ABARIS GROUP

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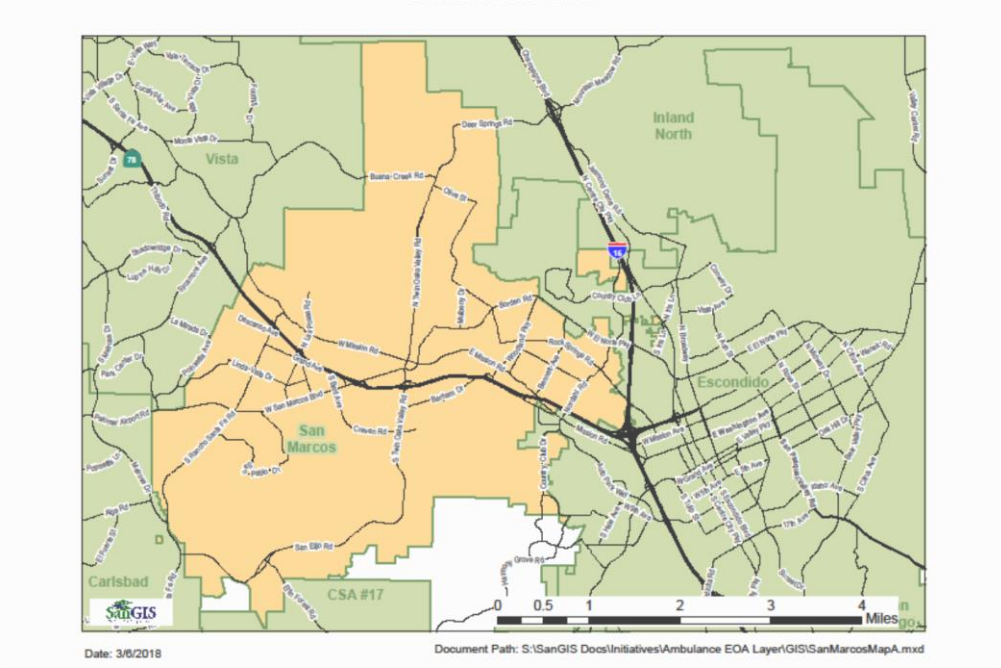
SAN DIEGO COUNTY

EMERGENCY MEDICAL SERVICES

CONSULTANT'S REPORT



San Marcos

Operating Area

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Section 1: Executive Summary

The County of San Diego requested The Abaris Group complete a needs assessment of the emergency ambulance services within the San Marcos Operating Area. This assessment included:

1. Community and stakeholder listening sessions,
2. Industry and leading practice research,
3. Recommendations to improve the emergency medical services (EMS) delivery,
4. Proposed evaluation criteria for measuring performance, and
5. Proposed ambulance service delivery model and performance measurement and indicators.

The San Marcos Operating Area emergency ambulance service provider is currently meeting or exceeding the standards set within the service agreement. Attendees at the listening sessions consistently spoke positively about the current system and performance. Recommendations to further enhance the service were received, as well.

A national roll-up of EMS best practices and industry trends was completed for consideration of the Local EMS Agency (LEMSA) and San Marcos stakeholders. As a system, these leading EMS practices should be evaluated for local applicability and value to the operating area.

The recommendations provided by The Abaris Group focus around maintaining the current high level of service provided. Improvements to further integrate the EMS system are available. The final agreement for service should allow for future innovation as the state approves community paramedicine and other best practices.

Section 2: Overview

2.1 Scope of Work

The Abaris Group was contracted by the County of San Diego to coordinate, plan, advertise and conduct stakeholder and community feedback sessions, research and compile information and develop reports of findings and recommendations for the San Marcos Operating Area.

Section 3: Background Information

3.1 Community Profile

Location and Area
San Marcos is located in northern San Diego County. It is 35 miles north of downtown San Diego with the Pacific Ocean to the west. The San Marcos Fire Department (SMFD) covers an area of about 24 square miles of incorporated city boundaries. Through an agreement covering an additional nine square miles of unincorporated communities including several small, non-contiguous areas surrounded by the City of Escondido, the total service area for the fire protection district is approximately 33 square miles.[1]

[1] *EMS Services in San Marcos*, San Marcos Fire Department, 2018, p.2.

Population[2]
The residential population of San Marcos is nearing 100,000 with an estimated 11 percent population growth since 2010. In addition to the City population, approximately 20,000 residents are located within the Fire Protection District, for a total of nearly 120,000 residents being served by SMFD. The service area's daytime population increases to approximately 160,000.

Population Trends
The San Marcos population is growing four percent faster than the other neighboring cities and almost two percent faster than the San Diego region with a projected growth of 6.1 percent by 2020. It is projected that, by 2030, the population is expected to grow by over 15 percent.

Fire Department Responses
The SMFD has experienced steady and significant call volume increases since 2014. "Throughout 2017, the department responded to 11,490 fire and medical calls which represent an increase of 4 percent from 2016. During 2014 and 2015, the department experienced a 22 percent and 11 percent increase in calls from the previous year, respectively."[3]

Section 4: Listening Sessions

4.1 Introduction

The Abaris Group offered two listening sessions in San Marcos. The purpose of each session was to gather community and stakeholder input on emergency ambulance services in San Marcos. The formal listening sessions were scheduled for two hours in length and consisted of a short presentation, community member and stakeholder forum, and collection of feedback and input provided.

4.2 Marketing

Flyers
To advertise the listening sessions to the community, flyers were created for San Marcos which explained the goals and objectives of the sessions and provided the specific dates, times and locations of the two sessions.

The flyer can be viewed in Attachment 1: San Marcos Flyer.

Flyers were posted in fire stations, library community boards, local post offices, markets, feed stores, and community centers.

Social Media
Six separate Facebook advertisements were created focused on specific zip codes. The zip codes used covered the San Marcos Operating Area included: 92069, 92078, 92079, and 92096.

An example of the Facebook advertisement can be reviewed in Attachment 2: Facebook Advertisement.

The City of San Marcos – Government official Facebook page also posted the listening sessions in their events section. See Attachment 3: City of San Marcos - Government Facebook Page.

[2] *EMS Services in San Marcos*, San Marcos Fire Department, 2018, p.3.
[3] *EMS Services in San Marcos*, San Marcos Fire Department, 2018, p.3.

4.3 Complete Listening Sessions

City Council Chambers – June 26, 2018
There were 49 people in attendance. It was a mixture of SMFD staff, San Marcos residents, staff from other fire departments (Escondido, Rancho Santa Fe, Vista, Pala) and CALFIRE (Deer Springs), City of San Marcos staff, and two members of NBC 7.

City Council Chambers – June 28, 2018
Thirty-three people attended the evening session. It was a similar mixture of SMFD staff, San Marcos and Lake San Marcos residents, one person from CALFIRE (Deer Springs), City of San Marcos staff and a council member, and one person from Vista Firefighter's Association.

Questions Asked
An important step in the process of issuing a request for proposal (RFP) for emergency ambulance service is determining the current system performance and potential improvements through input from community members and other stakeholders such as fire department and city government. The feedback captured is reviewed for applicability and possible inclusion in the RFP, which directly affects the future of emergency ambulance service in San Marcos.

Three questions were asked to help start the comments and input.

1. What do you like about your current emergency ambulance service?

2. What could be improved?

3. What might you like to see in the future?

4.4 Feedback

The feedback is summarized below and organized by topic area. All comments can be found in Attachment 4: Listening Session Comments.

Current Ambulance Service Strengths

Integration
One of the recurring themes, mentioned by four separate people, was the excellent level of response, by the current provider (SMFD), regardless of boundary; i.e., closest ambulance throughout San Marcos, Vista, Deer Springs, Oceanside, Carlsbad, Escondido, and Rancho Santa Fe. Many see these individual fire departments working as one department in the North County. There is a common vision throughout the North County with standardized policies including EMS. Maintaining integration with the fire department and paramedics is important. In their opinions, this could not be repeated if a private provider were servicing the area. There is constant and consistent supervision on every call through the engine captain. SMFD can send paramedics into any setting due to the dual-role training (e.g., send into fire zones – wildland fire lines).

Currently, there is a consolidated fire/EMS dispatch center. SMFD has a strong working relationship with hospitals and is dedicated to improving the EMS system.

Local
It was mentioned four times by different audience members, that local input and control is important. Along with those comments, it was stated that local paramedics/firefighters know the area the best and they know the nuances without needing GPS. Because many of the staff are local, they know the community, its members and stakeholders (e.g., doctors, nurses). There is a

sense of ownership. The dedication to the community beyond the job is evident with the current provider. The paramedics are seen at local events, such as street events and grocery stores, and it is common to see paramedics talking with residents outside of work. They are not just EMTs or paramedics, they have the firefighter professionalism and trust.

The current provider has demonstrated they have a high level of retention in comparison to private providers. Two separate stakeholders stated this. The strategically placed stations throughout San Marcos, in-house mechanics, fuel, and other resources were also mentioned. Finally, the current provider has maintained a level of trust between stakeholders, including a high level of trust between the city and the provider. This needs to continue in the future.

Quality
The current quality of care offered is outstanding, as mentioned by three audience members. The community trusts the judgment of the current provider and the staff are very professional. They have the community's respect.

Because the service is standardized, speakers mentioned knowing who will respond to emergencies (i.e., EMT, paramedic, and captain), they will be well-equipped, the units will be configured the same, and the policies will be uniform as seen in the Emergency Medical Operations Manual. SMFD typically has significantly more paramedics on each call than is required. Dual-role paramedics offer an enhanced level of service which is not available with private ambulance and single-role paramedics.

The current provider holds constant internal re-evaluation to improve and offer the best service to the community. The training is the best, and the personnel are dedicated. Also, the current required level of care is exceeded (e.g., minimum one-year probation, after one year there is continued education minimums and annual evaluations).

The current provider is not concerned about profit. This is evident in that they only transport when necessary, not incentivized (like a private ambulance) to transport.

Response Times
One of the main themes of the listening sessions was the quick response by EMS. The current agreement requires eight minutes for the advanced life support (ALS) first response and nine minutes for the ambulance; however, SMFD self imposes even faster response times. Three people commented on this topic. To a few attendees, it is important to keep the current response times in the future.

The current provider has an excellent staffing record and does not "down-staff" ambulances due to illness, injury, or vacation. In fact, it was mentioned how the current provider added a fifth ambulance to exceed the minimum required level of service.

Fiscal
Two different stakeholders stated the current provider offers a reasonable cost/good value to the customer. The service is less expensive but offers a higher level of capability. Since the current provider also offers fire-based services, speakers feel like they are "getting so much more than we are paying for." One person brought up that a change in EMS service could negatively impact fire protection class rating and increase fire insurance premiums.

Suggested Improvements

Integration
The future provider should be open to change and innovation. Two examples mentioned were modifying dispatch levels for tiered-response and regional medical direction.

The provider contract should maintain that the closest ambulance handles the call, regardless if it is located in or out of the San Marcos Operating Area (i.e., private ambulances typically do not participate in boundary drop.) The future provider should continue role expansion and services (e.g., support police SWAT teams).

Quality
The current provider is always improving, and this needs to continue into the future. The service should not be allowed to degrade or step backward while maintaining continuous quality improvement at or above the current contract standards. Some attendees consider the quality of services excellent right now and do not see any need to improve. A few attendees would like to see the RFP include a quality assurance program.

Response Times
Wall-times/off-load delays at hospitals could be improved to release ambulances faster and improve response times. A stakeholder suggested there should be an excellent backup/reserve fleet to ensure response times are not affected.

Process
It was evident that the community would like to continue its involvement in this process past the listening sessions. A desire was shared to have San Marcos citizens on the committee choosing the future emergency ambulance service.

Fiscal
Attendees requested that the next contract ensure an adequate level of cash reserves and demonstrated the ability to utilize those funds to improve EMS. There was a consistent message shared to prevent the focus from changing to the "bottom dollar" rather than maintaining a high level of service. The next provider should be a value-based organization, e.g., "right thing to do for the patient."

Future System Innovations

Integration
The stakeholders want to see the great relationship continue with surrounding cities (i.e., closest ambulance response). There is also interest in maintaining the service level while participating in boundary drop to allow sharing of services including EMS. SMFD shared a recent strategic plan suggesting a more efficient/tiered-dispatch system.

Quality
It would be nice to retain longevity in positions, like the current provider. The future provider should understand and learn about the constituents it is serving. Presently, the community is receiving excellent service, and this should continue in the future. It is important to the community to retain the best service model, training, value to the community, and commitment – there should not be any loss in the quality of care and baseline services with the new provider.

Response Times
More than one person stated that the response times need to stay the same. People were concerned about having longer response times with a private ambulance. To help improve

response times, it was suggested that hospital off-load times be reduced so that ambulances could return to service sooner.

Process
Three audience members were worried about not having local representation on the committee choosing the future ambulance service. The primary concern is the loss of oversight when the choice is given to the County and taken from the City. One person would like to see flexibility in RFP to expand services and improve patient care. Another community member would like to see a perpetual contract (i.e., no RFP every ten years).

Fiscal
The consensus was to ensure the rate stays the same across cities. The future provider should not gouge the citizens, transport unnecessarily, focus on profit or adopt a model focused on transport fees. Currently, the SMFD rate is $1,600, while the private rate is between $3,000-$4,000. Attendees would like to keep the public agency model, which has a history of serving the stakeholders and the community well. Some people are worried the new contract will mean a higher cost/bills to the community.

Section 5: Industry and Leading Practice Research

As an industry, EMS continues to evolve and improve. Starting as a "load-and-go" service with untrained attendants and using hearses (i.e., the only vehicle that could transport a person lying flat), modern EMS brings the emergency department (ED) to the patient through ALS paramedics and mobile healthcare equipment. Some EMS providers have implemented best practices to improve patient care in the pre-hospital environment. These industry trends can be organized into five categories – dispatch triage and awareness, alternate transportation and destination, high system user diversion, clinical benchmarks and standards, and primary and mobile healthcare (see chart below). Each best practice is focused on reducing 9-1-1 use, bringing the right patient to the right place, redirecting frequent users of the 911 system, establishing data-driven clinical standards, and offering mobile integrated healthcare (i.e., community paramedicine).

Location/Program	911 Dispatch Triage & Awareness	Alternate Transportation & Destination	High System User Diversion	Clinical Standards & Benchmarks	Primary & Mobile Healthcare
Fort Worth, Texas	✓		✓	✓	✓
Houston, Texas		✓			
Lake County, Florida	✓				
Las Vegas, Nevada		✓	✓		
Liberty County, Texas					✓
Louisville, Kentucky	✓		✓		
McKinney, Texas			✓		✓
Mesa, Arizona			✓		
San Antonio, Texas		✓			
San Diego, California		✓[1]	✓[1]		
San Francisco, California		✓	✓		

Location/Program	911 Dispatch Triage & Awareness	Alternate Transportation & Destination	High System User Diversion	Clinical Standards & Benchmarks	Primary & Mobile Healthcare
San Mateo County, California		✓			
Santa Barbara County, California		✓[1]			
Santa Cruz County, California				✓	
Seattle, Washington	✓				
Spokane, Washington		✓			
Toronto (Ontario), Canada	✓				
Tucson, Arizona			✓		
Western Eagle County, Colorado			✓		✓

Note: [1] Discontinued

5.1 9-1-1 Dispatch Triage and Awareness

Tele-Triage Services

The four programs listed below use advanced dispatch protocols administered by a healthcare professional (typically a nurse) to determine if 9-1-1 resources are necessary. If not, other transportation and appointments are coordinated to ensure the caller receives the appropriate level of care and treatment. The goal is to reduce the demand for 9-1-1 services while delivering the most appropriate care for the caller.

Comparison of Tele-nursing Programs				
Location	**Houston**	**Seattle**	**Richmond**	**Toronto**
Population (2011)	2,145,146	620,778	205,533	2,615,060
Runs/year[1]	300,000	136,000	40,880	240,000
Diversion rate	**1.83%**	**0.51%**	**8.04%**	**1.42%**
Diversions/year	5,475	700	3,285	3,398
Send-back rate	**75%**	**9%**	**83%**	**18%**
Final diversions/year	1,369	637	548	2,786
Final diversion rate	**0.46%**	**0.47%**	**1.34%**	**1.16%**
Net savings	**$328,562**	**$240,324**	**$30,660**	**$1,560,362**

Sources: http://www.philadelphiacontroller.org/publications/audits/04_21_09_tele_nursing%20report.pdf, US Census

Notes: [1] Runs/year are from 2006, except Toronto and (2011)

Dispatch Resource Triage

The King County (WA) dispatch center uses a contemporary dispatch triage process to determine which 9-1-1 resources to send for each call. Often, a basic life support (BLS) fire engine is sent as the first response to determine need. Then, after an assessment, a BLS or ALS ambulance may be requested if ambulance transport is warranted.

911 Awareness Campaigns
Other services are starting marketing and public service announcement campaigns about the proper reasons to call 9-1-1. This is typically referred to as "*Use them, don't abuse them.*"

5.2 Alternate Transportation and Destination

Mental Health Transportation
Many EDs find themselves with mental health patients who need a medical screening before transport to the proper behavioral health facility. This requirement impacts ED throughput. San Mateo County (CA) has paramedics who have completed additional training and can perform the mental health evaluation on scene. The same paramedic can place and document the application for 72-hour detention for evaluation and treatment form, transport the patient directly to the behavioral health facility or release to the police officer for transport. This program saves an ambulance ride to the hospital, an ED assessment, and a second ambulance ride from the hospital to the behavioral health facility.

Sobering Centers
A number of cities have established sobering centers. The goal is to keep these patients from overusing the ambulance system and the EDs as well as provide law enforcement a better option. Two centers that have been very successful include San Francisco (CA) and Spokane (WA). Both have a medical practitioner (typically a nurse) on-site to assess and monitor any healthcare needs as many of the people brought to sobering centers have medical issues as well.

San Francisco Encounters by Referring Parties						
	2011		2010		2009	
Ambulance	1,878	36.3%	1,448	44.5%	1,128	43.5%
Mobile Assistance Patrol (MAP)	1,991	38.5%	1,227	37.7%	1,033	40.4%
Police	393	7.6%	286	8.8%	167	6.5%
ED Transfer (via MAP)	599	11.6%	116	3.6%	71	2.7%
Referred by Other	314	6.0%	177	5.4%	189	7.0%
Total Referrals	**5,175**	**100%**	**3,254**	**100%**	**2,588**	**100%**

Source: San Francisco Coordinated Case Management System
Note: The number of EMS calls referred to MAP is not tracked currently

Spokane 9-1-1 Diversions to Sobering Center by Referring Parties						
Referral Source	**2012***		**2011**		**2010**	
Fire Department	654	42%	635	35%	418	36%
Police Department	670	43%	944	52%	607	52%
Merchants/Private Citizens	218	14%	241	13%	142	12%
Total Referrals	**1,542**	**100%**	**1,820**	**100%**	**1,167**	**100%**

Note: * Projected using Jan-Jun 2012 data

Taxi Cab Vouchers
Some EMS systems will provide vouchers for taxis as an alternate form of transportation. 9-1-1 dispatch center can offer this after proper screening or the field staff following assessment for any medical emergency conditions. This best practice requires significant quality assurance to prevent any adverse outcomes.

5.3 High System User Diversion

Some EMS systems are focused on reducing 9-1-1 calls by frequent users of the EMS system. The goal is to prevent the calls from occurring by proactively managing chronic healthcare conditions. In Fort Worth (TX), the EMS system identified 21 people calling 9-1-1 two or more times per week for over 1,000 calls (>1%) annually. A Community Health Program intervention reduced 9-1-1 use by 86% in the first 12 months, saving $1.6 million in EMS and $7.4 million in ED charges. San Diego implemented a Resource Access Program (RAP) intervention that reduced EMS encounters by 38% in the first 30 days for 933 individuals that accounted for 3,347 (11%) of annual transport volume.

5.4 Clinical Standards and Benchmarks

As an industry, EMS is just starting to embrace data-driven decision making. A number of procedures and tools have been proven ineffective or worse, detrimental, to patient care. MAST trouser application and unilateral use of c-spine precautions and other practices have changed due to clinical data. Fort Worth (TX) and Santa Cruz (CA) have both adopted clinical and operational standards with applicable benchmarks based on clinically proven data. Existing organizations that provide recommended standards include state EMS agencies, national EMS information system (NEMSIS), American Heart Association (AHA), National Health System (England), and Centers for Medicare and Medicaid Services (CMS). Clinical areas include cardiac arrest, STEMI, stroke, trauma, seizures, sepsis, pain management, respiratory distress, hypoglycemia, and patient safety. See Attachment 5 for national benchmarks and clinical standards adopted by Santa Cruz.

5.5 Primary and Mobile Healthcare

Community Paramedicine
Many states now allow paramedics to provide more than acute care during a 9-1-1 call. After completing additional training and education, these "community paramedics" will visit people before a condition reaches the need for 9-1-1 services. Some systems focus on follow-up after hospital discharge to prevent patients from being readmitted. Others look at high-risk hospice patients likely to call 9-1-1. California is currently permitting some pilot projects and, hopefully, will approve the programs to become permanent as the results are positive.

5.6 Medicare Healthcare Innovation Awards

Medicare has approved a number of innovation awards looking to improve care or reduce costs in healthcare. There are five that specifically involve EMS. They include:

Post-discharge and high system user support using community paramedics
Regional EMS Agency (REMSA), NV – $9.9 million

Post-discharge support using community paramedics
Prosser Public Hospital District, WA - $1.5 million

EMS in-home, follow-up care in medically underserved areas
Upper San Juan Health Service District, CO - $1.7 million

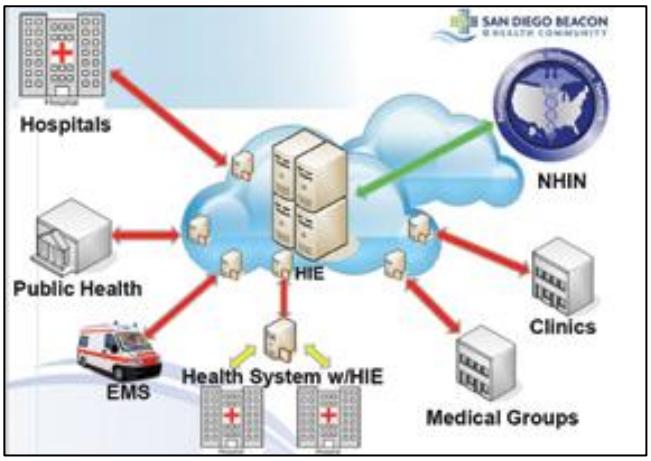
Provide hospital-at-home care
Icahn School of Medicine at Mount Sinai (NY) - $9.6 million

Fall prevention by EMS to reduce future 9-1-1 calls
Yale University (CT) – $7.2 million

Most of these award programs will become possible within California when the State approves community paramedicine following validation of the current pilot projects.

5.7 Beacon Community Program – San Diego/San Diego Health Connect

San Diego (CA) received a $15M federal award to create a health information exchange (HIE) for its community. The goals are to push historical healthcare information to EMS when encountering a 9-1-1 patient, improve pre-hospital care, reduce turnaround times, improve quality assurance, reduce hospital utilization, increased community surveillance, and upload EMS records for hospital access. Some counties are exploring the use of HIE for hospital and pre-hospital care.



The program has transitioned to San Diego Health Connect and is operational. The EMS component is called "SAFR" – with four elements:[4]

Search – When the field crew begins inputting patient data, the HIE automatically looks for a match. If one is located, it prompts the EMS provider to confirm the identity. Once validated, the provider has access to patient history, medications, allergies, and previous EMS encounters. The goal is improved prehospital clinical decision-making and patient care.

Alert – Transport crews can alert the ED through the system of the pending patient. The HIE will transmit, vital signs, electrocardiograms (EKGs), and narrative report as they are entered into the ePCR. This improves receiving hospital preparedness, transitions of care, and patient care.

File: The completed ePCR is automatically attached to the hospital's electronic health record with no need to print, fax, or email to the receiving facility. A better longitudinal patient record is created and available for future reference.

Reconcile: The hospital shares insurance information with the EMS provider to expedite accurate billing. The HIE also transforms the data into NEMSIS-compliant formatting for further analysis. Finally, the patient's final diagnosis is recorded at discharge and available for EMS providers to review and compare with their initial findings (e.g., did the patient have a stroke). The goal is improved overall care and population health.

The major health systems and EMS providers in the City of San Diego are participating. The implementation with the University of California, San Diego is complete, and it is underway with Kaiser, Scripps, and Sharp healthcare systems. Roughly 60 percent of EMS cases are being entered during the call, and approximately the same percentage have a record that the field provider can confirm, review, and use to improve the patient care delivered.

[4] https://ehrintelligence.com/news/onc-safr-guide-to-aid-ems-providers-in-health-data-exchange

Section 6: The Abaris Group Recommendations – Improve EMS Delivery

6.1 Recommended EMS Delivery Improvements

The current provider for emergency ambulance service is meeting the standards and criteria established in the agreement for service. One of the strengths is the level of integration offered by the same provider for both ALS first responder and transport. This ensures a high level of efficiency for EMS delivery. The same provider manages training, supervision, quality improvement, and oversight. The future contract should ensure there is a consolidated dispatch center, a coordinated quality program using the same electronic patient care report (ePCR), and participation in the current mutual aid system (i.e., boundary drop).

Suggested service improvements would embrace additional EMS system integration. It should be noted that The Abaris Group was hired to conduct listening sessions and review current agreements for service. The following recommendations are based specifically on this information combined with our industry knowledge of best practice systems.

Consolidated fire/EMS dispatch – The San Marcos operating area and many other EMS systems have experienced gains in performance through centralizing the dispatch of first responder and ambulance transport units. This is not required by the current agreement; however, should be included in the next RFP. Having one communications center simultaneously dispatching all units can reduce the time from 9-1-1 call to units responding by up to one minute (e.g., dispatch consolidation by Contra Costa County in 2016).[5] One center eliminates the need to electronically or otherwise share call information and improves dispatcher-call taker coordination. When all field crews use the same radio channel, it simplifies communication for sharing call location (e.g., fire crew can broadcast local knowledge to help the ambulance find the location) as well as greater crew safety (e.g., if power lines are involved with a traffic collision, the original dispatcher confirms all crews are aware of the danger and does not rely on the ambulance dispatcher to handle).

System-level quality improvement – The EMS system should be evaluated in its entirety, not as individual providers. Evaluation requires a single repository for all pre-hospital call data. It is most effectively done by selecting a single electronic patient care report (ePCR) system for all EMS providers. This option allows for the real-time transfer of data from first responders to ambulance crews and the most efficient approach to data capture. Some EMS systems utilize "middleware" to connect different software and extract necessary data fields to a centralized data warehouse. While not ideal and potentially adding significant manpower to accomplish, it may be an alternative approach. Once collected, reports can be generated to identify clinical care trends and potential deficiencies that can be the focus of future clinical training and education for all system providers.

Clinical Benchmarks and Standards – While it is important to arrive quickly, it is more critical that the patient care provided is high quality. EMS systems should establish clinical standards based on objective criteria from highly-respective organizations, such as AHA, CMS, NEMSIS, EMS Compass, and United Health System. EMS providers should only be held to clinical benchmarks that it can manage. System-level benchmarks that are impacted by all providers, such as bystander CPR, should be established as well. A consolidated database of ePCR data supports this process.

Boundary Drop – There are a number of ambulance providers near San Marcos and, where possible, these providers should work together. The contracted provider should participate in a mutual aid process that ensures the closest ambulance responds to every call, even if not necessarily inside the EOA (this is often referred to as "boundary drop"). Typically, this is easier to accomplish when the same dispatch center is responsible for all of the operating areas. Any boundary drop should be executed in a neutral

[5] Chief Terrence Carey, Contra Costa County Fire Protection District, Washington County (OR) presentation, 7/25/18

and objective manner that does not favor any one provider participating in this approach to service delivery. For example, a provider could position resources closer to its operating area's borders and unfairly "steal" calls in other EOAs. To mitigate this concern, the contract administrator should track the number of mutual aid calls performed and received on a regular basis by the contracted provider. Any unbalanced mutual aid levels can be addressed by requiring the contracted provider to shift ambulance post location(s) and system status planning. Through transparency, a boundary drop can be achieved between all providers, whether public or private.

Flexibility – The provider agreement should allow for future system improvements during its term. This could include more refined triage of appropriate resources by the dispatch center. It may not be necessary to send first responders and an ambulance to every call based on the level of urgency, on-scene medical staff, and the probability of transport. Reviewing the history of each call type determinant (e.g., medical priority dispatch system-MPDS) may lead to the optimized use of EMS resources. There are some community paramedic pilot projects in California with proven benefits for recent hospital discharges, high 9-1-1 system users, and other programs. When the State approves community paramedicine beyond the pilot period, the agreement should allow for this potential.

Section 7: Proposed Evaluation Criteria

7.1 Framework for New Response Time Standards

Response Time Standards
Currently, the San Marcos Operating Area maintains a maximum response time of nine minutes (9:00) for all code three calls dispatched at least 90 percent of the time. First responder ALS maintains a maximum response time of eight minutes (8:00) also 90 percent of the time or better.

The current response time standards (above) are consistent with most EMS systems in the United States. However, they do not take into account the value of first responder ALS when determining the ambulance standard. The two standards operate independently of each other. There should be a benefit for ALS arriving before the ambulance. Minimal exemptions are recommended to simplify the contract compliance process.

While meeting the industry standard, response times are not based on data-driven, clinical research.[6,7,8] They started as an arbitrary number proposed in one high-performance, competitive ambulance bid that seemed appropriate for the public expectation of ambulance service. Since that time, a number of research studies have been completed that demonstrate there is no value beyond four minutes – when the brain starts to die following cardiac arrest. Response times are also the most expensive driver of ambulance costs with roughly 80 percent of budgets being devoted to unit hour costs (i.e., personnel and ambulance).

Progressive EMS systems are starting to look at ways to improve patient outcomes beyond quick response times. A new phrase, "*Pre-EMS*" has been coined to describe the important role of bystanders in the chain of survival. This includes bystander CPR, defibrillation, and bleeding control. From an economic point of view, it may save more lives to relax EMS response times and

[6] Pons PT, Haukoos JS, Bludworth W, et al. Paramedic response time: Does it affect patient survival? Acad Emerg Med. 2005;12(7):594–600.
[7] De Maio V, Stiell I, Wells G, et al. Optimal defibrillation response intervals for maximum out-of-hospital cardiac arrest survival rates. Ann of Emerg Med. 2003;42(2):242–250.
[8] Pons P, Markovchick V. Eight minutes or less: Does the ambulance response time guideline impact trauma patient outcome? J Emerg Med. 2002;23(1):43–48.

focus the limited financial resources on more training and education of bystanders to deliver care in the first four minutes following the medical emergency.

Moving forward, it is recommended that response times remain the same until the EMS system and all of its stakeholders are ready to commit to a wholesale change in EMS delivery through fiscal prioritization of Pre-EMS over quicker response times that are clinically unproven.

Clinical Standards
Hospitals have been held to clinical standards for decades. CMS penalizes and rewards hospitals for the care they provide based on some clinical criteria. To date, the pre-hospital environment has not been affected by this CMS requirement. To prove the value of EMS, it is important that systems adopt clinical standards that are data-driven to improve outcomes. This can include the length of time on scene during a stroke or heart attack as an example (see Section 5.4 for more examples). EMS systems should incorporate clinical standards beyond just measuring response times to demonstrate value. One recent competitively bid EMS system provides credits towards response time penalties based on the patient care provided (see Attachment 5). At a minimum, all EMS systems should at least start measuring ambulance service performance of clinical care to prove value. Examples of performance measures currently monitored in many systems that have proven clinical value include "door-to-needle" times for stroke patients and "door-to-balloon" times for heart attack patients.

Section 8: The Abaris Group Recommendations – Ambulance Service Delivery

8.1 Ambulance Service Delivery Model

The Abaris Group recommends an ambulance service delivery model that is driven by a combination of response times and clinical care provided. As an example, Santa Cruz County relaxed emergency response times, eliminated non-emergency response times, and set clinical goals that would provide sliding scale credits to response time penalties based on the level of care delivered (i.e., clinical report card of 90 percent = full penalty credit, 80 percent report card = 75 percent credit, etc.). The goal is not only timely ambulance arrival but also excellent patient care. The model should empower an integrated public-private partnership to value the role of fire first responders in the role of patient care. One way this can be accomplished is allowing the ambulance provider to subcontract with the fire service to guarantee ALS response times and extending ambulance response times. All EMS resources should be dispatched simultaneously and tracked by a consolidated dispatch center. In the San Marcos Operating Area, this occurs today due to the same agency providing both first response and transport services. Ambulance rates should be regulated with reasonable automatic annual increases based on the change in costs; extraordinary changes in expenses should allow for the provider to request a manual rate review.

8.2 Performance Measurement and Indicators

Response times should be monitored using the industry acceptable "90 percent" standard. It is recommended that there be no penalty for the ten percent of late calls as this is expected in the normal course of EMS operations. That said, calls that are significantly late should be subject to a penalty. These "outliers" are typically considered 200 percent of the response time standard in other systems. Many EMS systems are using a third party online compliance utility (e.g., First Watch) to monitor compliance and offer real-time performance dashboards. These utilities can decrease the workload for both the contract administrator and the provider. For example, the software automatically identifies late calls, sends a message to the provider, who can either

accept the call as late or request an exemption, the contract administrator receives the exemption request automated message and can approve/deny as appropriate.

The application of ePCRs in recent years affords a greater ability to measure clinical performance. It is possible to run reports using ePCR data on the clinical performance being delivered to EMS patients. For example, average length of time on scene for trauma, stroke, and heart attack patients can be easily measured. Systems should monitor overall performance as well as the individual performance of first response and transport providers. These results should regularly be reviewed to identify how the EMS system can become more efficient and effective at delivering patient care in the pre-hospital environment.

Section 9: The Abaris Group Recommendations – Statement of Work

9.1 Current Operational Statement of Work

As part of the review process, The Abaris Group examined the statement of work within the current agreement for emergency ambulance service. The agreement is consistent with the majority of recommended components, including performance, call exemptions, and other minimum standards. There are a few additional components worth considering.

Level of staffing vs. performance – Four ambulances are required at all times per the current agreement. This is considered a "level of staffing" standard. However, there is also a requirement to perform within the response times provided at least 90 percent of the time – known as a "level of performance" standard. In the experience of The Abaris Group, only one standard is appropriate per area; most EMS systems utilize performance level as it specifies a quality goal.

Integrated EMS system – The response time standards currently are independent (eight minutes for the first responder and nine minutes for the ambulance). That is, it does not impact the ambulance standard when the ALS first responder arrives. This is inconsistent with most high-performance EMS systems that value the ALS first responder by allowing the ambulance response time standard to be extended. This value can reduce ambulance hours, providing savings that can be redirected to the ALS first responder agencies.

First responder ALS funding – The current agreement requires financial support of the ALS first responders by providing all supplies and equipment. This is considered an acceptable practice – as long as the support does not exceed the value of the service (i.e., extending the ambulance by two minutes). However, as noted above, this contract does not provide for any savings by the ambulance provider that can be shared with the first responder agencies. When contracting, it is important to calculate the value and state, in writing, that the financial support will not exceed the value provided not to violate federal antitrust guidelines.

Exemptions – Sometimes, providers are going to arrive late due to no fault of their own. When this happens, the provider is entitled to an exemption for that call. However, exemptions should only be permitted when it is truly outside of the provider's ability to reasonably predict. The current agreement has some exemptions that are predictable, including traffic unrelated to the call, road construction/closure, train delays, and hospital off-load delays. The provider should be able to staff appropriately and position ambulances strategically to mitigate these issues.

Performance period – The current agreement requires a monthly review. That is defined as the first day to the last day of the month. A less ethical provider could decide to cut unit hours at the end of the month if response time performance is significantly above the contract standard during the first half of the month. The Abaris Group also recommends that the contract administrator be able to request a 30-day floating performance period within the provider

agreement. This ensures adequate response times during any 30-day period, such as the 15th of one month to 15th of the next month.

Liquidated damage – There do not appear to be any liquidated damages (i.e., penalties) for poor performance. Most high-performance EMS systems implement penalties to encourage quality service delivery financially. Examples include performance less than 90 percent in a zone and for outlier calls (see below).

Outlier liquidated damage – Many EMS systems are not imposing a penalty when late to a call, unless the ambulance is excessively late, i.e., an outlier. Being late is acceptable up to 10 percent of the time per the contract. Most contracts define an outlier as 150 to 200 percent of the required response time standard.

Contract – There appear to be no requirements mentioned for insurance or performance bonds, using the consolidated dispatch center, a franchise fee for contract administration, or defined quality improvement standards. The current agreement also does not state when a provider is in breach of contract, and the annual base rate adjustment is not clearly outlined.

Section 10: Attachments

Attachment 1: San Marcos Flyer

Listening Sessions on Ambulance Services for San Marcos Area

We Need Your Input

You are invited to attend one of the listening sessions listed below to provide input on ambulance services within the City of San Marcos and the San Marcos Fire Protection District. The County of San Diego has retained The Abaris Group, an Emergency Medical Services (EMS) consulting firm, to conduct the listening sessions.

Both sessions will cover similar material, so you are encouraged to attend the session that best fits your schedule.

If you cannot attend and would like to provide input, please call or email using the contact information below.

Tuesday, June 26th

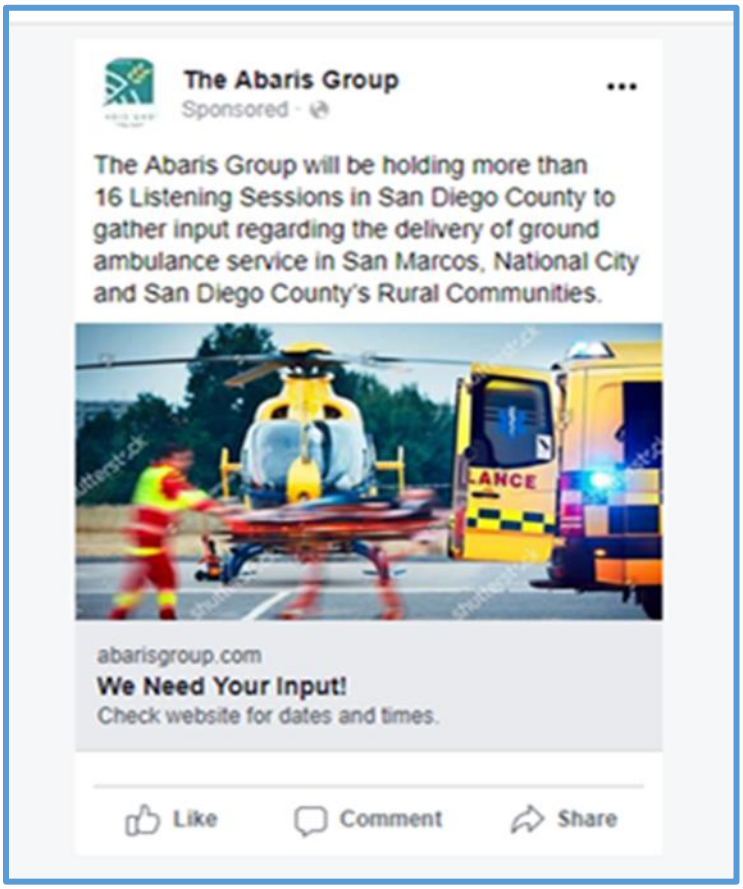
City Council Chambers
11:00 AM – 1:00 PM
1 Civic Center Drive
San Marcos, CA 92069

Thursday, June 28th

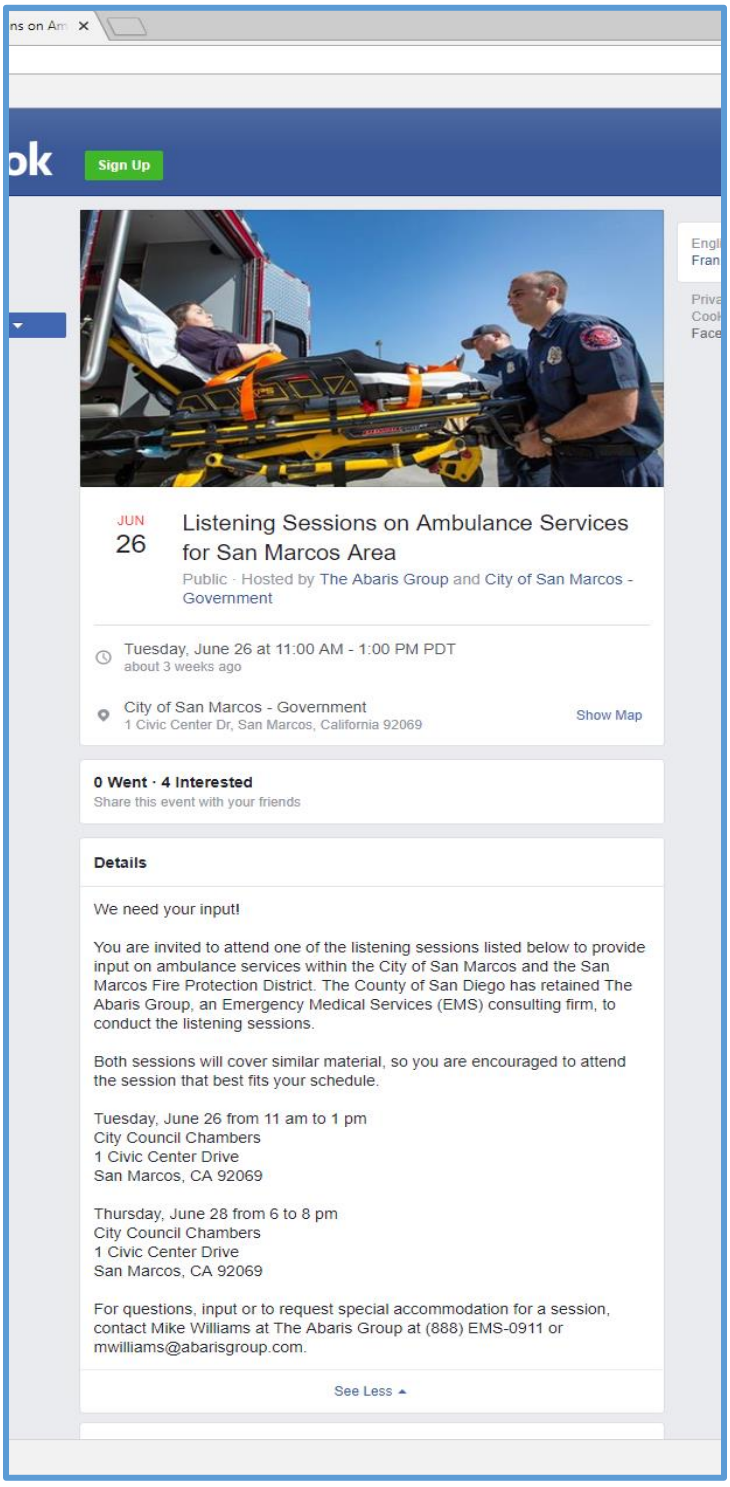
City Council Chambers
6:00 PM – 8:00 PM
1 Civic Center Drive
San Marcos, CA 92069

Please contact Mike Williams at The Abaris Group
with questions or input, or to request special accommodations for a session
888-EMS-0911 or mwilliams@abarisgroup.com

Attachment 2: Facebook Advertisement



Attachment 3: City of San Marcos - Government Facebook Page



Attachment 4: Listening Session Comments

Date	Time	Zone	Type	Topic	Comment
6/28/2018	18:00	San Marcos	Current	fiscal	Change in EMS service could impact ISO rating and fire insurance premiums
6/28/2018	18:00	San Marcos	Current	fiscal	Fire-based services… "getting so much more than we are paying for"
6/28/2018	18:00	San Marcos	Current	fiscal	Lower, inexpensive service @ higher level of capability
6/28/2018	18:00	San Marcos	Current	fiscal	Reasonable cost to the customer
6/28/2018	18:00	San Marcos	Current	integration	Ability to send paramedics into any setting (e.g., send into fire zones-wildland fire lines)
6/26/2018	11:00	San Marcos	Current	integration	Carlsbad Chief - current system will be extinct with a boundary drop, the relationship can't exist, will lose cross training with private EMS.
6/26/2018	11:00	San Marcos	Current	integration	Carlsbad Chief - keeping the way it is now is important to Carlsbad. He and Chief Van Wey have a handshake deal where they will serve the community regardless of jurisdiction which is only manageable with the current partnership.
6/28/2018	18:00	San Marcos	Current	integration	Closest ambulance responds (i.e., boundary drop)
6/28/2018	18:00	San Marcos	Current	integration	Consolidated fire/EMS dispatch center
6/28/2018	18:00	San Marcos	Current	integration	Constant and consistent supervision on every call
6/28/2018	18:00	San Marcos	Current	integration	Excellent level of response regardless of boundary; i.e., closest ambulance throughout San Marcos, Vista, Deer Springs, Oceanside, Carlsbad, Escondido, Rancho Santa Fe
6/26/2018	11:00	San Marcos	Current	integration	Extremely important to maintain integration with Fire dept and paramedics
6/28/2018	18:00	San Marcos	Current	integration	Standardized policies throughout North County - includes EMS - a common vision
6/28/2018	18:00	San Marcos	Current	integration	Strong working relationship with hospitals and improving EMS system
6/28/2018	18:00	San Marcos	Current	integration	Work as one fire department in the North County
6/28/2018	18:00	San Marcos	Current	local	Dedication to community beyond the job
6/28/2018	18:00	San Marcos	Current	local	High level of retention - Know most community members and hospital staff by face
6/28/2018	18:00	San Marcos	Current	local	High level of trust between city and current provider - needs to be maintained

Date	Time	Zone	Type	Topic	Comment
6/26/2018	11:00	San Marcos	Current	local	Important for constituents to see local paramedics in community -street events, grocery stores, talk with residents, etc.
7/1/2018	FB	San Marcos	Current	local	Keep San Marcos Fire as provider
6/25/2018	Email	San Marcos	Current	local	Keep San Marcos Fire as provider
6/30/2018	Email	San Marcos	Current	local	Keep San Marcos Fire as provider
6/26/2018	Email	San Marcos	Current	local	Keep San Marcos Fire as provider
6/27/2018	Email	San Marcos	Current	local	Keep San Marcos Fire as provider
6/27/2018	Email	San Marcos	Current	local	Keep San Marcos Fire as provider
6/27/2018	Email	San Marcos	Current	local	Keep San Marcos Fire as provider
6/28/2018	Email	San Marcos	Current	local	Keep San Marcos Fire as provider
6/28/2018	Email	San Marcos	Current	local	Keep San Marcos Fire as provider
6/26/2018	Email	San Marcos	Current	local	Keep San Marcos Fire as provider
6/28/2018	18:00	San Marcos	Current	local	Knowledge of our area/facility - institutional knowledge, know San Marcos better than anyone
6/26/2018	11:00	San Marcos	Current	local	Local control is important
6/26/2018	11:00	San Marcos	Current	local	Local input on paramedic services is important - part of community, part of a connection
6/26/2018	11:00	San Marcos	Current	local	Local paramedics, firefighters don't need to look at GPS
6/28/2018	18:00	San Marcos	Current	local	Maintain level of trust between stakeholders
6/28/2018	18:00	San Marcos	Current	local	Not just EMT or paramedic… have firefighter professionalism
6/26/2018	11:00	San Marcos	Current	local	Resident - best service model, training, value to community, commitment
6/26/2018	11:00	San Marcos	Current	local	Resident does not want an outside agency to come in. The care her family has received has been outstanding and has had a direct impact on outcomes.
6/26/2018	11:00	San Marcos	Current	local	Sense of community which is essential, ownership to go above and beyond
6/26/2018	11:00	San Marcos	Current	local	Since they are local, they know what city they are in, they know when school is in session, they know the nuances of the city.
6/28/2018	18:00	San Marcos	Current	local	Strategically placed stations, in-house mechanics, fuel tanks, other resources
6/26/2018	11:00	San Marcos	Current	local	With local people there is ownership, they know the streets and community, there is oversight

Date	Time	Zone	Type	Topic	Comment
6/28/2018	18:00	San Marcos	Current	quality	Constant re-evaluation of how we can improve… without concern for profit (X2)
6/28/2018	18:00	San Marcos	Current	quality	Dual-role paramedics enhanced level of service not available with private ambulance/single role paramedics
6/28/2018	18:00	San Marcos	Current	quality	Emergency Medical Operations Manual (EMOM) - ensures consistent, high level of service through standardization and policy
6/28/2018	18:00	San Marcos	Current	quality	Excellent customer service/bedside manner
6/28/2018	18:00	San Marcos	Current	quality	High professionalism
6/28/2018	18:00	San Marcos	Current	quality	Level of care exceeded - minimum 1-year probation, after 1 year there is continued education minimums, annual evaluations
6/28/2018	18:00	San Marcos	Current	quality	Majority of firefighters are also paramedics - significantly exceeding current contract
6/28/2018	18:00	San Marcos	Current	quality	New, well-equipped apparatus & equipment - sustainable, locally-provided services (i.e., not coming from outside this area)
6/26/2018	11:00	San Marcos	Current	quality	Only 65% of calls are transported. They refuse to make a $ if the call doesn't necessitate a transport.
6/26/2018	11:00	San Marcos	Current	quality	Private EMS has high turnover and EMT's, paramedics are young
6/26/2018	11:00	San Marcos	Current	quality	Quality of care is outstanding - trusts judgement, very professional
6/26/2018	11:00	San Marcos	Current	quality	Standardized in every way from who responds to emergencies (EMT, paramedic, and firefighter), bus is set up the same - this reduces time looking for drug box, aspirin, etc., and training
6/26/2018	11:00	San Marcos	Current	quality	They have the community's respect already
6/26/2018	11:00	San Marcos	Current	quality	Training is the best, personnel is dedicated
6/26/2018	11:00	San Marcos	Current	response	Chief Van Wey - proposed response times - 10m engine, 12m ambulance, but the current response times - 8m engine, 9m ambulance.
6/28/2018	18:00	San Marcos	Current	response	Current 1st response/ambulance response times are 8:00/9:00; want to maintain current times, not County-proposed times for USA; added a fifth ambulance to meet/exceed level of service (X2)
6/28/2018	18:00	San Marcos	Current	response	Easy ability to upstaff - can add more ambulances as well as extra medics on units; have a proven track record

Date	Time	Zone	Type	Topic	Comment
6/28/2018	18:00	San Marcos	Current	response	Excellent staffing… Don't down staff ambulances due to illness, injury, vacation - i.e., constant staffing
6/28/2018	18:00	San Marcos	Current	response	Quick response
6/26/2018	11:00	San Marcos	Current	response	Quick response by EMS
6/26/2018	11:00	San Marcos	Current	response	Resident - fire department arrived in less than 5 minutes to respond to heart attack victim.
6/26/2018	11:00	San Marcos	Future	fiscal	Don't gouge the citizens. Fire department standard rate is $1600. Private rate is between $3000-3400.
6/26/2018	11:00	San Marcos	Future	fiscal	Don't transport unnecessarily. (Private business model is based on transport fees.)
6/26/2018	11:00	San Marcos	Future	fiscal	Ensure the rate stays the same across cities.
6/26/2018	11:00	San Marcos	Future	fiscal	Public business model - Serve the stakeholders, the community - don't focus on profit.
6/26/2018	11:00	San Marcos	Future	fiscal	What will the costs be if it goes private? Will insurance rates skyrocket? Citizens won't understand why their costs go up.
6/26/2018	11:00	San Marcos	Future	integration	Continue great relationship with surrounding cities.
6/28/2018	18:00	San Marcos	Future	integration	Doing/have done standards of cover
6/28/2018	18:00	San Marcos	Future	integration	Strategic plan -> more efficient/tiered dispatch system
6/28/2018	18:00	San Marcos	Future	process	Like flexibility in RFP to expand services and improve patient care
6/28/2018	18:00	San Marcos	Future	process	Like to see perpetual contract (i.e., no RFP every 10 years)
6/26/2018	11:00	San Marcos	Future	process	Lose oversight when given to County and taken from City.
6/26/2018	11:00	San Marcos	Future	process	Want to see local people on committee who chooses next provider.
6/26/2018	11:00	San Marcos	Future	process	Worried about not having local representation on committee choosing future ambulance service.
6/26/2018	11:00	San Marcos	Future	quality	Baseline service can't drop due to new provider. Community is receiving excellent service.
6/26/2018	11:00	San Marcos	Future	quality	Don't lose quality of care
6/26/2018	11:00	San Marcos	Future	quality	Ensure the best service model, training, value to community, and commitment are retained
6/26/2018	11:00	San Marcos	Future	quality	Longevity in positions
6/26/2018	11:00	San Marcos	Future	quality	Understand and learn about constituents.

Date	Time	Zone	Type	Topic	Comment
6/26/2018	11:00	San Marcos	Future	response	Concerned about 30 min response times with private ambulance.
6/28/2018	18:00	San Marcos	Future	response	Improved hospital off-load times
6/26/2018	11:00	San Marcos	Future	response	No reduction in response times.
6/26/2018	11:00	San Marcos	Future	response	Response times need to stay the same.
6/28/2018	18:00	San Marcos	Improvements	fiscal	Ensure level of cash reserves and demonstrated ability to utilize
6/28/2018	18:00	San Marcos	Improvements	fiscal	Ensure value-based organization, "Right thing to do for the patient"
6/26/2018	11:00	San Marcos	Improvements	fiscal	Worried the focus will be on bottom dollar and not on service levels.
6/28/2018	18:00	San Marcos	Improvements	integration	Continued role and services (e.g., active shooter)
6/28/2018	18:00	San Marcos	Improvements	integration	Maintain closest ambulance regardless of services area (i.e., private ambulance does not participate in boundary drop)
6/28/2018	18:00	San Marcos	Improvements	integration	Open to change and innovation - modifying dispatch levels, regional medical direction
6/26/2018	11:00	San Marcos	Improvements	process	How can citizens be selected to committee who chooses the ambulance service?
6/26/2018	11:00	San Marcos	Improvements	process	How can community be more involved in this process? How can they increase their voice other than at listening sessions?
6/28/2018	18:00	San Marcos	Improvements	quality	Always improving currently (X2)
6/28/2018	18:00	San Marcos	Improvements	quality	Don’t see immediate need to improve
6/28/2018	18:00	San Marcos	Improvements	quality	Like to see RFP include quality assurance program
6/28/2018	18:00	San Marcos	Improvements	quality	Maintain continuous quality improvement well beyond contract standards
6/26/2018	11:00	San Marcos	Improvements	quality	Need to distinguish between medical professionals on ambulances
6/28/2018	18:00	San Marcos	Improvements	quality	Not willing to degrade/step backwards
6/28/2018	18:00	San Marcos	Improvements	quality	Stable/solid ambulance replacement plan
6/28/2018	18:00	San Marcos	Improvements	response	Ensure excellent backup/reserve fleet
6/28/2018	18:00	San Marcos	Improvements	response	Wall-times/delays at hospitals could be improved

Attachment 5: National Benchmarks and Santa Cruz County Clinical Standards

EMS Standards, Core Measures, & Benchmarks								
Organization	**SCEMS**	**MedStar**	**EMSA**	**NEMSIS**	**Compass**	**NHS-UK**	**AHA**	**CMS**
Cardiac Arrest								
Response interval < 5 minutes for CPR/AED		●						
Bystander CPR rate	●	●		●			●	
Bystander AED rate	●	●		●			●	
Appropriate airway management		●						
End-tidal CO2 monitored				●			●	
Pit crew/focused CPR	●							
Transport to "Resuscitation Center"		●						
ROSC percentage	●	●	●	●		●		
Survival to discharge (e.g., overall, Utstein)	●	●	●	●		●		
Hypoglycemia								
Glucose recorded before treatment					●	●		
Hypoglycemia corrected through treatment					●			
Glucose recorded after treatment						●		
Correct disposition (e.g., transport, referral, home)						●		
Pain Management								
Offered pain meds prior to movement		●	●					●
Pain score decreased		●			●			●
Respiratory Distress (e.g., asthma, intubation)								
Mental Status		●						
Resp. rate, SpO2, PEFR recorded before treatment		●		●		●		
Oxygen administered (if appropriate)		●				●		
Bronchodilators for pediatrics with wheezing			●		●			
Beta2 agonist administration for adults		●	●			●		
Endotracheal intubation success rate		●	●	●				
End-tidal CO2 performed on any successful ET intubation		●		●				
Improvement after treatment								
Seizure								
Glucose recorded					●			
Received intervention as appropriate					●			
Seizure, Febrile								
Glucose recorded						●		
Sp02 recorded						●		
Anticonvulsant administration						●		
Temperature management						●		
Sepsis								
Protocol completed (HR, BP, resp, temp documented with fluid initiation, O2, hospital		●						
STEMI								
Recognition		●					●	
ASA administration	●	●	●	●		●	●	●
NTG administration		●				●	●	
Appropriate analgesia given		●				●	●	
Two pain scores recorded		●				●	●	
Sp02 recorded				●		●	●	
EKG acquired	●			●		●	●	
EKG acquired within X minutes (e.g., 5-10)		●					●	●
12L acquired		●	●	●			●	
12L transmitted		●					●	
Scene time (e.g., < 10 minutes)	●	●	●				●	
Transport to STEMI center rate (with notificatior	●	●	●	●		●	●	●
911-to-balloon time	●							

EMS Standards, Core Measures, & Benchmarks								
Organization	**SCEMS**	**MedStar**	**EMSA**	**NEMSIS**	**Compass**	**NHS-UK**	**AHA**	**CMS**
Stroke								
Time last seen normal	●	●		●		●	●	
Use of a prehospital stroke scale (e.g., NHS, FAST, MEND, CPSS, LAPSS, MASS)	●	●		●	●	●	●	
Blood glucose documented	●	●	●	●		●	●	
Blood pressure documented		●		●		●	●	
Appropriate O2/airway management		●						
Scene time (e.g., < 10 minutes)	●	●	●	●				
Transport to a stroke-capable facility (and alerte	●	●	●	●		●	●	
911-to-needle time	●							
Trauma								
Over-triage rate							●	
Under-triage rate							●	
PAM scale recorded	●							
Scene time (e.g., < 10 minutes)	●	●	●					
Trauma center destination	●	●	●		●			
NON-CLINICAL STANDARDS, CORE MEASURES, BENCHMARKS								
Efficiency Domain								
Cost per patient contact								
Cost per transport		●						
Cost per unit hour		●						
Employee turnover rate								
Patient Safety								
Drops per 1,000 patient contacts								
AMA to new call within X hours (e.g., 24-72)		●				●		
AMA to hospital within 24 hours								
Mission failures per X responses/miles		●						
Ambulance crashes per X responses/miles								
Chart Review (random, manager, MD)								
Protocol compliance rate (note: this can be overall or individual)								
Total Standards	**19**	**39**	**15**	**19**	**8**	**25**	**22**	**5**

Legend:

SCEMS = Santa Cruz EMS System
MedStar = MedStar Mobile Integrated Healthcare (Fort Worth, TX)
EMSA = California EMS Authority (2015)
NEMSIS = National EMS Information Systems (version 3.0)
Compass = EMS Compass produced by National Association of EMS Officials (NASEMSO)
NHS-UK = National Health Service-United Kingdom (version 1.31, 2016)
AHA = American Heart Association
CMS = Centers for Medicare and Medicaid Services (ED standards applicable to EMS)

Santa Cruz County Transport Report Card				
Criterion	**2016**	**Goal**	**Weighted Value**	**Score**
Cardiac Arrest				
End-tidal CO2 monitored	38.9%	90.0%	3.0%	1.30
Complete documentation (see System QI P&P)	75.0%	90.0%	3.0%	2.50
Respiratory Distress				
Mental Status assessed/documented	90.9%	90.0%	3.0%	3.00
bronchodilator administration for wheezing	72.0%	85.0%	3.0%	2.54
Airway Management				
End-tidal CO2 performed on any successful ET intubation	38.8%	90.0%	3.0%	1.29
Other confirmation techniques (e.g., visualize chords, chest rise, auscultation)	75.0%	90.0%	3.0%	2.50
Complete documentation (see System QI P&P)	75.0%	90.0%	3.0%	2.50
STEMI				
ASA administration	56.7%	90.0%	3.0%	1.89
Sp02 recorded	98.3%	95.0%	3.0%	3.00
12 LEAD EKG acquired within 5 minutes	35.0%	80.0%	3.0%	1.31
Scene time less than 15 minutes	16.7%	80.0%	3.0%	0.63
Transport to STEMI center rate (with notification)	96.7%	95.0%	3.0%	3.00
Complete documentation (see System QI P&P)	75.0%	90.0%	3.0%	2.50
Stroke				
Time last seen normal	0.0%	90.0%	3.0%	-
Use of a prehospital BEFAST stroke scale	58.9%	90.0%	3.0%	1.96
Scene time less than 15 minutes	18.7%	80.0%	3.0%	0.70
Complete documentation (see System QI P&P)	75.0%	90.0%	3.0%	2.50
Trauma				
PAM scale recorded	60.8%	90.0%	3.0%	2.03
Scene time less than 15 minutes	12.7%	50.0%	3.0%	0.76
Trauma center destination	29.8%	90.0%	3.0%	0.99
Complete documentation (see System QI P&P)	75.0%	90.0%	3.0%	2.50
Safety				
Employee injuries per 10,000 hours worked	1.11	1.00	2.0%	1.80
Employee turnover rate	36.7%	25.0%	8.0%	5.45
Protocol compliance rate per chart review (high acuity, AMA/RAS, & random)	75.0%	90.0%	10.0%	8.33
Patient Satisfaction (use standardized questions to allow inter-agency comparison)				
Communication by medics (patient and family)	96.0%	97.2%	3.0%	2.96
Care shown by the ambulance crew	95.0%	94.4%	2.0%	2.00
Skill and professionalism of our ambulance crew	94.3%	93.8%	2.0%	2.00
Cleanliness of ambulance	96.0%	94.1%	2.0%	2.00
Ride of the ambulance	80.0%	92.3%	2.0%	1.73
ePCR Submission Compliance				
At time of patient drop off (over 90 days)	75.0%	90.0%	2.0%	1.67
High acuity (ROSC, STEMI, Stroke, Trauma) cases at time of drop off	75.0%	95.0%	2.0%	1.58
Completed within 24 hours	75.0%	100.0%	2.0%	1.50
Total Standards			**100.0%**	**70.43**

Green: Meet/Exceed Goal
Orange: 0-20% Below Goal
Red: >20% Below Goal

Criteria
1) Measurable
2) Must be improvable
3) Reflect value to the patient

Note: 2016 numbers highlighted in blue are placeholders as not currently tracked

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