – Riverside County Payer Mix/Collections, Current-2012

Figure 91 shows a visual representation of the 2012 payer mix for EMS transports.



Sources: AMR, Cathedral City, Idyllwild Fire Protection District, and Riverside County Fire

Figure 91 - EMS Payer Mix, 2012



## Impact of the Affordable Care Act (ACA)

The impact of Health Reform on EMS is estimated using county-level payer mix projections from the UCLA/UC Berkeley CalSim model. Currently, the UCLA/UC Berkeley model estimates 420,000 individuals are now without health coverage in Riverside County. By 2019, between 120,000 and 150,000 previously uninsured individuals are expected to purchase insurance through the health insurance exchange and another 90,000 to 110,000 individuals are expected to enroll in Medi-Cal expansion. Additional individuals will remain uninsured but will be eligible for either Medi-Cal or the health insurance exchange and another group of individuals will be uninsured and not eligible for health coverage due to immigration status for a total remaining estimated uninsured of 270,000.

### Health Insurance Coverage in Riverside County

Table 3 describes, according to the 2009 California Health Interview Survey (CHIS), that 21.3 percent (95 percent CI 16.2 – 26.3) of the under age 65 population in Riverside County is uninsured (approximately 400,000 individuals). Of the 18-64 year olds that are uninsured, about half (51.1 percent) are unemployed while the other half of the uninsured is either employed full or part-time. The majority of the uninsured (67 percent) fall below 200 percent of the Federal Poverty Level (\$22,980 for an individual, \$47,100 for a family of four).

Total Remaining Uninsured, Californians under age 65, 2019			
Region/county	Remaining uninsured	Projected total population	Uninsured share of county population
All California	4,010,000	35,810,000	11%
Northern California and Sierra Counties	120,000	1,240,000	10%
Greater Bay Area	570,000	6,840,000	8%
Santa Clara County	140,000	1,740,000	8%
Alameda County	120,000	1,470,000	8%
Sacramento Area	150,000	2,010,000	7%
San Joaquin Valley	410,000	3,780,000	11%
Fresno County	100,000	900,000	11%
Central Coast	220,000	2,110,000	11%
Ventura County	70,000	780,000	9%
Los Angeles	1,280,000	9,780,000	13%
Other Southern California	1,220,000	10,050,000	12%
Orange County	370,000	2,970,000	13%
San Diego County	290,000	2,960,000	10%
San Bernardino County	280,000	1,970,000	14%

Source: Lucia L, et al. *After Millions of Californians Gain Health Coverage under the Affordable Care Act, who will Remain Uninsured?* UC Berkeley–UCLA CalSIM model, Version 1.8. September 2012.

Table 3 - Total Remaining Uninsured Californians under Age 65, 2019



### Changes in Health Insurance Coverage

Changes in health insurance coverage were estimated based on data published by the UC Berkeley Labor Center using the California Simulation of Insurance Markets model and health coverage estimates from the California Health Interview Survey.

Figure 92 shows estimated health coverage in Riverside County based on a projected population of just under two million residents under the age of 65. Without the ACA, an estimated 21 percent of this population would be uninsured. With the ACA, 13.5 percent of this population would be uninsured but the majority of the uninsured would be eligible for coverage through Medi-Cal or exchange subsidies (9.5 percent).

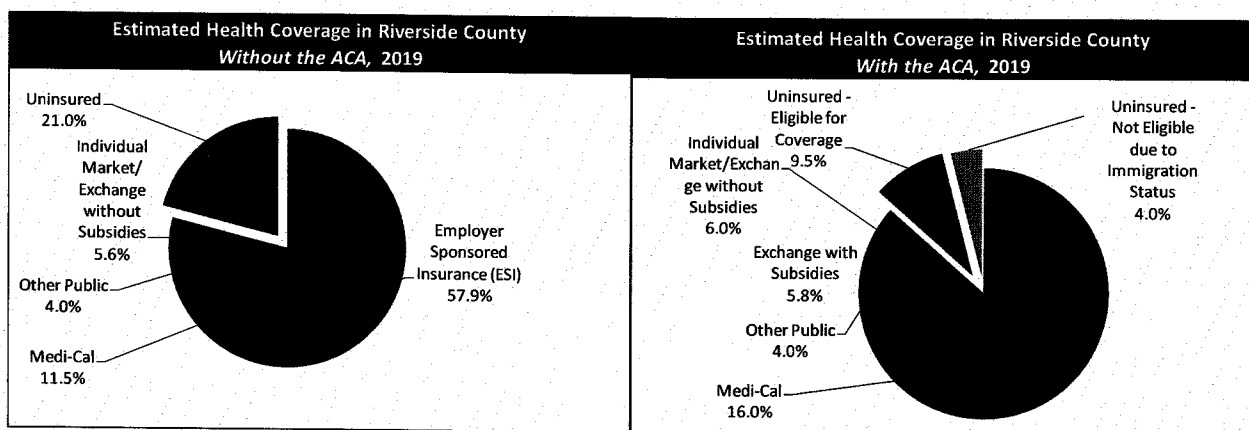


Figure 92 – Estimated Health Coverage in Riverside County With/Without the ACA, 2019



## EMS Payer Mix Projections

The impact of these substantial changes in health coverage throughout the county is likely to change the overall payer mix of EMS transports. Using the UCLA/UC Berkeley assumptions, the EMS transport payer mix is likely to increase in the number of individuals for commercial/managed care insurance (including the health exchange) and Medi-Cal while decreasing the number of self-payers (uninsured). Additionally, an aging population will increase the number of individuals with Medicare.<sup>44</sup>

Projections for payer mix were developed using EMS utilization data and projected impact of the ACA in Riverside County. The projections also accounted for changes in age demographics as a larger proportion of the population becomes eligible for Medicare.

Riverside County EMS Payer Mix Projections, 2014 & 2019				
	2012	2014	2019	Absolute Change 2012-2019
MCO/Commercial	25.2%	25.9%	28.5%	+3.4%
Medicare	32.9%	34.0%	37.9%	+4.9%
Medi-Cal	19.5%	20.1%	22.0%	+2.5%
Self-Pay	19.8%	17.5%	9.1%	-10.6%
<i>Eligible for Exchange or Medi-Cal</i>		14.1%	5.7%	NA
Other	2.6%	2.6%	2.4%	-0.2%

Table 4 – EMS Payer Mix Projections, 2014 & 2019

The following figures are visual representations of the projected payer mix in terms of percentages.

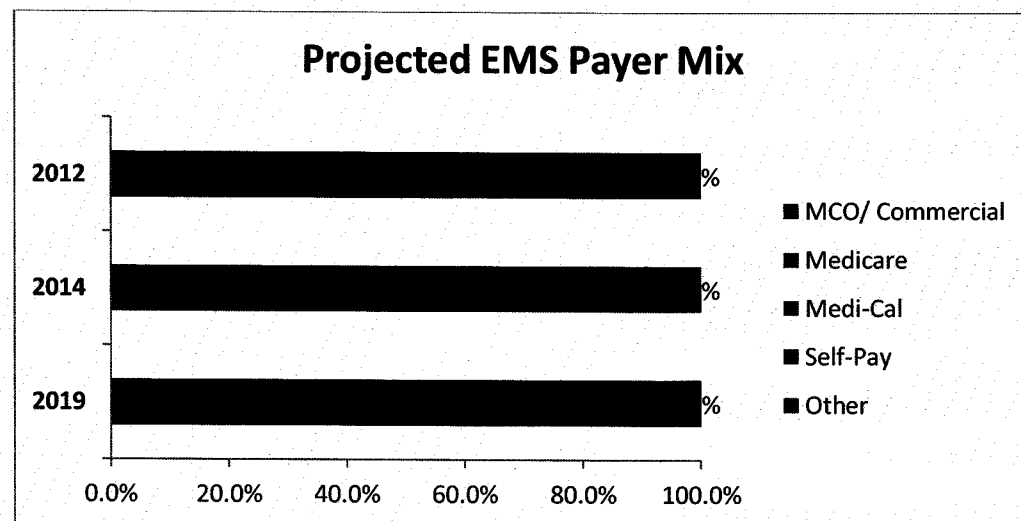
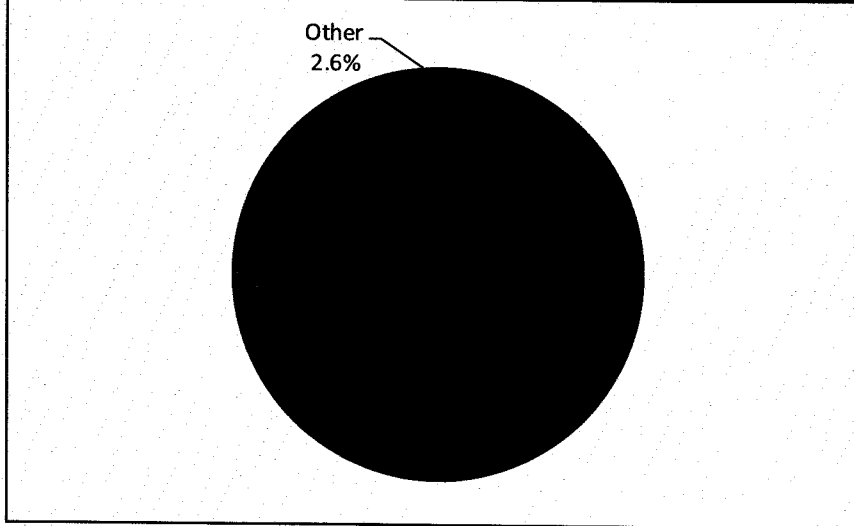


Figure 93 – Projected EMS Payer Mix

<sup>44</sup> The payer mix projections assume that most new Medicare enrollees previously had MCO/commercial coverage prior to become Medicare eligible. A smaller number of new Medicare enrollees were assumed to have Medi-Cal or uninsured.



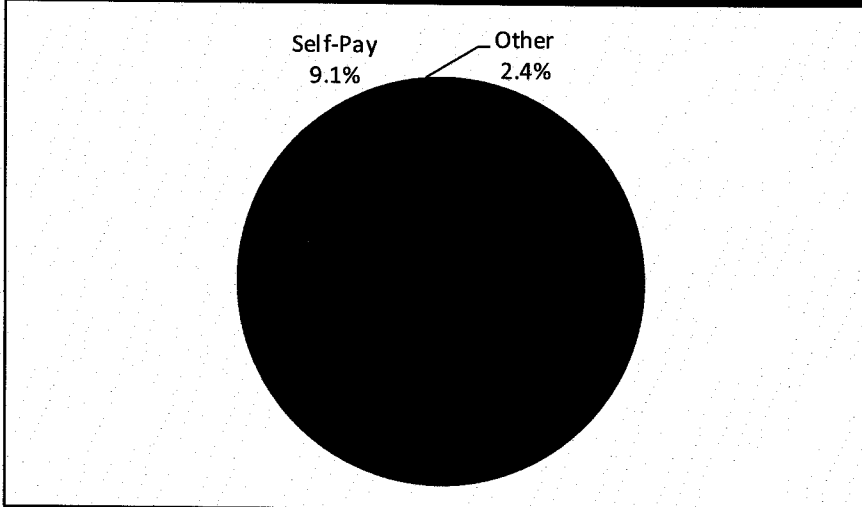
### Riverside County EMS Payer Mix, 2014



Source: The Abaris Group, 2013

Figure 94 - EMS Payer Mix, 2014

### Riverside County EMS Payer Mix, 2019



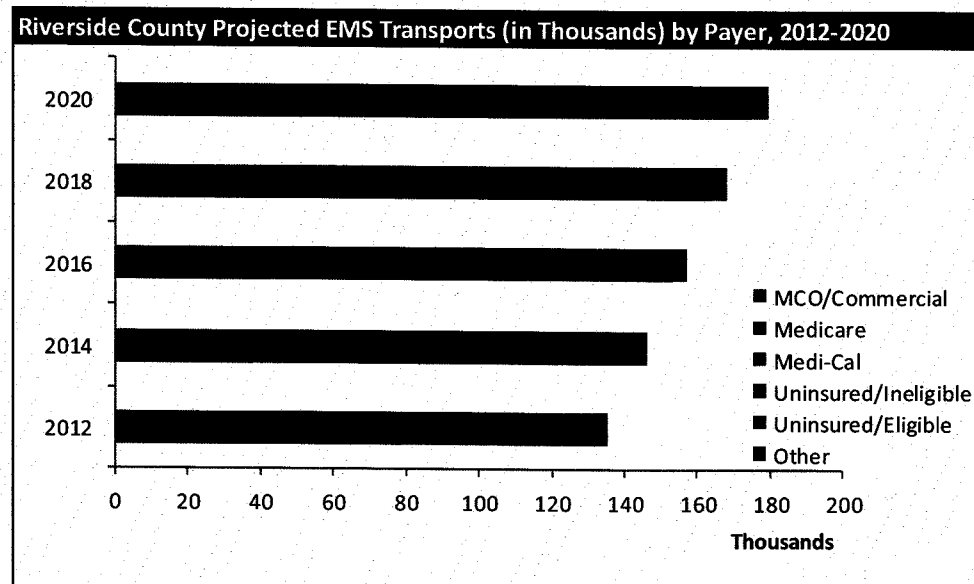
Source: The Abaris Group, 2013

Figure 95 - EMS Payer Mix, 2019





Figure 97 shows projected EMS transports by payer for 2012-2020. Medicare is projected to grow five percent from 44,638 transports in 2012 to 67,857 by 2020. The number of transports from uninsured individuals (ineligible for subsidized health coverage under ACA) is projected to drop from 26,766 to 6,243 (a 77 percent reduction). There will still be an additional 10,144 individuals transported without insurance but who would be eligible for subsidies through the health insurance exchange or through Medi-Cal.



Note: MCO/Commercial includes managed care organizations and commercially insured plans. It does not include Medicare Managed Care or Medi-Cal Managed Care plans. Other includes county indigent, other government, and other indigent programs

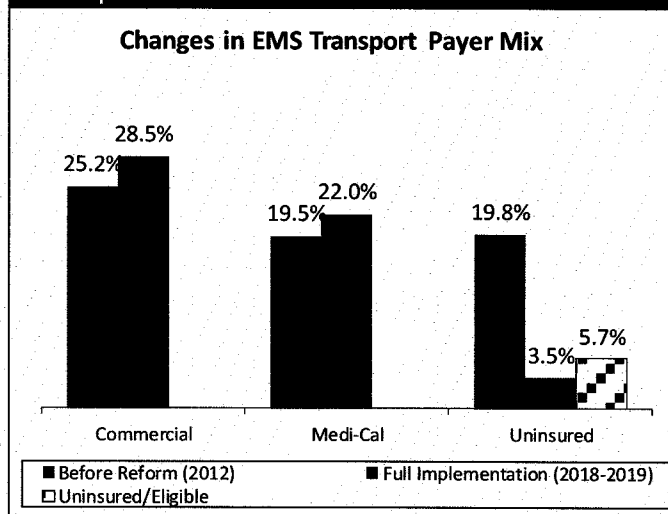
Source: The Abaris Group estimate is based upon data obtained from Riverside County EMS providers and expected ACA impact based on modeling by UC Berkeley-UCLA CalSIM model, version 1.7 (base scenario).

Figure 97 – Projected EMS Transports by Payer, 2012-2020

Stated another way, by 2018-2019 the EMS payer mix will change due to full implementation of the Patient Protection and Affordable Care Act (PPACA).

MCO/Commercial payers are expected to rise to 28.5 percent. Conversely, the uninsured, which accounted for 19.8 percent of all EMS transports, is expected to fall to 3.5 percent. An additional 5.7 percent of EMS transports will be uninsured but eligible to receive insurance either through subsidies on the health insurance exchange or through Medi-Cal.

**Riverside County ED and EMS Estimated Payer Mix post ACA Implementation**



\* Note: EMS payer mix projections for 2019 are based on population level estimates of ACA impact for Riverside County by UC Berkeley-UCLA CalSIM model, version 1.7 (base scenario).

Source: The Abaris Group projections, 2013

Figure 96 - EMS Estimated Payer Mix Post ACA Implementation



## EMS Revenue Projections

Total EMS revenues were estimated using the transport projections (Table 1), average collection/trip by payer (Table 2), and the projected payer mix (Table 4). The projections are for revenues only - costs are not included. All amounts are in 2012 dollars.

NOTE: New care delivery and payment models (e.g., ACO) may cause higher or lower EMS utilization and/or higher or lower reimbursements. Also, trends in MCO/Commercial insurance plans (e.g. high deductible plans) may influence reimbursement rates that are not captured in the revenue projections. To account for these possible changes, revenues are shown with 5 and 10 risk bands.

Riverside County Revenue Projections, 2014 & 2019					
	Baseline 2012	Projection 2014	Change 2012 - 2014	Projection 2019	Change 2012-2019
Total Transports	136,271	146,885	10,614	174,544	38,273
Total Revenue <sup>1,2</sup>	\$63,762,841	\$69,841,827	6,078,986	\$89,981,326	26,218,485
Average Revenue per Transport	\$467.91	\$475.49	\$7.57	\$515.52	\$47.61
+/- 5%	NA	\$451.71 - \$499.26	-\$16.2 - \$31.35	\$489.74 - \$541.3	\$21.83 - \$73.38
+/- 10%	NA	\$427.94 - \$523.04	-\$39.97 - \$55.12	\$463.97 - \$567.07	-\$3.94 - \$99.16

1. Assumes that 10% rate cut for Medi-Cal & 2% reduction in Medicare from sequestration will remain in effect through 2019.

2. Revenues have been adjusted according to new payer mixes resulting from ACA implementation and demographic trends (increasing overall and age 65+ population).

Table 5 – Revenue Projections, 2014 & 2019

Total projected revenue as well as change in revenue is calculated in Table 5. If reimbursements do not change for other reasons, average revenue per transport is expected to increase as more patients obtain health care coverage either through the health exchanges, Medicare, or Medi-Cal.



In 2014, the average revenue per transport is projected to increase by \$7.57 from \$467.91 to \$475.49 (+1.6 percent). Transports are projected to increase by 10,614 (Table 5) for a total of \$6.1 million in new revenue for that year alone.

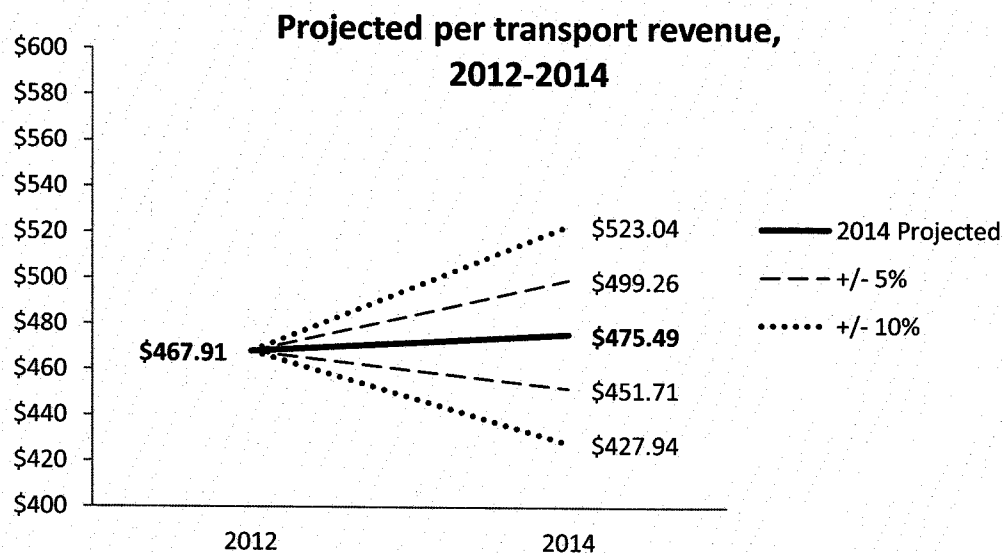


Figure 98 – Projected Per Transport Revenue, 2012-2014

By 2019, after full implementation of the ACA, average revenues per transport are projected to increase by \$47.61 to \$515.52 (+10.2 percent). From Table 5, transports are projected to increase by 38,273 for a total of \$26.2 million in new revenue for that year alone.

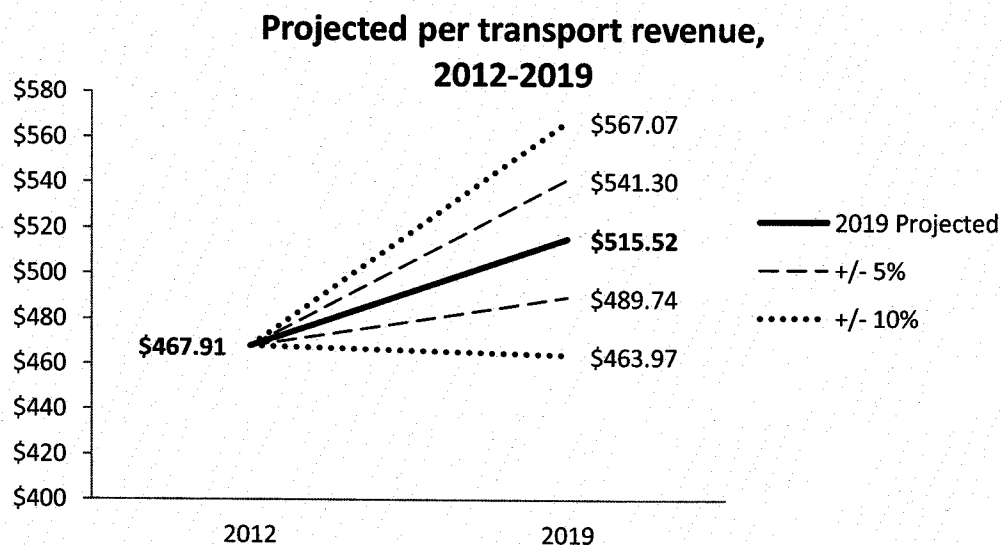


Figure 99 – Projected Per Transport Revenue, 2012-2019



## Conclusion

The Abaris Group concludes the following from this financial analysis.

- By 2019, between 120,000 and 150,000 previously uninsured individuals are expected to purchase insurance through the health insurance exchange and another 90,000 to 110,000 individuals are expected to enroll in Medi-Cal expansion.
- Up to 260,000 newly insured individuals will reside in Riverside County after full implementation of Health Reform.
- Even with Health Reform, there will likely remain 270,000 uninsured individuals in Riverside County (13 percent of the under 65 population) by 2019.
- The EMS transport payer mix is likely to increase in the number of individuals with managed care/commercial insurance (including the health exchange), Medi-Cal and Medicare while decreasing the number of self-payers (uninsured).
- If reimbursements do not change due to other factors, average revenue per transport is expected to increase by \$7.57 per transport (2014) to \$47.61 per transport (2019).
- Total new net revenue for 2014 will increase \$6.1 million per year in 2014 and \$26.2 million per year in 2019 through a combination of organic volume increases and improvement in payer mix due to Health Reform.
- There are many other factors of Health Reform that at this point are difficult to predict and thus will require this analysis to be updated annually with actual market changes

**Appendix D: EMS Transportation Plan Requirements to Obtain/Maintain EOAs**

**California Health and Safety Code, Division 2.5, 1797.224.** A local EMS agency may create one or more exclusive operating areas (EOAs) in the development of a local plan, if a competitive process is utilized to select the provider or providers of the services pursuant to the plan. No competitive process is required if the local EMS agency develops or implements a local plan that continues the use of existing providers operating within a local EMS area in the manner and scope in which the services have been provided without interruption since January 1, 1981. A local EMS agency, which elects to create one or more exclusive operating areas in the development of a local plan, shall develop and submit for approval to the authority, as part of the local EMS plan, its competitive process for selecting providers and determining the scope of their operations. This plan shall include provisions for a competitive process held at periodic intervals. Nothing in this section supersedes Section 1797.201.

	Bid	No Bid
<b>Options that can be explored.</b>	<ul style="list-style-type: none"> <li>• Changes to EOA Boundaries</li> <li>• Changes to Types of Exclusivity</li> <li>• Changes to Response Time Zones</li> <li>• Public/Private Partnerships</li> <li>• Different or Multiple Providers</li> <li>• System Enhancements that are part of competitive bidding</li> <li>• Improved Performance Standards and Equipment as part of a competitive bidding process</li> </ul>	<ul style="list-style-type: none"> <li>• Public/Private Partnerships</li> <li>• Changes to Response Time Zones</li> <li>• System Enhancements as part of a negotiation process</li> <li>• Improved Performance Standards and Equipment as part of a negotiation process</li> <li>• Anything that is not deemed a change in “manner or scope” by EMSA.</li> </ul>
<b>Options that cannot be explored.</b>	<ul style="list-style-type: none"> <li>• Maintaining County EOA Grandfathering Rights</li> </ul>	<ul style="list-style-type: none"> <li>• Changes to EOA Boundaries</li> <li>• Changes to Types of Exclusivity</li> <li>• Different or Multiple Providers</li> <li>• Competitive Pricing for Services</li> <li>• Any other change that will be deemed a change to “manner or scope” by EMSA</li> </ul>

Recent Competitive Bids		
County	Type of Bid	Award
Santa Clara	Multiple EOAs – Single ALS Provider	Rural Metro
Alameda	Multiple EOAs – Single ALS Provider	Paramedics Plus
Napa	Multiple EOAs – Single ALS Provider	AMR
Monterey	Multiple EOAs – Single ALS Provider	WestMed (defaulted) subsequently went to AMR
San Mateo	Multiple EOAs – Single ALS Provider	AMR
Los Angeles	Multiple EOAs – Multiple BLS Providers	McCormick, Care, AMR
Merced (Pending)	Multiple EOAs – Single ALS Provider	?



January 6, 2014

The Honorable Jeff Stone  
Chairman of the Board  
Riverside County Board of Supervisors  
4080 Lemon Street  
Riverside, CA 92501

Dear Chairman Stone:

As the Board of Supervisors reviews its emergency response systems, the City of Lake Elsinore would like to express our support for AMR Riverside.

We have established a positive working relationship with AMR through the years and they have consistently provided adequate service with professionalism and courtesy.

NATASHA JOHNSON  
MAYOR

The City also supports the Board of Supervisors efforts to ensure the highest quality emergency response systems and services for our residents. Competition and negotiation are the cornerstones of a fair selection and contracting process.

STEVE MANOS  
MAYOR PRO TEM

We are confident that the Board will take the actions necessary to ensure our communities have the best emergency response services available including a provider that pays their fair share, adequate continuation of care and the latest tools and resources in emergency response.

DARYL HICKMAN  
COUNCILMEMBER

ROBERT E. MAGEE  
COUNCILMEMBER

If you have any questions, please contact me at (951) 674-3124 ext. 204.

BRIAN TISDALE  
COUNCILMEMBER

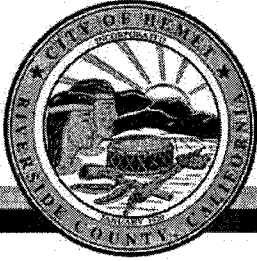
Sincerely,

Natasha Johnson  
Mayor  
City of Lake Elsinore

GRANT M. YATES  
CITY MANAGER

cc: Board of Supervisors

951.674.3124  
130 S. MAIN STREET  
LAKE ELSINORE, CA 92530  
WWW.LAKE-ELSINORE.ORG



# City of Hemet

445E. FLORIDA AVE • HEMET, CALIFORNIA 92543 • (951)765-2303

From the Office  
of the  
**MAYOR**  
Larry Smith

February 11, 2014

Supervisor Jeff Stone  
Chairman  
Riverside County Board of Supervisors  
4080 Lemon Street  
Riverside, California 92502

***Re: AMR contract***

Dear Chairman Stone:

The City of Hemet enjoys an exceptional working relationship with American Medical Response. They have provided and continue to provide outstanding service to our City. AMR is a committed public safety partner, and supports everything from our Ramona Pageant to the Regional Air Show. When needed they have changed their deployment plan to occupy one of our fire stations, facilitating our eastern neighborhoods with medical aid. AMR has, and continues to be responsive to the needs of our City, therefore I respectfully request that they be allowed to continue providing the service with which we have come to enjoy and depend upon. They are part of the fabric of our community.

Should you have any questions, please feel free to contact me.

Sincerely,

Larry Smith  
Mayor

LS/ka

Submitted by

2-11-14  
(date)

Item

16-3

## CONCERNS FROM INTER-FACILITY COMPANIES

- If AMR is the only company that can hire paramedics (aside from fire and air) then in a disaster our county won't be well covered with mutual aid from companies like ours.
- We are unable to bill for ALS level calls through Medicare since we are not allowed to have an ALS level license through REMS. We have to downgrade or upgrade (not wise) our calls in order to get any reimbursement. That's not right, we should be able to bill at the level that the call is.
- There should be no exclusivity for certain level of calls just because the 911 provider requests it in their contract. In REMS' EMS Plan they state that AMR has exclusivity for "ALS and all emergency calls".
- We have to pay a nurse high wages to run our contracted ALS level calls when AMR only has to pay medic rates. This is not a level playing field.

Submitted by Patrick Powers  
2-11-14 Item 16-3  
(date)





OFFICE OF: Mayor

Phone: 951-736-2370  
Fax: 951-736-2493

400 South Vicentia Avenue, Corona, California 92882  
City Hall Online All The Time – <http://www.discovercorona.com>

January 28, 2014

The Honorable County Board of Supervisors  
4080 Lemon Street  
Riverside, CA 92502

**RE: AMERICAN MEDICAL RESPONSE**

Dear Sirs:

For the previous 16 years, the City of Corona and American Medical Response have partnered to provide emergency medical services to our citizens. Under our current deployment model, our Fire Department and American Medical Response deliver comprehensive and integrated services to ensure that the needs of our residents are met. Throughout our partnership, American Medical Response has provided reliable, efficient and responsive service meeting their response time standards.

Because of this arrangement and excellent service provided, the City supports memorializing and reaffirming the existing ambulance franchise agreement, allowing American Medical Response to continue to provide service to our city and throughout the county. We truly appreciate the opportunity the EMS Agency has afforded us to provide input into enhancing our EMS system. As always, the City of Corona looks forward to our continued relationship with American Medical Response and the Riverside County EMS Agency.

Sincerely,

Karen Spiegel  
Mayor

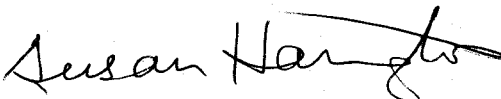
16-3

2014-2-11/40

February 5, 2014

To: Debbie Cournoyer

From: Susan Harrington, MS, RD  
Director of Public Health



RE: Emergency Medical Services System Evaluation Documents

Attached for your information are two reports from The Abaris Group for the County of Riverside Emergency Medical Services (EMS) System Evaluation:

County of Riverside EMS Evaluation Report, February 2014  
Riverside County EMS System Recommendations and Observations

Please let me know if you have any questions or need additional information.

Thank you.

16-3 2/11/14

70

# Riverside County EMS System

**RECOMMENDATIONS & OBSERVATIONS**

THE ABARIS GROUP

MARTINEZ, CA



# **Summary of Key EMS Study Recommendations**

*For the Consideration of*  
**County and EMS Stakeholders**



## Key Recommendations

The following is a summary of key recommendations that are a result of analysis and data gathered by The Abaris Group in the firm's "As-Is" Report for the County of Riverside published in August 2013.

- 1) Commence an Emergency Medical Services (EMS) Innovations Project (Phase II of this project) to better position the community for changes occurring both in the community and in healthcare with Healthcare Reform (The Affordable Care Act).<sup>1</sup>
- 2) Continue the reinstitution of a state-of-the art continuous quality improvement (CQI) and medical-control program (i.e., enhanced medical direction) consistent with the recommendations of the report
  - Include a comprehensive customer feedback mechanism with loop closure and regular reporting
- 3) Collaborate and document opportunities to create an EMS system where the most appropriate and available EMS resource responds to an emergency request regardless of geographical jurisdiction
  - Such a system would study the impact of "boundary-drop" mutual-aid systems (i.e., Orange County boundary-drop system) throughout the county, ensuring "boundary-drops" provide equitable services and does not subsidize surrounding communities
  - Further consider the first response-time standards identified in The Abaris Group's report including their documentation and accountabilities
- 4) Explore and develop improved efficiencies for EMS services provided to mental health patients:
  - Investigate alternatives to 72-hour holds (Welfare and Institutions Code Section 5150) for mental health patients
  - Consider additional mental health training for EMS and law enforcement
  - Determine if alternative destinations can be developed for mental health patients
- 5) Address the "EMS-to-ED (emergency department)" off-load ambulance delays in the form of a multidisciplinary collaborative, with parameters monitored by the EMS Agency:
  - Require substantial key executive leadership involvement from all appropriate stakeholders with a clear mandate to reduce and eventually eliminate ambulance off-load delays
  - Further examine the option to institute GPS tracking to monitor wall time/delays with ED volume increases included when evaluating wall time/delays

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<sup>1</sup> Some of the recommendations included in this document will be further defined and studied during the Phase II collaboration portion of this project.



- 6) Adopt stronger inter-facility transport (IFT) requirements and monitoring processes:
  - Conduct felony background and Medicare “excluded-provider” checks and disclosures of all current or past Office of Inspector or other payer investigations
  - Insist on current audited or “reviewed” financial statements from ambulance permits to ensure provider credibility and solvency
  - Consider requiring a physical presence within the county at a credible base of operations (i.e., formal dedicated office) for the applicant
  
- 7) Adopt key communication recommendations from the report, this should be based on cost and current financial status of the County:
  - Fully deploy the provision of Emergency Medical Dispatch (EMD) services to all EMS requests
    - Pre-arrival instructions on 100 percent of all appropriate EMS requests
    - Further study of call priority response tiering and response times
    - CQI policies/practices completed on all requests
  - Mandate computer aided dispatch (CAD) -to-CAD interfaces between the communications center and 9-1-1 ambulance providers throughout the county
  - Examine further the consolidation of all ambulance dispatching functions for all 9-1-1 requests within a consolidated and high-performance communication center, with the exception of those communities who dispatch their own Police Department/Fire Department
  - Encourage the participation of all EMS responders in the County’s Public Safety Emergency Communications System (PSECS) as appropriate
  - Establish a communications policy requiring responding ambulances to contact first-response agencies to receive on-scene updates
  - Standardize data collection requirements and quality improvement standards and monitoring from dispatching operations
  
- 8) Change the EMS governance structure:
  - Adjust EMS Agency staffing as comparable to like-sized counties
    - Add “EMS specialist” staff positions (estimated to be at least 1 up to 3 specialist positions) per recent statewide EMS agency survey
    - Achieve a full time EMS medical director
    - Study and implement specialized programs (e.g., mental health, inebriates, etc.)
  - Review and consolidate EMS advisory committee structure as appropriate
    - Re-evaluate and “zero base” all current EMS advisory committees
    - Determine if consolidation, re-timing and/or elimination is a possibility of each advisory committee
  - Take appropriate steps as called for by the consolidation study



- 9) Evaluate and develop strategies to improve on-line medical direction:
  - Implement optimal patient movement solutions
  - Determine the ideal number of base hospitals to manage EMS direction in the field while maintaining a sufficient span of control from the EMS Agency, while considering costs to agencies
  - Investigate ways to improve system coordination with a uniform medical control model (e.g., Medical Alert Center, Medical/Health Communications Center)
- 10) Address existing contract parameters with all of its 9-1-1 ambulance providers, with specific parameters to be identified during Phase II of the project:
  - Targeting key operational and performance issues required for a responsive and contemporary countywide ambulance delivery system
  - Creating or updating response times for each entity, including participating agencies that partner with private ambulance services
  - Establishing performance penalties with bench mark financial sanctions for under-performance
  - Crafting a written agreement and a timetable for participation with countywide data and information technology initiatives
  - Obtaining a countywide agreement to participate in medical control and quality-improvement initiatives
  - Adopting various equipment and vehicle standardizations
  - Developing reimbursement formulas for first responder costs and supplies used on EMS calls
  - Disclosing of key system status plan (SSP) provisions including advanced notification and approval by the Riverside County EMS Agency (REMSA) of planned adjustments to the SSP
  - Providing quarterly disclosure of financial statements at a unit (Riverside County) level, including continuance of the annual audited statement requirement
  - Seeking agreement to participate, negotiate in good faith and implement system enhancement features for future system innovations (assuming financial sustainability) of the EMS delivery system
  - Adopting a variety of contract clauses that permit the contract to be amended based on researched and verified efficacy and adopted ambulance delivery system benchmarks that demonstrate a high potential for system enhancements and alignment with the "triple aim" of Health Reform



- 11) Consider one of three models of ambulance exclusivity as documented in the report and, as appropriate, begin a request for proposal (RFP) process to establish appropriate providers throughout the county:
- In addition, obtain commitments to achieve the ambulance and contracting performance as listed in these recommendations and in the report
  - The three broad options are listed in the report but the County is not limited solely to these three options:
- (1) Memorialize and reaffirm the existing ambulance franchise zones and their key parameters with contractual updates as listed in this report, should further examine a timeline with a specific expiration date to negotiate with current provider
  - (2) Develop a revised exclusive operating area (EOA) plan that would include multiple EOAs each with local parameters and characteristics consistent with the local needs and then conduct an RFP process for each zone
  - (3) Define a single ambulance EOA (with the exception of the two current zones that have California Health and Safety Code Section 1797.201 grandfathered rights) for the entire county and conduct an RFP process consistent with the single zone and the contract and performance parameters in this report





# **EMS System Observations**



## EMS Providers

### 1) Fully utilize EMD countywide including all of its capabilities

Every medical call should be evaluated and the priority determined; in turn, the ambulances are only dispatched with lights and siren when appropriate. Incorporate non-emergency response time standards into first responder and ambulance agreements.

### 2) Create closest resource policy

Consider adopting a countywide policy that the closest, most appropriate resource be dispatched to a medical call.

### 3) First response system

- Establish a collaboratively designed response-time standard
- Encourage the establishment of an “auto-response” and “boundary-drop” system
- Establish a minimum level of first responder equipment – Ensure all first responders have automatic external defibrillators (AEDs) as part of their medical equipment.

### 4) Further examine an air-medical auto-launch policy

Study further an auto-launch policy for helicopter emergency medical services (HEMS) based on geographic area, with criteria, that takes into consideration transport distance to appropriate receiving hospital for patient type (e.g., trauma, pediatric, burn). Consider establishing an acceptable over-triage rate for HEMS patients discharged from the ED, similar to the trauma system ED discharges or ST-elevated myocardial infarction (STEMI) false activations.

### 5) Review pediatric trauma center capability

Study and ensure the appropriate level of pediatric resources are available at the designated trauma centers and in the community.

### 6) Update trauma plan

The current trauma plan was written in 2001 and should be reviewed and updated.

### 7) Designate STEMI receiving centers in East County

Additional STEMI hospital resources are necessary to augment the one designated hospital in East County.

### 8) Expand STEMI program

Consider growing the program to include related cardiac events, such as cardiac arrest, for protocol development, tracking, and improved patient outcomes.



**9) Establish stroke program**

Create necessary protocols and designate receiving hospitals for stroke patients to improve stroke patient outcomes.

**10) Develop additional inter-facility provider requirements**

Include a national, felony background check as well as a copy of current, audited financials to ensure credibility and solvency. Consider requiring a physical presence within the county. Review and possibly increase current application and on-going fees that are sufficient to encourage a resource commitment to Riverside County to become financially viable.

Moving forward, Riverside County has four primary options to manage the IFT marketplace:

**a) Maintain Competitive IFT Market With Adjustments – Recommended**

This is the current environment in Riverside County for basic life support (BLS) and critical care transportation (CCT). The benefits include a significant number of ambulances within the county for routine and disaster needs as well as a competitive market that may offer faster response times and the ability for insurance carriers, hospitals, and other providers to negotiate for lower transport costs. However, a competitive market is tougher to manage from a regulatory perspective and there is little ability to force ambulance providers to meet response time standards or contribute back into the EMS system. The Abaris Group recommends below adjustments that should be made to the IFT programs for Riverside County.

**b) Define and Bid Some IFT EOAs**

This combines the same strengths and weaknesses of the competitive and exclusive options. When only certain zones are established as exclusive, there is a legitimate concern that outlier, isolated areas may not be able to secure IFTs when needed.

**c) Create IFT EOA(s) that Covers Riverside County Completely**

Advanced life support (ALS) IFT is part of the Riverside County 9-1-1 EOA zones. Similar to creating an EOA for emergency services, this option ensures IFT services anywhere within the county, mandates response times with non-compliance penalties, monitors fewer providers, and captures some of the IFT revenue to benefit the EMS system. With an exclusive provider(s) for IFT, any current provider who is not a winning bidder for a zone would no longer be able to operate in Riverside County. This approach can lead to perceived predatory pricing by the private hospitals and insurance providers. The number of available ambulances would most likely decrease, possibly impacting transportation during a disaster.

**d) Create combined 9-1-1 and IFT EOA(s) that Covers Riverside County Completely**

This option has the same benefits and concerns as a stand-alone IFT EOA (i.e., Option #3); however, it offers the advantage of one provider for both services. This difference allows for the option of a single fleet of ambulances to perform all ambulance transports. This should be more efficient for the private ambulance provider, which should translate to lower costs or more resources that would be returned to the system in terms of other system optimizations (i.e., public education, stakeholder training resources, lower overall ambulance rate costs, etc.) put



back into the EMS system.

However, in looking at the San Bernardino County ambulance rate structure, which currently has a combined EOA for both types of service, a 10-mile ALS urban transport is only \$7.22 less (see Figure 1) in that system in spite of the potential

overall revenue advantage through the San Bernardino 9-1-1/IFT ambulance franchise combination. In the rural areas, a similar transport would actually be more expensive by \$124.14. There also does not appear to be other resources returned to the San Bernardino County EMS system commensurate with the IFT franchise as witnessed through a separate study recently by The Abaris Group. In addition, there were considerable concerns raised by one hospital/payer provider in San Bernardino County (Kaiser) about predatory pricing by the current ambulance provider that they believe is permitted with that county's IFT franchise.

9-1-1 Ambulance Rates			
Components	Riverside	San Bernardino	
		Urban Operating Areas	Rural/ Wilderness Operating Areas
ALS-1	\$ 1,229.81	\$1,313.69	\$1,445.05
Mileage (per mile)	\$ 34.05	\$24.94	\$24.94
10-Mile Transport	\$ 1,570.31	\$1,563.09	\$1,694.45
Difference compared to Riverside		-\$7.22	\$124.14

Note: Review of partial rate structures, e.g., BLS, oxygen, and night rates not included

Source: EMS agencies

Figure 1 – Ground Ambulance Comparison Rates

## Communications and Dispatch

### 1) Consolidate the Ambulance Dispatching Function for all 9-1-1 Requests within a Communication Center in the county

The current ambulance contractor's dispatch center provides no secondary primary public safety answering point (PSAP) function or EMD services, and only serves to receive 9-1-1 requests for service from either the County Emergency Communications Center (ECC) or one of several city PSAPs. Secondly, it receives and processes inter-facility transfer requests from various medical institutions. The 9-1-1 ambulance dispatching function should be conducted through the comprehensive, accredited communication center, only requiring the ambulance contractor to place a system status controller at the communication center site to manage the unit deployment and system status plan for the contractor. This would reduce the amount of time required to alert ambulances for 9-1-1 responses, as requests to the communication center would be alerted and dispatched at that time, rather than having to wait for dispatch information to be transferred to the ambulance contractor's dispatch center.

Additionally, with the vast majority of medical 9-1-1 calls coming to the communication center, proper prioritization of calls and tiering of EMS responses can be facilitated, thereby reducing the risk of responding ambulances lights and siren to all requests. Future innovations would also be easier to adopt, test and monitor at such a communication center site (i.e., nurse triage, an RN/MICN, in communication center, etc.)



**2) Ensure the Provision of EMD Services to all requests for emergency ambulance in Riverside County**

The provision of EMD for medical 9-1-1 calls is firmly established as the standard of care in dispatching operations. While the majority of Riverside County enjoys the provision of EMD, nearly 300,000 residents in five communities do not receive EMD services. The EMS Agency should encourage all of the communities not providing EMD currently to establish a plan and timeline to provide for or contract for the provision of EMD to its citizens. The EMS Agency should assist with identifying possible sources of funding to assist those communities with the cost of establishing or contracting for the provision of EMD.

**3) Encourage the Participation of all EMS Responders in the County's PSEC Communications System**

The Riverside County Public Safety Enterprise Communications system provides a state of the art communications network with enormous capacity and potential to improve emergency communications county-wide. While the participation of the various cities and public safety organizations is a matter of marketing the benefits and costs to those entities by the county, the EMS Agency can build in a requirement for the successful bidder's participation into their anticipated request for proposals.

**4) Establish Communications Policy Requiring Responding Ambulances to Contact First Response Agencies to Receive On-Scene Updates**

While this would seem on the surface to be an automatic procedure, it was, in fact, stated as an on-going issue for several first response agencies. As such capabilities should exist with most if not all agencies, the EMS Agency should ensure that it is a system requirement with the contracted ambulance provider with appropriate sanctions for continued non-compliance.

**5) Standardize Data Collection Requirements and Quality Improvement Standards from Dispatching Operations**

The collection of dispatch information for medical 9-1-1 requests varies throughout Riverside County, and the ability to validate the timeliness and quality of services provided is hampered by both inconsistent data collection and quality assurance processes. The EMS Agency should use a collaborative process with all affected organizations to establish a common set of data definitions and collection requirements to allow for standardized review and evaluation. Using the California Emergency Medical Services Information System (CEMSIS) standards, the EMS Agency can establish the minimum requirements for data collection from all organizations that touch the medical 9-1-1 call, and develop a quality assurance/improvement process using standardized quality indicators to ensure and validate the quality of services being provided throughout the system.



## System Benchmarks

### 1) Increase EMD to countywide percent coverage

Ensure that all of all eligible requests for EMS response are prioritized through a medical priority dispatch system (MPDS) that determines most appropriate resources.

### 2) Adjust system fees

Ensure transport providers are paying an equitable share of the dispatching and other services it utilizes within the EMS system.

### 3) Establish and monitor first response goals

Define, implement and monitor countywide response time standards for first responder services, especially where there is a relaxed response time standard (i.e., Cities of Riverside and Corona).

### 4) Identify enhanced transport response-time standard by EMD countywide

Determine the appropriate response time based on the MPDS information for all medical calls; ensure that all transport providers are in compliance with county response time standard.

### 5) Consider response time refinement

Response of 7:59 minutes, 90 percentile and the corresponding support performance standards or a revised standard countywide with documented ALS first-response capabilities.

### 6) Consider eliminating compliance exemptions

Consider eliminating all exemptions except during a major disaster as defined by the REMSA contract administrator.

### 7) Simplify penalties assessed

Review current penalties for frequency and complexity to track; identify key performance indicators and penalize appropriately (to be determined in Phase II of the project); consider eliminating performance credit.

### 8) Adjust outlier definition (i.e., "calls longer than...")

Consider using a percentage of response time (e.g., 150-200 percent) instead of 10:00 minutes to more appropriately identify outliers in all types of response areas (i.e., urban, suburban, rural, wilderness).



## Continuous Quality Improvement

- 1) **Re-establish and sustain a county-wide, coordinated CQI program with the consideration of establishing a Business Associate Agreement (BAA) with all entities to ensure the ability to share patient outcome data for a successful CQI program**
- 2) **Dedicate appropriate resources for success**  
Assure REMSA has the staff and other resources committed to fully pursue an “excellence” mission desired with full CQI implementation and other key initiatives, while considering that staffing does not exceed like-sized communities.
- 3) **Develop countywide EMS training center**  
Similar to the county police and fire training center, establish an EMS equivalent program; consider using assessed EMS liquidated damage penalties to fund this program. Consider implementation of standardized trainers and training material to ensure standardized training.
- 4) **Reestablish county-wide coordinated continuous quality improvement (CQI) Technical Advisory Committee (TAC) –** While there exists an extensive network of committees reviewing and reporting on the quality of care being provided at various phases of the patient care experience within the system, there is no overarching body responsible for putting all of this information together in a comprehensive picture of the patient experience. REMSA should reestablish the CQI TAC with responsibility for oversight and coordination of all CQI activities within the system. It should be chaired by the REMSA Medical Director and staffed by a REMSA CQI Coordinator.

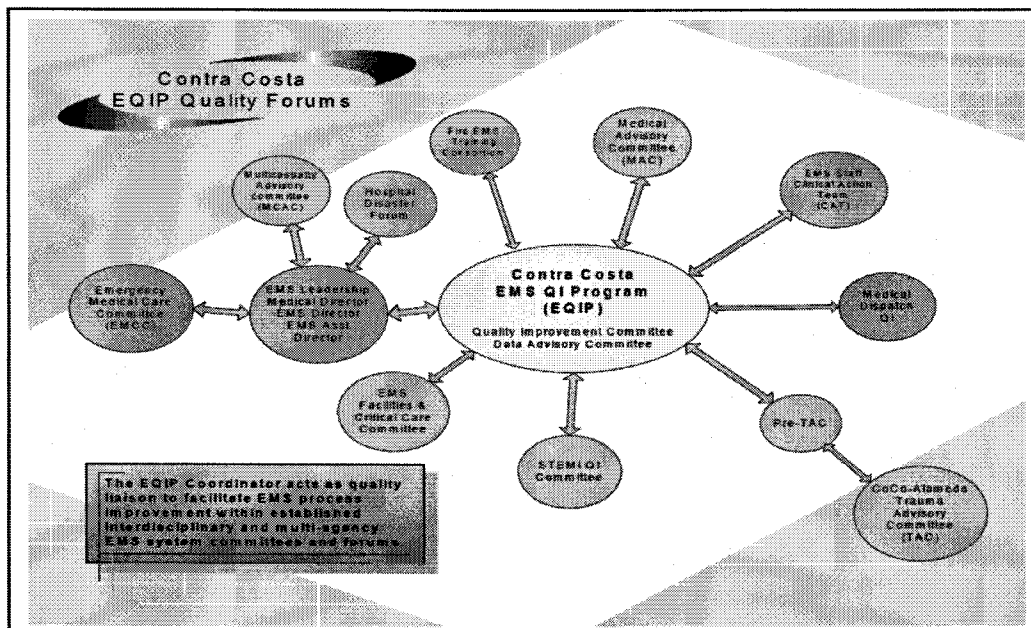


Figure 2 –Sample Contra Costa EQIP Quality Forums



Figure 2 graphically represents the Contra Costa County Emergency Medical Services (EMS) Agency CQI relationships, and the interaction between the various QI groups within that system.<sup>2</sup> This method leads to a formalized CQI process for any EMS issue with trending, quantifying, and identification of concerns for training opportunities (e.g., under/over trauma triage, false STEMI activations, medication errors). A coordinated approach may also improve participation of EMS system stakeholders. For example, there is no EMS provider involvement at specialty care system meetings.

**5) Consider a “Just-Culture” approach to quality review initiatives**

The National Association of Emergency Medical Technicians (EMT) has announced that they are encouraging all EMS agencies to adopt a “just-culture” approach to system quality improvement.<sup>3</sup> The term “just culture” refers to a value system of shared responsibility in which health care organizations are accountable for responding to their staff performance in a fair and just manner. The staff is likewise then responsible for their choices and reporting both their errors and system vulnerabilities. Thus, a process where “blame” is not the first reaction to an error, but rather an understanding that the error is likely a failure in the system design.

The just-cause environment breaks behaviors down to three types of errors:

- “Human error”
- “At-risk behavior”
- “Reckless behavior”

These categories help create a framework for consistency among evaluators and instill a sense of confidence and accountability for the individuals involved.<sup>4</sup>

**6) Select online protocol vendor**

Timely and up to date protocol information is crucial for patient clinical care. A vendor should be endorsed to provide Riverside County EMS policies online and through smartphone/tablet applications.

<sup>2</sup> <http://cchealth.org/ems/quality.php>

<sup>3</sup> [http://www.naemt.org/WhatsNewALLNEWS/12-07-13/Board\\_Adopts\\_New\\_Position\\_Statement\\_on\\_Just\\_Culture\\_in\\_EMS.aspx?ReturnURL=%2Fdefault.aspx](http://www.naemt.org/WhatsNewALLNEWS/12-07-13/Board_Adopts_New_Position_Statement_on_Just_Culture_in_EMS.aspx?ReturnURL=%2Fdefault.aspx)

<sup>4</sup> <http://www.justculture.org/>





## **Industry Trends and Best Practices**

### **1) Implement a 9-1-1 appropriateness campaign**

Utilize the existing public service announcement to develop a subsequent "When to Call 9-1-1" educational campaign and website.

### **2) Quantify and possibly develop a pre-hospital mental health program**

Quantify the volume of 5150 transports and determine whether an alternative response and transport program may be more appropriate.

### **3) Quantify and possibly develop a program for serial inebriates**

Quantify the volume of serial inebriate transports and determine whether an alternative response and transport program may be more appropriate.

### **4) Implement a solution to address the needs of high system EMS users**

Identify the heaviest users of the 9-1-1 system and develop a multi-disciplinary approach to reduce the frequency used. Consider community resources to manage specific patients with over-utilization of the EMS system. Further study the option of working with insurance companies to enhance case management.

### **5) Research community paramedicine programs**

Follow community paramedic and mobile healthcare programs being developed and implemented in other EMS systems for suitability in the local environment. Compare these programs with the quantified local needs (e.g., 9-1-1 users who are the least served by the current health-care system) and define opportunities to partner with public and private entities to financially support a potential program.

### **6) Monitor CMS Health Care/EMS Innovation Awards**

The Center for Medicare and Medicaid Services (CMS) EMS innovation programs will mature over the three-year implementation period and there is a new round of funding applications underway which may allow more EMS innovations to be tested. The REMSA should monitor these projects for outcome results and consider their appropriateness and applicability should they be replicatable locally.



## **ED and Hospital Capacity Challenges**

- 1)** ED capacity and resultant EMS patient off-load delays need to be addressed sooner and not wait for the full strategic planning process (Phase II)
- 2)** Timing is key due to significance of the problem, impact on EMS delivery system, timeliness and quality of care
- 3)** Statewide initiatives are also now underway
- 4)** Recommend a local collaborative model be initiated immediately
- 5)** Focus on:
  - Population innovations
  - EMS innovations
  - Hospital innovations



## **Consideration for Ambulance Exclusivity and Zone Configuration**



## Considerations for Exclusivity and Zone Configuration

The Abaris Group considered several options for the county with regard to the establishment of Exclusive Operating Area(s) and the configuration of either multiple EOAs within the county or a single EOA for the entirety of Riverside County with separate and distinct sub-zones for compliance analysis and carving out only those eligible H&S Code Section 1797.201 cities. While three distinct options are presented, there are many permutations to these three options. The relative strengths and weaknesses of the options are discussed below.

### Option A - Maintain Current Grandfathered System

This option would maintain the current makeup of the EMS system, with the current grandfathering option continued for many of the EOAs.

#### Option A – Maintain Current Grandfathered System

##### Strengths

- Based on stakeholder comments, the current system is performing well and generally meets expectations
- Would maintain a configuration of separately contracted EOAs familiar to the system participants
- May provide for continuity of service delivery
- Quite possibly the least expensive and least complicated option for the county
- Maintains relationship with current contracted provider
- Retains more local control of the EMS system while maintaining state action immunity based upon approval of the EMS Transportation Plan
- The current contracted provider is cooperating for the ambulance service in the three, non-exclusive operating areas

##### Weaknesses

- Maintains a non-competitively awarded system with limited incentive for creative enhancements to service delivery
- Maintains the status quo, which has been criticized by several system participants
- May continue the use of zones which might be better incorporated into reconfigured response areas and improved response leverage
- Potentially creates an “ad-infinitem” monopoly
- At least three ambulance operating areas are either not EOAs (i.e., Indio, Cathedral City) or have not had a completed bidding process (i.e., Mountain Plateau Zone and Pass Zone) within the state mandated periodic interval and thus would need to be bid if the county wanted to establish them as EOAs, as they do not qualify under H&S Code sections 1797.201 or 1797.224



## Option B - Multiple EOAs Separately Bid

This option would be very similar to the current makeup of the EMS system, with the obvious difference being that the current EOAs would be competitively bid, versus the current grandfathering option utilized for many of the EOAs.

### Option B – Multiple EOAs Separately Bid

#### Strengths

- Would maintain a configuration of separately contracted EOAs familiar to the system participants
- Could allow for distinct contracting specifications individualized by EOA
- Could maximize EOA specifications and allow for different bidders to customize options, rather than bid one set of specs for entire county
- Could permit more public/private models

#### Weaknesses

- Could fragment county coverage if bidders are not required to bid all EOAs
- Leaves larger, more sparsely populated areas without incentive for bidders to bid them
- If multiple awardees for separate EOAs, will create the need for multiple mutual aid agreements and potential for poor coverage during peak periods
- Devalues the potential financial attractiveness of county-wide EOA as a bid opportunity
- Creates complex REMSA contracting/monitoring duties at increased expense to the county
- System parameters must be approved by CA EMS Authority



### Option C - Single County-wide EOA Bid

This option would eliminate the multiple, separate EOAs and establish the entirety of Riverside County as an EOA for ALS ambulance service with the exception of the qualified H&S Code section 1797.201 zones (i.e., Cove Cities and the Idyllwild Fire Protection District).

#### Option C – Single County-Wide EOA Bid

##### Strengths

- Could maximize the financial attractiveness of the Riverside EOA by providing for a very large, contiguous service area as a bid opportunity
- Would eliminate the potential for more than one vendor for the county to have to contract with and oversee their operations
- Could provide the county with maximal leverage to obtain system enhancements and cutting-edge technology at a competitive price
- Creates a blank slate from which the county can produce a “system by collaborative design,” rather than a “system by evolution”
- Establishes a single, uniform system designed for quality service delivery for all areas of the county, particularly the more difficult areas to serve
- Without such the county could experience zones with no providers in the future (i.e., ICEMA’s 27 zones some with no providers)
- Could permit collaborative public/private partnerships using a single accountable entity model

##### Weaknesses

- County would forfeit its current grandfathering rights over EOAs
- Will most likely leave some holes in the system due to existing, qualified H&S Code section 1797.201 communities (Idyllwild and Cove Cities)
- Will require collaborative negotiation for areas that are currently non-exclusive but served by alternate providers
- Will require a comprehensive and potentially expensive request for proposals (RFP) process
- System parameters must be approved by CA EMS Authority
- Once the contract is bid, bids must continue to occur at periodic intervals. The State’s current requirement is every ten years.

### H&S Code Background

The California Health and Safety Code allows counties to designate “one or more” exclusive-operating areas. While this option may have been advantageous when counties were looking to “grandfather” providers into specific, traditional service areas, it is of minimal value when looking to maximize a county’s opportunity to create a very attractive exclusive zone for the purpose of bidding the system and assuring high performance. While all of the current “EOAs” designated by Riverside County made sense from the standpoint of “continuous, uninterrupted service delivery” in specific areas of the county, these zones today do not have the same rational they once if anticipating going to bid. Dividing an enormous EOA the size of Riverside County and reducing it to much smaller, individual EOAs (and presumably) bidding them separately will likely devalue the overall system and the attractiveness of the bid process to outside bidders.



Performance Evaluation Zones would be defined as non-EOA (i.e., smaller than an EOA), compliance zones. They are calculated on a periodic basis, as determined by the EMS Agency in coordination with the affected areas. Their purpose is to provide a more defined area of analysis that would not directly impact the contract compliance analysis process, but would be conducted to ensure that specific areas of the county are not being underserved from the standpoint of response time performance. The specific, required performance level would be negotiated and defined in the contract, and continued non-performance in these areas would trigger a mandatory system status plan evaluation and corrective action plan.

### **Other Ambulance Zone – Observations and Recommendations**

The charge to The Abaris Group for this section of the report is to review the existing ambulance zones and recommend changes to their configuration, as deemed appropriate. The Abaris Group pursues this objective from the perspective that the EMS Agency and the County wish to maximize the strength and viability of the county franchise, creating a financially attractive bidding opportunity for potential providers of service, and thereby maximize the leverage of the County for system improvements and opportunities for excellent patient care. The Abaris Group also understands that this objective must be tempered with prudent consideration of existing public sector providers, particularly where they clearly qualify under California Health and Safety Code section 1797.201, or where their tax subsidized service model is crucial for service delivery to sparsely populated, difficult areas to serve.

The relevant sections of the California Health and Safety Code are listed below in their entirety for the clarification of the reader. These sections of law outline the process whereby counties may establish exclusive operating areas, and also clarify the retained authority for cities that qualify under the specifications of the H&S Code section 1797.201 statute.

“1797.6. (a) it is the policy of the State of California to ensure the provision of effective and efficient emergency medical care. The Legislature finds and declares that achieving this policy has been hindered by the confusion and concern in the 58 counties resulting from the United States Supreme Court's holding in *Community Communications Company, Inc. v. City of Boulder, Colorado*, 455 U.S. 40, 70 L. Ed.2d810, 102 S. Ct. 835, regarding local governmental liability under federal antitrust laws.

(b) It is the intent of the Legislature in enacting this section and Sections 1797.85 and 1797.224 to prescribe and exercise the degree of state direction and supervision over emergency medical services as will provide for state action immunity under federal antitrust laws for activities undertaken by local governmental entities in carrying out their prescribed functions under this division.”



"1797.85. "Exclusive operating area" means an EMS area or subarea defined by the emergency medical services plan for which a local EMS agency, upon the recommendation of a county, restricts operations to one or more emergency ambulance services or providers of limited advanced life support or advanced life support."

"1797.201. Upon the request of a city or fire district that contracted for or provided, as of June 1, 1980, pre-hospital emergency medical services, a county shall enter into a written agreement with the city or fire district regarding the provision of pre-hospital emergency medical services for that city or fire district. Until such time that an agreement is reached, pre-hospital emergency medical services shall be continued at not less than the existing level, and the administration of pre-hospital EMS by cities and fire districts presently providing such services shall be retained by those cities and fire districts, except the level of pre-hospital EMS may be reduced where the city council, or the governing body of a fire district, pursuant to a public hearing, determines that the reduction is necessary."

"1797.224. A local EMS agency may create one or more exclusive operating areas in the development of a local plan, if a competitive process is utilized to select the provider or providers of the services pursuant to the plan. No competitive process is required if the local EMS agency develops or implements a local plan that continues the use of existing providers operating within a local EMS area in the manner and scope in which the services have been provided without interruption since January 1, 1981. A local EMS agency which elects to create one or more exclusive operating areas in the development of a local plan shall develop and submit for approval to the authority, as part of the local EMS plan, its competitive process for selecting providers and determining the scope of their operations. This plan shall include provisions for a competitive process held at periodic intervals. Nothing in this section supersedes Section 1797.201."

Riverside County is the second largest county in California, with 7,206 square miles in land area. It currently contains 12 primary zones, and 15 sub-zones. The largest of these zones is the Desert Zone, which encompasses nearly 62 percent of the entire county area.

The Abaris Group has previously defined three broad EOA zone configurations earlier in this report. The County should also continue to use separate compliance analysis zones (most of which will be consistent with the current EOAs). Further, the County should consider designating sub-zones for either monthly compliance analysis or as specific Performance Evaluation Zones. This is to ensure that the response time performance in smaller communities that are incorporated into compliance zones with major urban areas maintain a defined level of service, and that their response times are not simply lost in the much larger compliance analysis process, outlines the recommendations relative to the current zones.





Proposed Riverside County Ambulance Zones					
Zone Name	SubZones Included	Exclusive (Yes or No)/Provider	Average Monthly Response Volume	Recommendation	Adjustments
Central Zone	Central Unincorp. South, Moreno Valley	Yes/AMR	1,753	Maintain for compliance	Continue to use current sub zones for monthly compliance
Desert Zone	Desert Unincorp., Palm Springs and Desert Hot Springs, La Quinta-Coachella, (and contains Coves Cities, Cathedral City, Indio City)	Yes/AMR	1,728	Maintain for compliance	Incorporate Indio and Cath. City into Desert Zone - Continue to use current sub zones for monthly compliance
Northwest Zone	N. Norco/NW Unincorp., S. Corona/NW Unincorp., Riverside City	Yes/AMR	3,709	Maintain for compliance	Continue to use current sub zones for monthly compliance
Pass Zone	None	Yes/AMR	713	Maintain for compliance	None
Mountain Plateau Zone	None (Idyllwild City Zones fall within)	Yes/AMR	82	Maintain for compliance - 2 to 3 month intervals	Reconsider compliance analysis time period
Southwest Zone	SW Unincorp 01, Murrieta-Temecula	Yes/AMR	2,379	Maintain for compliance	Continue to use current sub zones for monthly compliance.
San Jacinto Valley / Hemet Zone	San Jacinto Unincorp., Hemet	Yes/AMR	1,667	Maintain for compliance	Continue to use current sub zones for monthly compliance
Palo Verde Valley Zone	None	Yes/AMR, dba Blythe Ambulance	156	Maintain for compliance	Ensure "Immediate Dispatch" standard for "best effort" response grids
Idyllwild Fire Protection District (IFPD)	IFPD SubZones I, II and III	Yes/IFPD	49	Maintain for compliance - 2 to 3 month intervals	Reconsider compliance analysis time period
Cathedral City Zone	None	No/Cathedral City Fire Department	310	Incorporate into Desert Zone	Separate for Performance Evaluation Zone
Indio City Zone	None	No/RivCo Fire-Cal Fire	Unknown	Incorporate into Desert Zone	Separate for Performance Evaluation Zone
Coves Cities Zone	None	Yes/RivCo Fire-Cal Fire	Unknown	Maintain for compliance	None

Source: Riverside County EMS Plan, 2012 Draft Update, EMS Agency Response Statistics, Abaris Group Recommendations

Figure 3 - Proposed Riverside County Ambulance Zones

Performance Evaluation Zones would be defined as non-EOA, compliance zones. They are calculated on a periodic basis, as determined by the EMS Agency in coordination with the affected areas. Their purpose is to provide a more defined area of analysis that would not directly impact the contract compliance analysis process, but would be conducted to ensure that specific areas of the county are not being underserved from the standpoint of response time performance. The specific, required performance level would be negotiated and defined in the contract, and continued non-performance in these areas would trigger a mandatory system status plan evaluation and corrective action plan. These zones are typically designated at a response time compliance level of between 75 – 85 percent, depending on the negotiated process.



## Current Riverside County EOAs and Non-exclusive Zones

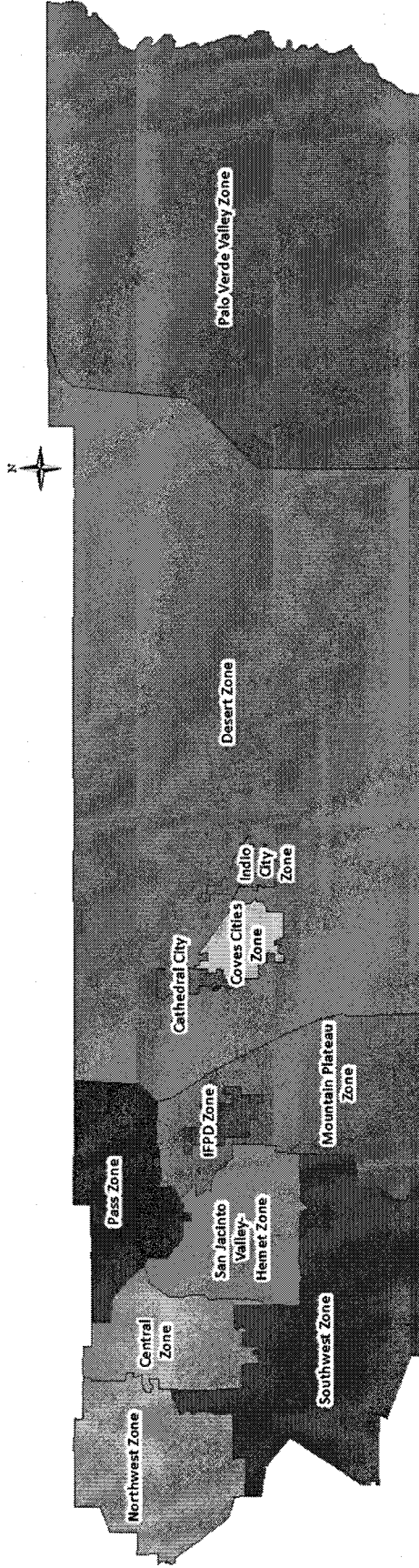


Figure 4 - Current Riverside County EOAs and Non-exclusive Zones

Cathedral City and Indio do not have exclusivity under H&S Code section 1797.224 and also do not qualify under 1797.201



## Proposed Riverside County Response Time Compliance Zones and Qualified "201" Cities or Fire Protection Districts

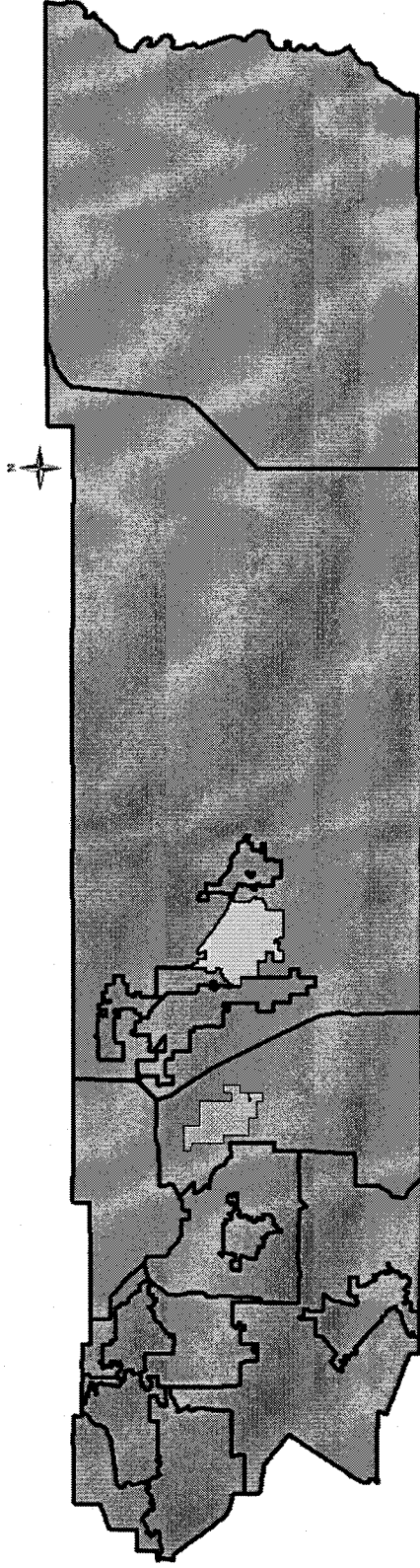


Figure 5 - Proposed Response Time Compliance Zones and Qualified H&S Code section 1797.201 Cities or Fire Protection Districts



## Proposed Emergency Response Times

The following maps display recommended ALS ambulance response times maps.

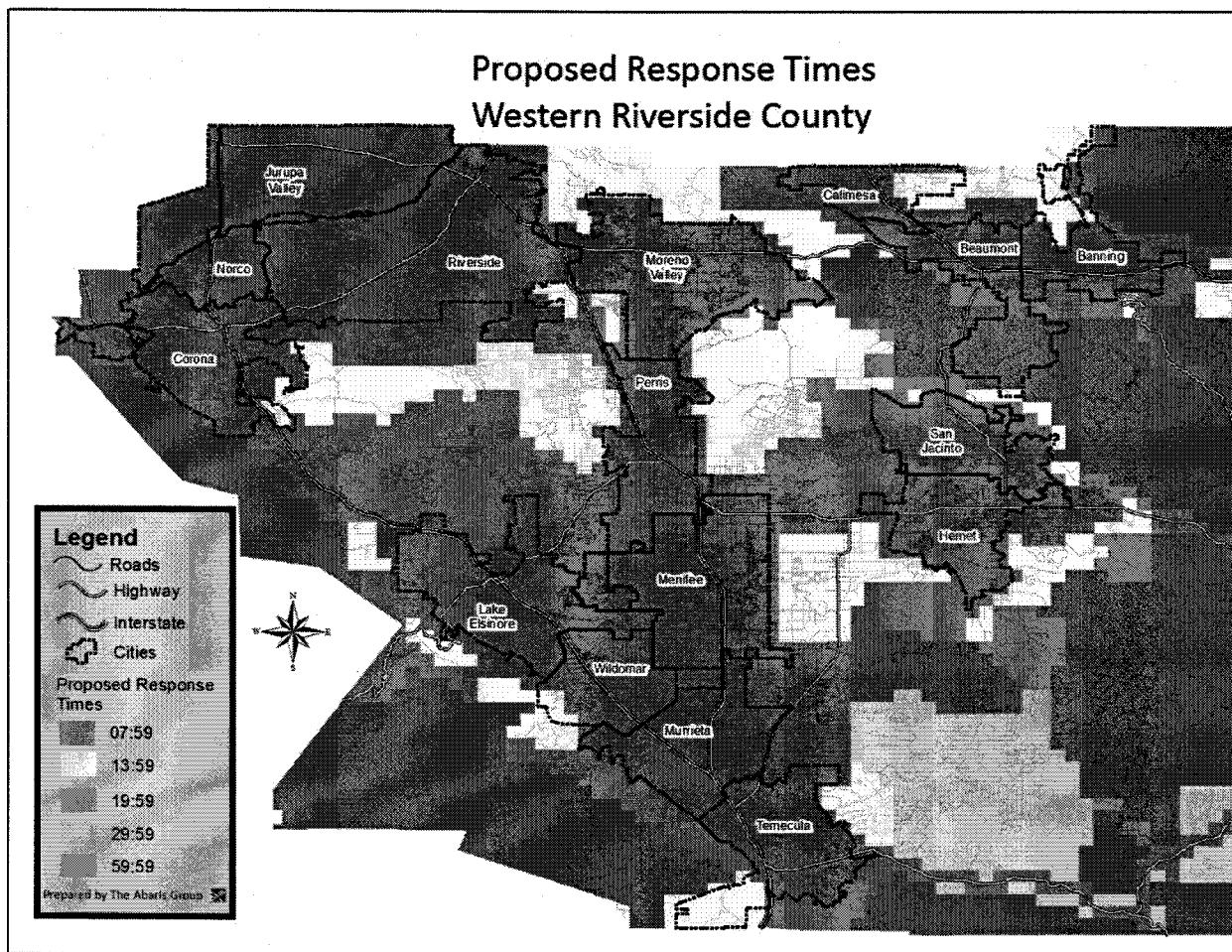


Figure 6 - Proposed Response Times - Western Riverside County

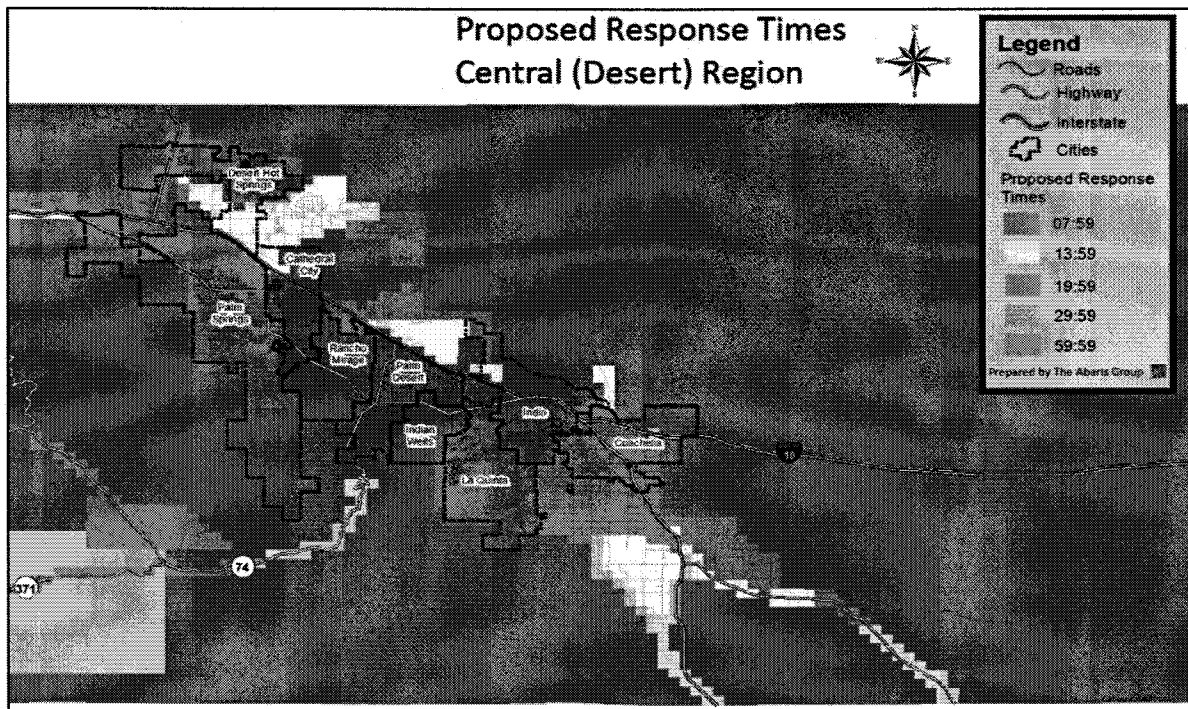


Figure 7 - Proposed Response Times - Central (Desert) Region

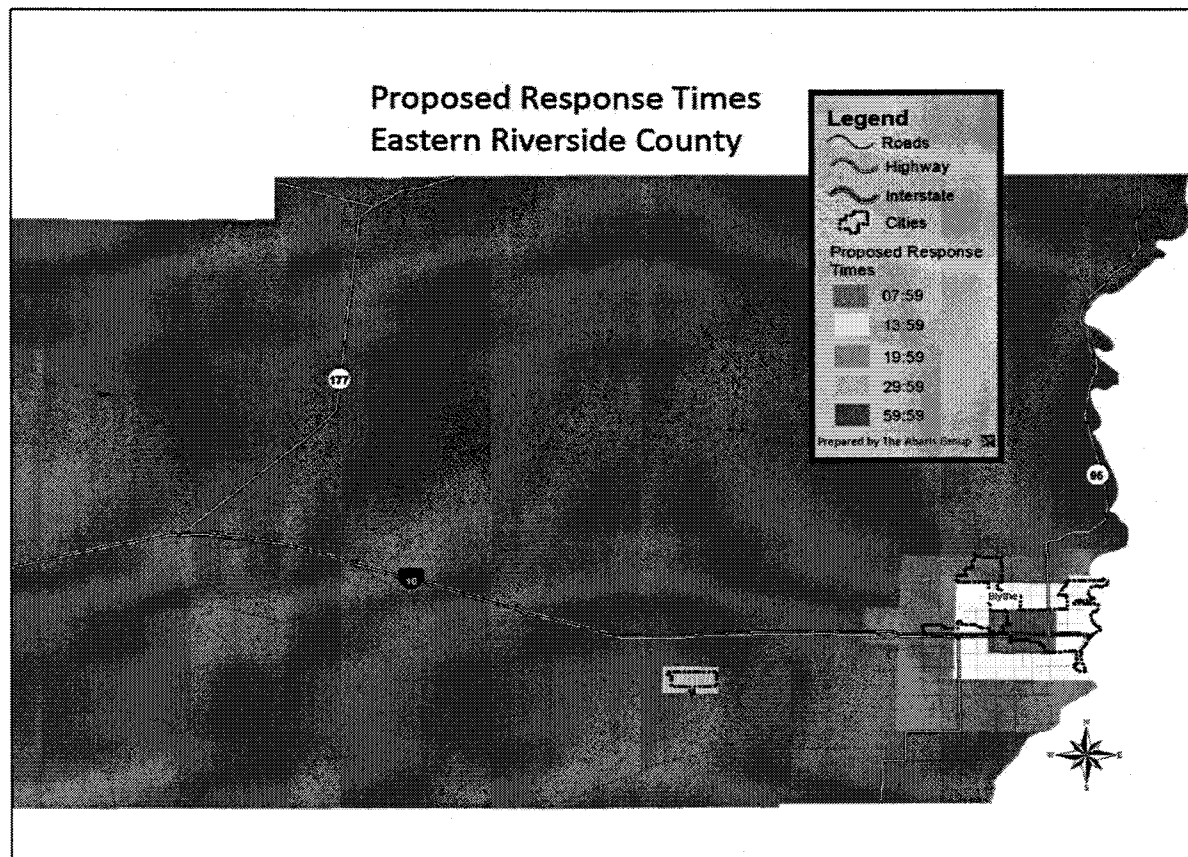
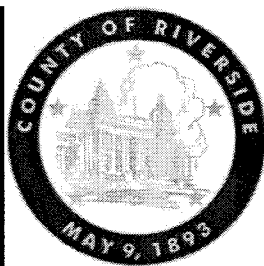
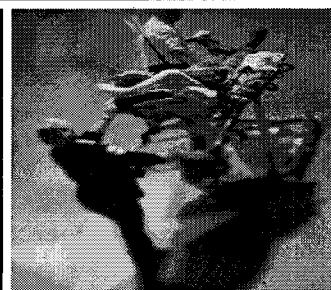
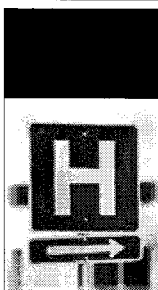


Figure 8 - Proposed Response Times - Eastern Riverside County





County of Riverside  
EMS Evaluation Report  
February 2014

Prepared for  
The Riverside County  
EMS Agency



by  
The Abaris Group  
Martinez, CA



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## Executive Summary

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### Overview

The goal of the Riverside County Emergency Medical Services (EMS) system is to provide optimal, pre-hospital emergency medical care to all residents and visitors. The Riverside County Board of Supervisors has directed the Riverside County Emergency Medical Services Agency (REMSA) to undertake a comprehensive evaluation of the EMS system. The healthcare environment is changing dramatically and will continue to undergo many profound changes in the next decade. These changes, along with steadily increasing community needs for access to primary and emergency medical care, present many challenges as well as opportunities for innovation in the delivery of quality EMS service within the context of an integrated healthcare system. This comprehensive EMS system evaluation has been designed using an inclusive and collaborative process that will provide REMSA and the County Executive Office with recommendations for improving the EMS system. Riverside County has taken this proactive step to assure that the EMS system is meeting the needs of residents and visitors now and will continue to meet those needs into the future.

The Abaris Group was selected to conduct the EMS system evaluation, which includes development of an evaluation “As Is” report on the current EMS system. The Abaris Group’s EMS system recommendations, a scope of work for the County emergency ambulance contract and an EMS system strategic plan for implementation of the system improvements is provided under separate cover.

This report represents the Abaris Groups “As Is” evaluation of the current Riverside County EMS system.



## System Review

The “As Is” evaluation and report outline the structure and function of the current EMS system design. In performing this evaluation and producing this report, The Abaris Group has evaluated all data, plans, financial reports, operational performance reports, regulatory requirements and other relevant documents pertaining to the current EMS system. The Abaris Group also conducted greater than 100 individual and focus group style interviews, performed direct field observations, visited hospitals and dispatch centers and held eight stakeholder group meetings to solicit input on the current EMS system. This “As Is” evaluation report outlines the specific findings on the current EMS system compiled during this process that began in November 2012.

The report’s components include evaluation of the following items:

<ul style="list-style-type: none"><li>▪ Advanced life support programs (first responder and ambulance)</li><li>▪ Ambulance performance for both 9-1-1 and inter-facility</li><li>▪ Continuous quality improvement</li><li>▪ Data collection and reporting</li><li>▪ Emergency departments/hospitals and their EMS patient capacity</li><li>▪ EMS communications and dispatch</li><li>▪ EMS education and training</li></ul>	<ul style="list-style-type: none"><li>▪ EMS first responder services and needs</li><li>▪ EMS performance measures</li><li>▪ Medical direction</li><li>▪ Medical equipment and supplies</li><li>▪ Operational integration and cooperative relationships of system participants</li><li>▪ Public access, education and prevention</li><li>▪ Specialty hospitals (i.e., trauma, pediatrics, stroke and heart)</li><li>▪ Patient satisfaction and customer service</li></ul>
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## Acknowledgements

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The Abaris Group would like to thank the Riverside County Board of Supervisors, the Riverside County Health and Hospital System, Public Health Department, and the Emergency Medical Services (EMS) Agency for the opportunity to partner with Riverside County as it identifies opportunities to improve the EMS system and the implementation of the strategic recommendations. Most importantly, The Abaris Group acknowledges all of the public and private EMS system stakeholders, who took the time to share their thoughts, opinions, and suggestions on how to serve the EMS needs of the people of Riverside County. The stakeholders demonstrated an exemplary level of commitment for the EMS system. The Abaris Group would also like to thank the members of the Steering Committee who provided valuable input to the evaluation and attended several meetings over the course of this evaluation.

In addition to performing approximately 100 interviews and attending a number of the EMS committee meetings, observation sessions were conducted with different EMS organizations, including ambulance crews and supervisors, County communication dispatchers, EMS specialists, and fire department first responders. Their input, combined with the experience of The Abaris Group's consultants, and data collected and analyzed form the basis for this report.

### Participating Agencies & Providers

- Air Ambulance Providers
- Ambulance Association of Riverside County
- American Medical Response (AMR)
- Blythe Fire Department
- Calvary Ambulance
- Care Ambulance
- Cathedral City
- California Highway Patrol (Air Ambulance)
- City of Corona
- City of Corona Fire Department
- City of Eastvale
- City of Lake Elsinore
- City of Murrieta
- City of Norco
- City of Riverside Fire Department
- Coachella Valley Association of Governments
- County Service Area-38
- Emergency Medical Care Committee
- Hemet Valley Medical Center
- Helicopter EMS Continuous Quality Improvement (CQI)
- Hospital Association of Southern California
- Idyllwild Fire Protection District
- Loma Linda University Medical Center - Murrieta
- Morongo Tribe Fire Department
- Murrieta Fire Department
- Palm Springs Fire Department
- Pechanga Tribe Fire Department
- Paramedic liaison nurses
- Pre-hospital Medical Advisory Committee
- Public Health Emergency Preparedness and Response Branch
- Riverside City Police Department
- Riverside County Department of Mental Health
- Riverside County EMS Agency
- Riverside County Executive Office



## ABARIS GROUP

- Riverside County Fire Chief's Association
- Riverside County Fire Department
- Riverside County Law Enforcement Administrators Association
- Riverside County Medical Association
- Riverside County Regional Medical Center
- Riverside County Sheriff's Office
- Rural/Metro Ambulance
- Trauma Audit Committee
- Trauma Program Managers
- Western Riverside Council of Governments



## Project Overview

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The current EMS system is meeting many of the needs of the almost 2.2 million Riverside County residents. The County has undergone significant population growth in the past decade. The demand for efficient, high quality, cost-effective emergency medical care is at an all-time high and will continue to increase EMS service demand in the foreseeable future. Additionally, both service and financial challenges anticipated under the Affordable Care Act (ACA) will require significant change within the healthcare system. The Community Health Profile released by the County of Riverside Department of Public Health (DOPH) outlines specific health risk factors and chronic diseases directly affecting County residents.

In response to these known challenges and challenges yet unforeseen, Riverside County has taken a proactive step with the initiation of this emergency medical services (EMS) evaluation. Through the EMS system evaluation process, the County of Riverside has invited EMS system stakeholders to participate in the redesign of the EMS system during this era of challenge, innovation and opportunity.

The EMS system evaluation and review is a comprehensive systems assessment to be completed during the term of the current County master ambulance service agreement. This evaluation will provide REMSA with recommendations for improving the EMS system including the current agreement for advanced life support (ALS) ambulance services. REMSA has employed an experienced consultant, The Abaris Group, to guide staff and EMS stakeholders through the evaluation process. The EMS system evaluation is being conducted using a four-pronged approach. This approach includes the use of an EMS System Evaluation Steering Committee, broad stakeholder group meetings, key informant interviews and stakeholder focus group interviews. This effort is an inclusive and transparent process; one that has obtained valuable input from stakeholders of the Riverside County EMS system. The EMS System Evaluation Steering Committee includes members appointed as representatives or designees from the Riverside County Board of Supervisors, Western Riverside Council of Governments (WRCOG), Coachella Valley Association of Governments (CVAG), the Riverside County Fire Chief's Association (RCFCA), the Hospital Association of Southern California (HASC), the Riverside County Medical Association (RCMA), and the Riverside County Law Enforcement Administrators Association (RCLEAA). Riverside County staff on the EMS Evaluation Steering Committee include the EMS Agency Director, the County Fire Chief, the Director of Public Health and a representative from the Executive Office, Department of Mental Health, County Sheriff's Office and Riverside County Regional Medical Center (RCRMC).

Broad stakeholders groups accessed during this evaluation include members of the greater Riverside County community including representatives from cities; ambulance providers; tribes; hospitals; education and training programs and institutions; skilled nursing facilities; law enforcement; mental health ; emergency medical care committee; field personnel such as firefighters, paramedics, emergency medical technicians, dispatchers; special districts such as community service areas and the public.

The Abaris Group has conducted key informant interviews and focus group interviews. The key informant interviews were conducted utilizing tools developed to gather information from community





leaders about their thoughts, interests, and needs as well as expectations about the process and future direction of the EMS system. Focus group interviews have also been conducted to gather additional information from community partners. The Abaris Group conducted meetings of stakeholder groups and used input received during those sessions to acquire an understanding of their organization or group needs.

### **Project Phase I**

The initial phase of the EMS system evaluation includes three deliverables. The evaluation considers national and state guidelines and best practices for model EMS systems to benchmark the strengths and improvement opportunities current EMS system. Phase I findings and deliverables will be presented to the Board of Supervisors in March 2014.

Phase I activities and deliverables include:

1. Evaluation of the current EMS system and development of the "As Is" report including a review of the economics of Riverside County as it relates to the cost and funding of the EMS system.
2. Development of recommendations for system improvements to optimize patient outcomes within a feasible and stable cost/funding model. This also includes updating the EMS Transportation Plan to ensure optimal patient outcomes.
3. Development of a comprehensive Scope of Work (SOW) that can be used for the County's Master Ambulance Contract.

### **Project Phase II**

Phase II will build upon the results of Phase I. Deliverables for Phase II are an EMS system strategic plan and an associated implementation plan. The desired output of this planning process is a strategic plan that identifies the EMS system's mission, vision, values, goals, and objectives and targets potential system innovations that may be achievable and that may be required with health reform for the Riverside County EMS system. Upon completion of the EMS system strategic plan, the final step of Phase II of the project will be to develop a comprehensive implementation plan for the EMS strategic plan. The implementation plan will address each phase of the approved strategic plan and include guidance for implementing each element of the plan.

### **Project Methodology**

The Abaris Group conducted this project using a variety of tools and input processes. These included:

- Accessing and reviewing an extensive number of data sources.
- Conducting key informant and focus group interviews that ultimately exposed The Abaris Group to hundreds of EMS and hospital stakeholders.
- Conducting broad stakeholder meetings designed to solicit input from interested individuals and stakeholder groups.



- Conducting a variety of site visits and interviews with on-duty EMS field personnel, emergency department staff and dispatch center personnel.

In addition to an extensive team of experienced experts from The Abaris Group, this project received subject matter guidance from the 19-member EMS System Evaluation Steering Committee.

### **Stakeholder Groups**

REMSA and The Abaris Group hosted a total of eight stakeholder meetings conducted during two time periods of the evaluation. This included Round One occurring February 2013 and Round Two during July 2013. The meetings were held at geographically strategic locations throughout the County. There were a total of 205 stakeholders who participated. The purpose of these meetings was to introduce the evaluation to stakeholders and to obtain input on the EMS system evaluation and the future of the EMS delivery system. The following is a combined snapshot from the different meetings of what was expressed.



## Project Summary

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### **“As Is” Evaluation and Report Key Findings**

Empirically, based upon analysis of the available data, the Riverside County EMS system is materially meeting the current emergency medical care needs of residents and visitors. There are emergency medical capacity, performance and financing challenges that are identified in detail throughout this “As Is” evaluation report. System improvement opportunities and enhancements to address these issues will be addressed in the EMS system improvement document. Anecdotally, during the initial evaluation focus group interviews and broad stakeholder meetings, most stakeholders present indicated that the current system is performing well and generally meeting expectations.

While there are many elements of the current EMS system that are working well, there are many opportunities to improve the EMS delivery system. There also appears to be a strong community and stakeholder desire to continue to enhance the EMS system to meet current healthcare challenges and prepare in the anticipation of the Patient Protection and Affordable Care Act (PPACA or ACA otherwise known as “Health Reform” in this report) and other anticipated healthcare changes.<sup>1</sup> The new healthcare delivery system of the future will emphasize accountability and value and move away from the current paradigm of payments that are now largely driven based on services delivered. Some of these key opportunities are related to ambulance and first-response performance standards, EMS dispatch, EMS and emergency department (ED) mental health bottlenecks, hospital capacity challenges, data integration and outcome measures and continuous quality improvement (CQI) initiatives.

Key findings that are explored in detail within this report include (non-prioritized):

- There is a single private ambulance provider for the majority of the County – American Medical Response (AMR).
- AMR is meeting response-time requirements for all of their service zones as set forth in the current Master Agreement for ALS Ambulance Services.
- The current Master Agreement for ALS Ambulance Services response-time requirements and definitions are not consistent with national/state guidelines and contain a permissive list of exemptions.
- Response-time penalties as set forth in the Master Agreement for ALS Ambulance Services are not as stringent as those established by other counties with more contemporary performance-based agreements.
- With the exception of the Mountain Plateau Zone, all emergency ambulance service exclusive operating areas (EOAs) and response zones are reasonably balanced based upon population, generation of fee-for-service revenue and response-time performance.

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<sup>1</sup> Pub.L. 111-148, 124 Stat. 119, to be codified as amended at scattered sections of the Internal Revenue Code and in 42 U.S.C.



- The Cities of Indio and Cathedral City are identified in the County EMS plan as non-exclusive ambulance operating areas.
- REMSA continues to have dialogue with the State EMS Authority (EMSA) over the status of the Mountain Plateau and Pass ambulance EOAs as identified in the current EMS plan.
- With the exceptions of the cities of Hemet, Blythe, and Calimesa, all communities within the County have fire-department based first-responder ALS services.
- There are currently two public-private partnership agreements within the EMS system, one between the City of Riverside and AMR and a second between the City of Corona and AMR. Parties to these agreements continue to voice satisfaction with these partnerships.
- REMSA, base hospitals and some pre-hospital providers have collectively implemented programs to create and maintain a continuous quality improvement (CQI) focus.
- There is an established network of hospitals along with pre-hospital protocols for cardiac (ST-elevated myocardial infarction – STEMI), trauma, and pediatric care demonstrating a substantial commitment to patients that require these specialized services.
- Increasing demand for primary and emergency medical care has created ED crowding issues with the system.
- Ambulance patient off-load delays at the hospitals are a significant system problem.
- The system currently utilizes a decentralized model for on-line medical direction and patient distribution through six different base hospitals.
- Dedicated EMS communication systems for medical control, patient distribution and disaster medical coordination are outdated and currently pending improvement with the Riverside County Public Safety Enterprise Communications (PSEC) project.
- There is exceptionally good working relationship amongst all stakeholders including committee involvement and task force participation (e.g., recent comprehensive ALS protocol revisions).
- Emergency medical dispatch (EMD) is in use in the Cities of Corona and Riverside and in all Riverside County Fire Department service areas. These programs are effectively providing lifesaving instructions over the phone simultaneously while EMS responders are en-route to the emergency and have future expansion potential as well.
- EMD coverage is not 100 percent (estimated at 93 percent) across the County.
- With the exception of the City of Riverside, EMD-based resource triage and prioritization is minimally utilized in the system.
- All ambulances and most first-responder apparatus are dispatched as an emergency response (i.e., lights and siren), regardless of EMD-call determinant.
- EMS mutual and automatic-aid agreements are out of date and in some areas missing.
- There is currently no uniform system standards, contemporary screening, clear definitions or reporting of first responder, non-emergency or inter-facility transfer (IFT) response times in the County EMS Plan.
- Individual EMS provider agencies have implemented a wide variety of training programs but conduct much of their training independently.
- Expanding requirements for data collection, analysis, reporting and information sharing continue to greatly increase the demand for new technology and staffing to support CQI activities.



- EMS equipment is not standardized across all EMS providers.
- Equipment and supply cost-reimbursement for ALS first responders varies.

## **Broad Stakeholder Group Meeting Feedback**

### Round One Meeting

During the Round One stakeholder sessions, an overview of the project was provided and input was solicited for follow-up interviews and stakeholder groups. Three key questions were asked by the consultants who facilitated these meetings.

#### The first question asked was "What works well with the current EMS delivery system"

The responses varied but many stated the 9-1-1 works well and overall EMS response times were working well. Others stated there was a sense of "community" within the different departments – between fire and EMS and much collaboration among hospitals and good communication. Many stated that "field" care was excellent.

#### The second question was "What does not work well?"

Again, there was varied commentary on this question. There was definitely a bias towards more of a "regional" approach to EMS with a number of participants suggesting by those speaking at these meetings that there were many "silos" with local delivery systems, agreements and even contracting terms that did not imply a true regional EMS delivery system. There was a strong sense that all providers should be on the same electronic medical record and a lack of clarity on whether that will really happen in the community. A substantial issue with many providers and their leaders was the lack of patient feedback on patient outcomes once EMS patients are transported to the EDs. There was some commentary made to have the need for more liberal use of air medical services from some of the air medical providers in attendance. Many agreed that roles could be expanded for paramedics and that care options being used across the country as well as alternative destinations for patients (e.g., urgent care centers, clinics, etc.) should be investigated. This would allow timely care of the patient and enable crews to get back in the system more quickly. The prevalent issue was the described "wall time" for EMS patients waiting to be off-loaded from an ambulance to the ED with many expressing frustration with excessive times as well as the number of ambulances that are delayed in their off-load times.