



# EMS System Assessment Summary Briefing Report

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*Prepared for the Contra Costa County Board of Supervisors*    December 2023



# Today's Agenda

- 1 About Fitch & Associates
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# About Fitch & Associates

We've designed, developed, and managed some of the world's most innovative EMS systems, and we bring the energy, focus, and experience that drive decision-making and action.



We seek to partner with communities willing to ask the tough questions, that seek transparency and public input, and are interested in planning for the future in a sustainable manner aligned with community expectations.



Forty years of experience implementing innovative, customized solutions in the public safety and healthcare arenas, providing consulting services in thousands of communities in all 50 states, every Canadian province, and 12 other countries.



# Project Background



## Competitive RFP

California State statutes require the County to administer and oversee the EMS system through its local Emergency Medical Services Agency. Contra Costa County Health Services conducted a competitive RFP process from May - June 2022, for Consulting Services for the Assessment of the County's EMS System and for the Development and Management of a Request for Proposal for Ambulance Services for the next competitive cycle of emergency ambulance provider selection for ERA's I, II and V.



## Project Subject Areas

Specific areas of emphasis included clinical quality, operational efficiency, technology utilization, emergency medical dispatch, Medical Priority Dispatch System® use, response time performance, response time standards, contract compliance and oversight, and system revenues and expenses.



## Consultant Selected

Fitch & Associates was selected to conduct a three-phase project that is projected to conclude before the current emergency ambulance contract expires on December 31, 2025.

# Project Phases





# Summary Definitions

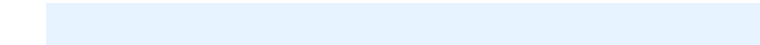
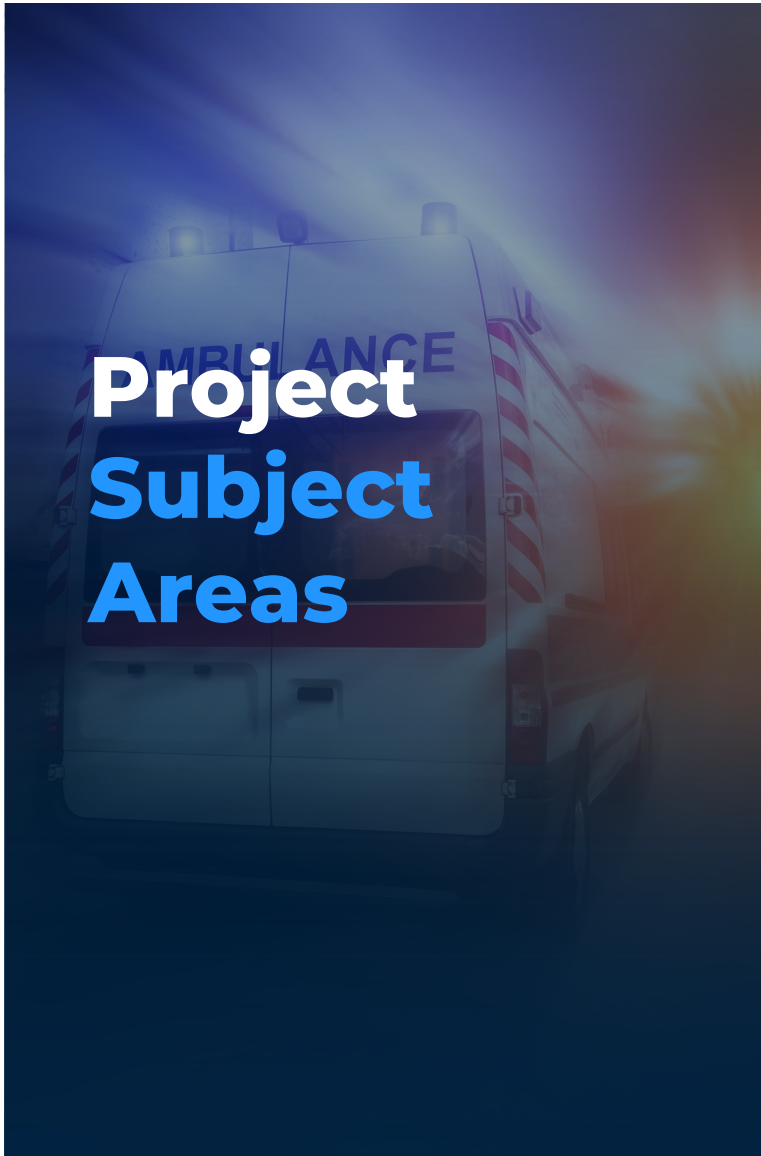
**Contractor** – the Contra Costa County Fire Protection District (CCCFPD), and the ambulance subcontractor American Medical Response (AMR), also known as the “Alliance,” the current provider of emergency medical services for CCCEMS Response Zones A, B, C, and D.

**Emergency Medical Dispatch** – a medically directed system of protocol-based medical dispatch and communications designed logically and does not delay the activation of medical resources.

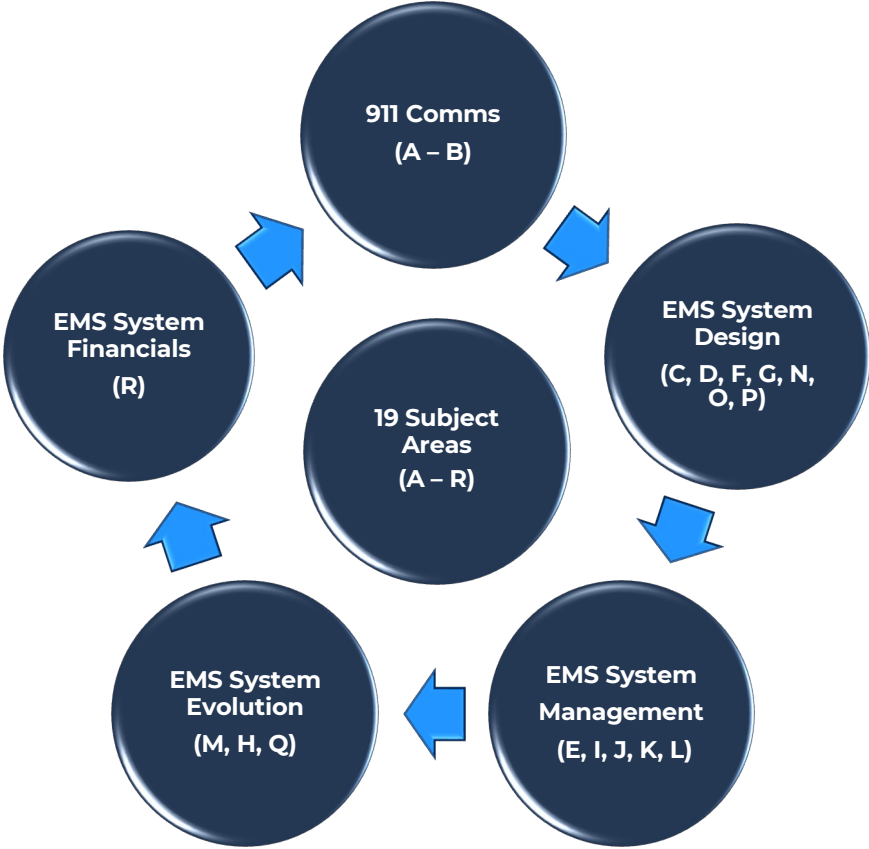
**International Academies of Emergency Dispatch (IAED™)** – a universal standard establishing body for emergency responders to ensure consistent, high-quality care worldwide.

**Local Emergency Medical Services Agency** – an agency established according to the California Health and Safety Code to provide regulatory oversight of the EMS system, which includes coordinating activities, communications, quality improvement, and quality assurance activities, developing policies, protocols and providing medical direction for the agencies that provide EMS.

**Medical Priority Dispatch System (MPDS™)** – a universal standard for emergency medical dispatchers for a broad range of field and triage responses—all while the first responders are on their way to the call location.



FITCH was tasked with nineteen "Project Subject Areas," lettered A – R, to evaluate as part of this assessment. Those subject areas were distilled into five key focus areas FITCH used to conduct the EMS System assessment.



A graphic showing a project schedule or Gantt chart on a desk with a paperclip and a pen. The text "Project Tasks" is overlaid in white and blue.

# Project Tasks

- 1 Conduct Stakeholder Interviews
- 2 Identify Efficiencies of Services Provided
- 3 Obtain Detailed Impression of EMS Delivery
- 4 Conduct Analysis of Current Resource Use
- 5 Complete Commensurate Risk Analysis
- 6 Analyze Historical Response Data
- 7 Review System Finances
- 8 Provide Executive Summary Report



# EMS System Evaluation Model



## Engage

Contra Costa County EMS Agency, EMS service providers, fire protection districts, first responder organizations, receiving facilities, and the community.



## Profile

The EMS system to understand the communications environment, performance requirements, and administrative procedures.



## Evaluate

The service delivery model in use, current efficiencies, and opportunities.



## Identify

Methods to improve 911 communications, clinical care, operational efficiency, contractual and EMS system oversight, and overall service delivery.

# Approach to Data Collection



## Approach

FITCH used a mixed-methods approach—using both quantitative and qualitative data collection and analysis—to triangulate findings across data sources for each assessment subject area and to provide multiple perspectives on the multi-dimensional opportunities explored in the report.



## Quantitative

Quantitative data included publicly available data, aggregate response, transport, receiving facility, billing, collections, revenue, and expense data collected from the Contra Costa County EMS Agency, Contra Costa County Fire Protection District, and American Medical Response.



## Qualitative

Qualitative data included interviews with EMS system participants and health system stakeholders to understand the current communications and EMS environment.

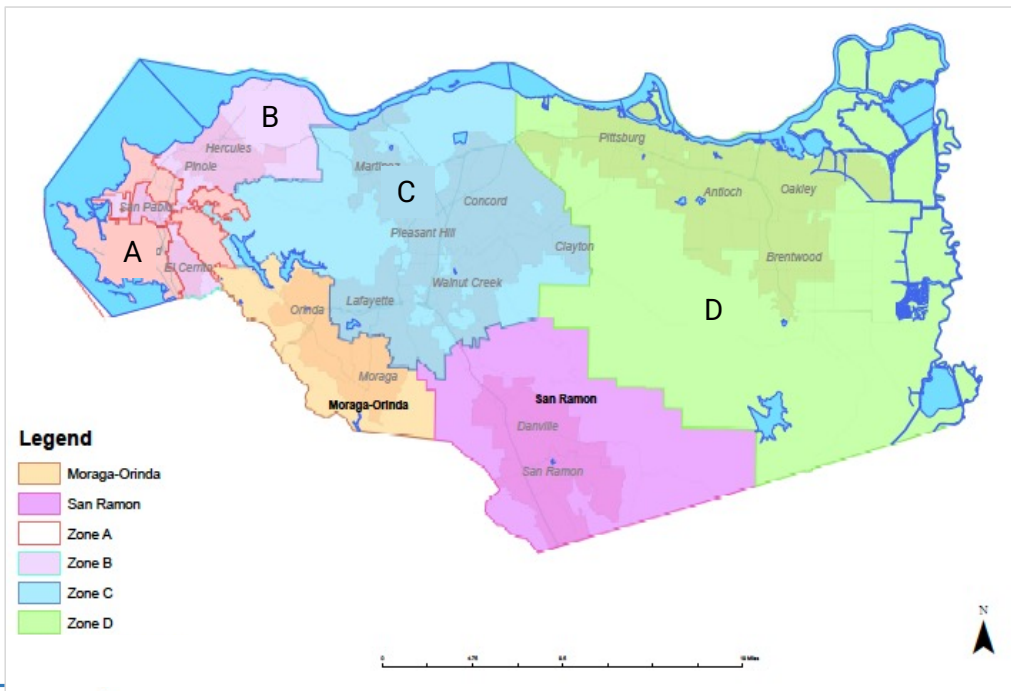


## Time Period

Generally, data were sought for January 1, 2017, through December 31, 2022.

# Project Service Area

Contra Costa County Ambulance Response Zones



## EMS System Providers

Contra Costa County Fire Protection District (CCCFPD), with their ambulance subcontractor American Medical Response (AMR), also known as the “Alliance,” provides emergency medical services to residents and visitors in the remaining portions of the county (Ambulance Response Zones A, B, C, and D).

Moraga-Orinda Fire District (MOFD) provides emergency medical services to residents and visitors in the Moraga-Orinda Ambulance Response Zone.

San Ramon Valley Fire Protection District (SRVFPD) provides emergency medical services to residents and visitors in the San Ramon Ambulance Response Zone.

The geographical focus area of this EMS System Assessment comprises the Ambulance Response Zones A, B, C, and D.



- This Executive Summary Report outlines findings and recommendations for how Contra Costa County can most effectively approach the provision of emergency medical services (EMS). This includes adopting policies and implementing contracts with the utmost confidence to meet community expectations with transparency and sustainability.
- The findings presented throughout this report were driven by comprehensive data analyses and guided by evidence-based best practices available in the industry literature, standards from accrediting bodies, and FITCH's forty years of EMS system review and design experience .
- Importantly, recommendations for system change toward optimization of the project focus areas were developed to facilitate a system that aligns with the six guiding principles of the EMS Agenda 2050.
- Overall, the firm's strategy is to provide the County with sufficient objective data to establish direction for the future of the EMS system. Therefore, all alternatives and recommendations are grounded in the data analysis and best practices, insulating the process from potential biases.



# Key Findings



## 911 Communications

- Contra Costa Regional Fire Communications Center (CCRFC) is accredited.
- The Richmond Police Communications Center (RPDCC) is accredited.
- Emergency Medical Dispatchers (EMD), ProQA™ software, and MPDS™ protocols are utilized.
- There are synchronization issues between the CCRFCC and RPDCC CAD systems.
- Priority 2 responses are not utilized, where ambulances are dispatched based on the priority (priority 1, 2, or 3) assigned at dispatch.
- CCRFCC and law enforcement should work together to implement the Advanced SEND protocol.

## EMS System Design

- The current response density zone structure should be updated in the next contract to reflect call density.
- The response time requirements should be updated in the next contract to reflect the zone changes.
- The clinical performance measures should be updated in the next contract as described.
- The current CCCEMSA methodology should be used to guide the evolution of a tiered ALS / BLS response model.
- The response time performance penalty structure should be revised in the next contract to include incentives and penalty forgiveness based on clinical performance.



# Key Findings



## EMS System Management (Contractor)

- The current deployment locations adequately cover historical demand within response time requirements.
- Level zero status has occurred routinely in the past several months.
- Future efforts to reduce low resource availability should include surge capacity strategies.
- The average and 90th percentile response times have been increasing since 2021.
- The EMS service provider struggled to achieve the required response time performance standards in 2022.
- Recruitment and retention have been a challenge locally and nationwide for the past two years.

## EMS System Evolution

- The County should consider alternative transport models for 5150 patients, such as Non-EMS transport teams.
- The County should explore funding opportunities to implement a Health Information Exchange.
- CCCEMSA and the Alliance should continue monitoring the current treat and refer program's efficacy.
- The CCRFCC should consider an Emergency Communication Nurse System™ eligibility assessment.

## EMS System Financials

- The gross and net charges increased year-over-year in three of the four years evaluated.
- The net collections increased year-over-year in three of the four years evaluated.
- The transport rates are favorable compared to agencies we evaluated throughout the state.
- The percentage of net collections from commercial insurance has remained steady, averaging 14%.
- Operating expenses for the subcontractor outpaced revenue in 2022, resulting in a negative contribution margin.

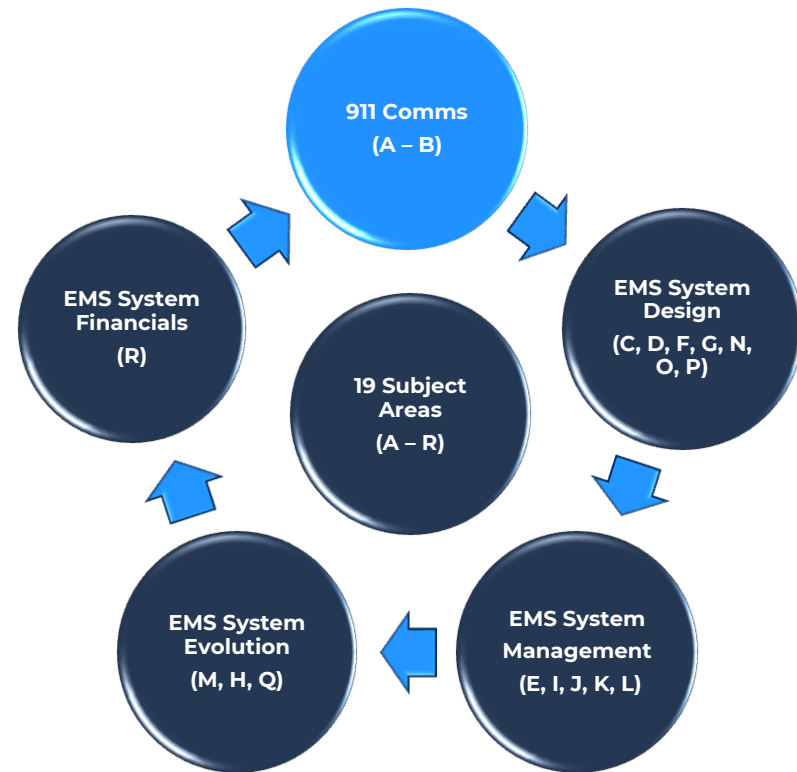
# 911 Communications

## Subject Area A.

Use of the Medical Priority Dispatch System (MPDS®) for a prioritized and tiered response.

## Subject Area B.

Use of communications system, including dispatch and communications practices and configuration.



# 911 Communications

## Strengths

### Communications System Configuration

All ambulance resources are dispatched through the Contra Costa Regional Fire Communications Center (CCRFCC). The Richmond Police Department Communications Center (RPDCC) handles emergency medical dispatch for their response area. A direct CAD-to-CAD connection between CCRFCC and RPDCC allows for a bi-directional flow of call data for ambulance response.

### Medical Priority Dispatch System (MPDS®)

Both communications centers use EMD-certified personnel and ProQA™ software containing MPDS™ protocols. In 2022, the CCRFCC achieved the Accredited Center of Excellence (ACE) designation from the IAED™. RPDCC achieved ACE designation in 2023.

### Call Prioritization

CCCEMSA policy contains a minimum response matrix to dispatch ambulances based on the prospective priority (priority 1 or 3) assigned at dispatch (life-threatening responses, non-life-threatening responses, and non-life-threatening/non-urgent responses). Priority Interventions and a Minimum Response Matrix were developed by CCCEMSA medical director Senai Kidane, M.D., that guide communications activities.

### Communications Systems

CentralSquare® Computer Aided Dispatch (CAD), Global Positioning System (GPS), and Automatic Vehicle Location (AVL) technology are utilized. The CCRFCC has invested in technology to ensure software and programs keep up with EMS system demands.



# 911 Communications

## Opportunities

### Communications System Configuration

There is a time-sync issue, and the problem/nature codes are not synchronized between the two systems' CADs. This has been identified due to discrepancies in times between the two systems when reporting data into the CARES registry on cardiac arrest calls and other incident reviews.

### Medical Priority Dispatch System (MPDS®)

Every 911 call does not go through the appropriate EMD process. Our review of Contra Costa Regional Fire Communications Center CAD data (2017 – 2022) indicated that between three call nature codes (5150 PD Request, EMS-PD C3, EMS-PD C2), approximately 98,954 calls (17% of 561,242) did not go through a complete EMD process. This equals an average of (46) calls per day.

### Call Prioritization

Despite CCCEMSA policy containing a minimum response matrix to dispatch ambulances based on the prospective priority (priority 1 or 3) assigned at dispatch, priority 2 responses have not been defined and are not currently utilized as part of response time compliance. There are six priority levels in the MPDS. These levels are used to define the relative urgency and response needs of the patient. Each priority level is associated with a response mode: COLD or HOT (lights and sirens or no lights and sirens).

### Communications Systems

The time sync issue previously described should be further explored and corrected.

# 911 Communications

## Recommendations

### Communications System Configuration

Both communications centers should work with CentralSquare to identify how the call/nature code and time synchronization challenges can be corrected.

### Medical Priority Dispatch System (MPDS®)

All 911 system participants should consider working with the CCRFCC and other PSAPs to implement the Advanced SEND Protocol from the IAED. The MPDS® Advanced SEND protocol guides EMDs to a more efficient and effective evaluation to record a reporting officer's on-scene assessment and send the most appropriate resources to them. It is designed to help answer calls for medical assistance from non-medical officers. This would have to be accomplished through collaborative efforts from CCRFCC, the other PSAPs, and law enforcement agencies. The Advanced SEND Protocol is used throughout the country.

### Call Prioritization

The next contract should ensure that priority 2 responses are utilized and measured according to industry standards.

### Communications Systems

When the Online Compliance Utility (OCU) monitoring system was implemented, there was no distinction made in the system for ALS and BLS units. CCCEMSA worked with FirstWatch to ensure that the OCU data monitoring capabilities allow for ALS / BLS tiered response system compliance monitoring. Once this is implemented, CCCEMSA and CCRFCC should work together to ensure the OCU is appropriately measuring EMD and response time compliance for the ALS / BLS tiered system.

# EMS System Design

## Subject Area C.

Response time and outlier performance standards, including ambulance response and density zone analysis.

## Subject Area D.

Clinical oversight and performance measures.

## Subject Area F.

Integration of non-emergency ambulance service providers into the system during disasters and low-level events.

## Subject Area G.

Evaluation of a tiered BLS and ALS emergency ambulance response.

## Subject Area N.

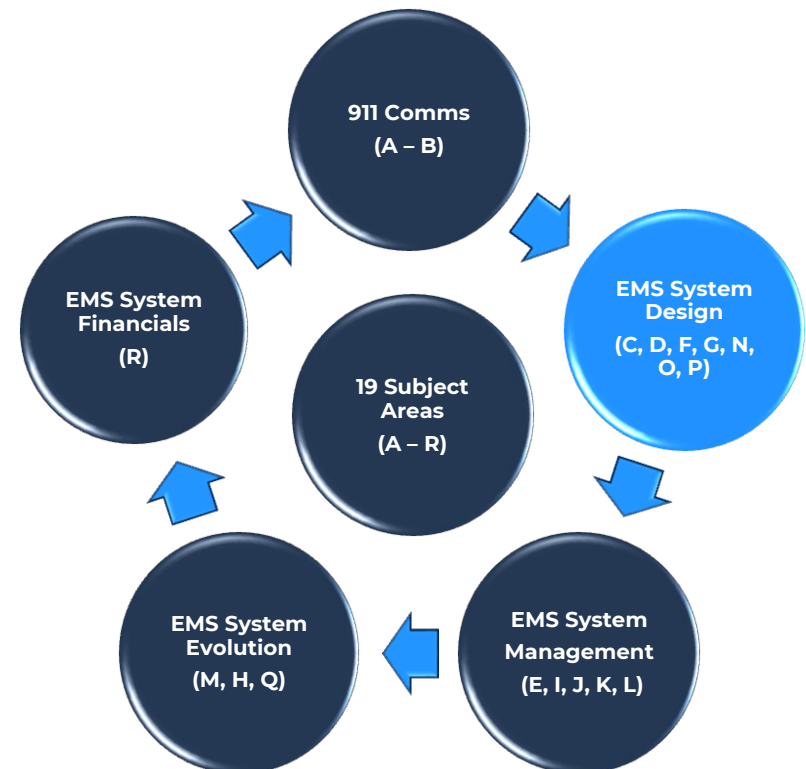
Options for sanctions/incentive structures to compel and encourage compliance with contractual standards.

## Subject Area O.

Evaluation of the establishment of an EMS fund for fines and penalties to be used for EMS system improvements as identified by the EMS Agency.

## Subject Area P.

Data and performance reporting requirements.

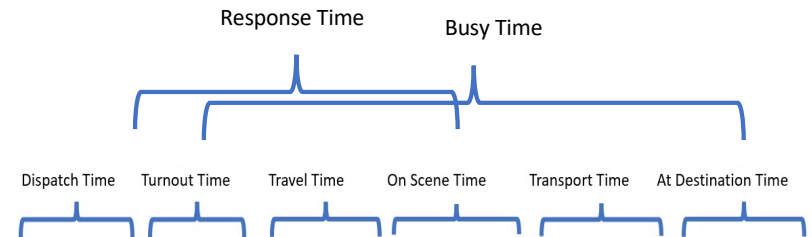


# Data Analysis Methodology



## Measures

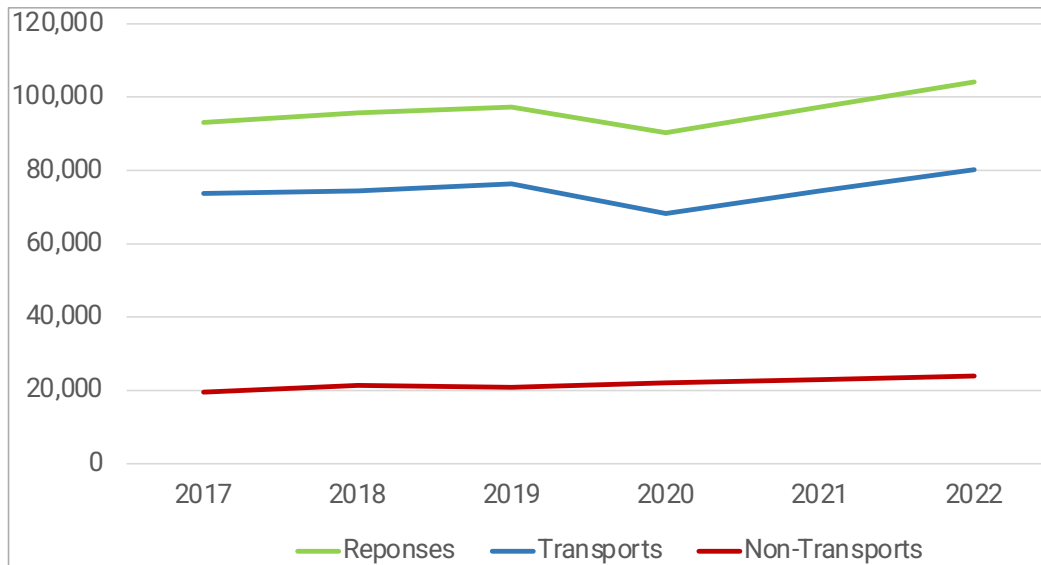
- Travel time - from the time the ambulance begins a continuous state of travel to the time a unit arrives on the scene.
- Response time includes turnout and travel times.
- On-scene time - from the time unit arrived on the scene to the time the unit began to transport.
- Transport time - from the time a unit began to transport to the time a unit arrived at its destination.
- At destination time - from the time a unit arrived at the destination to the time a unit is available.



CAD Incident #	Case Number	Unit	Date/Time	Dispatched	Enroute	On Scene	Transported	Arrived at Hospital	Call Cleared
22000005	2-000019	M77	1/1/2022 0:12:35	1/1/2022 0:13:17	1/1/2022 0:13:31	1/1/2022 0:22:04	1/1/2022 0:33:36	1/1/2022 0:58:58	1/1/2022 1:38:11
22000006	2-000021	M74	1/1/2022 0:14:27	1/1/2022 0:15:38	1/1/2022 0:17:05	1/1/2022 0:22:32	1/1/2022 0:32:39	1/1/2022 0:50:16	1/1/2022 1:21:30

# Historical Volume

**Response & Transport Volume  
2017 - 2022**

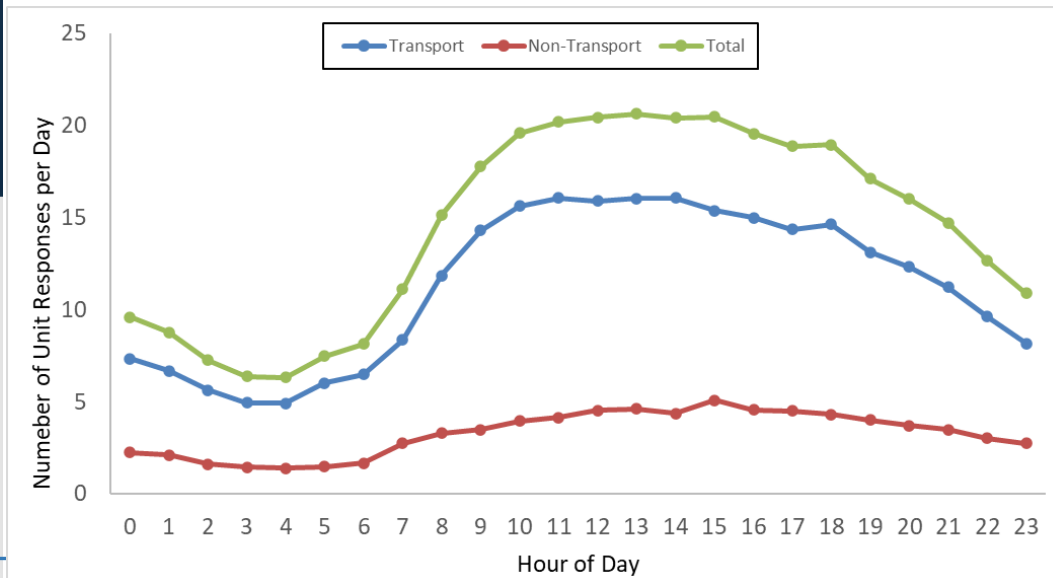


## Findings

- In 2022, the EMS service provider responded to 104,148 calls, which increased by 7.1% compared to 2021.
- From 2017 through 2022, the Compound Annual Growth Rate (CAGR) for responses was 4.6%.
- Responses that resulted in a transport accounted for 77% of the total responses.

# Temporal Volume

### Average Unit Responses per Day by Hour of Day 2022



## Findings

- From the time ambulances were dispatched until the time ambulances were available for another response totaled 128,696 busy hours in 2022.
- Busy hours averaged 353 hours per day.
- Demand from midnight through 0600 averaged 7.7 responses per hour. This is less than half of the demand for the rest of the day 17.7 per hour on average.

# Temporal Volume Trends

## Total Busy Hours and Average Time on Task 2017 - 2022

Total Busy Hours						
Category	2017	2018	2019	2020	2021	2022
Transport	92,890	96,902	101,468	91,289	104,329	117,582
Non-Transport	8,872	10,144	9,983	10,571	10,426	11,114
Total	101,761	107,046	111,451	101,860	114,755	128,696

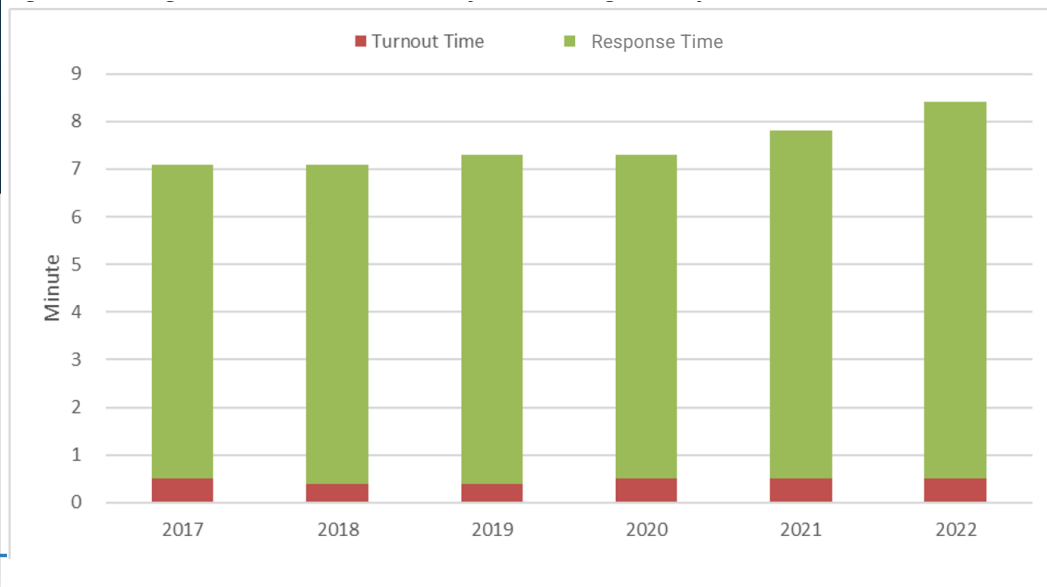
Average Time on Task						
Category	2017	2018	2019	2020	2021	2022
Transport	68.7	69.6	69.9	70.9	71.8	71.6
Non-Transport	25.8	27.1	25.7	25.7	23.7	23.3
Total	60	60.6	60.6	59.9	60.6	60.7

### Findings

- Total busy hours increased each of the past five years, except for 2020, which is consistent with what we have observed nationwide.
- Average Time on Task increased each of the past five years, except for 2020, and non-transport Time on Task decreased last year, indicating quicker on-scene times.

# Response Time Performance Trends

**Average Turnout and Response Time  
2017 - 2022**



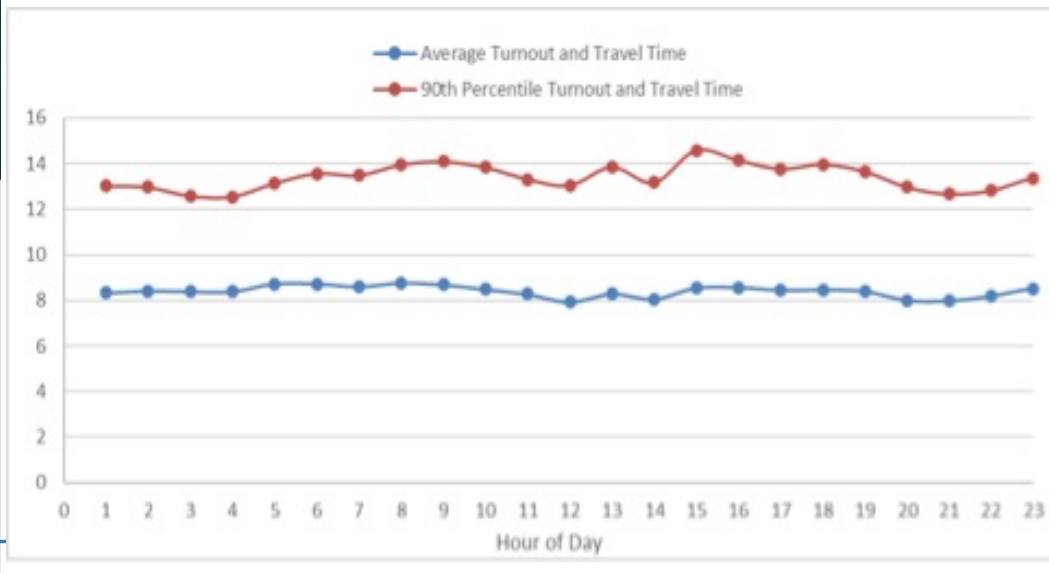
## Findings

- Average turnout time was 0.5 minutes.
- Average response time was 7.9 minutes.
- Average time on scene was 13.8 minutes.
- Average transport time to destination was 13.4 minutes.
- Average APOT ranged from a low of 41 minutes to a high of one hour and 4 minutes in 2022.
- Non-transport unit responses averaged 23.3 minutes from dispatch to clear.
- The average response time has been increasing since 2021.



# Response Time Performance Highlights

**Average and 90<sup>th</sup> Percentile Turnout and Travel Time 2022**

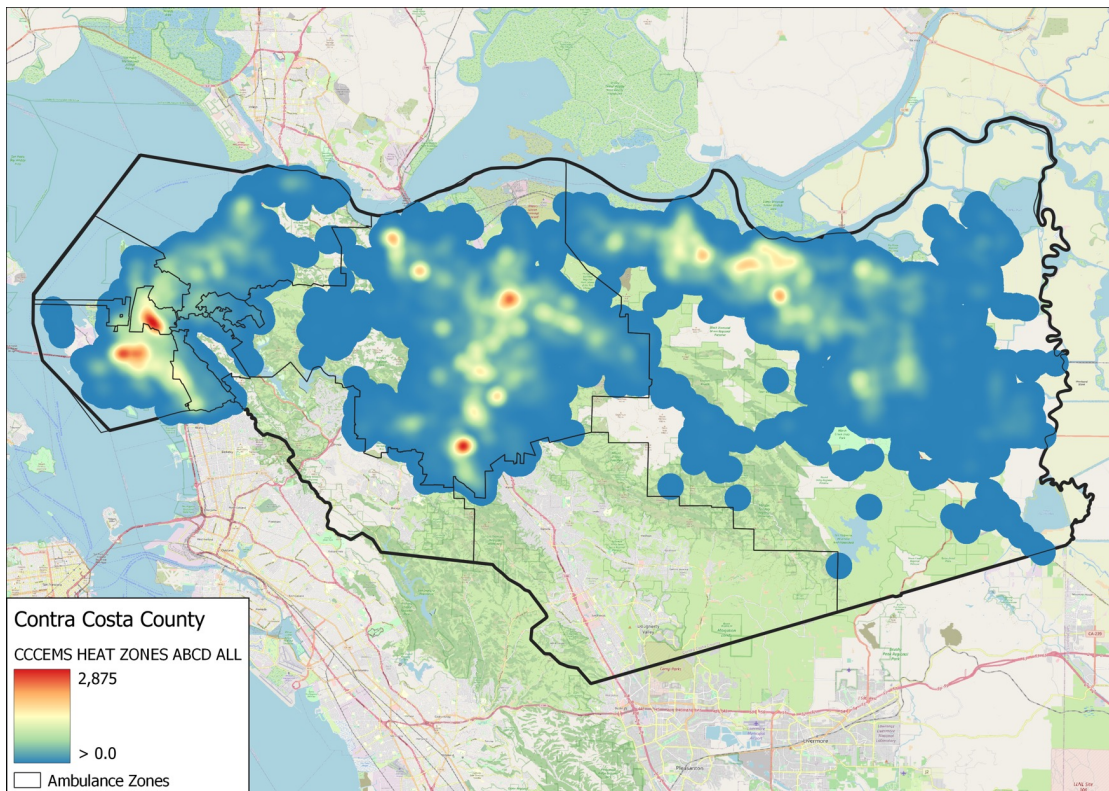


## Findings

- The average response time for lights and siren calls was 8.4 minutes in 2022.
- The 90th percentile response time for lights and siren calls was 13.5 minutes in 2022.
- Increases in response times by hour of day are commensurate with increases in response volume by hour of day.

# System Volume Distribution

## Geographic Distribution of EMS Volume 2022



### Findings

FITCH utilized heat mapping to evaluate call activity and the current response density levels. This model allows for informed decisions on performance levels of response.

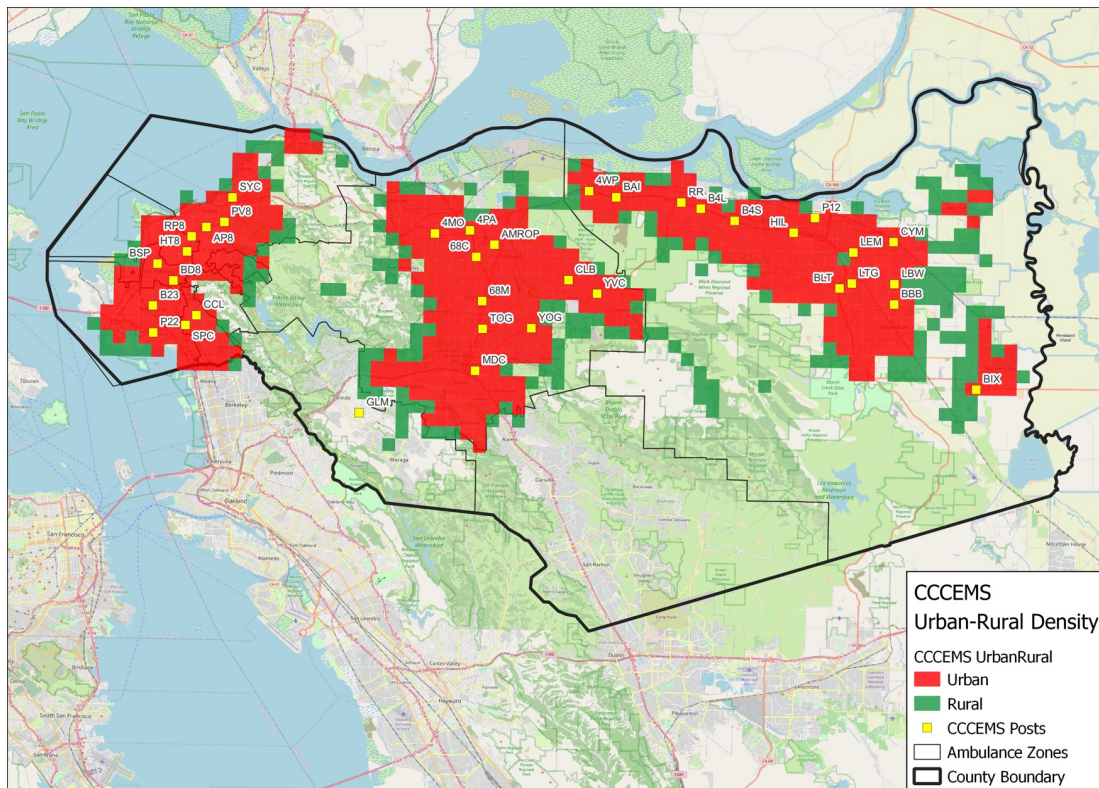
Color coding indicates various levels of responses within the service area.

- Red: these areas indicate a “hot spot” and a high number of responses.
- Blue: these areas indicate a mostly rural response and a lower number of responses.
- No Color: these areas received no requests for service or are not included in the zones that comprise this assessment.

From year to year, geographic volume distribution remained stable, and there were no identifiable shifts in patterns of demand.

# Commensurate Risk Model

## Commensurate Risk Mapping of EMS Volume 2022



### Findings

FITCH utilizes a commensurate risk model to evaluate Urban and Rural density levels for response zones. This assessment is based on call density and not population. Color coding indicates various levels of responses within the service area.

- Red: Urban Incident Zones.
- Green: Rural Incident Zones.

The current Response Density Zones currently use high-density and low-density areas (based on population) and associated Response Time Performance Standards. These should be updated in the next contract cycle to reflect call volume density. The map on this page depicts where the urban and rural density zones would be, and as illustrated, they would match the current high- and low-density zones.

# EMS System Design

## Strengths

### Response Time Standards

The contract contains response time requirements, and our evaluation indicated all required elements are being measured and reported. From 2017 – 2021, the Contractor achieved the contractually required 90% response time compliance across all measured priority levels and in all zones. In 2022, the Contractor struggled to achieve 90% response time compliance. CCCEMSA waived nine of twelve months of penalties associated with instances of non-compliance.

### Response Density Zones

CCCEMSA utilizes a comprehensive methodology that organizes response areas into Emergency Response Zones with high and low-density zones to develop total response time standards and measure response time compliance.

### Clinical Performance & Measurement

The contract contains clinical performance measures, and the EPCR system allows for measuring clinical services in a performance-oriented manner. EMS providers transmit 12-Lead ECGs and send “STEMI Alerts” and “Stroke Alerts” to activate emergency departments. CCCEMSA and the Contractor participate in quality assurance activities and medical quality improvement committees.

### ALS / BLS Contract Language & Efforts

The contract allows the Contractor to send BLS ambulances to requests for calls that meet specific EMD criteria and if CCCEMSA policy supports the response model. In 2021, CCCEMSA allowed the contractor to utilize BLS resources to provide limited additional response resources at a critical time in the system. Nationally, this has occurred in several large EMS systems in the wake of similar issues.

### Response Time Compliance Penalty Structure

The contract contains penalties if the response time standards are not met and for other instances of non-compliance.

# EMS System Design

## Opportunities

### Response Time Performance

The average and 90th percentile response times have increased since 2021, and the EMS service provider has struggled to achieve the required response time performance standards.

### Resource Availability

EMS System stakeholders expressed concern with the system's frequency of experiencing level zero status, where there are no available ambulances. Likewise, these concerns were expressed by community members in the community survey.

### Increasing Response Times & APOT

Ambulance Patient Offload Times have been a significant challenge locally and nationally for the past three years.

### Clinical Performance Measures

The contract requires specific clinical key performance indicators, some of which are broad in scope; however, these should be updated in the next contract.

### Response Time Compliance Penalty Structure & EMS System Enhancement Fund

The penalty structure should be revised in the next contract to include adjusting the outlier penalties and including penalty forgiveness if specific clinical performance measures are met. Historically, outlier penalties were implemented in EMS Systems nationwide to ensure an equitable response across the service area. In recent years, these penalties have been adjusted in favor of measuring patient outcomes and clinical performance measures to ensure equity in response times and patient care throughout the service area. The system currently does not have an EMS System Enhancement Fund. There are opportunities to structure a fund in the next contract that would be invested in through instances of non-compliance with response time standards.

# EMS System Design

## Recommendations

### Response Zone Redesign

The current response density zone structure should be adjusted to reflect call density (to be conducted during phase 2).

### Ambulance Patient Offload Time Strategies

The Alliance should continue working on an incremental time-based escalation process to ensure there is active communication and partnership to transfer patients. This includes patients being placed in the waiting room if the patient is stable at the 60 min time interval.

### Clinical Performance Measures

The next contract's clinical performance measures should be updated to include an analysis of medical interventions provided to ensure compliance with established medical guidelines, provider skill performance benchmarking, documentation quality evaluation, and reported patient outcome data, and reviewed and adjusted on an annual basis.

### ALS / BLS Model Evaluation

FITCH reviewed the 911 response review methodology utilized in the 2022 CCCEMSA EMD Study, and it aligns with methods used in comparable-sized EMS Systems with a tiered ALS / BLS response system. This methodology can guide the evolution of a tiered ALS / BLS response model in the County. The total number of BLS ambulances depends on the Minimum Response Requirement Plan implemented and developed in concert with Physician Medical Direction.

### Response Time Compliance Penalty Structure & EMS System Enhancement Fund

The penalty structure should be revised in the next contract to include incentives and penalty forgiveness if certain clinical performance measures are met. The next contract should also contain an EMS Enhancement Fund, as previously described. This fund could be used to pay for enhancements such as HIE.

# EMS System Management

## Subject Area E.

Deployment of ambulance response resources.

## Subject Area I.

Recruitment and retention of highly trained and skilled paramedics and EMTs.

## Subject Area J.

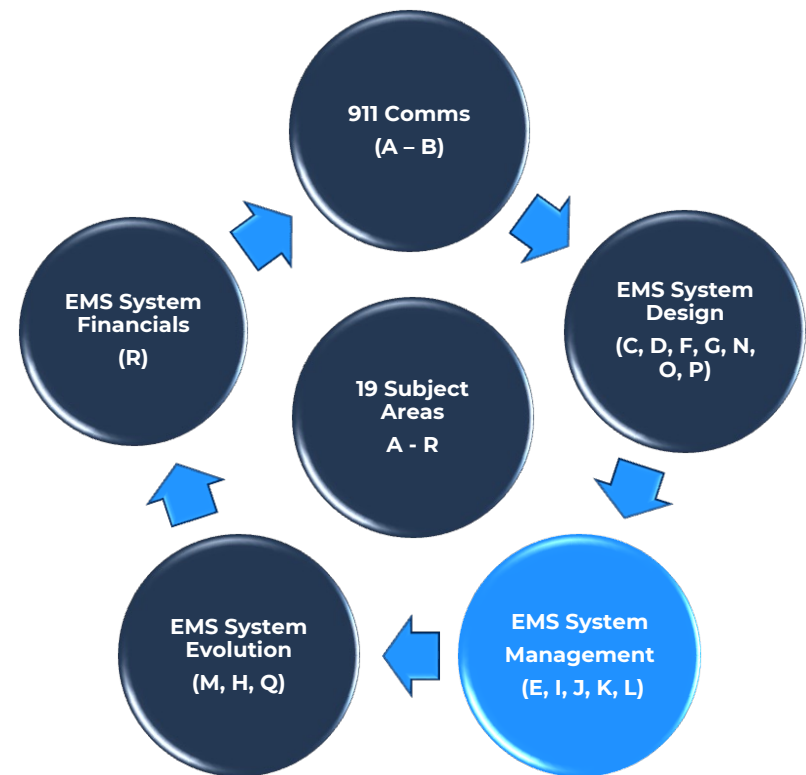
Disaster response capabilities, utilization, and training of ambulance strike teams.

## Subject Area K.

Deployment model evaluation based on call volume patterns and receiving facility locations, including specialty service providers.

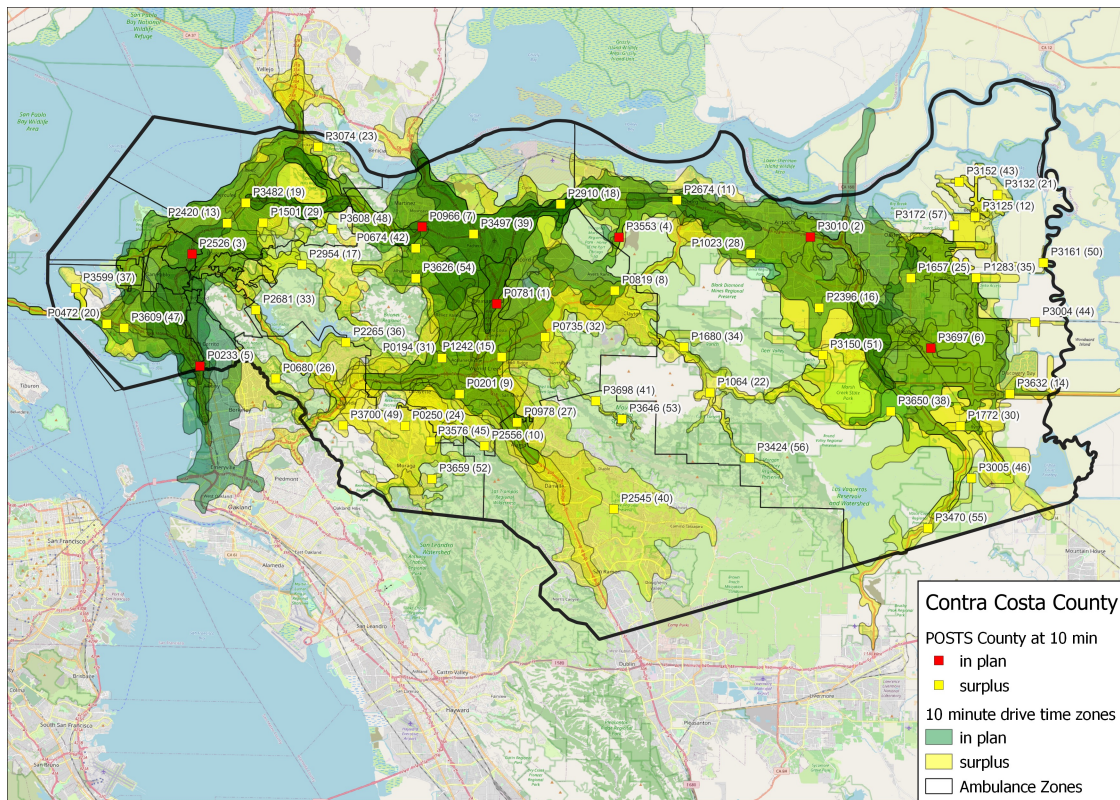
## Subject Area L.

Air ambulance utilization.



# GIS Analysis

## 10 - Minute Travel Time Analysis

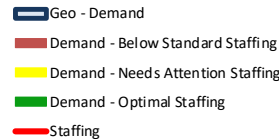


## Findings

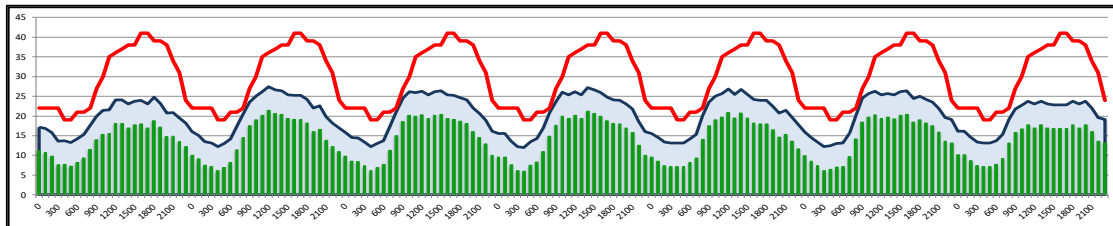
- The green shaded areas indicate the 91% response capability within 10-minutes. Any successively darker shades of green indicate that more than one deployment location can service the area within 10-minutes.
- The yellow shaded areas show the additional coverage within 10-minutes between 91% and 99%.



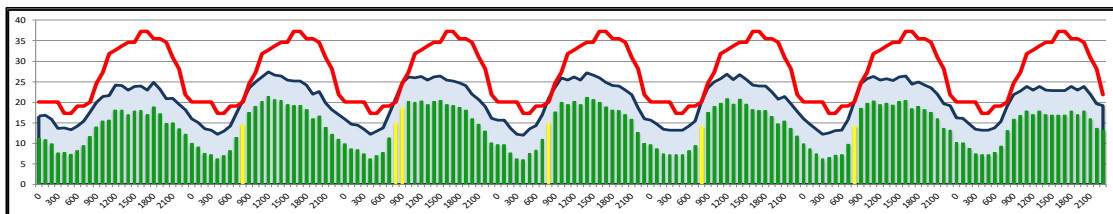
# Staffing vs Demand Analysis



## 10 - Minute Travel Time Staffing vs. Demand Analysis At 100% Staffing



## 10 - Minute Travel Time Staffing vs. Demand Analysis At 85% Staffing



### Findings

- The analysis evaluates demand by day of the week, beginning on Sunday and ending on Saturday (green and yellow bar graphs).
- The geographic requirement to meet the desired response time of 10-minutes (light blue), and then finally, the current staffing (red line).
- The system is under-resourced whenever the staffing line (red) is below the required demand (blue).
- At 100% staffing, the Contractor is adequately-resourced throughout the day, although close to being under-resourced at 8:00 AM if the desired outcome is a 10-minute travel time.
- At 85% staffing, the Contractor is under-resourced at 8:00 AM and 9:00 AM if the desired outcome is a 10-minute travel time.

# EMS System Management

## Strengths

### Ambulance Deployment

FITCH evaluated alternative deployment locations for an optimized configuration if the Contractor relocated deployment locations. This was done to determine whether the Contractor's deployment plans could be optimized to meet the response time performance requirements. Our GIS analysis of the distribution and concentration of response resources determined that the current strategic deployment locations can cover the historical demand within the specified travel time performance for each priority level. Current response time performance is monitored using the FirstWatch Online Compliance Utility (OCU)™ response time performance monitoring and reporting system.

### Recruitment & Retention of EMS Professionals

AMR has increased the amount it spends on crew wages per unit hour every year since 2018. Our analysis illustrated an increase of \$32.63 per hour, or a 44% increase when comparing 2022 to 2018, crew wages per unit hour. The Alliance developed a partnership with the county's workforce development board to actively recruit from underserved areas in the community.

### Disaster Response Capabilities

The service area has a Multi-Casualty Incident Plan that establishes a standardized organization, management, and structure to coordinate emergency response to MCIs. Stakeholders reported that community planning events for emergency evacuations and disaster planning exercises were conducted regularly before the pandemic and have recently started again. The responsibility areas for mutual and automatic aid are identified and documented, and the Alliance maintains an active relationship with the surrounding agencies.

### Air Medical Provider Utilization

Data reviewed indicated air medical use is appropriate and used to minimize the time interval to initiate critical care or time-sensitive procedures provided at the receiving healthcare facility. In the most recent three-year period, annual transport volume averaged less than 140 transports. CCEMSA staff routinely evaluate air medical transport.

# EMS System Management

## Opportunities

### Ambulance Deployment

Once an ALS / BLS tiered response system is implemented, the Contractor should consider analyzing the BLS-level calls on a quarterly basis and developing a separate deployment plan for BLS ambulances based on the geographic and temporal distribution of calls that meet BLS response criteria.

### Recruitment & Retention of EMS Professionals

AMR has not been able to staff enough unit hours to meet the minimum daily deployment necessary to achieve response time performance compliance. Reasons cited for staffing shortages include a high attrition rate, higher-than-average cost of living, and a lack of applicants in the past two years. While turnover has been a problem in the EMS industry for decades, early retirements and relocations for employees in certain services have resulted in greater staffing shortages.

### Disaster Response Capabilities

Many agencies nationwide conducted fewer exercises as a result of the pandemic. The EMS System participants are encouraged to complete an analysis of what type of exercises could be conducted and methods to participate in exercises of varying scales.

### Air Medical Provider Utilization

Helicopter transportation may decrease transportation times and minimize the time interval to initiation of critical care or time-sensitive procedures provided at the receiving healthcare facility, especially in rural areas or those with difficult terrain. CCCEMSA and the EMS Provider should continue to monitor air medical use to ensure appropriate utilization.

# EMS System Management

## Recommendations

### Ambulance Deployment

The Contractor should analyze the effectiveness of its deployment plan at least quarterly to ensure move-up strategies are adequately covering the volume demands. Additionally, the Contractor should develop a separate BLS unit deployment plan to ensure adequate BLS resource distribution.

### Surge Capacity Strategies

Future efforts to reduce instances of low resource availability should include considering the use of CCCFPD personnel to staff ambulances when the system status reaches a defined threshold. Considerations, if implemented, would include methods to cover backfill, CCCFPD minimum staffing, policies for direct overtime, unit hour costs, and additional liability-related concerns.

### Recruitment & Retention of EMS Professionals

The Contractor should continue to explore grant opportunities and tuition support programs to supplement sign-on bonuses, relocation bonuses, and referral bonuses to support business and workforce planning initiatives.

### Disaster Response Capabilities

Continue to conduct exercises to evaluate the EMS System participants' ability to respond to a large-scale event.

### Air Medical Provider Utilization

Continue to evaluate whether air medical use is appropriate and used to minimize the time interval to initiate critical care or time-sensitive procedures provided at the receiving healthcare facility.

# EMS System Evolution

## Subject Area M.

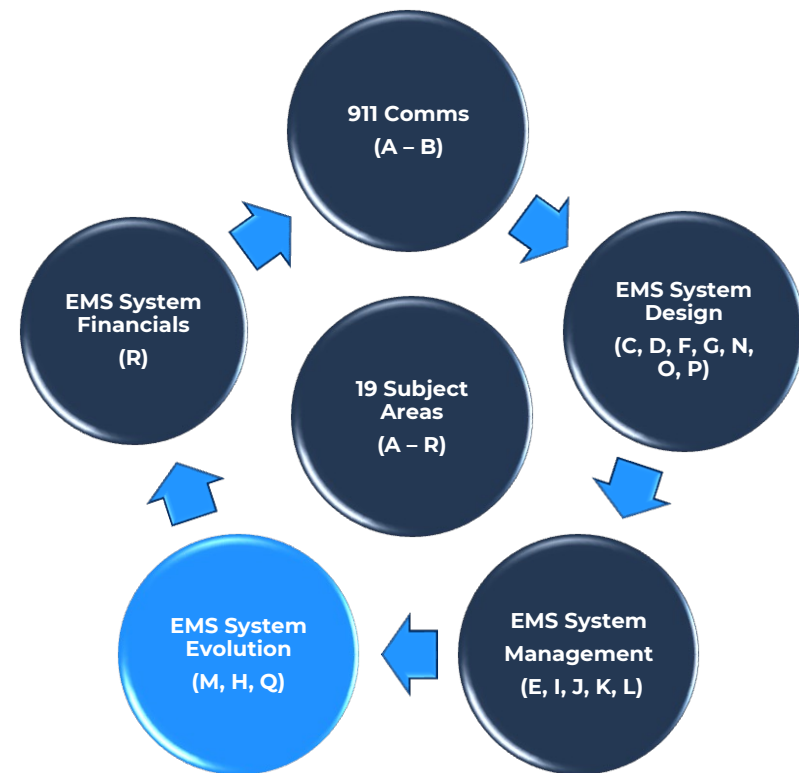
Options for transport or diversion of ambulance transport of 5150 patients.

## Subject Area H.

Integration of bidirectional health exchange between prehospital providers and receiving facilities

## Subject Area Q.

Assess the feasibility of future community paramedic and mobile healthcare demands, including efficacy of on-scene treat and release models, alternate destinations and 911 nurse navigation.





# EMS System Evolution



**Community Paramedic** – a paramedic who has completed additional interdisciplinary training that works to increase access to primary care and decrease the use of emergency departments and EMS.

**Health Information Exchange (HIE)** – a system that connects EMS service providers to the broader healthcare ecosystem allowing EMS providers to search for patients' medical history, allergies, prescribed medications, etc., and bridges the data gap between EMS and receiving facilities with bidirectional data sharing to support operational and clinical quality improvement.

**Treat and Refer Protocol** – established standards to identify patients whose condition does not warrant 911 ambulance transport or evaluation in an emergency department, intended to decrease the impact of non-emergency EMS requests on the EMS system and hospital emergency departments.

**Nurse Navigation** – a comprehensive, secondary, telephonic system of triage that uses nurses that have completed additional telecommunicator training, to decide the type and place of care the patient receives, thereby identifying the most appropriate healthcare resource and destination for patients calling 911.

# EMS System Evolution

## Strengths

### **Transport Alternatives for Behavioral Health Patients**

The Contractor expressed their willingness to participate in experimental programs and processes that will ensure the safe and appropriate transport of 5150 patients and patients experiencing behavioral health emergencies.

### **Integration of a Health Information Exchange**

The Contractor and hospital representatives that we spoke with indicated their willingness to participate in data exchange and the desire for a bidirectional health exchange between prehospital providers and receiving facilities. Three of nine EMS service providers or first responder organizations are currently using or transitioning to the same EPCR system, which will allow for an easier HIE setup in the long run.

### **Community Paramedic Feasibility**

The Contractor expressed their willingness to participate in a community paramedic program or programs targeted to specific patient populations, and CCCEMSA indicated their support of these programs.

### **On-Scene Treat and Release Models**

An increase in response and transport volume, overcapacity of emergency departments, staffing challenges, and lengthy ambulance patient off-load times (APOT) made ambulance availability a challenge. As a result, CCCEMSA and the Contractor implemented a treat and refer model.

### **Nurse Navigation**

The Contractor expressed willingness to participate in a nurse navigation system.

# EMS System Evolution

## Opportunities

### Transport Alternatives for Behavioral Health Patients

The current practice of utilizing ambulances to transport an average of approximately twenty 5150 patients each day is placing a strain on the EMS System. In addition to the obvious resource utilization, incidents where PES was the receiving facility, had an average call duration (from call receipt until the unit was available) of 100 minutes from 2017 – 2022 and an average of 123 minutes in 2022. The County should consider modifying the local policy to ensure EMS is not obligated to transport patients who do not have medical complaints.

### Integration of a Health Information Exchange

Typically, the upfront setup and annual cost are the greatest barriers to establishing a bidirectional health exchange between prehospital providers and receiving facilities. EMS providers of comparable size and receiving facilities with at least 500 beds have reported expenditures of approximately \$30,000 for the EMS provider and \$30,000 per receiving facility, and these costs are reoccurring annual costs that do not include any implementation costs. One potential funding method could be establishing an EMS System Enhancement fund, described in greater detail in another section of this report.

### Community Paramedic Feasibility

CPs have shown they can collaborate effectively with numerous healthcare partners, provide services safely and efficiently, and reduce medically unnecessary transports to hospital emergency departments. However, the current lack of paramedics, the resulting inability to staff ambulances at the ALS level, rigorous statutory requirements, and the recent announcement of the early discontinuation of the federal Emergency Triage, Treat, and Transport (ET3) model makes implementing a community paramedic program in the current EMS System a significant challenge.



# EMS System Evolution

## Recommendations

### Transport Alternatives for Behavioral Health Patients

The County should explore appropriate non-EMS transport alternatives for behavioral health patients without medical complaints..

### Integration of a Health Information Exchange

The County should explore funding opportunities to implement an HIE. The benefit for the EMS agencies participating (and the CCEMSA and Medical Director) is that bi-directional exchange allows for the review of outcome information from patients encountered by the EMS system. EMS agencies across California and the United States are implementing connectivity with hospital EMRs and Health Information Exchanges to enable better care and coordination of patients served by the systems.

### Community Paramedic Feasibility

As staffing improves, consideration can be given to implementing a community paramedic program. Legislation was passed in 2022 that allows specially trained paramedics to transport specific patients by ambulance to authorized mental health facilities, sobering centers, and veteran's administration emergency departments. Despite these allowances, the current regulations are extensively prescriptive, and currently, there are few counties that have undertaken measures to develop policies around this model.

### On-Scene Treat and Release Models

Continue to monitor the efficacy of the current treat and refer program.

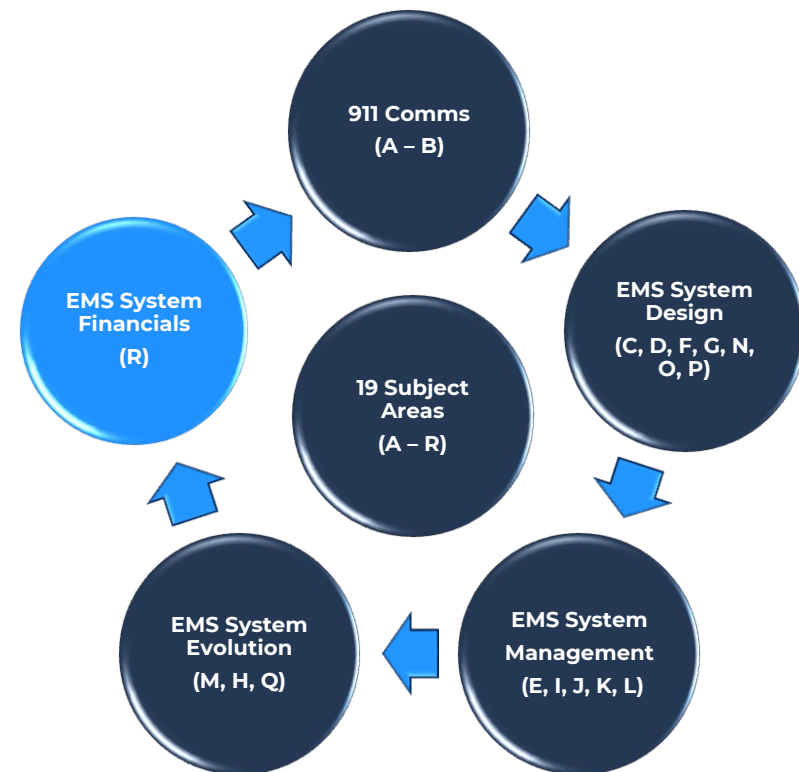
### Nurse Navigation

The CCRFCC should consider having the IAED conduct an Emergency Communication Nurse System™ (ECNS™) eligibility assessment. The IAED will provide the top ten eligible ECNS codes and the percentage of total calls they believe would be eligible for nurse navigation.

# EMS System Finances

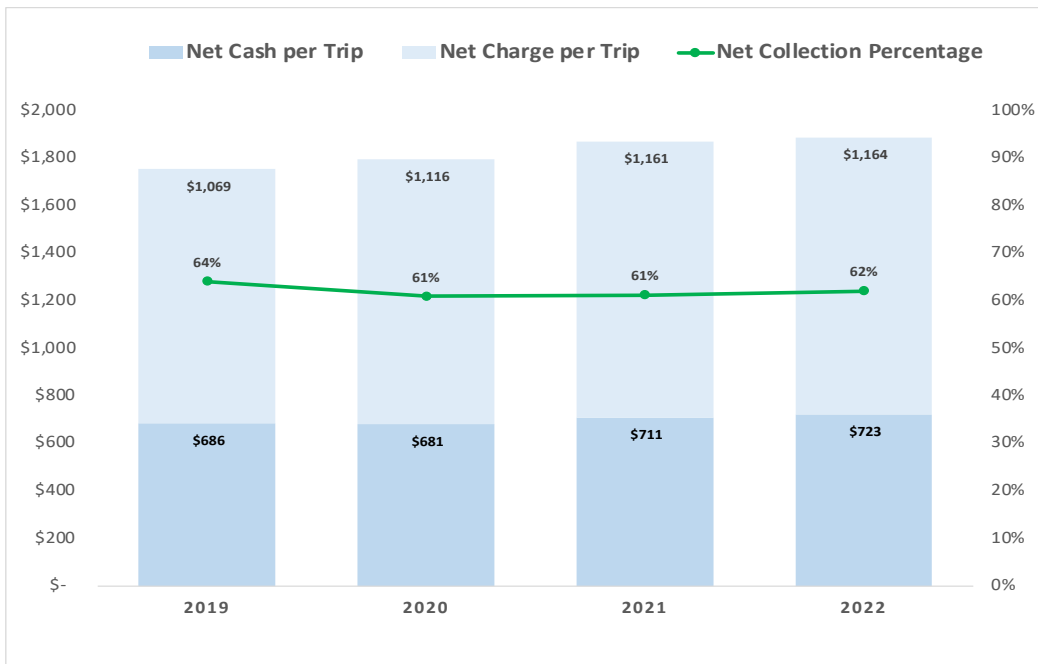
## Subject Area R.

EMS system financial analysis, including gross revenue, net revenue, payer mix, intergovernmental transfer supplemental payment programs, and EMS transport rates.



# Charge & Collections Analysis

## Gross Charges vs. Net Collections Analysis



### Findings

FITCH analyzed the gross and net charges, contractual adjustments, net collections, and net collection rate for 2019 -2022.

- The average net cash per trip was \$700.
- The average net charge per trip was \$1,128.
- The average gross charge per trip was \$2,887 (not pictured) .
- The average net collection rate was 62%.

# Transport Rate Analysis

## Ambulance Chagemaster Comparable Analysis Percentile Rank

Department	ALSE Base Rate	Percentile Rank of Field	Mileage	Percentile Rank of Field	BLSE Base Rate	Percentile Rank of Field
<b>Contra Costa County</b>	<b>\$ 2,700.95</b>	<b>50%</b>	<b>\$65.29</b>	<b>59%</b>	<b>\$2,700.95</b>	<b>81%</b>
El Dorado Co. - East	\$ 2,517.00	42%	\$63.00	50%		
San Fransico	\$ 2,405.00	25%	\$46.00	25%	\$2,405.00	<b>67%</b>
Berkley	\$ 3,331.40	92%	\$75.17	75%	\$3,331.40	<b>89%</b>
Alameda County	\$ 2,295.00	17%	\$51.78	33%	\$2,295.00	<b>56%</b>
Sacramento City	\$ 2,275.00	8%	\$41.00	17%	\$2,068.00	<b>22%</b>
Napa County	\$ 2,997.00	58%	\$97.00	100%		
Butte County	\$ 3,060.29	67%	\$69.72	67%	\$2,068.00	<b>22%</b>
Alpine County	\$ 3,191.89	83%	\$89.90	92%	\$2,263.74	<b>44%</b>
Santa Barbara	\$ 3,163.16	75%	\$61.80	42%	\$2,055.96	<b>11%</b>
Monterey County	\$ 4,128.49	100%	\$89.05	83%	\$3,990.00	<b>100%</b>
Ventura County	\$ 2,433.25	33%	\$64.75	58%	\$2,433.25	<b>78%</b>
Los Angeles County	\$ 2,710.00	50%	\$23.00	0%	\$1,687.00	

## Findings

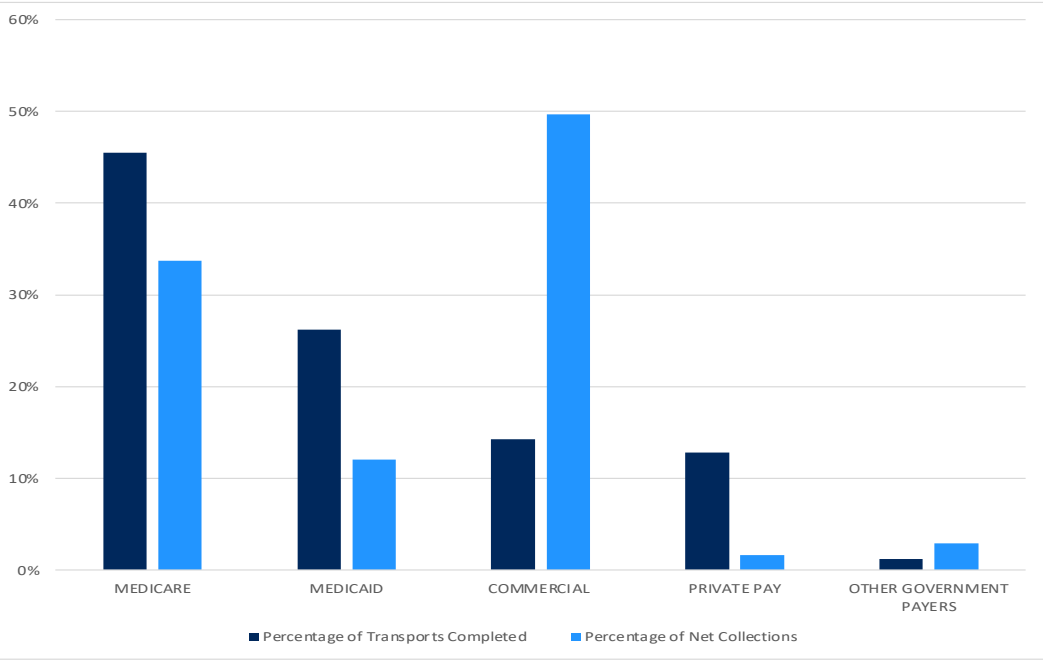
FITCH reviewed and compared Contra Costa County's EMS transport rates to twelve California municipalities with published rate data.

Overall, the current rates compare favorably when compared to other EMS transport agencies in California included in this analysis.

- The ALS Emergency rate ranked at the 50<sup>th</sup> percentile.
- The BLS emergency rate ranked at the 81<sup>st</sup> percentile.
- The Mileage rate ranked at the 59<sup>th</sup> percentile.

# Payer Mix Analysis

**Payor Mix Analysis**  
Average 2019 - 2022



### Findings

- Medicare comprises 46% of transport volume and 34% of net collections.
- Medicaid comprises 26% of transport volume and 12% of net collections.
- Commercial Insurance comprises 14% of transport volume and 50% of net collections.
- Private Pay comprises 12% of transport volume and 2% of net collections.
- Other Government comprises 1% of transport volume and 3% of net collections.

# EMS System Finances

## Strengths

### Gross & Net Charges

The gross and net charges increased year-over-year in three of the four years evaluated, with the exception being 2020, which aligns with what we have observed in comparable-sized systems due to transport volume decreases at the beginning of the pandemic. Gross and net charges averaged \$237,112 and \$92,670, respectively.

### Net Collections & Supplemental Funding

The net collections increased year-over-year in three of the four years evaluated, with the exception being 2020, which aligns with what we have observed in comparable-sized systems, averaging \$58,318. The Contractor is a participant in the supplemental payment programs for which they are eligible.

### Transport Rates

Emergency Ambulance rates are set and approved by the governing bodies of the participating fire districts in accordance with written agreements approved by the Contra Costa County Board of Supervisors. CCCEMSA monitors EMS reimbursement as the local authority regulating emergency and non-emergency care and transport services throughout the County. The rates are favorable compared to agencies we evaluated throughout the state.

### Payer Mix

The percentage of net collections that comes from commercial insurance has remained steady, averaging 50%.

### System Expenses

The subcontractor has increased the amount it spends on crew wages per unit hour every year since 2018. This is one of many contributing factors that have significantly increased operating expenses to provide emergency medical services in the past twelve months.

# EMS System Finances

## Opportunities

### Gross & Net Charges

Continue to monitor revenue aging.

### Net Collections & Supplemental Funding

The net collection percentage of 62% is favorable compared to comparable-sized EMS Systems we have evaluated. In February of 2024, the Department of Veterans Affairs (VA) amended its beneficiary travel regulations to establish a new payment methodology for ambulance transportation. The new payment methodology will apply in the absence of a contract between the VA and the ambulance transport company. With the new rule, the VA will pay the lesser of the actual charge or the amount determined by the Medicare Part B Ambulance Fee Schedule established by the Centers for Medicare and Medicaid Services.

### Transport Rates

None.

### Payer Mix

None.

### System Expenses

The unit hour rate paid to the Contractor should be reviewed on a quarterly basis and updated to ensure the EMS System is equitable.

# EMS System Finances

## Recommendations

### Gross & Net Charges

Continue to monitor contracted billing revenue cycle performance.

### Net Collections & Supplemental Funding

The Contractor should monitor changes to their reimbursement for VA patients and for any changes in government supplemental funding.

### Transport Rates

Continue to evaluate Emergency Ambulance rates on an annual basis.

### Payer Mix

None.

### System Expenses

If a Contractor-Subcontractor arrangement with a leased unit hour rate payment schedule is selected for the next contract cycle, the unit hour rate paid to the subcontractor should be reviewed on a quarterly basis to ensure expenses do not outpace collections from transport activities.





# Next Steps

- 1 Draft RFP Developed – 8/23
- 2 Draft RFP Reviewed & Approved by BOS – 3/24
- 3 Draft RFP Reviewed & Approved by EMSA – 4/24
- 4 RFP Released – 5/24
- 5 Pre-Proposer's Conference – 5/24
- 6 Q & A Period 6/24
- 7 RFP Proposal Responses Evaluated – 8/24
- 8 Contract Awarded – 9/24
- 9 Contract Negotiations – 9/24
- 10 Contract Begins – 1/26

A photograph of several business professionals in a meeting, with their hands clasped together in a supportive grip. The image is overlaid with a semi-transparent dark blue filter.

# Thank You

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FITCH wishes to thank all those who contributed to the Contra Costa County EMS System Assessment. EMS System participants spent countless hours engaging with our team, providing valuable insight into the local emergency medical services environment, and this report would not be possible without their time, energy, and thoughtful efforts.

We appreciated the collaborative spirit of everyone who participated and applaud their endeavors to improve healthcare throughout the County. We also extend our sincere gratitude to the EMS providers, firefighters, law enforcement officers, telecommunicators, and all the public safety agency support staff serving the citizens of Contra Costa County each day.