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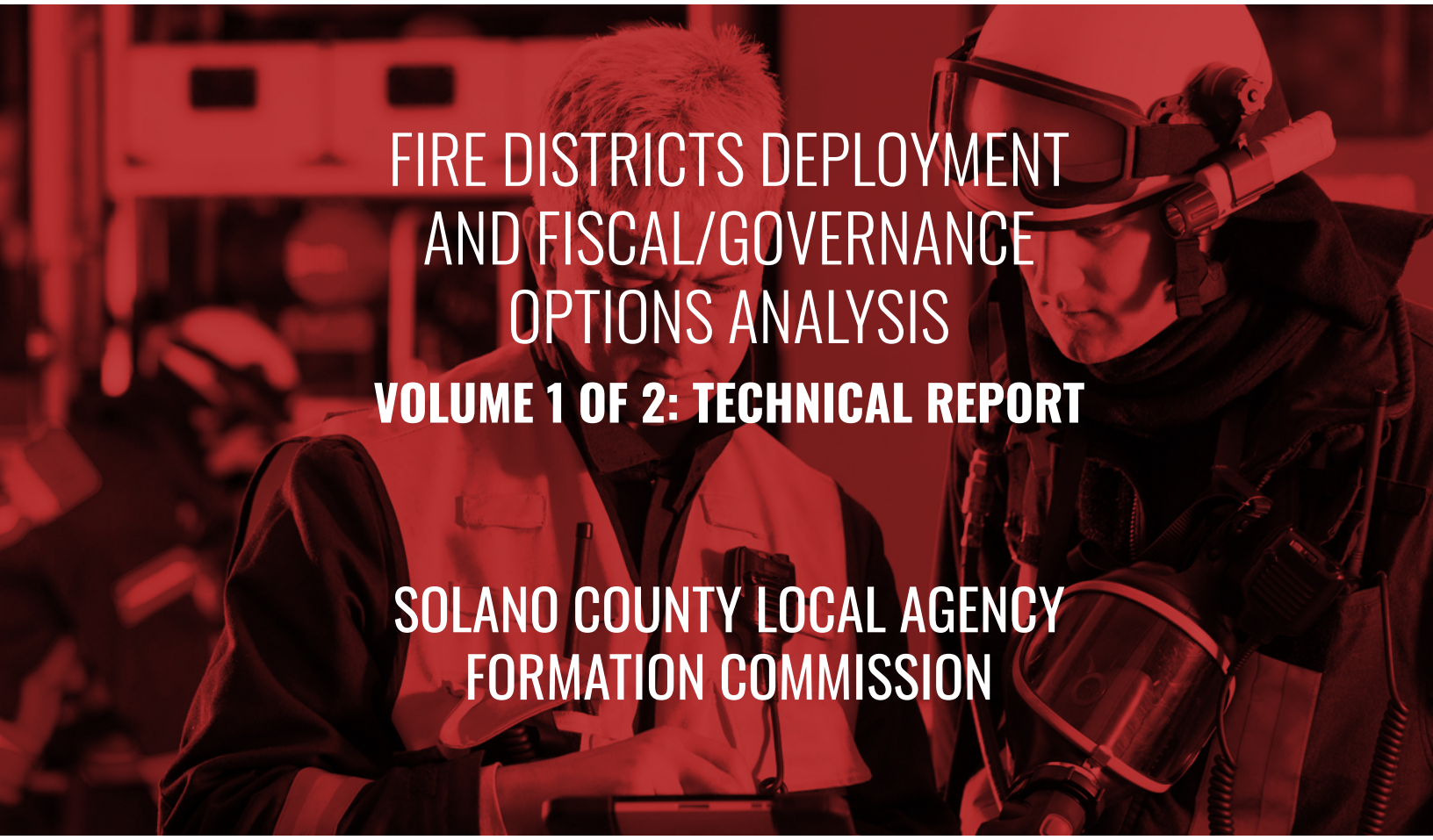

FIRE DISTRICTS DEPLOYMENT AND FISCAL/GOVERNANCE OPTIONS ANALYSIS

VOLUME 1 OF 2: TECHNICAL REPORT

SOLANO COUNTY LOCAL AGENCY FORMATION COMMISSION

OCTOBER 13, 2020

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WWW.CITYGATEASSOCIATES.COM

600 COOLIDGE DRIVE, SUITE 150
FOLSOM, CA 95630

PHONE: (916) 458-5100
FAX: (916) 983-2090

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The Solano County Local Agency Formation Commission (LAFCO) retained Citygate Associates, LLC (Citygate) to conduct a Fire Districts Deployment and Fiscal/Governance Options Analysis of the Cordelia, Montezuma, Suisun, and Vacaville Fire Protection Districts (Districts) to identify current service levels and response performance, service infrastructure condition and needs, staffing levels and needs, and current and projected near-future fiscal ability to sustain or improve services. The study also identifies and evaluates service model and governance alternatives as appropriate.

This report is presented in seven parts, including this Executive Summary, supported by Appendix A Risk Assessment and a separate map atlas **(Volume 2)**, which contains all the maps referenced throughout this report. Overall, Citygate makes 39 findings and six specific action recommendations.

Fire Service Policy Choices Framework

In the United States, there are no Federal or State regulations requiring a specific minimum level of fire services. Each community, through the public policy process, is expected to understand the local fire and non-fire risks and its desire and ability to pay and then choose its level of fire services. *If* fire services are provided at all, Federal and State regulations specify how they must be safely provided to protect the public and the personnel providing the services. Given this, the overarching challenge in Solano County is to design an unincorporated rural fire service system with the fiscal capacity to provide appropriate staffing, training, and equipment for a safe and effective fire/medical response force. The fiscal challenge is made more severe given the decades of property tax regulations because of Proposition 13 that limit the ability of fire districts to reorganize without unduly changing their property tax rates.

Deployment Summary

The four districts serve a suburban to rural population over a predominantly agriculture and rural residential land-use pattern and deploy the appropriate types of response apparatus to protect against the hazards likely to impact their service areas.

Fire service deployment, simple summarized, is about the *speed* and *weight* of response. *Speed* refers to initial response (first unit) of all-risk resources (engines, ladder trucks, rescues, and wildland firefighting units) strategically deployed across a jurisdiction for response to emergencies within a time interval to achieve desired outcomes. *Weight* refers to multiple-unit (Effective Response Force or ERF) responses to more serious emergencies, such as building fires, multiple-patient medical emergencies, vehicle collisions with extrication required, or technical rescue

incidents. In these situations, a sufficient number of firefighters must be assembled within a time interval to safely control the emergency and prevent it from escalating into an even more serious event.

If desired outcomes include limiting building fire damage to only the affected building, minimizing the spread of a wildland fire, and minimizing permanent impairment resulting from a medical emergency, then the Districts will need response coverage consistent with a Citygate- and NFPA-recommended best practice goal in **rural** areas of first-due-unit arrival within 14:00 minutes from crew notification at 80 percent or better reliability, and multiple-unit arrival at serious incidents within 19:00 minutes from dispatch notification at 80 percent or better reliability.

All four districts stive to maintain varying levels of 24-hour, seven-day-per-week emergency response capability and capacity with a fiscally forced combination of paid full-time, paid part-time, and volunteer personnel. All fire districts in Solano County and beyond are fragile in that there are three key challenges to the provision of *reliable and effective* fire services.

Challenge #1 Revenue Limits and the Increased Cost of Fire Services

The rural districts existing on an old, post-Proposition 13 tax rate cannot provide increased in-station staffing or afford large capital projects, such as station replacements. The safety, equipment, and personnel costs in the fire service have increased by largely double the inflation rate for the last two decades. The older tax rates were not designed for modern fire services, or the increased emergency medical services (EMS) and wildfire demands.

Cordelia ire rotection istrict's FPD) fiscal health is *poor* and *deteriorating*, with a projected *increasing structural budget deficit* each fiscal year through FY 24/25, significant capital renewal/replacement needs, and a declining reserve fund balance likely exhausted within the next several years without substantial additional revenue.

Montezuma, Suisun, and Vacaville FPDs are *fiscally viable at the moment but cannot likely afford more in-station staffing.* They can only afford modest capital renewal/replacement as needed; not entire fire station replacements eventually needed.

Challenge #2 Maintaining Volunteer and Part-Time Fire Services

Table 9, here repeated, summarizes the daily paid and volunteer staffing by district.

Table 9 (Repeated)—Daily Deployment Staffing Summary

Station	Response Staffing		
	Paid		Volunteer
	Number	Hours	
		24 7	
		8 00 5 00 . .	
		8 00 4 30 . .	
		9 00 5 00 . . .	
		9 00 5 00 . .	
		5 00 9 00 . .	

A quantity of 134 volunteers sounds like a lot, but is only an average of 13 per company, meaning at some hours of a day a district is fortunate to get two to three volunteers per unit to immediately respond. Volunteer firefighting recruitment and retention is a nationwide strain, if not an outright crisis, due to more two-income families and less time to volunteer.

The fire service has adopted additional missions, including large-scale wildland firefighting, emergency medical services, hazardous materials response, and technical rescue. This dramatically increased the legally mandated training requirements, causing many volunteers to drop out as the time commitment is often unbearable. Under California safety laws, a firefighter is a firefighter, and there is not a lesser standard for training and equipping volunteer, paid-on-call, or part-time firefighters.

Another result of mission expansion impacting volunteerism is the resultant significant increase in emergency incidents. Where smaller or rural jurisdictions previously had one or two calls per week, service demand has increased to an average of more than one call per day in many locations.

n City ate's opinion a four istricts have are y the minimum number of personnel to provide response services from a ***staffed*** fire station 24 hours per day, seven days per week, as well as adequate command and quality control for training, safety, and fiscal responsibilities.

As separate entities, the Districts are very exposed to single points of failure if they were to lose a few career personnel or highly responsive volunteers hey ac "*strength in numbers"* to be resilient and have redundancy.

Challenge #3 Geography of the Coverage Area in Solano County

The large size of the rural road network means that when a unit arrives, the problem to solve is much larger and more dangerous to the firefighters and the public they serve. *Boots on the ground* deliver customer service, not fire trucks. The very limited one-, two-, or maybe three-person staffing backed up by volunteers that take longer to respond means the overall system will likely be unable to slow or control serious emergencies.

IMPROVEMENTS NEEDED / CONCLUSION

The Districts must fix their fragile personnel counts and 24-hour-per-day, seven-day-per-week in-station staffing. In the current wildfire and building fire environment, incidents cannot wait for a minimal force to respond from home or business. Operating and commanding a district is more than a one-person job and the Districts are very exposed to failure as stand-alone agencies.

The Districts, working together in a cost-effective merger, must show the taxpayer they have done what they can to gain economies of scale and to share the personnel available. n City ate's opinion, the improved provision of unincorporated fire services must include fewer agencies to reduce overhead expense and to share limited numbers of volunteer and part-time personnel.

After this, the Districts can make the case to the taxpayers to provide a minimum of two personnel per unit, 24 hours per day, seven days per week, backed up with volunteers or part-time firefighters. The two personnel would ensure a certified driver-operator for the engine and a company officer for command decisions.

Shared fire services can begin incrementally with contracts for service or a limited Joint Powers Authority (JPA) for collective policy oversight by elected officials and as a committee to work on the next steps. The Board of Supervisors and LAFCO should establish a task force to identify a merged district model to provide *sustainable, long-term funding* for the delivery of adequate rural fire services.

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The Solano County Local Agency Formation Commission (LAFCO) retained Citygate Associates, LLC (Citygate) to conduct a Fire Districts Deployment and Fiscal/Governance Options Analysis of the Cordelia, Montezuma, Suisun, and Vacaville Fire Protection Districts (Districts) to identify current service levels and response performance, service infrastructure condition and needs, staffing levels and needs, and current and projected near-future fiscal ability to sustain or improve services. The study also identifies and evaluates service and governance alternatives as appropriate.

This report is presented in seven parts covering fire service policy choices and deployment, fiscal, service model, and governance observations and challenges facing rural fire service delivery in Solano County (County), including an overall summary. The findings and recommendations can e use to strate ica y ui e the CO's an istricts' efforts to provide sustainable fire services.

City ate's scope of or an correspon in or an ere eve ope consistent ith City ate's ro ect eam mem ers' e perience in fire a ministration an ep oyment. Citygate utilizes various industry-recognized best practice guidelines and criteria in the field of deployment analysis, including National Fire Protection Association (NFPA) standards, the self-assessment criteria of the Commission on Fire Accreditation International (CFAI), Insurance Services Office (ISO) schedules, and Federal and State mandates relative to emergency services.

1.1 REPORT ORGANIZATION

This report is organized into the following sections. **Volume 2** (Map Atlas) is separately bound.

Executive Summary summarizes fire service policy choices, key challenges facing rural fire service delivery in the County, and key findings and recommendations that can be used to strategically guide the LAFCO's an istricts' efforts.

Section 1—Introduction and Background describes City ate's pro ect approach an methodology, scope of work, and overview of the County and Districts.

Section 2—Deployment Assessment describes in detail our analysis and findings relative to the istricts' current ep oyment an service e ivery.

Section 3—Physical Assets Assessment descri es City ate's assessment of the con ition of each district's physical facilities and vehicles.

Section 4—Fiscal Assessment describes in detail our assessment of each district's fisca health and projected sustainability over the near term.

Section 5—Service Model and Governance Alternatives describes potential alternative service delivery models and governance options to provide long-term sustainable, efficient, and effective rural fire services.

Section 6—Findings and Recommendations lists all the findings and recommendations contained throughout this report in sequential order.

1.1.1 Goals of the Report

This report cites findings and makes recommendations, as appropriate, relative to each finding. Findings and recommendations throughout this report are sequentially numbered. This document provides technical information about how fire services are provided and legally regulated and the way each district currently operates and provides services. This information is presented in the form of recommendations and policy choices for consideration by LAFCO and each district.

The result is a solid technical foundation upon which to understand the advantages and disadvantages of the choices facing County and District leadership regarding current and alternative service models to facilitate an appropriate level of fiscally sustainable fire services.

1.1.2 Limitations of Report

While this report and technical explanations can provide a framework for the discussion of services, neither this report nor the Citygate team can make the final decisions, nor can they cost out every possible alternative in detail. Once final strategic choices are considered and receive appropriate policy approval, County and District staff can conduct any final costing and fiscal analyses as typically completed in their normal operating and capital budget preparation cycle.

1.2 Project Approach and Scope of Work

1.2.1 Project Approach and Methodology

Citygate utilized multiple sources to gather, understand, and model information about each district, beginning with our request and review of relevant background data and information to better understand current costs, service levels, and history of service level decisions, including any prior studies.

Citygate subsequently reviewed demographic information about each district and the potential for future growth and development. Citygate also obtained map and response data from which to model current deployment expectations. Once an understanding of each district's service area and their fire and non-fire risks was gained, the Citygate team then developed a model of fire services that was tested against the travel time mapping and prior response data to ensure an appropriate fit. Citygate also evaluated future growth and service demand for each district, as well as prior, current, and projected near-future revenues and expenditures to model overall fiscal health and

sustainability. Citygate further identified and evaluated potential alternative service and governance models, particularly where we identified a current or near-future fiscal concern, resulting in a proposed approach to both address current and longer-term service needs while meeting reasonable community expectations and fiscal realities.

City ate's project approach and scope of work for this study included:

- Reviewing information provided by LAFCO and each district
- Interviewing LAFCO and each district's e ecutive mana ement staff
- Utilizing FireView , a geographic mapping software program, to model fire station travel time coverage
- Reviewing prior service demand and response performance
- Identifying and evaluating future population and related development growth for each district
- Projecting future service demand
- Reviewing historical revenues, expenditures, and fiscal reserves
- Evaluating service infrastructure condition and needs
- Evaluating overall service delivery, costs, and projected future fiscal health and sustainability by district
- Identifying and evaluating potential alternate service delivery models
- Recommending appropriate risk-specific response performance goals
- Identifying a long-term strategy, including incremental short- and mid-term goals, to achieve desired service objectives
- Utilizing NFPA 1201 Standard for Providing Emergency Services to the Public, and other NFPA, CFAI, and Citygate-recommended goals and recommendations as the basis for evaluating current service delivery.

1.3 SOLANO COUNTY OVERVIEW

Created in 1850, Solano County is one of the original California counties. Located 60 miles northeast of San Francisco along Interstate 80, it is the northernmost county comprising the San Francisco Bay Area region. The County encompasses 910 square miles with a population of

446,000.[1] Approximately 95 percent of the population resides in the County's seven cities ith the remaining 5 percent, or approximately 22,000 people, residing in the unincorporated areas of the County comprising 494,000 acres, or 85 percent of the total land area. County General Plan land use policies have historically required any development water and sewer service to be incorporated within one of the County's cities. In addition, approximately 9 percent of the County area is water, with marshland comprising an additional 11 percent and watershed an additional 6 percent. Land use within the unincorporated areas of the County is predominantly agriculture (56 percent), followed by residential (1.2 percent) and commercial (0.1 percent).[2]

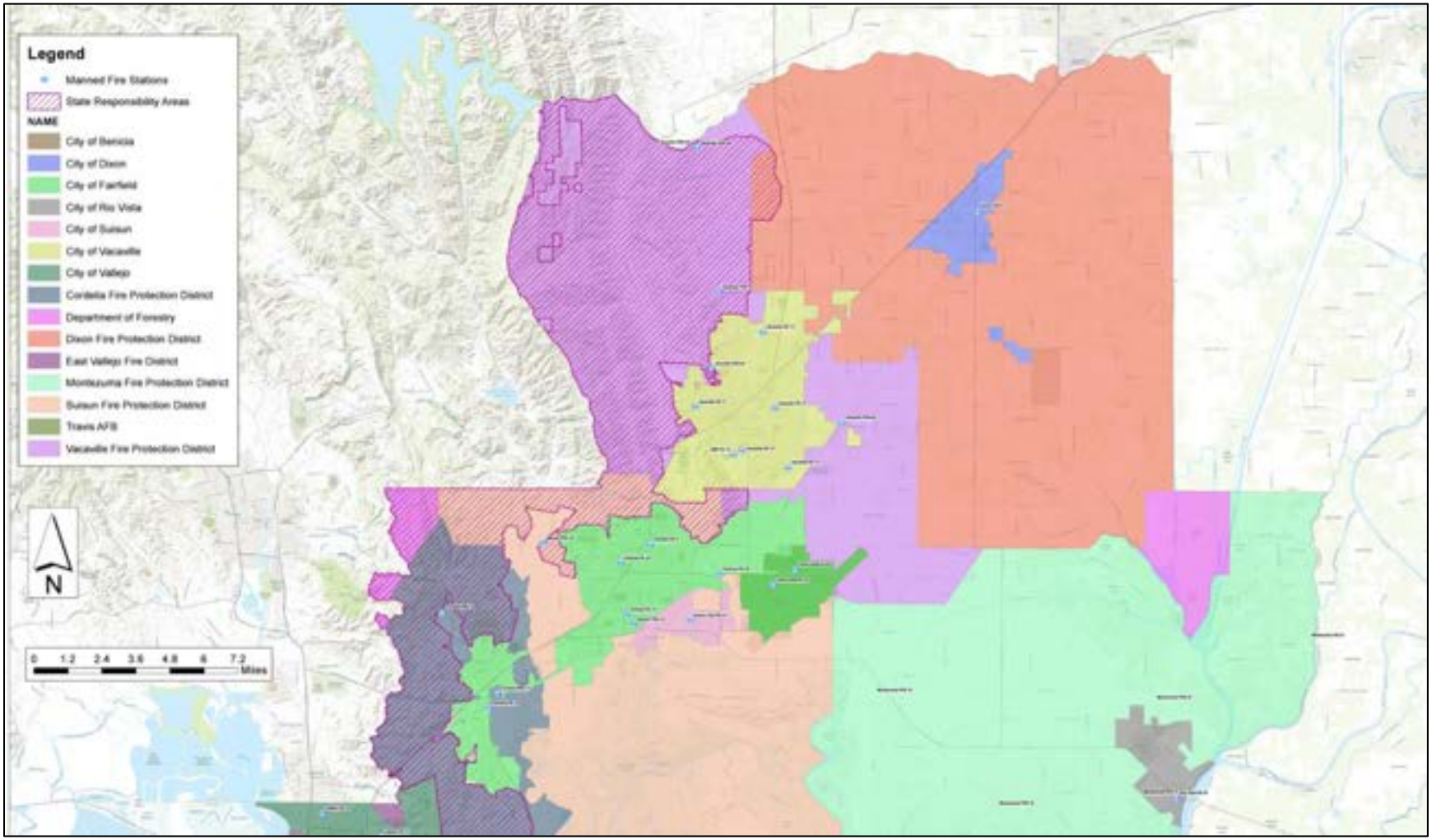
1.4 FIRE SERVICES OVERVIEW

Fire protection and first responder emergency medical services in the unincorporated areas of the County are provided by six FPDs and the California Department of Forestry and Fire Protection (CAL FIRE), as illustrated in the following figure and Map #1 in **Volume 2** (Map Atlas).

[1] Source: U.S. Census Bureau American Community Survey Estimate.

[2] Reference: Solano County General Plan, Chapter 2, Land Use.

Figure 1—Solano County Fire Districts



The scope of this study focuses on the following four fire districts:

- Cordelia Fire Protection District
- Montezuma Fire Protection District
- Suisun Fire Protection District
- Vacaville Fire Protection District

1.4.1 Pressures on Volunteer Fire Departments

The Districts all use forms of volunteer, paid-on-call, and part-time firefighters. Over the last two decades, there have arisen severe challenges to recruiting, training, retaining, and deploying volunteer firefighters. The solution to the issues faced by the Districts cannot be solved with a simplistic, "fin more vo unteers so ution

Predominantly volunteer-based fire departments are under great pressure across the nation to maintain an adequate membership roster. The reasons for this are not unique to any one type of community:

- Economic pressures result in more two-income families and less time to volunteer.
- In a commuter economy, more jobs are clustered in metropolitan and dense suburban areas. Communities increasingly contain residents who work elsewhere, and many who might consider volunteering are simply too busy.
- Due to the growth in society of complex systems and technology, the fire service has adopted additional missions, including large-scale wildland firefighting, emergency medical services, hazardous materials response, and technical rescue. This dramatically increased the legally mandated training requirements, causing many volunteers to drop out as the time commitment is often unbearable. Under California safety laws, a firefighter is a firefighter, and there is not a lesser standard for training and equipping volunteer, paid-on-call, or part-time firefighters.
- Active firefighting (not just driving or supportive roles) requires significant physical fitness and great health. As the populations age in some areas and young adults move away for employment, it becomes difficult to find volunteers of middle age or older whom have the time and ability to maintain *excellent* fitness.
- Another result of mission expansion impacting volunteerism is the resultant significant increase in emergency incidents. Where smaller or rural jurisdictions previously had one or two calls per week, service demand has increased to an average of more than one call per day in many locations.

These changes, coupled with other factors, have resulted in volunteer firefighter programs drying up or, in many cases, struggling to maintain an adequate number of members. Additional training and response requirements mean a significant time commitment for "true vo unteers that are serving for love of the community and to give something back. Most departments feel that it takes 100 120 hours of training per year to meet minimum safety requirements, and this time is expended before a volunteer responds to a single incident.

As a result, fire service volunteer programs across the country are being challenged to adapt to different service models, including using a combination of paid full-time and part-time staff to provide adequate response capacity when volunteer personnel are unavailable or where there is an insufficient number of volunteers.

1.4.2 Cordelia Fire Protection District Overview

Formed in 1918 as an independent special district, the Cordelia FPD provides fire suppression, pre-hospital emergency medical, initial hazardous materials and technical rescue, fire prevention, and related services under authority of California Health and Safety Code Section 13800 et seq. (Fire Protection District Law of 1987) to a resident population of approximately 6,500 over 56 square miles. Governed by a five-member Board of Directors elected at large to staggered four-year terms, the District provides services from two fire station facilities with a full-time paid Fire Chief, volunteer Assistant Chief, three full-time paid career response personnel, and part-time/intermittent non-resident response personnel paid a daily shift stipend as described in Section 1.5. The istrict's Sphere of nf uence SO is coterminous with its current boundaries.

1.4.3 Montezuma Fire Protection District Overview

The Montezuma FPD was formed in 1928 and provides fire suppression, pre-hospital emergency medical, initial hazardous materials and technical rescue, fire prevention, and related services under authority of California Health and Safety Code Section 13800 et seq. (Fire Protection District Law of 1987) to a resident population of approximately 1,200 over 325 square miles. Governed by a five-member Board of Directors appointed by Solano County Supervisorial District 5 to staggered four-year terms, the District provides services from two fire station facilities with a combination of paid and volunteer personnel as described in Section 1.5. The SOI is coterminous with its current boundaries.

1.4.4 Suisun Fire Protection District Overview

Formed in 1935 as an independent special district, the Suisun FPD provides fire suppression, pre-hospital emergency medical, initial hazardous materials and technical rescue, fire prevention, and related services under authority of California Health and Safety Code Section 13800 et seq. (Fire Protection District Law of 1987) to a resident population of approximately 2,700 over 140 square miles. Governed by a five-member Board of Directors appointed by Solano County Supervisorial

Districts 2 and 3 to staggered four-year terms, the District provides services from two fire station facilities with a combination of paid and volunteer personnel as described in Section 1.5. The istrict's SOI is coterminous with its current boundaries.

1.4.5 Vacaville Fire Protection District Overview

The Vacaville FPD was formed in 1946 and consolidated with the Elmira FPD in 1986. The District provides fire suppression, pre-hospital emergency medical, initial hazardous materials and technical rescue, fire prevention, and related services under authority of California Health and Safety Code Section 13800 et seq. (Fire Protection District Law of 1987) to a resident population of approximately 6,200 over 135 square miles. Governed by a five-member Board of Directors appointed by Solano County Supervisorial Districts 4 and 5 to staggered four-year terms, the District provides services from four fire station facilities with a combination of paid and volunteer personnel as described in Section 1.5 he istrict's SOI is coterminous with its current boundaries.

1.5 Fire District Facilities, Response Resources, Staffing, and Service Capacity

1.5.1 Facilities

The following four tables summarize fire station locations and assigned response resources by district.

Table 1—Facilities and Response Resources Cordelia FPD

Station Number	Address	Response Resources
	1624	29 529 231
	2155	31 531 31 31 3100 3101 29

Table 2—Facilities and Response Resources Montezuma FPD

Station Number	Address	Response Resources
51	21 N. 4th Street Rio Vista	Engine 51 Engine 251 Engine 451 Engine 551 Water Tender 51 Utility 51 Utility 53 Utility 54
52	2151 Collinsville Road Birds Landing	Engine 52 Engine 552 Engine 562 Utility 52

Table 3—Facilities and Response Resources Suisun FPD

Station Number	Address	Response Resources
	4965	32 532 32 233
	445	33 333 533 534 33 33 33 33 33 333

Table 4—Facilities and Response Resources Vacaville FPD

Station Number	Address	Response Resources
	420	64 264 64 64 64 264 64 64 264 364 464 6400 6403 6404 6407 6409
	6080	65 265 65 65 65
	4315	67 267 67 67
	4015	68 68 68 68

1.5.2 Staffing

The following table summarizes the total paid and volunteer staffing by district. As discussed in Section 2.6, volunteer agencies typically struggle to get adequate staffing 24 hours per day, seven

days per week to all emergencies. A quantity of 134 volunteers sounds like a lot, but is only an average of 13 per company, meaning at some hours of a day a district is fortunate to get two to three volunteers per unit to immediately respond.

Table 5—Total District Staffing Summary

District	Paid Admin.	Volunteer Admin. Support	Full-Time Paid Response	Part-Time Resident Firefighter Response	Volunteer Response	Total Personnel
	0	2	4	16	0	
	1	0	4	0	18	
	1	4	1	0	32	
	3.5	0	3	0	84	

1.5.3 Service Capacity

All response personnel are trained to either the First Responder Medical or Emergency Medical Technician (EMT) level, capable of providing Basic Life Support (BLS) pre-hospital emergency medical care, or EMT-Paramedic (Paramedic) level, capable of providing Advanced Life Support (ALS) pre-hospital emergency medical care. Ground Paramedic ambulance service is provided by Medic Ambulance Service, a private-sector ambulance provider operating under an exclusive operating area contract administered by the Solano Emergency Medical Services Cooperative (SEMSC).

Response personnel are further trained to the U.S. Department of Transportation Hazardous Material First Responder Awareness level to provide initial hazardous material incident assessment and hazard isolation and are also trained to the Confined Space Awareness level. Some district personnel may also be trained to provide other specialized services such as low-angle/high/angle rope rescue, swift-water rescue, etc.

Finding #1: Each district provides *basic and limited* advanced emergency response services relative to fire, medical, hazardous materials, and technical rescue risks.

1.6 FUTURE GROWTH AND SERVICE DEMAND

1.6.1 Future Growth

With County land use strategies and policies promoting city-centered development, future growth within the Districts will be limited to predominantly agriculture and rural residential land uses at a density of one dwelling unit per 2.5 or more acres.[3] As such, Citygate projects minimal population growth within the Districts over the next five to ten years.

1.6.2 Future Service Demand

Given minimal projected future population growth, Citygate projects future service demand to increase annually from about 1 percent in Suisun FPD to about 9 percent in Vacaville FPD consistent with recent annual service demand growth as summarized in the following table.

Table 6—Recent Annual Service Demand Summary

Fire District	Calls for Service			Total	Average Annual Change	FY 17/18 Incidents per Day
	FY 15/16	FY 16/17	FY 17/18			
	771	773	805		2.20%	2.2
	248	326	355		21.57%	.97
	443	442	449		0.68%	1.2
	534	513	601		6.27%	1.6

Finding #2: Minimal population growth is projected in the Districts over the next five to ten years.

Finding #3: Future annual service demand is projected to increase from 1 percent to 9 percent by district consistent with recent annual service demand change.

[3] 2008 Solano County General Plan, Chapter 2.

This section provides a detailed analysis of the istricts' current ability to deploy and mitigate hazards within their service areas. The response analysis uses prior response statistics and geographic mapping to help the Districts and the communities to visualize what the current response systems can and cannot deliver.

2.1 DEPLOYMENT ASSESSMENT METHODOLOGY

The core methodology used by Citygate in the scope of its deployment analysis work is *Standards of Cover* (SOC), 5th and 6th editions, which is a systems-based approach to fire department deployment published by the CFAI. This approach uses local risk and demographics to determine the eve of protection est fittin a community's nee s

The SOC method evaluates deployment as part of a fire a ency's se f-assessment process. This approach uses risk and community expectations on outcomes to help elected officials make informed decisions on fire and emergency medical services deployment levels. Citygate has adopted this multiple-part systems approach as a comprehensive tool to evaluate fire station locations. Depending on the needs of the study, the depth of the components may vary.

Such a systems approach to deployment, rather than a one-size-fits-all prescriptive formula, allows for local determination. In this comprehensive approach, each agency can match local needs (risks and expectations) with the costs of various levels of service. In an informed public policy debate, a overnin oar "purchases the fire an emer ency me ical service levels the community needs and can afford.

While working with multiple components to conduct a deployment analysis is admittedly more work, it yields a much better result than using only a singular component. For instance, if only travel time is considered, and frequency of multiple calls is not, the analysis could miss over-worked companies. If a risk assessment for deployment is not considered, and deployment is based only on travel time, a community could under-deploy to incidents.

The following table describes the six elements of the SOC process utilized for this study.

Table 7—Standards of Coverage Process Elements

SOC Element		Description
1		
2		
3		
4		
5		
6		

Source: CFAI Standards of Cover, 5th Edition

Fire service deployment, simply summarized, is about the *speed* and *weight* of response. *Speed* refers to initial response (first-due) of all-risk intervention resources (engines, ladder trucks, rescues, and wildland firefighting units) strategically deployed across a jurisdiction for response to emergencies within a time interval sufficient to control routine to moderate emergencies without the incident escalating to greater size or severity. *Weight* refers to multiple-unit responses for more serious emergencies, such as building fires, multiple-patient medical emergencies, vehicle collisions with extrication required, or technical rescue incidents. In these situations, a sufficient number of firefighters must be assembled within a time interval to safely control the emergency and prevent it from escalating into an even more serious event. The following table illustrates this deployment paradigm.

Table 8—Fire Service Deployment Paradigm

Element	Description	Purpose
***Speed** of Response*		
***Weight** of Response*		

Thus, smaller fires and less complex emergencies require a single-unit or two-unit response (engine and/or specialty resource) within a relatively short response time. Larger or more complex incidents require more units and personnel to control. In either case, if the crews arrive too late or the total number of personnel is too few for the emergency, they are drawn into an escalating and more dangerous situation. The science of fire crew deployment is to spread crews out across a community or jurisdiction for quick response to keep emergencies small with positive outcomes, without spreading resources so far apart that they cannot assemble quickly enough to effectively control more serious emergencies.

2.2 CURRENT DEPLOYMENT

EXISTING DEPLOYMENT MODEL

Nationally recognized standards and best practices suggest using several incremental measurements to define response time. Ideally, the clock start time is when the 9-1-1 dispatcher receives the emergency call. In some cases, the call must then be transferred to a separate fire dispatch center. In this setting, the response time clock starts when the fire center receives the 9-1-1 call into its computer-aided dispatch (CAD) system. Response time increments include dispatch center call processing, crew alerting and response unit boarding (commonly called turnout time), and actual driving (travel) time.

NFPA Standard 1720, a recommended deployment standard for *substantially* volunteer-staffed fire departments in rural areas, is the appropriate best practice for the Solano County departments in this stu y he efinition of "rura in merica can of course vary from su ur an c usters in unincorporated Solano to rural Iowa with widely spaced large farms. However, the constant factor is that the agencies are substantially staffed by volunteer, paid-on-call, or part-time firefighters.

NFPA 1720 recommends initial (first-due) intervention units arrive within 14:00 minutes of receipt of the dispatch notification at 80 percent or better reliability.[4] Although 9-1-1 dispatch center call processing time is *not* included in this deployment standard, the most recent published NFPA best practices have increased the dispatch processing time to 1:30 minutes and, if there are language barriers, 2:00 minutes. For crew turnout time, Citygate has long recommended 2:00 minutes as a realistic goal for agencies with on-duty staffing, leaving 12:00 minutes travel time to meet the 14:00-minute NFPA 1720 response goal if dispatch processing time is not included, and 10:30 minutes travel time if it is included.

Finding #4:	The National Fire Protection Association (NFPA) Standard on Volunteer Fire Departments should be the minimum deployment goal measures for which the Districts should strive.

2.2.1 Current Deployment Model

Resources and Staffing

Cordelia FPD

One engine is staffed daily with two to four on-duty personnel, including one to two full-time paid personnel and one to two part-time resident firefighters. The Fire Chief and Assistant Fire Chief are also available from Station 31 during normal weekday business hours. Part-time resident firefighters are paid a daily stipend of $25 to work a 24-hour shift. A volunteer chief officer is available on call 24 hours per day for incident command.

Montezuma FPD

One engine is staffed from 8:00 a.m. to 5:00 p.m. Monday through Friday at Station 51 with a Captain and Engineer. The Fire Chief and Assistant Fire Chief are also available from Station 51 during those hours. Station 52 is staffed as needed by on-call volunteer personnel. Additional response staffing, including after hours and weekends, is provided by an on-call duty chief and a cadre of 18 on-call volunteer firefighters.

Suisun FPD

One engine is staffed from 8:00 a.m. to 4:30 p.m. Monday through Friday at Station 33 with the Fire Chief and a full-time paid Firefighter. Station 32 is staffed as needed by on-call volunteer

[4] NFPA 1720 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments (2014 Edition).

personnel. Additional response staffing, including after hours and weekends, is provided by an on-call duty chief and a cadre of 32 on-call volunteer firefighters.

Vacaville FPD

One engine is staffed from 8:00 a.m. to 4:00 p.m. daily at Station 64 with one full-time paid Captain or Engineer. In addition, the Fire Chief and full-time Battalion Chief are available from Station 64 from 9:00 a.m. to 5:00 p.m. Monday through Friday. Stations 65, 67, and 68 are staffed as needed by on-call volunteer personnel. Additional response staffing, including after hours and weekends, is provided by an on-call duty chief and a total of 84 on-call volunteer firefighters.

Table 9 summarizes each district's current ep oyment an staffin While paid on-duty staffing is available as shown, volunteer response is available 24 hours per day, seven days per week.

Table 9—Daily Deployment Staffing Summary

Station	Response Staffing		
	Paid		Volunteer
	Number	Hours	
		24 7	
		8 00 5 00 . .	
		8 00 4 30 . .	
		9 00 5 00 . . .	
		9 00 5 00 . .	
		5 00 9 00 . .	

Finding #5:	n City ate's opinion a four istricts have are y the minimum number of personnel to provide response services from a *staffed* fire station 24 hours per day, seven days per week, as well as adequate command and quality control for training, safety, and fiscal responsibilities.
Finding #6:	Cordelia, Montezuma, and Suisun have *insufficient* daily staffing capacity 24 hours per day, seven days per week, for anything other than a single-unit response to a minor emergency without assistance from another agency.

Response Plan

Each district deploys the appropriate types and numbers of resources depending on the type of incident, except for Cordelia FPD, which at the time of this assessment had staffing capacity for only one response unit and one chief officer.

2.3 RISK ASSESSMENT

RISK ASSESSMENT

Another element of the deployment assessment process is a risk assessment. Within the context of a deployment study, the objectives of a risk assessment are to:

- Identify the values at risk to be protected within the community or service area.
- Identify the specific hazards with the potential to adversely impact the community or service area.
- Quantify the overall risk associated with each hazard.
- Establish a foundation for current/future deployment decisions and risk-reduction/hazard mitigation planning and evaluation.

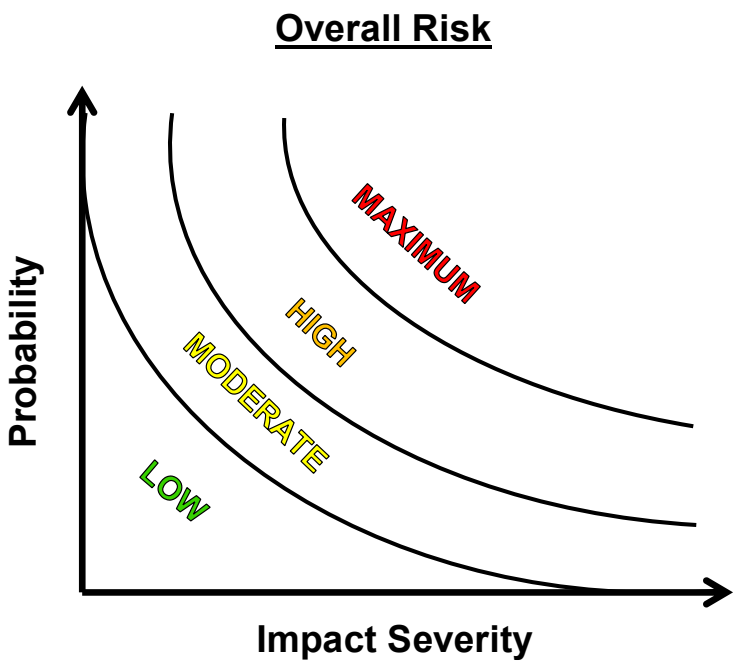
A *hazard* is broadly defined as a situation or condition that can cause or contribute to harm. Examples include fire, medical emergency, vehicle collision, earthquake, flood, etc. *Risk* is broadly defined as the *probability of hazard occurrence* in combination with the *likely severity of resultant impacts* to people, property, and the community as a whole.

2.3.1 Risk Assessment Methodology

The methodology employed by Citygate to assess community risk as an integral element of an SOC study incorporates the following elements:

- Identification of geographic planning sub-zones (risk zones) appropriate to the community or jurisdiction
- Identification and quantification (to the extent data is available) of the specific values at risk to various hazards within the community or service area
- Identification of the fire and non-fire hazards to be evaluated
- Determination of the probability of occurrence for each hazard
- Identification and evaluation of relevant impact severity factors for each hazard by planning zone using agency/jurisdiction-specific data and information
- Quantification of overall risk for each hazard based on probability of occurrence in combination with probable impact severity

Figure 2—Overall Risk



2.3.2 Values at Risk to Be Protected

Broadly defined, *values at risk* are those tangibles of significant importance or value to the community or jurisdiction that are potentially at risk of harm or damage from a hazard occurrence. Values at risk typically include people, critical facilities/infrastructure, buildings, and key economic, cultural, historic, and/or natural resources.

People

Residents, employees, visitors, and travelers through a community or jurisdiction are vulnerable to harm from a hazard occurrence. Particularly vulnerable are specific at-risk populations, including those unable to care for themselves or self-evacuate in the event of an emergency. At-risk populations typically include children less than 10 years of age, the elderly, and people housed in institutional settings. Key demographic data for Solano County includes the following:[5]

- Slightly more than 24 percent of the population is under 10 years or over 65 years of age
- The County's popu ation is White (37 percent), followed by Hispanic/Latino (27 percent), Asian (15 percent), Black / African American (13 percent), and other ethnicities (8 percent)
- Of the population over 24 years of age, nearly 89 percent has earned at least a high school diploma or equivalent
- Of the population over 24 years of age, 27 percent has an undergraduate, graduate, or professional degree
- Nearly 94 percent of the population 15 years of age or older is in the workforce; of those, 6.1 percent are unemployed[6]
- The population below the Federal poverty level is 7.3 percent
- Only 4.4 percent of the population does not have health insurance coverage.

Buildings

Unincorporated Solano County consists of predominantly single-family dwellings and agriculture-related buildings. In addition, Solano Community College is a significant value to be protected in Cordelia FPD.

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[5] Source: ESRI Community Profile Solano County (2019).

[6] Prior to the COVID-19 Pandemic.

2.3.3 Hazard Identification

Citygate utilizes prior risk studies where available, fire and non-fire hazards as identified by the CFAI, and data and information specific to the agency/jurisdiction to identify the hazards to be evaluated for this report.

Following an evaluation of the hazards identified in the 2012 Solano County Local Hazard Mitigation Plan and the fire and non-fire hazards as identified by the CFAI as they relate to services provided by the Districts, Citygate evaluated the following three hazards for this risk assessment:

- Building Fire
- Vegetation/Wildland Fire
- Medical Emergency

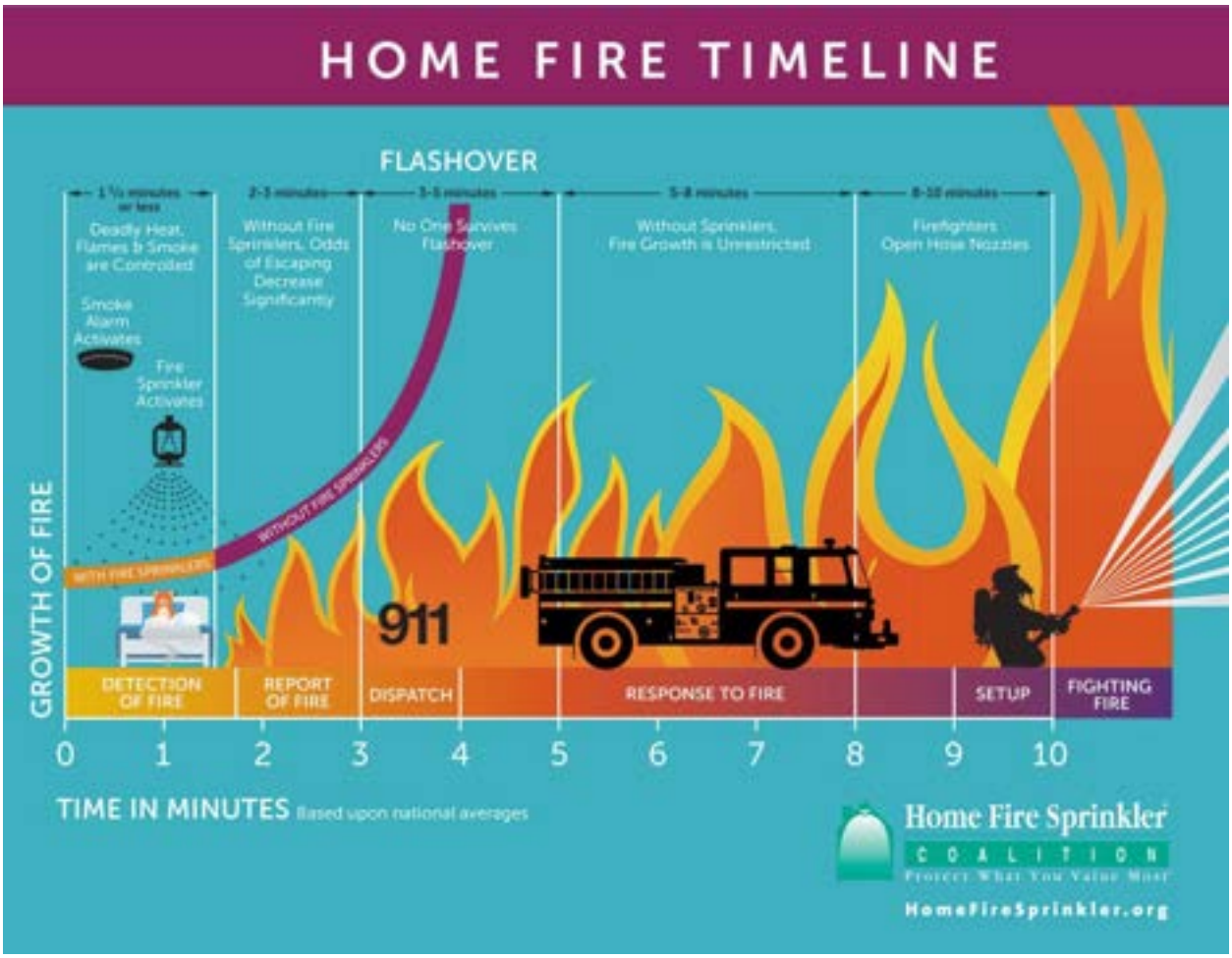
Because building fires and medical emergencies have the most severe time constraints if positive outcomes are to be achieved, the following is a brief overview of building fire and medical emergency risk. **Appendix A** contains the full risk assessment.

Building Fire Risk

One of the primary hazards in any community is building fire. Building fire risk factors include building density, size, age, occupancy, and construction materials and methods, as well as the number of stories, the required fire flow, proximity to other buildings, built-in fire protection/alarm systems, available fire suppression water supply, building fire service capacity, fire suppression resource deployment (distribution/concentration), staffing, and response time.

The following figure illustrates the building fire progression timeline and shows that flashover, which is the point at which the entire room erupts into fire after all the combustible objects in that room reach their ignition temperature, can occur as early as 3:00 to 5:00 minutes from the initial ignition. Human survival in a room after flashover is extremely improbable.

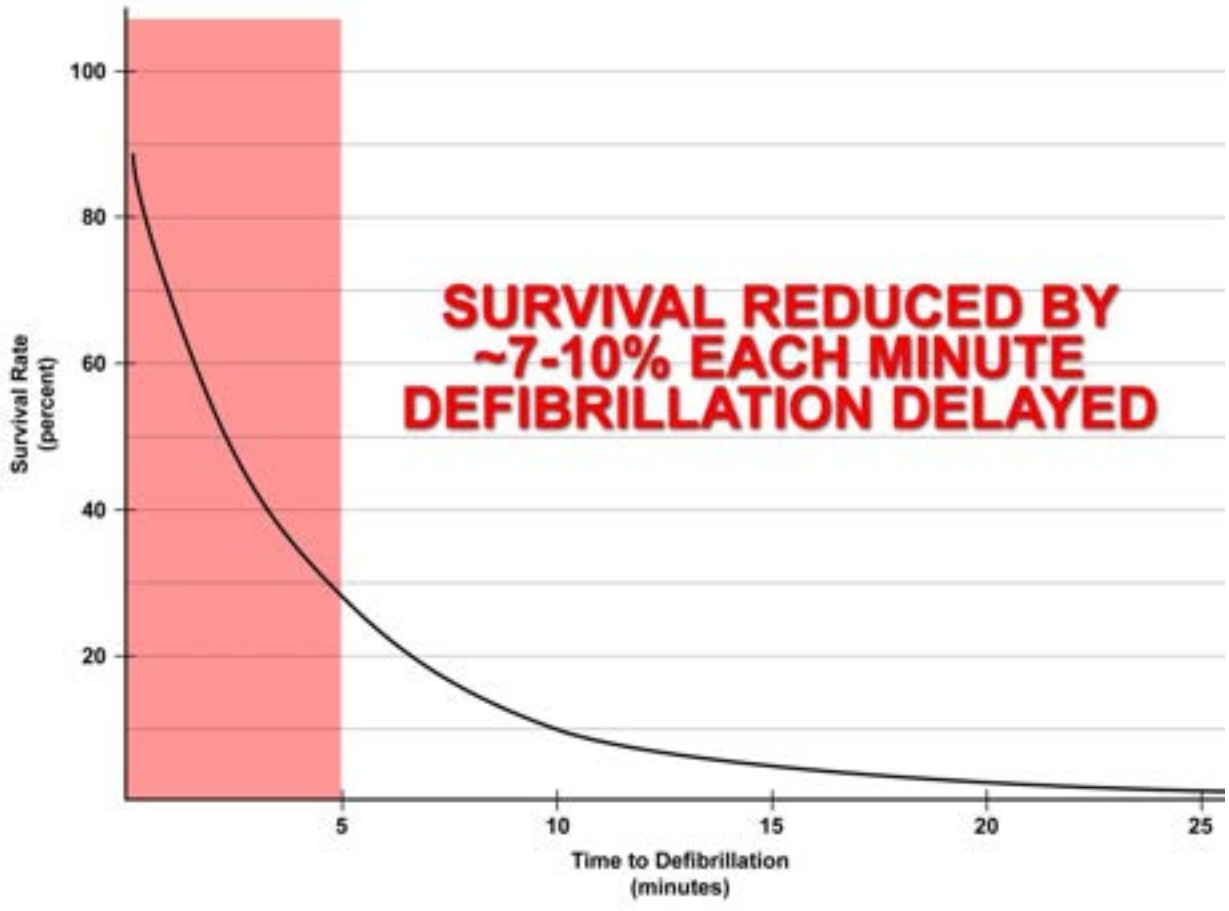
Figure 3—Building Fire Progression Timeline



Medical Emergency Risk

Fire agency service demand in most jurisdictions is predominantly for medical emergencies. The following figure illustrates the reduced survivability of a cardiac arrest victim as time to defibrillation increases.

Figure 4—Survival Rate versus Time of Defibrillation



Source: www.suddencardiacarrest.org

The Districts provide BLS pre-hospital emergency medical services, with operational personnel trained to the First Responder Medical or EMT level.

2.3.4 Risk Assessment Summary

City ate's assessment of the va ues at ris an ha ar s i e y to impact the four districts yields the following:

- The Districts serve a predominantly rural population, with densities ranging from mostly less than 500 to nearly 5,000 per square mile in some small district areas
- he County's an use oa s an po icies will result in minimal projected growth in the four districts
- he istricts' ui in inventory is pre ominant y sin e-family dwelling units and agriculture-related buildings

- he istricts' overall risk for the three hazards evaluated range from **Low** to **High** as summarized in the following table.

Table 10—Overall Risk by Hazard

Hazard	Cordelia 29	Cordelia 31	Suisun 32	Suisun 33	Montezuma 51	Montezuma 52	Vacaville 64	Vacaville 65	Vacaville 67	Vacaville 68

Finding #7: Overall building fire, vegetation/wildland fire, and medical emergency risk in the Districts range from ***low*** to ***high***.

2.4 Distribution and Concentration Studies—How the Location of First-Due and First Alarm Resources Affects Emergency Incident Outcomes

Fire Station Distribution and Concentration

The four districts are collectively served by ten fire stations with an aggregate of 33 fire engines, seven water tenders, and 25 light-duty or other vehicles/equipment. It is appropriate to understand, using geographic mapping tools, what the existing stations do and do not cover within travel time goals, if there are any coverage gaps needing one or more stations, and what, if anything, to do about them.

In brief, there are two geographic perspectives to fire station deployment:

- **Distribution** the spacing of first-due fire units to control routine emergencies before they escalate and require additional resources.
- **Concentration** the spacing of fire stations sufficiently close to each other so that more complex emergency incidents can quickly receive sufficient resources from multiple fire stations. As indicated, this is known as the **Effective Response Force** (ERF), or, more commonly, the First Alarm Assignment the collection of a sufficient number of firefighters on scene, delivered within the concentration time goal to stop the escalation of the problem. Montezuma, Suisun, and Vacaville send multiple response units, including from multiple stations as needed, to mitigate more serious emergency incidents. At the time of this assessment, Cordelia was able to provide a maximum of one engine and one chief officer.

To analyze first-due fire unit travel time coverage, Citygate used FireView™, a geographic mapping tool to measure travel time over the districts' road network. For this calculation, Citygate used the base map and street travel speeds calibrated to actual fire apparatus travel times from previous responses to simulate real-world travel time coverage. Using these tools, Citygate modeled 12:00-minute first-due *travel* time coverage from each fire station based on recommended response time goals for rural areas.[7]

2.4.1 Deployment Baselines

All maps referenced can be found in **Volume 2** (Map Atlas).

Map #1 – General County Geography, City and Fire District Boundaries, and District Fire Station Locations

Map #1 provides an overview of Solano County, city, and fire district boundaries, and fire station locations within the four study districts.

Map #2a – Cordelia Fire Protection District

Map #2a shows the boundaries of the Cordelia FPD, as well as the location of the two District fire stations and the two most proximal City of Fairfield fire station locations.

Map #2b – Montezuma Fire Protection District

Map #2b shows the boundaries of the Montezuma FPD and the district's two fire stations. The City of Rio Vista fire station is co-located with Montezuma Station 51 in the City of Rio Vista.

Map #2c – Suisun Fire Protection District

Map #2c shows the boundaries of the Suisun FPD and the location of the two District fire stations.

Map #2d – Vacaville Fire Protection District

Map #2d shows the boundaries of the Vacaville FPD and the location of the district's four fire stations.

Map #3a – Risk Assessment: Population Density

Map #3a displays the population densities within the four study districts, ranging from mostly less than 500 to nearly 5,000 people per square mile in some very small district areas.

[7] NFPA 1720 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments.

Map #4a – Distribution: 12:00-Minute First-Due Travel Time Coverage – Cordelia FPD

Map #4a shows in green the road segments within the Cordelia FPD that should be expected to be reached within 12:00-minutes travel time from Stations 29 and 31 without traffic congestion. As the map illustrates, first-due travel time coverage is good, at 97 percent of total public road miles *if the units are staffed*.

Map #4b – Distribution: 12:00-Minute First-Due Travel Time Coverage – Montezuma FPD

Map #4b shows in green the road segments within the Montezuma FPD that should be expected to be reached within 12:00-minutes travel time from its two fire stations without traffic congestion. As the map illustrates, expected first-due travel time coverage is 62 percent of total public road mi es ue to each station's ar e response area; however, approximately 62 percent of the District is farmland and pasture lands with very sparse building and population density. In addition, responses to the Ryer Island section of the District (northeast) requires a ferry crossing across the Sacramento River, thus extending response times to that area of the District.

Map #4c – Distribution: 12:00-Minute First-Due Travel Time Coverage – Suisun FPD

Map #4c shows in green the road segments within the Suisun FPD that should be expected to be reached within 12:00-minutes travel time from its two fire stations without traffic congestion. As the map illustrates, expected first-due travel time coverage is 78 percent of total public road miles; however, the areas beyond 12:00-minute travel time coverage are marshland with minimal building fire, vegetation fire, or medical emergency risk factors.

Map #4d – Distribution: 12:00-Minute First-Due Travel Time Coverage – Vacaville FPD

Map #4d shows in green the road segments within the Vacaville FPD that should be expected to be reached within 12:00-minutes travel time from its four fire stations without traffic congestion. As the map illustrates, expected first-due travel time coverage is very good, at 97 percent of total public road miles.

Map #5a – All EMS Incident Locations – Cordelia FPD

Map #5a shows the location of all EMS incidents within Cordelia FPD from July 1, 2017 through June 30, 2018. As can be seen when compared to Map #4a, nearly all incidents occurred within an expected 12:00-minute travel time from either District station.

Map #5b – All EMS Incident Locations – Montezuma FPD

Map #5b shows the location of all EMS incidents within Montezuma FPD from July 1, 2017 through June 30, 2018. As can be seen when compared to Map #4b, most of the incidents occurred within an expected 12:00-minute travel time from one of the istrict's t o stations

Map #5c – All EMS Incident Locations – Suisun FPD

Map #5c shows the location of all EMS incidents within the Suisun FPD from July 1, 2017 through June 30, 2018. As can be seen when compared to Map #4c, nearly all the incidents occurred within an expected 12:00-minute travel time from one of the istrict's t o stations

Map #5d – All EMS Incident Locations – Vacaville FPD

Map #5d shows the location of all EMS incidents within the Vacaville FPD from July 1, 2017 through June 30, 2018. As can be seen when compared to Map #4d, all but a few incidents occurred within an expected 12:00-minute trave time from one of the istrict's four stations

Map #6a – All Fire Incident Locations – Cordelia FPD

Map #6a displays the location of all fire incidents within Cordelia FPD from July 1, 2017 through June 30, 2018. As can be seen when compared to Map #4a, nearly all incidents occurred within an expected 12:00-minute travel time from either District station.

Map #6b – All Fire Incident Locations – Montezuma FPD

Map #6b displays the location of all fire incidents within Montezuma FPD from July 1, 2017 through June 30, 2018. As can be seen when compared to Map #4b, most fire incidents occurred within an expected 12:00-minute trave time from one of the istrict's t o stations

Map #6c – All Fire Incident Locations – Suisun FPD

Map #6c displays the location of all fire incidents within Suisun FPD from July 1, 2017 through June 30, 2018. As can be seen when compared to Map #4c, most incidents occurred within an expected 12:00-minute travel time from one of the istrict's t o stations

Map #6d – All Fire Incident Locations – Vacaville FPD

Map #6d displays the location of all fire incidents within Vacaville FPD from July 1, 2017 through June 30, 2018. As can be seen when compared to Map #4d, all fire incidents occurred within an expected 12:00-minute trave time from one of the istrict's four stations.

2.4.2 Road Mile Coverage Measures

In addition to the visual displays of coverage that maps provide, the GIS software allows the miles of public streets covered at a specified travel time to be measured. The following table summarizes 12:00-minute, first-due, non-congested travel time coverage by district.

Table 11—12:00-Minute First-Due Travel Time Coverage Summary

Fire District	Total Public Road Miles	Miles Covered at 12:00-Minutes Travel	Percent of Total Miles Covered
		91	
		129	
		82	
		189	

Finding #8: While the fire station placements cover most of the public road miles, units do not provide services, firefighters arriving in time do.

2.5 INCIDENT STATISTICAL ANALYSIS

RELIABILITY & HISTORICAL RESPONSE EFFECTIVENESS

The map sets described in Section 2.4 and presented in **Volume 2** show the ideal situation for response times and the response effectiveness given perfect conditions with no competing calls, traffic congestion, units out of place, or simultaneous calls for service. Examination of the actual response time data provides a picture of actual response performance with simultaneous calls, rush hour traffic congestion, units out of position, and delayed travel time for events such as periods of severe weather.

The following subsections provide summary statistical information for the four districts.

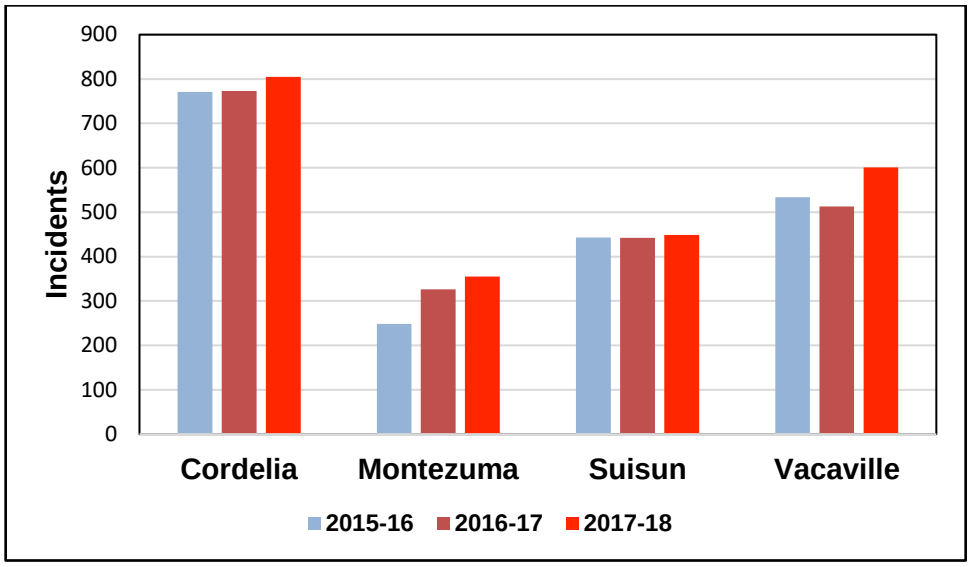
2.5.1 Service Demand

CAD data was provided by the So ano County Sheriff's Office Communications Center for report years (RY) 7/1/2015 through 6/30/2018 as summarized in the following table and figure. Overall service demand increased from 1.35 percent in Suisun FPD to 43 percent in Montezuma FPD over the three-year study period, with an aggregate increase of nearly 11 percent.

Table 12—Annual Service Demand by District

Fire District	Calls for Service			3-Year Total	3-Year Change
	RY 15/16	RY 16/17	RY 17/18		
	771	773	805		4.41%
	248	326	355		43.15%
	443	442	449		1.35%
	534	513	601		12.55%

Figure 5—Annual Service Demand by District



The following table summarizes, and Figure 6 through Figure 9 illustrate, annual service demand by incident type. As can be seen in both the table and figures, EMS incidents comprise the greatest percentage of annual service demand in each district.

Table 13—Annual Service Demand by Category Cordelia FPD

Call Type	Calls for Service			Total	Percent of Total
	RY 15/16	RY 16/17	RY 17/18		
	326	347	400		45.68%
	79	73	81		9.92%
	185	178	145		21.63%
	181	175	179		22.78%

Figure 6—Annual Service Demand by Category Cordelia FPD

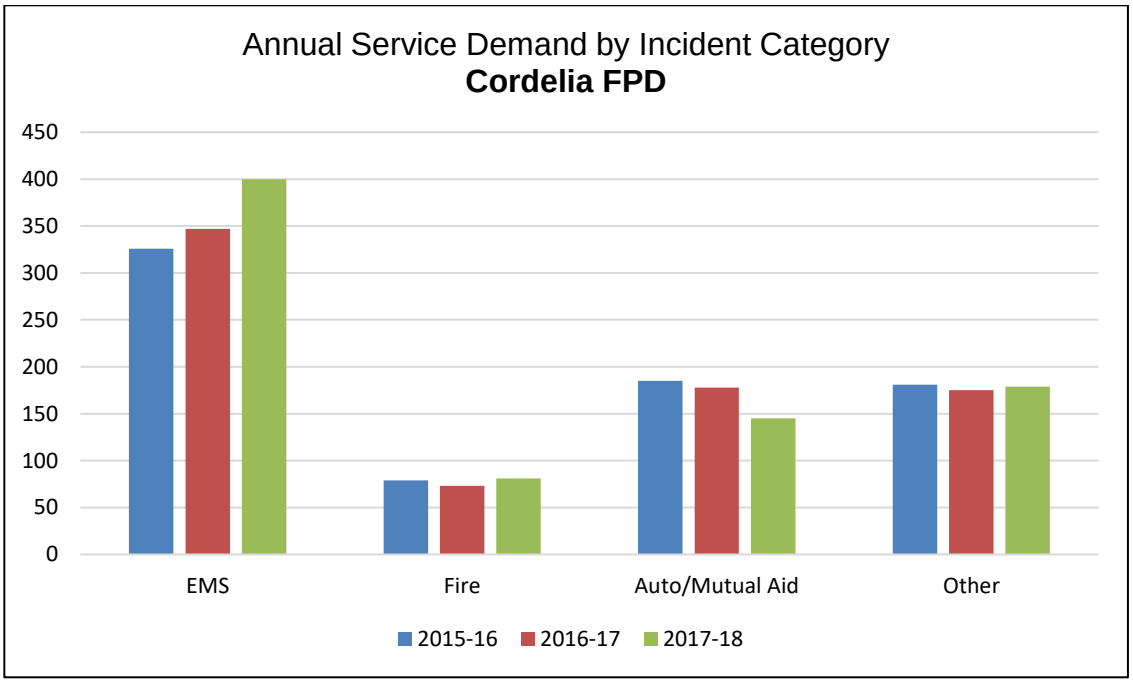


Table 14—Annual Service Demand by Category Montezuma FPD

Call Type	Calls for Service			Total	Percent of Total
	RY 15/16	RY 16/17	RY 17/18		
	121	170	180		50.70%
	73	75	88		25.40%
	17	29	30		8.18%
	37	52	57		15.72%

Figure 7—Annual Service Demand by Category Montezuma FPD

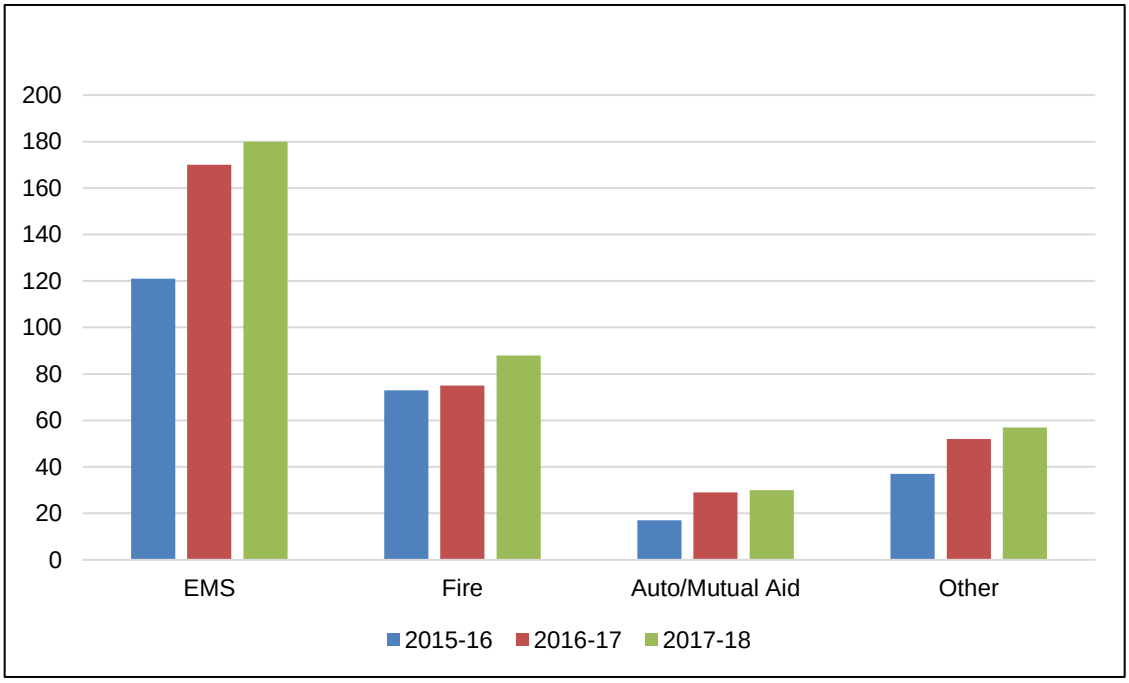


Table 15—Annual Service Demand by Category Suisun FPD

Call Type	Calls for Service			Total	Percent of Total
	RY 15/16	RY 16/17	RY 17/18		
	203	203	225		47.30%
	67	61	89		16.27%
	95	101	73		20.16%
	78	77	62		16.27%

Figure 8—Annual Service Demand by Incident Type Suisun FPD

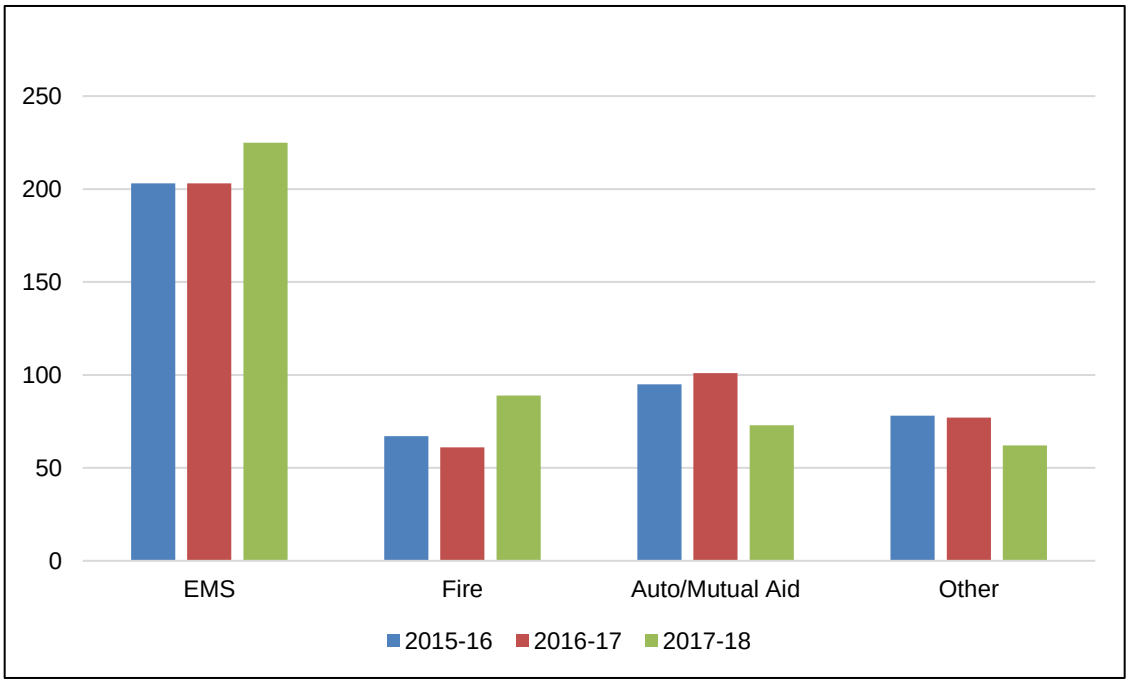
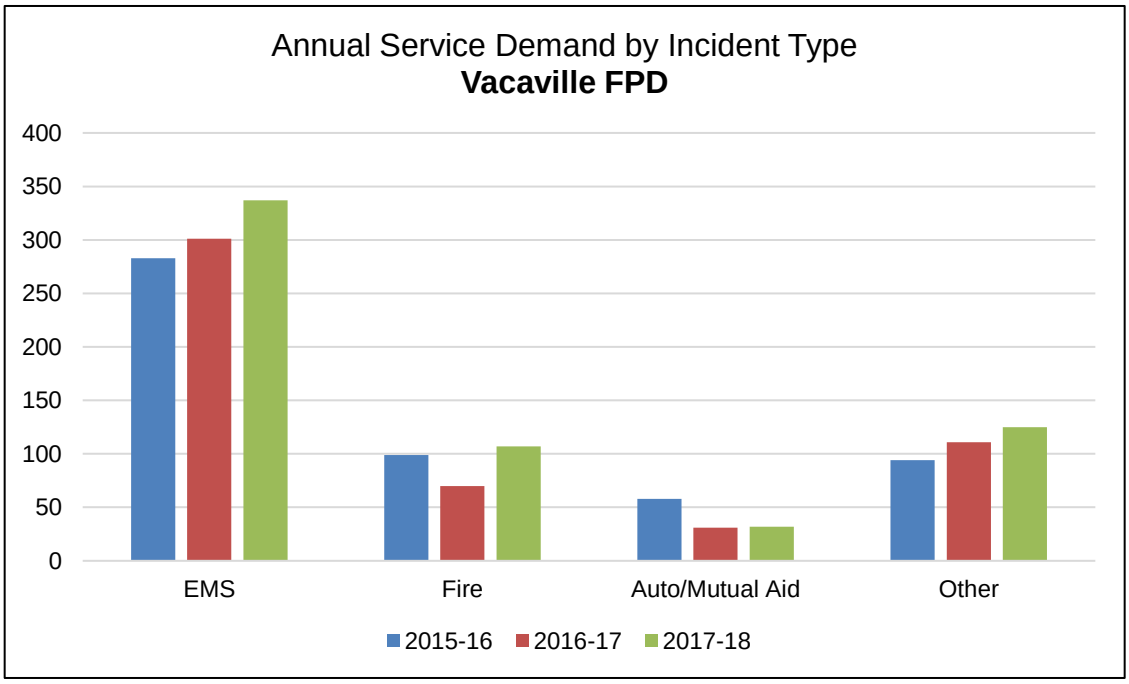


Table 16—Annual Service Demand by Category Vacaville FPD

Call Type	Calls for Service			Total	Percent of Total
	RY 15/16	RY 16/17	RY 17/18		
	283	301	337		55.89%
	99	70	107		16.75%
	58	31	32		7.34%
	94	111	125		20.02%

Figure 9—Annual Service Demand by Incident Type Vacaville FPD



2.5.2 Mutual Aid Activity

Table 17 summarizes mutual aid provided by each district to other jurisdictions over the three-year study period. Of note is mutual aid activity in aggregate comprises nearly 16 percent of all calls for service. Of additional note is that each district creates its own mutual aid matrix, which may not be in order of a closest unit response from a neighboring agency. The mutual aid matrices are a so not pro ramme into the County Communications Center's Computer i e ispatch C system, requiring the dispatcher to manually reference a district's matri henever a request for mutual aid is received.

Table 17—Mutual Aid Given by District

District	Mutual Aid Provided Calls for Service			3-Year Total	Percent of All Calls for Service
	2015-16	2016-17	2017-18		
	185	178	145		21.63%
	17	29	30		8.18%
	95	101	73		20.16%
	58	31	32		7.34%

Finding #9: Nearly 16 percent of the aggregate service demand of the four districts is mutual aid to other jurisdictions, including more than 20 percent of all calls for service for Cordelia and Vacaville FPDs.

Finding #10: The Districts and nearby cities, via their common fire dispatch center, are not using closest available unit response to emergencies. To not do so inappropriately delays response times.

2.5.3 Response Performance

Measurements for the performance of the first apparatus to arrive on the scene of emergency incidents are the number of minutes and seconds necessary for 80 percent completion of dispatch to arrival at the incident. Although *not* an element of this rural response performance standard, other recognized best practices recommend call processing / dispatch performance of 1:30 minutes or less at 90 percent reliability.[8]

Call Processing / Dispatch

Call processing performance measures the time from receipt of the 9-1-1 request for assistance in the So ano County Sheriff's Office Communications Center until the appropriate response resources are dispatched. As the following table shows, overall call processing for the three-year study period ranged from 107 percent (at 3:06 minutes) to 141 percent (at 3:37 minutes) *slower* than the 1:30-minute recommended best practice.

[8] NFPA 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems.

Table 18—90th Percentile Call Processing Performance

District	3-Year Performance

Finding #11: Call processing performance ranges from 107 percent (at 3:06 minutes) to 141 percent (at 3:37 minutes) *slower* than the 1:30-minute recommended best practice goal. This time loss is even more critical when units are not staffed with in-station personnel and the response must wait for volunteers.

Dispatch-to-Arrival

Dispatch-to-arrival performance (excluding dispatch process time) is a recommended best-practice customer service metric that measures the time from receipt of the dispatch by the fire agency until the first responding unit arrives at the emergency incident. The following table shows 80th percentile dispatch to arrival performance meeting or slightly exceeding the recommended 14:00-minute goal, which seems to pass the common-sense test when compared to the 12:00-minute travel time coverage maps, except for Vacaville, where we would expect to see better performance. Deeper analysis of the dispatch system data, however, revealed numerous time stamp irregularities raising concern about the overall accuracy of the data and suggesting that actual dispatch-to-arrival performance may be better than the data indicates, with conformance closer to the 14:00-minute goal than shown for Montezuma and Vacaville.[9] This concern was also voiced by district Fire Chiefs when we presented our initial results, with anecdotal reports of better response performance than the data suggests.

[9] Missing time stamps, duplicate time stamps for all responding resources, outlier time stamp intervals based on reasonable expectations from other similar client studies.

Table 19—80th Percentile Dispatch to Arrival Performance

District	3-Year Performance	Goal Point

Finding #12: First unit response performance appears to meet or be slightly slower than the 14:00-minute goal as a recommended by NFPA 1720 and Citygate; however, dispatch system time stamp irregularities, GIS travel time coverage analysis, and anecdotal district information suggest that response performance may be slightly better than the data indicates. Even if true, a 12:00-minute response time is past the point of a positive outcome in a critical emergency.

2.6 Overall Deployment Evaluation

Overall Deployment Evaluation

The Districts serve a suburban to rural population over a generally agriculture/residential land-use pattern typical of other rural California counties.

If desired outcomes include limiting building fire damage to only the affected building, keeping vegetation fires from spreading to inhabited buildings, and/or minimizing permanent impairment resulting from a medical emergency, then the Districts will need a bare minimum response coverage consistent with a Citygate and NFPA response performance recommendation of first-due arrival within 14:00 minutes from receipt of the 9-1-1 call at the Solano County Sheriff's Office Communications Center at 80 percent or better reliability.[10]

While all four districts currently have partial-day or day-of-the-week in-station staffing for response to emergency incidents, the station staffing is not 24 hours per day, seven days per week. The Districts are very dependent on volunteer participation, with volunteer personnel providing

[10] With a minimum of six personnel.

supplemental daytime response staffing as well as when paid staffing is off duty or in those station areas without paid staffing.

Call processing / dispatch performance is more than double the recommended best practice goal of 1:30 minutes, with numerous dispatch system data irregularities raising concern about the overall accuracy and reliability of the dispatch data used to evaluate response performance. While crew notification to first-unit arrival performance appears to meet the recommended best practice 14:00-minute goal in two districts and slightly exceed it in the other two districts, dispatch system data irregularities and anecdotal reports from District staff suggest that response performance *may* be better than the dispatch data indicates. Another factor makes the response times better than they seem; more calls for service are in the daylight hours during partial in-station staffing. Thus, the good daylight response times mask the slower performance off hours when volunteers must first respond to the station.

Overall, Citygate finds that each district is existing on a very thin combination of career and volunteer firefighters. The loss of one of the few command staff, or a few volunteers that are able to carry much of the response workload, would cripple a district's capa i ities

Finding #13: As separate entities, the Districts are very exposed to single points of failure if they were to lose a few career personnel or highly responsive vo unteers hey ac "*strength in numbers"* to be resilient and have redundancy.

Finding #14: The Districts must fix their fragile personnel counts and 24-hour-per-day, seven-day-per-week in-station staffing. In the current wildfire and building fire environment, incidents cannot wait for a minimal force to respond from home or business.

Finding #15: Operating and commanding a district is more than a one-person job and the Districts are very exposed to failure as stand-alone agencies.

2.6.1 Deployment Recommendations

Although current recommended best practice[11] does not include 9-1-1 call processing in the 14:00-minute, first-unit response goal in rural areas, in City ate's e perience, community and individual customer expectations are based on *total response time* from receipt of the 9-1-1 call to arrival of the first responding unit. Based on the technical analysis and findings contained in this assessment,

[11] NFPA 1720 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments.

overall response system performance should reasonably be expected to provide the following deployment goals with recommended dispatch system improvements.

Recommendation #1: The Districts should merge their command and volunteer staffs to improve key personnel resiliency and redundancy. This will also improve cost effectiveness of headquarters services and can be done initially via contracts or a Joint Powers Authority (JPA) of elected officials to provide oversight and planning for a longer-term, permanent solution.

Recommendation #2: The Districts should work with and insist that the Solano County Sheriff's Office Communications Center improve time stamp accuracy and call processing performance to align with recommended best practices in order to reduce dispatch processing time by at least 1:30 minutes.

Recommendation #3: **Adopt Updated Deployment Policies:** The Districts should adopt complete performance measures to communicate to the public what they can and cannot deliver and to monitor performance.

Recommendation #4: Updated response time measures should be designed to deliver outcomes that will save patients when possible upon arrival and to keep small and expanding fires from becoming more serious. With this is mind, Citygate recommends the following measures:

4.1 Distribution of Fire Stations: To treat pre-hospital medical emergencies and control small fires, first-due units should arrive within 14:00 minutes of receipt of the 9-1-1 call at the Solano County Sheriff's Office Communications Center at 80 percent or greater reliability.

4.2 Multiple-Unit Effective Response Force for Serious Emergencies: To confine building fires to only the affected building, keep vegetation fires under five acres in size, and treat multiple medical patients at a single incident, a multiple-unit ERF, including at least one chief officer, should arrive within 19:00 minutes of receipt of the 9-1- ca at the So ano County Sheriff's Office Communications Center at 80 percent or greater reliability.

4.3 Hazardous Materials Response: To protect residents from the hazards associated with uncontrolled release of hazardous and toxic materials, first-due units should arrive within 14:00 minutes of receipt of the 9-1-1 call at the Solano County Sheriff's Office Communications Center at 80 percent or greater reliability. The fundamental mission of the Districts' response is to isolate the hazard, deny entry into the hazard zone, and notify appropriate officials/resources to minimize impacts on the community. After an initial evaluation is completed, a determination can be made whether to request additional resources from the regional hazardous materials team.

4.4 Technical Rescue: Respond to technical rescue emergencies with a first-due response time of 14:00 minutes or less from receipt of the 9-1-1 call at the Solano County Sheriff's Office Communications Center at 80 percent or greater reliability to evaluate the situation and/or initiate rescue actions. Following the initial evaluation, request additional resources as needed to safely complete rescue/extrication and delivery of the victim to the appropriate emergency medical care facility.

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In this Section, Citygate provides a macro-level assessment of the istricts' physica fire station facility and response assets. These assessments were conducted in collaboration with each district Fire Chief.

3.1 FIRE STATION FACILITY ASSETS

The following table summarizes the general criteria used by Citygate to evaluate the condition of the istricts' fire station faci ities

Table 20—Facility Assessment Criteria

Condition	General Criteria
	• 10 • • • •
	• • • •
	• • • •
	• • • •

3.1.1 Cordelia FPD

Station 29 – 1624 Rockville Road, Fairfield

Fire Station 29 is a 1,600 square-foot, single-story, wood-frame apparatus garage facility constructed in 1974 and located in Green Valley adjacent to the Green Valley Country Club on property owned by the Fairfield-Suisun School District. The Fire District has placed a 500-square-foot mobile/modular trailer adjacent to the garage for use as living/office space by District personnel as needed. This station is currently only utilized as a storage facility for three apparatus.

City ate's assessment of this facility rates its condition as ***Poor*** with the following needs identified to sustain continued operational use:

- Extensive dry rot
- Roof needs replacement
- Building is too close to the street to allow apparatus to park on front driveway apron without encroaching on roadway
- Portable crew quarters less than ideal for 24-hour shift personnel
- Fire District does not own or control the property

Station 31 – 2155 Cordelia Road, Fairfield

Fire Station 31 is an 11,939 square-foot, single-story, concrete and wood-frame building originally constructed in 1939 as an automobile dealership. The building has had multiple additions/modifications over the years, and houses seven District vehicles, administrative staff, and two shift response personnel as well as a large meeting hall and outdoor parking/training area. This facility is owned by the District. City ate's assessment of this faci ity rates its con ition as ***Fair*** with the following needs identified to sustain continued operational use:

- Inadequate indoor apparatus/vehicle space
- Roof needs replacement; has been a problem for many years
- Heating / Ventilation / Air Conditioning (HVAC) system needs replacement
- Ongoing sewer and electrical issues
- No backup electrical generator
- Single-pane windows in crew quarters do not provide sufficient noise insulation from adjacent bar

3.1.2 Montezuma FPD

Station 51 – 21 N. 4th Street, Rio Vista

Fire Station 51 is a 5,600 square-foot, single-story facility constructed in 1954 and co-located with the City of Rio Vista Fire Department. This station houses the district's administrative staff and offices, two on-duty response personnel, and nine apparatus/vehicles. Two apparatus bays, a training room, new roof, new HVAC system, new exhaust removal system, new apparatus doors, and new flooring have been added since 2014. City staff's assessment of this facility rates its condition as ***Good*** with the following needs identified to sustain continued operational use:

- Insufficient secured parking for all assigned vehicles
- Insufficient office space

Station 52 – 2151 Collinsville Road, Birds Landing

Fire Station 52 is a 4,000 square-foot facility constructed in 2011 housing three response apparatus staffed by District volunteers. City staff's assessment of this facility rates its condition as ***Excellent*** with no significant needs identified to sustain continued operational use.

3.1.3 Suisun FPD

Station 32 – 4695 Clayton Road, Fairfield

Fire Station 32 is a 4,000 square-foot wood-frame building constructed in 1984 that houses four response apparatus staffed by District volunteers. The District has plans to add a four-bay apparatus storage unit in at the rear of the property. City staff's assessment of this facility rates its condition as ***Good*** with no specific needs identified to sustain continued operational use.

Station 33 – 445 Jackson Street, Fairfield

Fire Station 33 is a 6,573 square-foot, two-story facility constructed in 1954 that houses the district's administrative offices, two response personnel during weekday daytime hours, and 10 response apparatus/vehicles. City staff's assessment of this facility rates its condition as ***Good*** with no significant needs identified to sustain continued operational use.

3.1.4 Vacaville FPD

Station 64 – 420 Vine Street, Vacaville

Fire Station 64 is an approximately 10,000 square-foot, two-story building constructed in 1981 that houses the district's administrative offices, 16 apparatus/vehicles, and one to two shift-based paid response personnel plus volunteer response personnel. City staff's assessment of this facility rates its condition as ***Good*** with no specific needs identified to sustain continued operational use.

Station 65 – 6080 A Street, Elmira

Fire Station 65 is an approximately 4,000 square-foot, single-story concrete block building constructed in 1984 that houses five response apparatus staffed by District volunteer personnel. City ate's assessment of this faci ity rates its con ition as ***Good*** with no significant needs identified to sustain continued operational use.

Station 67 – 4135 Cantelow Road, Vacaville

Fire Station 67 is an approximately 4,000 square-foot single-story metal building constructed in 1984 that houses four response apparatus staffed by District volunteer personnel. The District has p ans to rep ace this faci ity ithin the ne t five years City ate's assessment of this facility rates its condition as ***Fair*** with no significant immediate needs identified to sustain continued operational use.

Station 68 – 3866 Canal Lane, Winters

Fire Station 68 is an approximately 5,000 square-foot, single-story metal building constructed in 2010 that houses four response apparatus staffed by District volunteer personnel. The station also has living, sleeping, and office space for up to three on- uty personne City ate's assessment of this facility rates its condition as ***Excellent*** with no significant immediate needs identified to sustain continued operational use.

3.1.5 Facility Assessment Summary

City ate's assessment of the istricts' fire station faci ities is summarized in the following table.

Table 21—Fire Districts Facility Assessment Summary

Facility	Assessed Condition
29	***Poor***
31	***Fair***
51	***Good***
52	***Excellent***
32	***Good***
33	***Good***
64	***Good***
65	***Good***
67	***Fair***
68	***Excellent***

Finding #16: Except for Cordelia FPD Stations 29 and 31 and Vacaville FPD Station 67, the istricts' fire station facilities meet current and anticipated future operational needs and have been adequately maintained for continued operational use.

3.2 PHYSICAL RESPONSE (APPARATUS) ASSETS

The following table summarizes the general criteria used by Citygate to evaluate the condition and operational reliability of the istricts' physical response assets.

Table 22—Physical Response Asset Assessment Criteria

Condition	General Criteria
	• 10 • • • • 95
	• 20 • • • • 90
	• 20 • • • • • 80
	• 20 • • • • • 80

While Citygate finds the physical response assets appropriate to protect against the hazards likely to impact each district, the aggregate number of resources is *more than* would be reasonably needed in a single agency or shared resource service model.

3.2.1 Cordelia FPD

The following table summarizes City ate's assessment of Cor e ia 's physica response assets.

Table 23—Physical Response Assets Assessment Summary Cordelia FPD

Response Asset	Age (Years)	ICS Type	Assessed Condition
29	26	1	***Poor***
31	11	1	***Fair***
231	19	2	***Fair***
529	11	6	***Good***
531	11	6	***Good***
31	26		***Good***
31	17		***Good***
3100	6		***Good***
3101	6		***Good***
29	13		***Good***

3.2.2 Montezuma FPD

The following table summari es City ate's assessment of onte uma 's physica response assets.

Table 24—Physical Response Assets Assessment Summary Montezuma FPD

Response Asset	Age (Years)	ICS Type	Assessed Condition
51	13	1	*Very Good*
251	10	1	*Very Good*
451	4	4	*Very Good*
551	11	5	*Very Good*
51	12		*Very Good*
52	3	1	*Very Good*
552	5	5	*Very Good*
562	12	5	*Very Good*
51	5		*Very Good*
52	10		*Very Good*
53	12		*Very Good*
54	15		*Very Good*

3.2.3 Suisun FPD

The following table summari es City ate's assessment of Suisun 's physical response assets.

Table 25—Physical Response Assets Assessment Summary Suisun FPD

Response Asset	Age (Years)	ICS Type	Assessed Condition
32	20	1	*Good*
33	11	1	*Good*
333	21	3	*Good*
532	9	5	*Good*
533	12	5	*Good*
534	23	5	*Good*
32	9	1	*Good*
33	3	1	*Very Good*
33	39		*Good*
33	4		*Very Good*
33	16		*Good*
33	8		*Good*
233	2		*Very Good*
333	4		*Good*

3.2.4 Vacaville FPD

The following table summari es City ate's assessment of acavi e 's physica response assets.

Table 26—Physical Response Asset Assessment Summary Vacaville FPD

Response Asset	Age (Years)	ICS Type	Assessed Condition
64	30	1	*Good*
264	25	1	*Good*
64	38		*Good*
64	14		*Good*
64	16	5	*Good*
264	35	3	*Good*
64	30	6	*Good*
64	14		*Good*
264	29		*Good*
364	24		*Poor*
464	22		*Good*
6400	13		*Very Good*
6403	1		*Very Good*
6404	4		*Good*
6407	24		*Good*
6409	12		*Good*
65	14	1	*Good*
265	30	1	*Good*
65	34	6	*Good*
65	45		*Good*
65	40		*Good*
67	38	1	*Good*
267	20	1	*Poor*
67	16	5	*Good*
267	46	6	*Good*
68	45	1	*Good*
68	16	6	*Good*
68	28	9	*Good*
68	32		*Good*

3.2.5 Physical Response Asset Assessment Summary

City ate's assessment of the istricts' physica response assets finds them to be of the appropriate types and configuration to protect against the hazards likely to impact each district. Citygate also finds the aggregate fleet size to be *larger than would be reasonably needed* in a single jurisdiction or shared resource service model.

Finding #17:	The istricts' physical response resources are of the appropriate types and configuration to protect against the risks likely to impact each district.
Finding #18:	The aggregate number of physical response resources is more than would be reasonably needed in a single agency or shared resource service model.
Finding #19:	Except for three Cordelia FPD engines and one Vacaville FPD engine and utility, the istricts' physical response apparatus meet current and anticipated future operational needs and are appropriately maintained for safe operational use.

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This section provides a comprehensive assessment of each district's current and projected future fiscal health and sustainability.

4.1 METHODOLOGY

For this assessment, Citygate used recent historical fiscal data provided by the Solano County Auditor-Contro er's Office for each district. Future revenue and expenditure assumptions were made by budget line item using historical change, Citygate consultant fiscal experience, and collaboration with district staff as offered by Citygate. Fund balances include all district reserve funds, including restricted funds, such as development impact fees.

4.2 CORDELIA FPD

4.2.1 Revenues

Table 27 summarizes actual revenues from fiscal year (FY) 10/11 through FY 18/19, and Table 28 projects revenues through FY 24/25.

Table 27—Recent Historical Revenue Cordelia FPD (FY 10/11 FY 18/19)

Revenue Source	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	217 696	209 309	204 685	221 278	236 205	246 660	261 581	272 791	288 229
	341 523	346 674	353 609	361 405	368 299	374 479	385 266	394 285	403 315
	21 464	23 117	22 656	22 811	22 951	23 666	24 163	24 901	25 574
	2 693	2 007	1 821	1 379	1 733	2 224	2 639	4 808	8 510
	8 662	8 327	10 376	10 548	7 626	0	0	0	0
	25 778	34 161	39 302	27 166	70 993	19 440	39 484	15 852	23 109
	647	7 148	156 581	69 573	184 267	155 023	31 405	176 942	76
	7 878	20 916	9 000	32 167	10 852	3 333	0	187 634	16 881
	9 575	17 912	20 142	13 145	11 204	6 905	11 153	9 715	4 066
	0	4 822	46 757	0	0	6 599	20 492	34 810	29 097
	16 219	18 601	11 501	1 893	6 458	6 665	1 301	15 006	3 513
	0	0	800	2 500	0	4 200	752	0	0
	0	0	0	0	0	0	0	0	0

Table 28—Current and Projected Future Revenue Cordelia FPD (FY 19/20 FY 24/25)

Revenue Source	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	298 365	308 807	319 616	330 802	342 380	354 364
	410 464	418 673	427 046	435 587	444 299	453 185
	25 353	25 606	25 862	26 121	26 382	26 646
	8 755	8 931	9 109	9 291	9 477	9 667
	2	2	2	2	2	2
	40 410	42 430	44 552	46 779	49 118	51 574
	2 395	2 635	2 898	3 188	3 507	3 857
	0	0	0	0	0	0
	7 558	7 558	7 558	7 558	7 558	7 558
	7 472	7 472	7 472	7 472	7 472	7 472
	750	750	750	750	750	750
	0	0	0	0	0	0
	0	0	0	0	0	0

4.2.2 Expenditures

Table 29 summarizes actual expenditures from FY 10/11 through FY 18/19, and Table 30 projects current and near-term future expenditures through FY 24/25. Of note is the 31 percent increase in expenditures from FY 18/19 to FY 19/20 due to hiring of one additional full-time employee, increases in employee salary, benefits, and operating costs, and planned capital expense.

Table 29—Recent Historical Expenditures Cordelia FPD (FY 10/11 FY 18/19)

Expenditure Category	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	340 859	392 750	415 728	427 256	424 464	506 907	455 170	466 354	410 721
	318 211	296 851	416 664	351 384	464 790	385 876	265 391	495 695	260 014
	0	0	8 995	0	0	49 153	11 433	175 100	0
	0	0	0	0	0	0	0	0	0

Table 30—Current and Projected Future Expenditures Cordelia FPD (FY 19/20 FY 24/25)

Expenditure Category	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	567 334	588 547	603 261	618 342	633 801	649 646
	309 992	322 011	327 759	335 953	344 352	352 961
	0	25 000	25 000	25 000	25 000	25 000
	0	0	0	0	0	0

4.2.3 Revenues to Expenditures

Table 31, Table 32, and Figure 10 summarize revenues to expenditures for Cordelia FPD. Of particular note and concern is the *negative* revenues to expenditures beginning in FY 19/20 and projected to increase each ensuing fiscal year through FY 24/25.

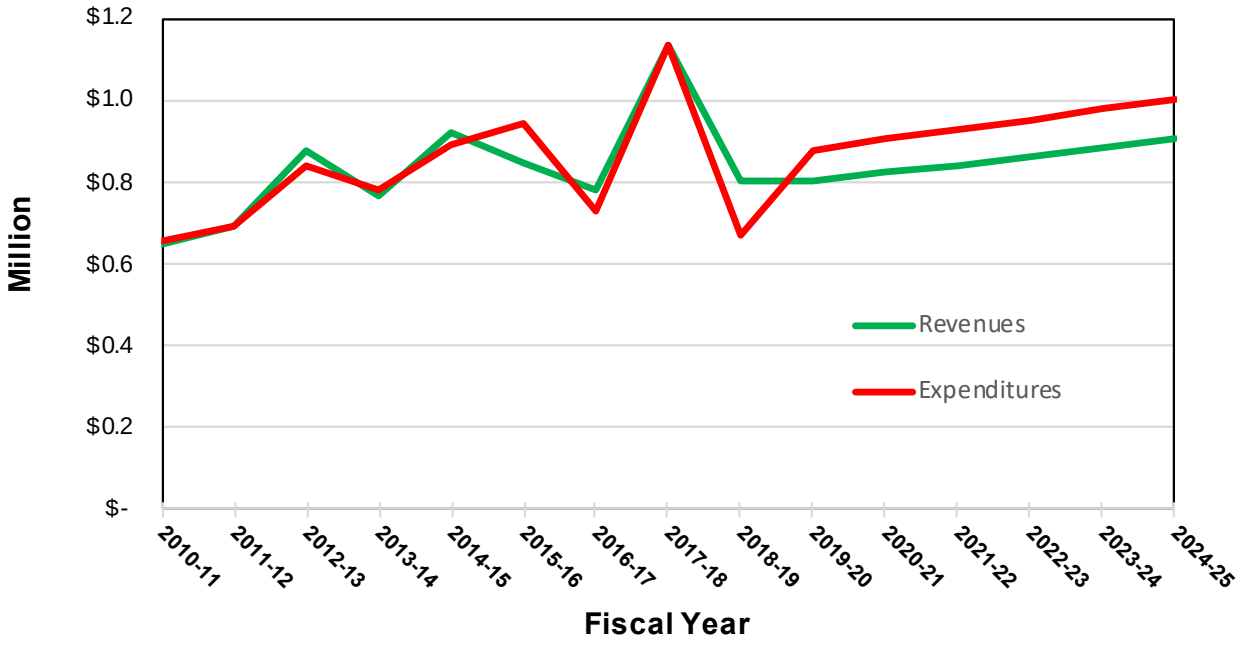
Table 31—Recent Historical Revenues to Expenditures Cordelia FPD (FY 10/11 FY 18/19)

Category	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	650 840	692 994	877 230	763 863	920 587	849 195	778 236	1 136 744	802 372
	659 070	689 600	841 386	778 639	889 254	941 937	731 994	1 137 149	670 735

Table 32—Current and Projected Future Revenues to Expenditures Cordelia FPD (FY 19/20 FY 24/25)

Category	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	801 523	822 864	844 865	867 551	890 945	915 075
	877 327	935 558	956 020	979 295	1 003 152	1 027 606

Figure 10—Revenues to Expenditures Cordelia FPD (FY 10/11 FY 24/25)



Finding #20: Cordelia FPD has a *structural budget deficit* beginning in FY 19/20 and increasing each ensuing year through FY 24/25.

4.2.4 Debt Service

Cordelia FPD has no debt service.

4.2.5 Unfunded Liability

Although not researched for this assessment, Cordelia may have an unfunded CalPERS employer retirement contribution liability.

4.2.6 Fiscal Reserves

Table 33, Table 34, and Figure 11 summarize Cor e ia 's recent historica an pro ecte near-future fiscal reserve fund balance. Of note is that the District's fun a ance is appro imate y 65 percent of the current budget and is projected to *decline* to approximately 1 percent of annual budget by FY 24/25 given projected revenues and expenditures. This declining fund balance is of *significant concern* relative to the District's continued fiscal viability.

Table 33—Recent Historical Fund Balance Cordelia FPD (FY 10/11 FY 18/19)

Category	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19

Table 34—Projected Future Fund Balance Cordelia FPD (FY 19/20 FY 24/25)

Category	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	801 523	822 864	844 865	867 551	890 945	915 075
	877 327	935 558	956 020	979 295	1 003 152	1 027 606

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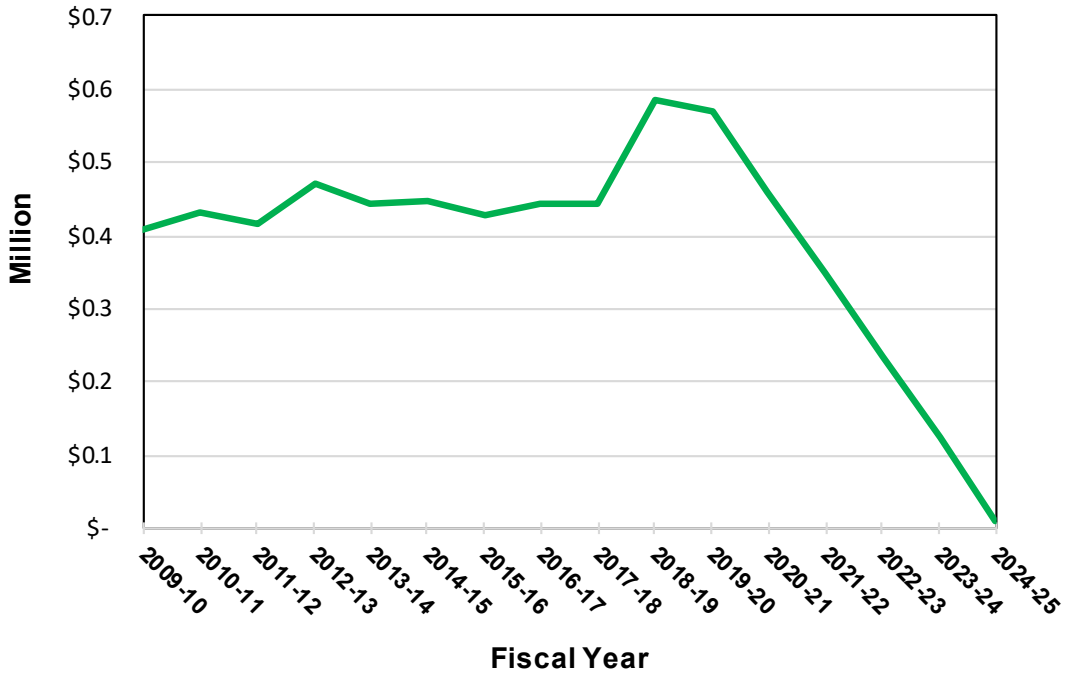
Figure 11—Fund Balance Cordelia FPD (FY 09/10 FY 24/25)



Finding #21: Given a structural budget *deficit* beginning in FY 19/20 and projected to increase each ensuing fiscal year, the Cordelia FPD fund balance is projected to *decline* from approximately 65 percent of annual budget in the current year to approximately 1 percent of annual budget by FY 24/25.

Finding #22: Absent additional revenues, reduced expenditures, or a combination of both, Cordelia FPD's fiscal reserves could be *exhausted* within the next several years.

4.3 MONTEZUMA FPD

4.3.1 Revenues

Table 35 summarizes actual Montezuma FPD revenues from FY 10/11 through FY 18/19, and Table 36 projects current and near-term future district revenues through FY 24/25. Of note is the 24 percent reduction in revenue from FY 18/19 to FY 19/20 due to assessed valuation depreciation of wind turbines and reduction in interest, grant, mutual aid reimbursement, and sale of fixed asset revenues.

Table 35—Recent Historical Revenues Montezuma FPD (FY 10/11 FY 18/19)

Revenue Source	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	616 279	597 298	723 993	950 325	914 836	871 019	858 793	831 540	794 614
	11 388	12 313	12 061	12 184	12 245	13 719	14 405	15 816	16 427
	3 996	2 915	6 084	3 493	5 561	9 327	15 813	27 120	44 372
	9 006	4	3 604	7 204	7 203	7 205	7 202	7 203	7 203
	0	0	0	0	0	0	0	0	0
	0	3 657	204 214	72 551	330 186	63	59	53	3 482
	0	0	0	0	0	0	0	0	120 822
	0	0	0	0	0	351 308	214 243	19 060	0
	0	0	0	0	0	0	0	0	52 029
	0	500	0	0	1 000	0	0	0	0
	320	4 499	6 551	0	18 944	8 769	0	0	37 803
	83 609	6 744	11 023	2 351	2 162	4 001	28 742	3 321	9 608

Table 36—Current and Projected Future Revenue Montezuma FPD (FY 19/20 FY 24/25)

Revenue Source	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	715 479	698 693	681 945	665 736	650 051	634 874
	16 260	16 910	17 587	18 290	19 022	19 783
	44 648	45 317	45 997	46 687	47 387	48 098
	7 202	7 200	7 200	7 200	7 200	7 200
	0	0	0	0	0	0
	65	0	0	0	0	0
	0	0	0	0	0	0
	14 768	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	22 384	0	0	0	0	0

4.3.2 Expenditures

The following table summarizes actual Montezuma FPD expenditures from FY 10/11 through FY 18/19, and Table 38 projects current and near-term future district expenditures through FY 24/25.

Table 37—Recent Historical Expenditures Montezuma FPD (FY 10/11 FY 18/19)

Expenditure Category	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	241 681	270 503	329 595	329 669	390 879	441 808	502 444	403 601	468 222
	161 338	193 083	224 003	187 256	249 087	230 242	233 070	209 815	314 904
	505 699	43 517	327 306	194 967	354 010	22 357	97 860	389 605	153 520

Table 38—Current and Projected Future Expenditures Montezuma FPD (FY 19/20 FY 24/25)

Expenditure Category	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	455 119	475 461	488 338	501 690	515 541	529 917
	255 975	244 945	256 955	269 749	283 387	297 936
	8 888	15 000	15 000	15 000	15 000	15 000

4.3.3 Revenues to Expenditures

Table 39, Table 40, and Figure 12 summarize revenues to expenditures for Montezuma. Of note are projected structural budget *deficits* beginning in FY 21/22 and beyond given current revenue and expenditure assumptions.

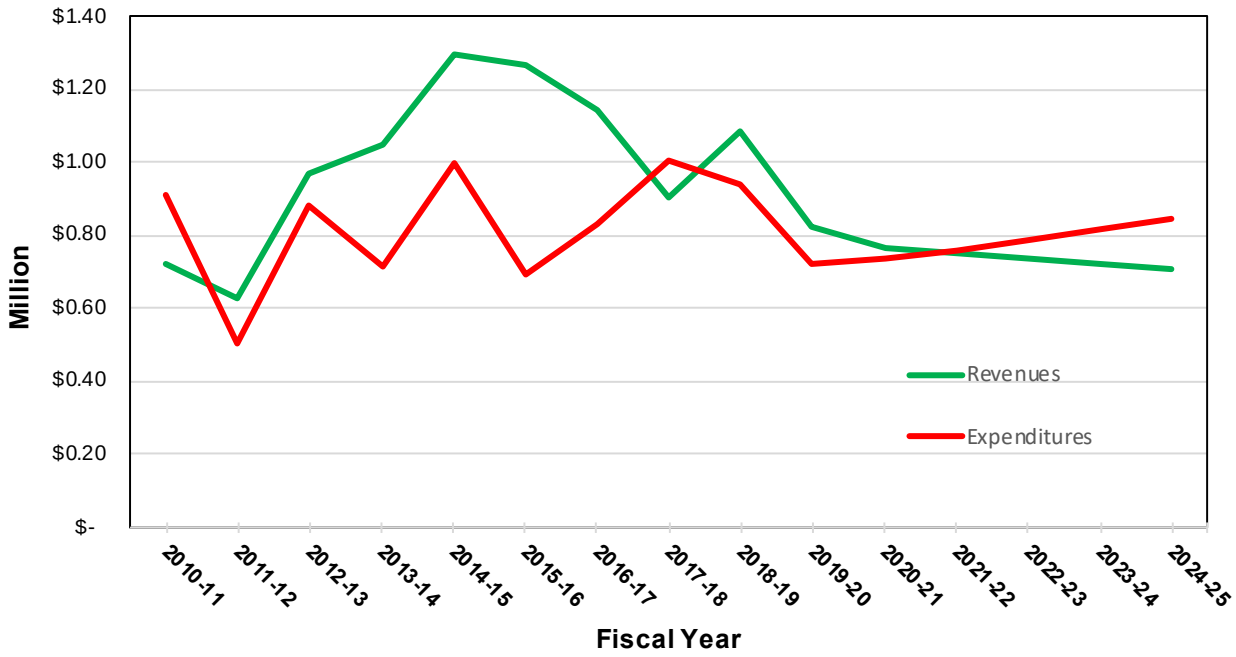
Table 39—Recent Historical Revenues to Expenditures Montezuma FPD (FY 10/11 FY 18/19)

Category	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	724 598	627 930	967 529	1 048 108	1 292 137	1 265 411	1 139 257	904 112	1 086 359
	908 718	507 103	880 904	711 891	993 976	694 406	833 374	1 003 020	936 646

Table 40—Current and Projected Future Revenues to Expenditures Montezuma FPD (FY 19/20 FY 24/25)

Category	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	820 806	768 121	752 729	737 914	723 660	709 955
	719 982	735 406	760 293	786 439	813 928	842 854

Figure 12—Revenues to Expenditures Montezuma FPD (FY 10/11 FY 24/25)



Finding #23: Montezuma FPD has projected structural budget *deficits* beginning in FY 21/22 and beyond given current revenue and expenditure assumptions.

4.3.4 Debt Service

Montezuma FPD has no debt service.

4.3.5 Unfunded Liability

Although not researched for this assessment, Montezuma may have an unfunded CalPERS employer retirement contribution liability.

4.3.6 Fiscal Reserves

Table 41, Table 42, and Figure 13 summarize Montezuma 's recent historica an pro ecte near-future fiscal reserve fund balance. Of note is that the District's reserve fun a ance is more than triple the FY 19/20 budget and is projected to *decrease* approximately 10 percent over the next five years given projected revenue and expenditure assumptions. In City ate's opinion, the slight deficit spending will eventually decrease reserves to the point to limit ongoing capital renewal/replacement and unanticipated contingencies.

Table 41—Recent Historical Fund Balance Montezuma FPD (FY 10/11 FY 18/19)

Category	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19

Table 42—Current and Projected Future Fund Balance Montezuma FPD (FY 19/20 FY 24/25)

Category	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	820 806	768 121	752 729	737 914	723 660	709 955
	719 982	735 406	760 293	786 439	813 928	842 854

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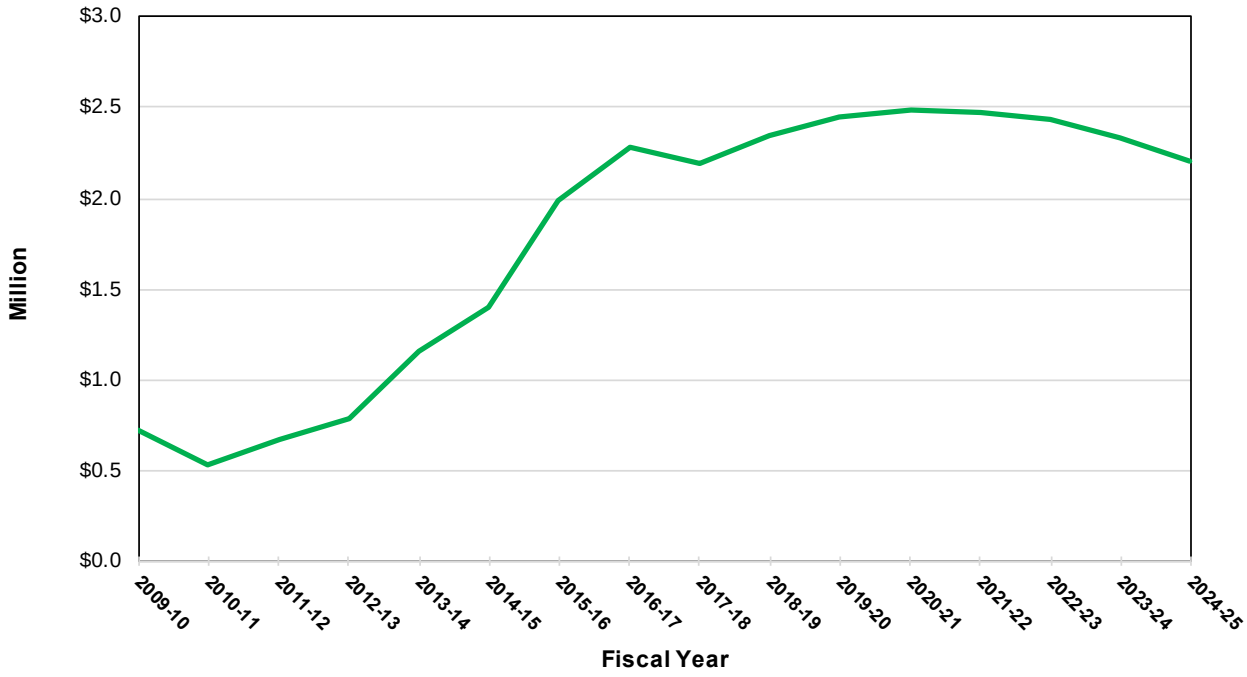
Figure 13—Fund Balance Montezuma FPD (FY 09/10 FY 24/25)



Finding #24: onte uma 's fund balance is *more than triple* the FY 19/20 budget and is projected to *decrease* approximately 10 percent over the next five years given projected revenue and expenditure assumptions.

Finding #25: Montezuma 's fun a ance will eventually decrease to the point to limit ongoing capital renewal/replacement and unanticipated contingencies.

4.4 SUISUN FPD

4.4.1 Revenues

The following table summarizes actual Suisun FPD revenues from FY 10/11 through FY 18/19, and Table 44 projects current and near-term future district revenues through FY 24/25.

Table 43—Recent Historical Revenues Suisun FPD (FY 10/11 FY 18/19)

Revenue Source	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	252 530	238 812	226 084	244 683	259 847	274 934	290 662	305 217	338 003
	9 471	10 201	9 965	10 048	10 107	10 638	10 918	11 490	11 853
	2 794	2 052	3 532	1 737	2 581	3 816	5 657	10 759	20 738
	1 152	2	1	1	1	1	1	1	1
	20 487	2 996	7 477	4 463	16 588	75 147	210 447	96 668	29 197
	0	0	0	0	0	20	20	20	86
	190 000	0	0	128 314	0	7 726	0	0	7 565
	267	3 455	0	95	0	0	0	0	0
	16 167	18 057	144 753	113 858	87 636	32 082	9 030	101 142	10 904
	2 296	135	714	2 125	190	615	1 450	2 200	8 435
	0	800	3 615	0	0	4 500	1 000	0	3 895
	1 265	800	400	0	407	3 839	9 661	6 741	740

Table 44—Projected Current and Future Revenues Suisun FPD (FY 19/20 FY 24/25)

Revenue Source	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	364 237	376 966	390 155	397 958	405 917	414 036
	11 730	12 023	12 324	12 570	12 822	13 078
	21 091	21 408	21 729	22 163	22 607	23 059
	1	1	1	1	1	1
	36 283	36 283	36 283	37 008	37 748	38 503
	31	31	31	32	32	33
	0	0	0	0	0	0
	0	0	0	0	0	0
	12 364	12 657	12 956	13 215	13 480	13 749
	14 124	14 477	14 839	15 136	15 439	15 748
	0	0	0	0	0	0
	686	700	714	728	743	757

4.4.2 Expenditures

The following table summarizes actual Suisun FPD expenditures from FY 10/11 through FY 18/19, and Table 46 projects current and near-term future district expenditures through FY 24/25.

Table 45—Recent Historical Expenditures Suisun FPD (FY 10/11 FY 18/19)

Expenditure Category	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	100 872	124 190	155 412	202 501	131 638	117 785	119 695	161 157	148 982
	103 818	259 355	96 033	132 664	133 768	100 147	105 067	121 011	161 865
	338 266	36 895	77 965	8 275	0	89 715	248 585	0	70 632

Table 46—Projected Current and Future Expenditures Suisun FPD (FY 19/20 FY 24/25)

Expenditure Category	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	255 748	263 468	271 503	276 933	282 471	288 121
	131 186	135 273	139 535	142 326	145 172	148 076
	11 490	30 000	30 000	30 000	30 000	30 000

4.4.3 Revenues to Expenditures

Table 47, Table 48, and Figure 14 summarize revenues to expenditures for Suisun. Of note is a *positive* structural budget (revenues to expenditures) since FY 12/13, which is projected to continue through FY 24/25.

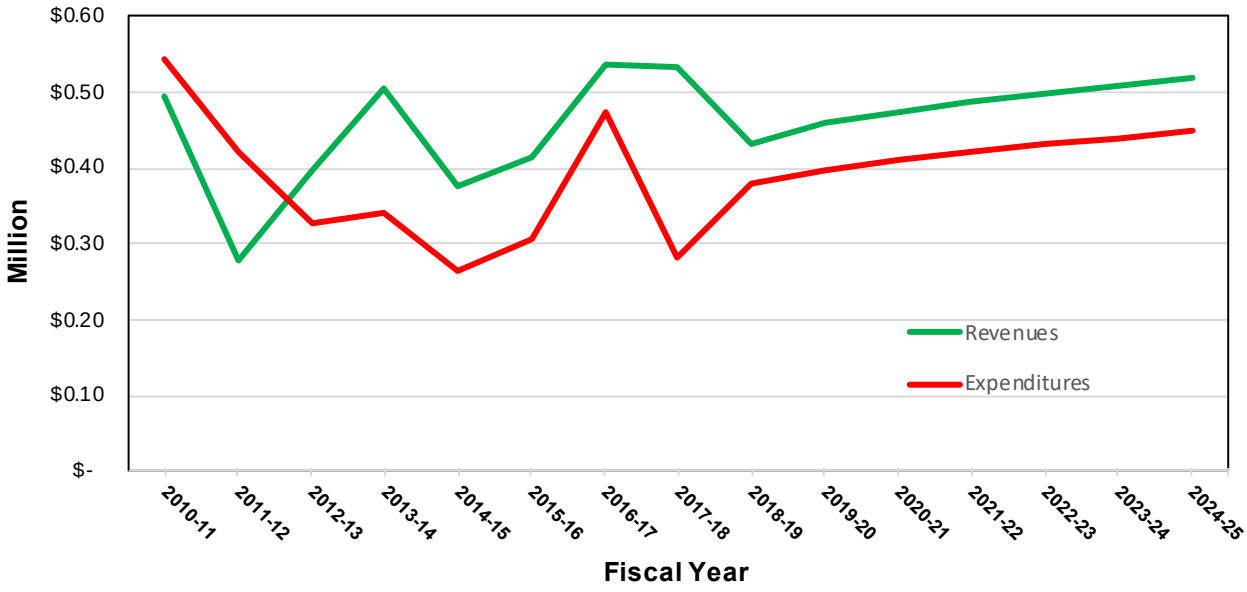
Table 47—Recent Historical Revenues to Expenditures Suisun FPD (FY 10/11 FY 18/19)

Category	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	496 428	277 310	396 542	505 323	377 356	413 319	538 845	534 239	431 418
	542 955	420 440	329 409	343 441	265 407	307 647	473 346	282 168	381 479

Table 48—Current and Projected Revenues to Expenditures Suisun FPD (FY 19/20 FY 24/25)

Category	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	460 548	474 546	489 031	498 812	508 788	518 964
	398 424	428 740	441 037	449 258	457 643	466 196

Figure 14—Revenues to Expenditures Suisun FPD (FY 10/11 FY 24/25)



Finding #26: Suisun FPD has a projected *positive structural budget* through FY 24/25.

4.4.4 Debt Service

Suisun FPD has no debt service.

4.4.5 Unfunded Liability

Although not researched for this assessment, Suisun may have an unfunded CalPERS employer retirement contribution liability

4.4.6 Fiscal Reserves

Table 49, Table 50, and Figure 15 summarize Suisun 's recent historica and projected near-future fiscal reserve fund balance. Of note is that the District's fiscal reserves are approximately 300 percent of the FY 19/20 budget and are projected to increase approximately 21 percent over the next five years given projected revenue and expenditure assumptions. n City ate's e perience and opinion, this reflects prudent fiscal management and fiscal reserves sufficient to fund conservative ongoing capital renewal/replacement, as well as nearly any unanticipated contingency.

Table 49—Recent Historical Fund Balance Suisun FPD (FY 10/11 FY 18/19)

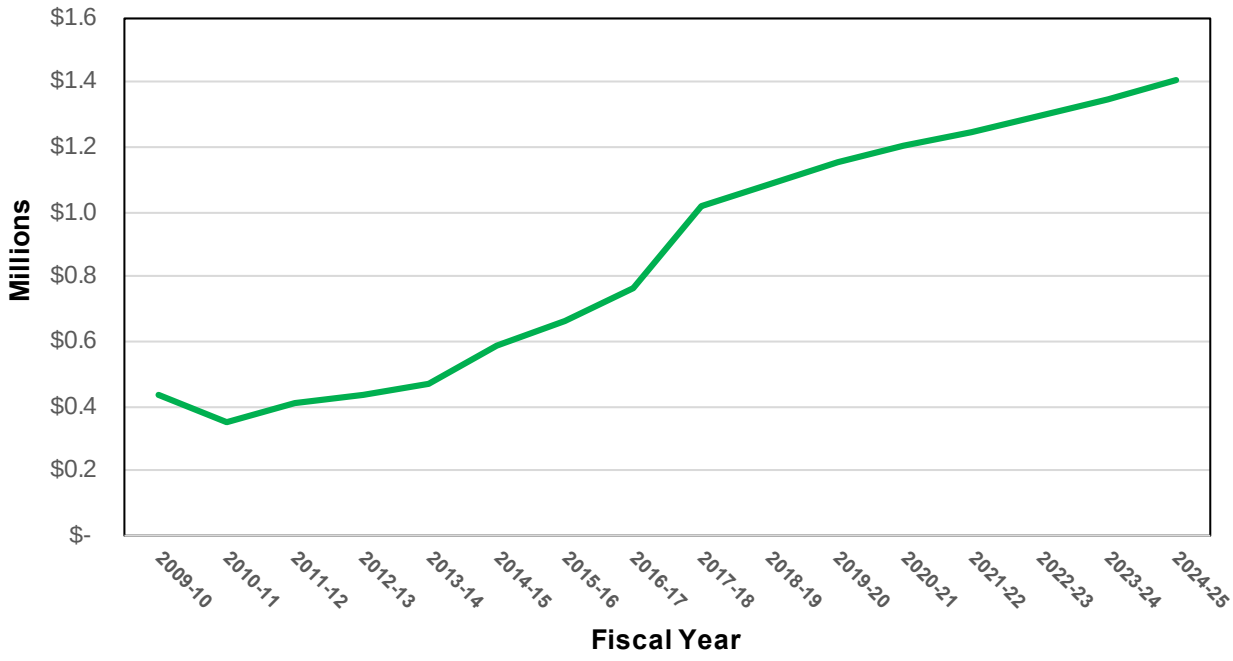
Category	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19

Table 50—Current and Projected Future Fund Balance Suisun FPD (FY 19/20 FY 24/25)

Category	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	460 548	474 546	489 031	498 812	508 788	518 964
	398 424	428 740	441 037	449 258	457 643	466 196

20 21
.

Figure 15—Fund Balance Suisun FPD (FY 09/10 FY 24/25)



Finding #27: Suisun 's fun a ance is *more than 300 percent* of the FY 19/20 budget and is projected to *increase* approximately 21 percent over the next five years given projected revenue and expenditure assumptions.

Finding #28: Suisun 's fun a ance ref ects pru ent fisca mana ement an fiscal reserves sufficient to fund conservative ongoing capital renewal/replacement and unanticipated contingencies.

4.5 VACAVILLE FPD

4.5.1 Revenues

The following table summarizes Vacaville FPD revenues from FY 10/11 through FY 18/19, and Table 52 projects current and near-term future district revenues through FY 24/25. Of note is the more than $650,000 reduction in FY 19/20 revenues from FY 18/19 due to significantly lower capital facility fees, revenue from other governmental agencies, other professional services, and other revenue.

Table 51—Recent Historical Revenues Vacaville FPD (FY 10/11 FY 18/19)

Revenue Source	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	977 070	948 744	931 797	1 010 072	1 095 472	1 172 507	1 230 170	1 283 221	1 353 543
	27 136	29 248	28 561	28 829	28 980	30 989	31 998	34 198	35 395
	4 885	2 658	6 624	1 190	2 948	4 988	8 846	16 593	32 447
	10 585	15 612	10 416	11 755	11 323	14 336	10 553	14 530	11 835
	50 408	66 038	99 118	65 863	77 284	73 241	57 273	109 831	74 350
	0	0	0	0	93 000	0	120 364	79 744	79 744
	0	0	0	0	0	0	0	286 432	0
	43 151	2 695	144 995	156 604	124 006	75 898	99 649	55 602	79 401
	21	42	51	14	43	28	35	21	7
	50	100	100	50	1 955	100	100	1 250	100
	0	11 514	0	0	0	0	15 527	0	47 023
	15 427	6 644	17 750	14 861	15 233	36 436	58 116	37 079	534 685

Table 52—Projected Current and Future Revenues Vacaville FPD (FY 19/20 FY 24/25)

Revenue Source	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	1 408 628	1 457 493	1 508 071	1 560 424	1 614 616	1 670 710
	34 999	35 874	36 771	37 691	38 633	39 599
	30 664	31 431	32 217	33 022	33 848	34 694
	12 164	12 407	12 655	12 909	13 167	13 430
	55 726	55 726	55 726	55 726	55 726	55 726
	3 782	3 858	3 858	3 858	3 858	3 858
	0	0	0	0	0	0
	4 984	5 084	5 084	5 084	5 084	5 084
	7	7	8	8	9	9
	100	105	110	116	122	128
	0	0	0	0	0	0
	44 943	26 686	27 018	27 357	27 702	28 054

4.5.2 Expenditures

The following table summarizes actual Vacaville FPD expenditures from FY 10/11 through FY 18/19, and Table 54 projects current and near-term future district expenditures through FY 24/25.

Table 53—Recent Historical Expenditures Vacaville FPD (FY 10/11 FY 18/19)

Expenditure Category	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	825 547	851 507	862 647	640 333	717 480	645 987	758 815	792 153	851 691
	456 180	500 410	497 926	401 085	395 686	418 246	451 445	510 433	684 136
	20 333	71 854	18 540	0	72 914	133 926	82 960	326 224	20 003

Table 54—Projected Current and Future Expenditures Vacaville FPD (FY 19/20 FY 24/25)

Expenditure Category	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	843 579	876 938	912 150	949 354	988 703	1 030 362
	533 150	544 384	554 577	565 597	576 923	588 567
	195 797	205 000	210 500	216 550	223 205	230 526

4.5.3 Revenues to Expenditures

Table 55, Table 56, and Figure 16 summarize revenues to expenditures for Vacaville. Of note is a *positive* structural budget (revenues to expenditures) since FY 13/14, which is projected to continue through FY 24/25.

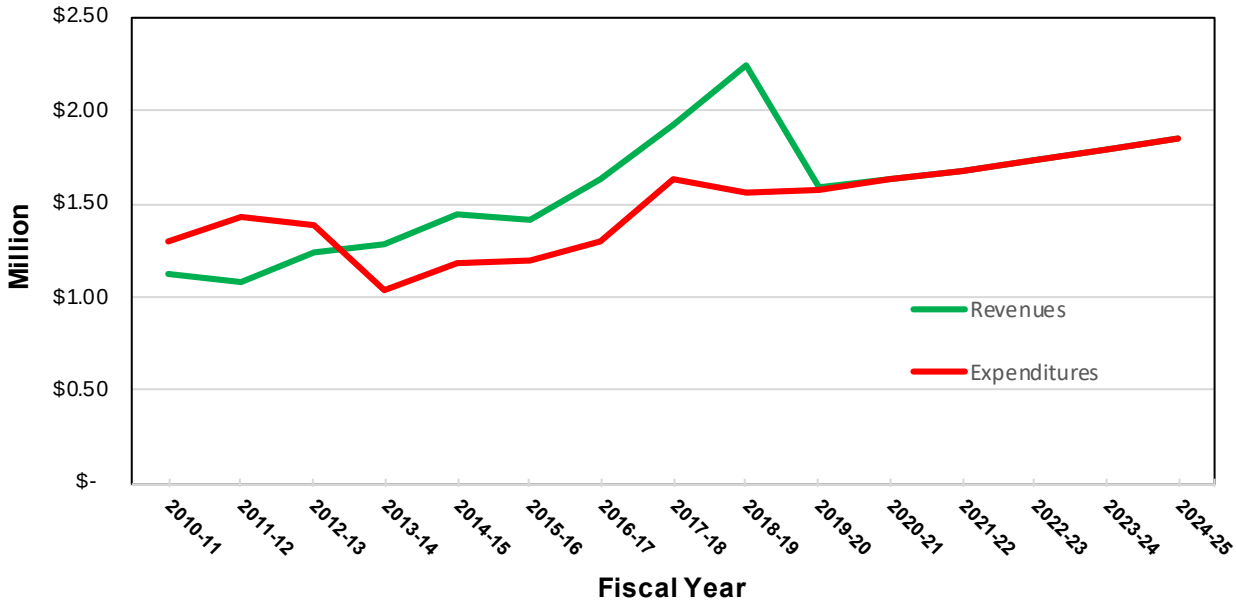
Table 55—Recent Historical Revenues to Expenditures Vacaville FPD (FY 10/11 FY 18/19)

Category	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19
	1 128 732	1 083 294	1 239 413	1 289 238	1 450 243	1 408 522	1 632 631	1 918 501	2 248 530
	1 302 060	1 423 772	1 379 114	1 041 418	1 186 080	1 198 159	1 293 220	1 628 810	1 555 830

Table 56—Current and Projected Revenues to Expenditures Vacaville FPD (FY 19/20 FY 24/25)

Category	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	1 595 998	1 628 670	1 681 517	1 736 193	1 792 762	1 851 290
	1 572 526	1 626 322	1 677 227	1 731 501	1 788 831	1 849 454

Figure 16—Revenues to Expenditures Vacaville FPD (FY 10/11 FY 24/25)



Finding #29: Vacaville FPD has a projected *positive structural budget* through FY 24/25.

4.5.4 Debt Service

Vacaville FPD has approximately $425,000 in debt service to finance two Type-5 wildland engines. The debt service will be retired in FY 22/23.

4.5.5 Unfunded Liability

Although not researched for this assessment, Vacaville may have an unfunded CalPERS employer retirement contribution liability.

4.5.6 Fiscal Reserves

Table 57, Table 58, and Figure 17 summari e acavi e 's recent historica an pro ecte near-future fiscal reserve fund balance. Of note is that the District's reserve fun a ance is approximately 12 percent more than its FY 19/20 budget and is projected to increase by approximately 1 percent over the next five years given projected revenue and expenditure assumptions. In City ate's opinion this reflects prudent fiscal management and fiscal reserves sufficient to fund conservative ongoing capital renewal/replacement, as well as nearly any unanticipated contingency.

Table 57—Recent Historical Fund Balance Vacaville FPD (FY 10/11 FY 18/19)

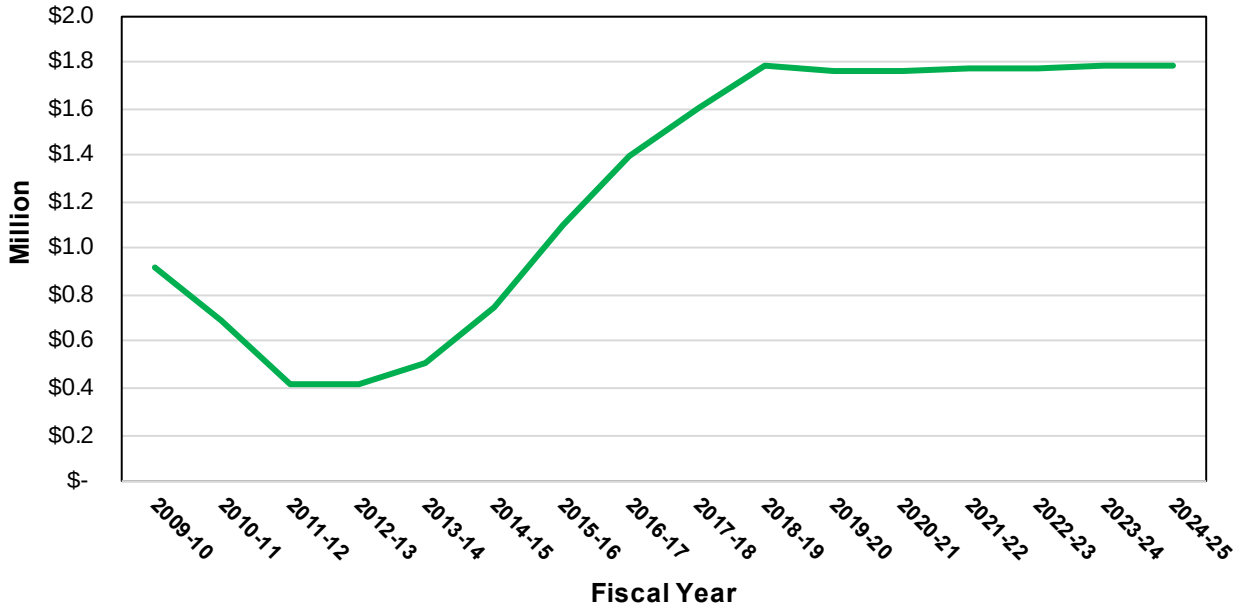
Category	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19

Table 58—Current and Projected Future Fund Balance Vacaville FPD (FY 19/20 FY 24/25)

Category	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
	1 595 998	1 628 670	1 681 517	1 736 193	1 792 762	1 851 290
	1 572 526	1 626 322	1 677 227	1 731 501	1 788 831	1 849 454

20 21
.

Figure 17—Fund Balance Vacaville FPD (FY 09/10 FY 24/25)



Finding #30: acavi e 's fun a ance is approximately *12 percent more* than its FY 19/20 budget and is projected to *increase* approximately 1 percent over the next five years given projected revenue and expenditure assumptions.

Finding #31: Vacaville 's fun a ance ref ects pru ent fisca mana ement and fiscal reserves sufficient to fund conservative ongoing capital renewal/replacement and unanticipated contingencies.

4.6 FISCAL ASSESSMENT SUMMARY

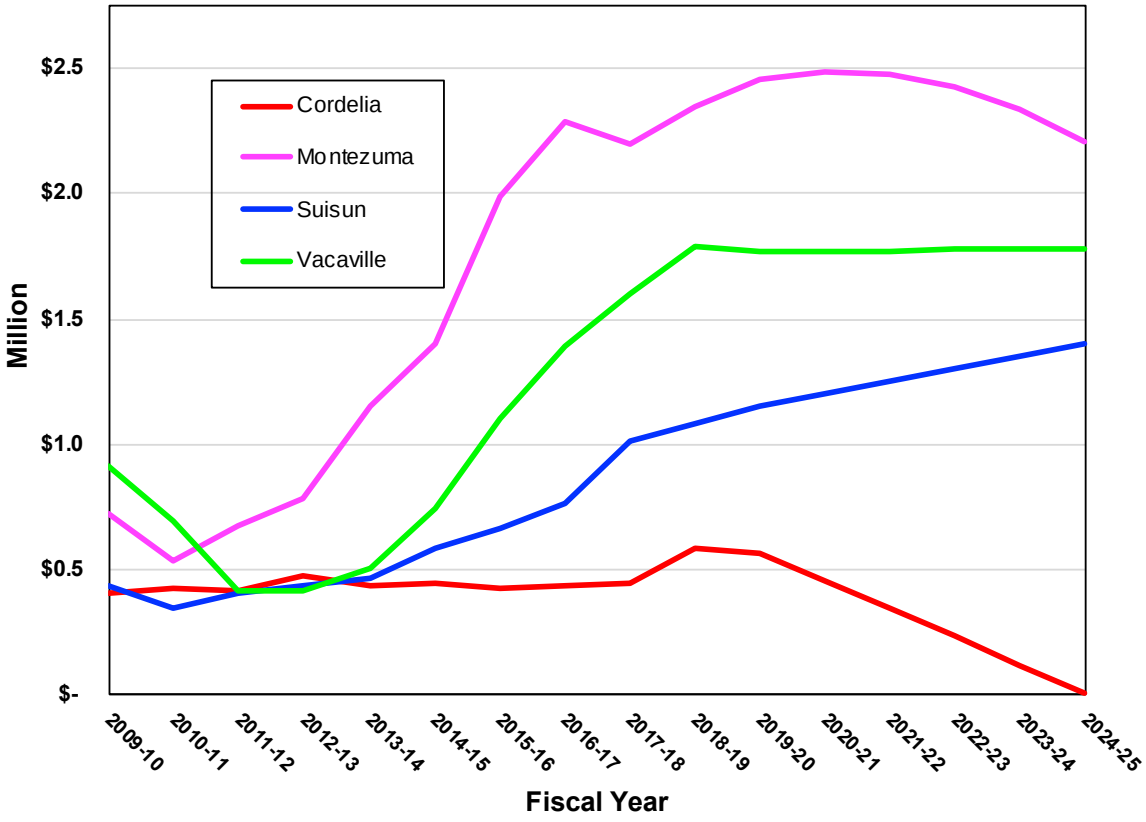
As the analysis in Sections 4.2 through 4.5 shows, Suisun and Vacaville have projected *positive* structural budgets and *stable-to-increasing* projected fiscal reserves over the next five years to FY 24/25 with modest capital renewal/replacement. n City ate's opinion these two districts are fiscally viable and sustainable over the near term, with sufficient fiscal reserves to sustain their current service delivery model and provide capital renewal/replacement as needed.

Montezuma's reserve fund balance is more than triple the FY 19/20 budget and is projected to *decrease* approximately 10 percent over the next five years given projected revenue and expenditure assumptions. In Citygate's opinion, the slight deficit spending will eventually decrease reserves to the point to limit ongoing capital renewal/replacement and unanticipated contingencies.

Cordelia FPD, however, has a *structural budget deficit* beginning in FY 19/20 and projected to increase each ensuing year to FY 24/25. This, combined with a fund balance projected to *decline* each year to less than $11,000 by FY 24/25 and the District's significant capital renewal/replacement needs and current service model, results in a significantly deteriorating fiscal situation to the point where the istrict's fiscal reserves will likely be exhausted within the next several years absent additional revenues, reduced expenditures, or a combination of both.

Each district has current fiscal reserves ranging from 65 percent of its FY 19/20 budget (Cordelia) to 341 percent (Montezuma), as summarized in Figure 18.

Figure 18—Fund Balances



Finding #32: Montezuma, Suisun, and Vacaville FPDs are *fiscally viable at the moment but cannot likely afford more in-station staffing*. They can only afford modest capital renewal/replacement as needed; not entire fire station replacements eventually needed.

Finding #33: Cordelia FPD's fiscal health is *poor* and *deteriorating*, with a projected *increasing structural budget deficit* each fiscal year through FY 24/25, significant capital renewal/replacement needs, and a declining reserve fund balance likely exhausted within the next several years without substantial additional revenue.

This section identifies and evaluates prospective alternative service delivery and current governance models.

5.1 Fire Service Policy Choice Framework

In the United States, there are no Federal or State regulations requiring a specific minimum level of fire services. Each community, through the public policy process, is expected to understand the local fire and non-fire risks and its desire and ability to pay and then choose its level of fire services. *If* fire services are provided at all, Federal and State regulations specify how they must be safely provided to protect the public and the personnel providing the services.

5.2 Rural Fire Service Challenges

Increasing migration from urban cities to more rural areas, increasing service demand, a general downward trend in volunteer firefighters, limited fiscal resources, increasing operating costs, and general property owner and voter aversion to additional taxes and fees are some of the issues challenging many rural fire agencies throughout the United States in providing a level of fire services adequate to mitigate the risks in their community or service area.

While three of the four districts have volunteer firefighter participation, Cordelia FPD has had no volunteer firefighters since 2013 and has needed to resort to part-time firefighters paid a small daily stipend to maintain a minimal daily response capacity, with significant recruitment and retention challenges associated with that staffing model.

5.3 Service Model Alternatives

n City ate's opinion a ternative service models should be considered to ensure an adequate level of fire protection services in all unincorporated areas of the County given current and potential or likely future staffing, fiscal, and capital infrastructure challenges. Potentially viable alternatives include the following:

- Shared administrative personnel/functions
- Shared response staffing
- Shared physical response resources
- Shared support services
- Contracted fire services

5.3.1 Shared Administrative Personnel/Functions

In this service model, two or more fire agencies share administrative personnel or functions (e.g., Fire Chief, Assistant Chief, clerical, fiscal, human resources, etc.) via contract, JPA, or merger.

5.3.2 Shared Response Staffing

In this model, two or more fire agencies share response staffing, including full-time, part-time, and volunteer firefighters as appropriate. Response personnel could be assigned to specific stations or respond from home or their work location as determined by the agencies.

5.3.3 Shared Physical Response Resources

In this service model, two or more fire agencies share physical response apparatus and equipment, including fire engines, water tenders, light-duty vehicles, boats, and other emergency response and support vehicles and equipment. This service model would likely require a smaller overall fleet than is currently in place with the separate agencies.

5.3.4 Shared Support Services

This model involves two or more fire agencies sharing support services, such as fire prevention, training, vehicle and fire station maintenance and repair, EMS equipment and supplies, fire station supplies, personal protective clothing and supplies, etc.

5.3.5 Contracted Fire Services

In this model, an existing fire agency would contract for full or partial fire protection services from another agency, including another fire district, city, or State agency, such as CAL FIRE. This model offers prospective enhanced service level and overall efficiency if another fire agency has or plans to have a fire station near a fire district service area.

While this report finds no *immediately* imminent inability to sustain current service levels in the four districts, Cordelia FPD faces the potential exhaustion of its fiscal reserves over the next several years absent significant additional revenue. This pending crisis is an opportunity not only for Cordelia FPD but also for the other fire districts to thoughtfully consider how adequate and sustainable fire services can best be provided in rural Solano County over the long term. In City ate's experience and opinion, multiple smaller agencies providing similar services are not as efficient or cost-effective as a larger unified agency with a single, appropriately sized administrative and support organization with shared staffing and physical resources. As such, Citygate strongly encourages the Districts to engage in a constructive dialogue relative to the long-term future delivery of rural fire services in the County and the potential advantages of one or more service model alternatives.

Finding #34: The fiscal crisis in Cordelia FPD and the limited staffing funds in all the Districts presents an opportunity for all four districts to thoughtfully consider merging to create a platform for sustainable fire services over the long term.

Finding #35: Potentially viable alternative service models include shared administration staff/functions, support services, response staffing, and/or physical response resources, or contracting with another agency or jurisdiction for full or partial fire services.

Recommendation #5: The Districts and LAFCO should immediately engage in a collaborative dialogue relative to the long-term future delivery of rural fire services in Solano County and the potential advantages of one or more forms of merger.

5.4 GOVERNANCE ALTERNATIVES

In addition to the current existing dependent and independent districts, potential fire service governance alternatives include the following:

- Consolidation/merger
- Single Countywide fire protection district
- County service area
- Countywide community services district
- Countywide Mello-Roos Community Facilities District

5.4.1 Consolidation/Merger

This alternative involves two or more existing fire districts merging or consolidating under a single elected or appointed governing body, which could also be the County Board of Supervisors. Under California law, any consolidation or merger would require approval by the LAFCO.

5.4.2 Single Countywide Fire Protection District

This alternative envisions a single Countywide FPD governed by an elected or appointed governing body, which could also be the County Board of Supervisors. This alternative would also require approval by the LAFCO, as well as prospective district voter approval.

5.4.3 County Service Area

Under this alternative, the County Board of Supervisors would establish a County service area (CSA) with authority to provide fire protection services in the unincorporated areas of the County and would serve as the governing body as authorized by California Government Code Section 25210 et seq. Formation of a new CSA, or expansion of an existing CSA, requires approval by the LAFCO. Voter approval would also be required for any new tax or fee required to fund the CSA.

5.4.4 Countywide Community Services District

The County Board of Supervisors could also initiate establishing a Countywide community services district (CSD) with authority to provide fire protection services pursuant to California Government Code Section 56036 et seq. Formation of a new CSD also requires approval by the LAFCO and voter election of the governing Board of Directors. Voter approval would also be required for any new tax or fee required to fund the CSD.

5.4.5 Countywide Mello-Roos Community Facilities District

A Countywide Mello-Roos community facilities district (CFD) could also be formed pursuant to California Government Code Section 53321 et seq., with specific authority to provide fire protection services and a specified annual special parcel tax to fund those services. The County Board of Supervisors can serve as the legislative governing body of a Countywide CFD, which would also require property owner or registered voter approval.

While each of these alternatives offer unique governance and funding opportunities, Citygate encourages that any alternative governance model considered include supplemental or special taxing authority to ensure adequate long-term funding.

5.4.6 Service Model and Governance Alternatives Summary

While multiple rural service delivery and governance alternatives are available for consideration by the Districts and LAFCO, any alternative considered should provide equitable services to the greatest population feasible, with funding structure(s) to sustain or enhance current service levels over the long term.

n City ate's e perience an opinion sharing of resources and/or services is a logical first step to achieve enhanced operational efficiency and cost-effectiveness, and is often a first step toward a more comprehensive, longer-term solution to improve services and ensure fiscal sustainability. While there are pros and cons to all the governance alternatives, the consolidation/merger alternative is, in our opinion, the least challenging of the alternatives to successfully implement, and provides a foundation for other districts to join in the future. As the most viable governance alternative for successful implementation, Citygate suggests a consolidated/merged FPD with one of the existing districts as the parent district, with a future goal of establishing a Countywide FPD.

A Countywide CSD, CSA, or CFD, in that order, are other viable governance alternatives of increasing implementation complexity.

Finding #36: Shared resources via a contract or JPA is a logical first step to achieve enhanced operational efficiency and cost-effectiveness.

Finding #37: Any service model alternative considered should provide equitable services to the greatest population feasible, with funding structure(s) to sustain or enhance current service levels over the long term.

Finding #38: The most viable governance alternative for successful implementation is a consolidated/merged FPD, with the goal of a future Countywide FPD.

Finding #39: Any alternative service delivery or governance model should include supplemental taxing authority to ensure adequate long-term funding.

Recommendation #6: Include supplemental special taxing authority with any alternative fire service delivery and/or governance model to ensure long-term fiscal sustainability.

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This section contains a sequential list of all findings and recommendations contained in this report by theme.

6.1 DEPLOYMENT FINDINGS AND RECOMMENDATIONS

Finding #1: Each district provides *basic and limited* advanced emergency response services relative to fire, medical, hazardous materials, and technical rescue risks.

Finding #2: Minimal population growth is projected in the Districts over the next five to ten years.

Finding #3: Future annual service demand is projected to increase from 1 percent to 9 percent by district consistent with recent annual service demand change.

Finding #4: The National Fire Protection Association (NFPA) Standard on Volunteer Fire Departments should be the minimum deployment goal measures for which the Districts should strive.

Finding #5: n City ate's opinion a four istricts have barely the minimum number of personnel to provide response services from a *staffed* fire station 24 hours per day, seven days per week, as well as adequate command and quality control for training, safety, and fiscal responsibilities.

Finding #6: Cordelia, Montezuma, and Suisun have *insufficient* daily staffing capacity 24 hours per day, seven days per week, for anything other than a single-unit response to a minor emergency without assistance from another agency.

Finding #7: Overall building fire, vegetation/wildland fire, and medical emergency risk in the Districts range from ***low*** to ***high***.

Finding #8: While the fire station placements cover most of the public road miles, units do not provide services, firefighters arriving in time do.

Finding #9: Nearly 16 percent of the aggregate service demand of the four districts is mutual aid to other jurisdictions, including more than 20 percent of all calls for service for Cordelia and Vacaville FPDs.

Finding #10: The Districts and nearby cities, via their common fire dispatch center, are not using closest available unit response to emergencies. To not do so inappropriately delays response times.

Finding #11: Call processing performance ranges from 107 percent (at 3:06 minutes) to 141 percent (at 3:37 minutes) *slower* than the 1:30-minute recommended best practice goal. This time loss is even more critical when units are not staffed with in-station personnel and the response must wait for volunteers.

Finding #12: First unit response performance appears to meet or be slightly slower than the 14:00-minute goal as a recommended by NFPA 1720 and Citygate; however, dispatch system time stamp irregularities, GIS travel time coverage analysis, and anecdotal district information suggest that response performance may be slightly better than the data indicates. Even if true, a 12:00-minute response time is past the point of a positive outcome in a critical emergency.

Finding #13: As separate entities, the Districts are very exposed to single points of failure if they were to lose a few career personnel or highly responsive volunteers. They lack "*strength in numbers"* to be resilient and have redundancy.

Finding #14: The Districts must fix their fragile personnel counts and 24-hour-per-day, seven-day-per-week in-station staffing. In the current wildfire and building fire environment, incidents cannot wait for a minimal force to respond from home or business.

Finding #15: Operating and commanding a district is more than a one-person job and the Districts are very exposed to failure as stand-alone agencies.

Recommendation #1: The Districts should merge their command and volunteer staffs to improve key personnel resiliency and redundancy. This will also improve cost effectiveness of headquarters services and can be done initially via contracts or a Joint Powers Authority (JPA) of elected officials to provide oversight and planning for a longer-term, permanent solution.

Recommendation #2: The Districts should work with and insist that the Solano County Sheriff's Office Communications Center improve time stamp accuracy and call processing performance to align with recommended best practices in order to reduce dispatch processing time by at least 1:30 minutes.

Recommendation #3: **Adopt Updated Deployment Policies:** The Districts should adopt complete performance measures to communicate to the public what they can and cannot deliver and to monitor performance.

Recommendation #4: Updated response time measures should be designed to deliver outcomes that will save patients when possible upon arrival and to keep small and expanding fires from becoming more serious. With this is mind, Citygate recommends the following measures:

4.1 Distribution of Fire Stations: To treat pre-hospital medical emergencies and control small fires, first-due units should arrive within 14:00 minutes of receipt of the 9-1- ca at the So ano County Sheriff's Office Communications Center at 80 percent or greater reliability.

4.2 Multiple-Unit Effective Response Force for Serious Emergencies: To confine building fires to only the affected building, keep vegetation fires under five acres in size, and treat multiple medical patients at a single incident, a multiple-unit ERF, including at least one chief officer, should arrive within 19:00 minutes of receipt of the 9-1- ca at the So ano County Sheriff's Office Communications Center at 80 percent or greater reliability.

4.3 Hazardous Materials Response: To protect residents from the hazards associated with uncontrolled release of hazardous and toxic materials, first-due units should arrive within 14:00 minutes of receipt of the 9-1- ca at the So ano County Sheriff's Office Communications Center at 80 percent or greater reliability. The fundamental mission of the Districts' response is to isolate the hazard, deny entry into the hazard zone, and notify appropriate officials/resources to minimize impacts on the community. After an initial evaluation is completed, a determination can be made whether to request additional resources from the regional hazardous materials team.

4.4 Technical Rescue: Respond to technical rescue emergencies with a first-due response time of 14:00 minutes or less from receipt of the 9-1-1 call at the Solano County Sheriff's Office Communications Center at 80 percent or greater reliability to evaluate the situation and/or initiate rescue actions. Following the initial evaluation, request additional resources as needed to safely complete rescue/extrication

and delivery of the victim to the appropriate emergency medical care facility.

6.2 PHYSICAL ASSET FINDINGS

Finding #16: Except for Cordelia FPD Stations 29 and 31 and Vacaville FPD Station 67, the istricts' fire station faci ities meet current an anticipate future operational needs and have been adequately maintained for continued operational use.

Finding #17: he istricts' physical response resources are of the appropriate types and configuration to protect against the risks likely to impact each district.

Finding #18: The aggregate number of physical response resources is more than would be reasonably needed in a single agency or shared resource service model.

Finding #19: Except for three Cordelia FPD engines and one Vacaville FPD engine and utility, the istricts' physica response apparatus meet current an anticipate future operational needs and are appropriately maintained for safe operational use.

6.3 FISCAL FINDINGS

Finding #20: Cordelia FPD has a *structural budget deficit* beginning in FY 19/20 and increasing each ensuing year through FY 24/25.

Finding #21: Given a structural budget *deficit* beginning in FY 19/20 and projected to increase each ensuing fiscal year, the Cordelia FPD fund balance is projected to *decline* from approximately 65 percent of annual budget in the current year to approximately one percent of annual budget by FY 24/25.

Finding #22: Absent additional revenues, reduced expenditures, or a combination of both, Cor e ia 's fisca reserves cou be *exhausted* within the next several years.

Finding #23: Montezuma FPD has projected structural budget *deficits* beginning in FY 21/22 and beyond given current revenue and expenditure assumptions.

Finding #24: onte uma 's fun a ance is *more than triple* the FY 19/20 budget and is projected to *decrease* approximately 10 percent over the next five years given projected revenue and expenditure assumptions.

Finding #25: Montezuma 's fun a ance will eventually decrease to the point to limit ongoing capital renewal/replacement and unanticipated contingencies.

Finding #26: Suisun FPD has a projected *positive structural budget* through FY 24/25.

Finding #27: Suisun 's fun a ance is *more than 300 percent* of the FY 19/20 budget and is projected to *increase* approximately 21 percent over the next five years given projected revenue and expenditure assumptions.

Finding #28: Suisun 's fun a ance ref ects pru ent fisca mana ement an fisca reserves sufficient to fund conservative ongoing capital renewal/replacement and unanticipated contingencies.

Finding #29: Vacaville FPD has a projected *positive structural budget* through FY 24/25.

Finding #30: acavi e 's fun a ance is approximately *12 percent more* than its FY 19/20 budget and is projected to *increase* approximately one percent over the next five years given projected revenue and expenditure assumptions.

Finding #31: acavi e 's fun a ance ref ects pru ent fisca mana ement an fisca reserves sufficient to fund conservative ongoing capital renewal/replacement and unanticipated contingencies.

Finding #32: Montezuma, Suisun, and Vacaville FPDs are *fiscally viable at the moment but cannot likely afford more in-station staffing*. They can only afford modest capital renewal/replacement as needed; not entire fire station replacements eventually needed.

Finding #33: Cordelia FPD's fiscal health is *poor* and *deteriorating*, with a projected *increasing structural budget deficit* each fiscal year through FY 24/25, significant capital renewal/replacement needs, and a declining reserve fund balance likely exhausted within the next several years without substantial additional revenue.

6.4 SERVICE MODEL / GOVERNANCE ALTERNATIVES FINDINGS AND RECOMMENDATIONS

Finding #34: The fiscal crisis in Cordelia FPD and the limited staffing funds in all the Districts presents an opportunity for all four districts to thoughtfully consider merging to create a platform for sustainable fire services over the long term.

Finding #35: Potentially viable alternative service models include shared administration staff/functions, support services, response staffing, and/or physical response resources, or contracting with another agency or jurisdiction for full or partial fire services.

Finding #36: Shared resources via a contract or JPA is a logical first step to achieve enhanced operational efficiency and cost-effectiveness.

Finding #37: Any service model alternative considered should provide equitable services to the greatest population feasible, with funding structure(s) to sustain or enhance current service levels over the long term.

Finding #38: The most viable governance alternative for successful implementation is a consolidated/merged FPD, with the goal of a future Countywide FPD.

Finding #39: Any alternative service delivery or governance model should include supplemental taxing authority to ensure adequate long-term funding.

Recommendation #5: The Districts and LAFCO should immediately engage in a collaborative dialogue relative to the long-term future delivery of rural fire services in Solano County and the potential advantages of one or more forms of merger.

Recommendation #6: Include supplemental special taxing authority with any alternative fire service delivery and/or governance model to ensure long-term fiscal sustainability.

A.1 COMMUNITY RISK ASSESSMENT OVERVIEW

Another element of the deployment assessment process is a risk assessment. Within the context of a deployment study, the objectives of a risk assessment are to:

- Identify the values at risk to be protected within the community or service area.
- Identify the specific hazards with the potential to adversely impact the community or service area.
- Quantify the overall risk associated with each hazard.
- Establish a foundation for current/future deployment decisions and risk-reduction/hazard mitigation planning and evaluation.

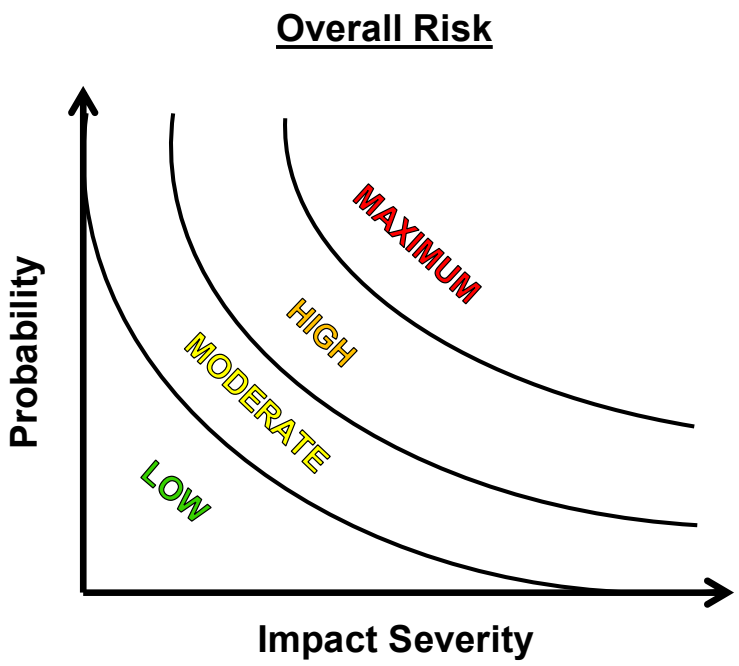
A *hazard* is broadly defined as a situation or condition that can cause or contribute to harm. Examples include fire, medical emergency, vehicle collision, earthquake, flood, etc. *Risk* is broadly defined as the *probability of hazard occurrence* in combination with the *likely severity of resultant impacts* to people, property, and the community as a whole.

A.2 RISK ASSESSMENT METHODOLOGY

The methodology employed by Citygate to assess community risk as an integral element of an SOC study incorporates the following elements:

- Identification of geographic planning sub-zones (risk zones) appropriate to the community or jurisdiction
- Identification and quantification (to the extent data is available) of the specific values at risk to various hazards within the community or service area
- Identification of the fire and non-fire hazards to be evaluated
- Determination of the probability of occurrence for each hazard
- Identification and evaluation of relevant impact severity factors for each hazard by planning zone using agency/jurisdiction-specific data and information
- Quantification of overall risk for each hazard based on probability of occurrence in combination with probable impact severity as shown in the following figure

Figure 19—Overall Risk



A.2.1 Probability of Occurrence

Probability of occurrence refers to the probability of a future hazard occurrence during a specific perio ecause the C a ency accre itation process re uires annua revie of an a ency's ris assessment and baseline performance measures, Citygate recommends using the 12 months following completion of an SOC study as an appropriate period for the probability of occurrence evaluation. The following table describes the five probability of occurrence categories and related scoring criteria used for this analysis.

Table 59—Probability of Occurrence Scoring Criteria

Score	Probable Occurrence	Description	General Criteria
0 1.0	***Very Low***	Improbable	Hazard occurrence is *unlikely*
1.25 2.0	***Low***	Rare	Hazard *could occur*
2.25 3.0	***Moderate***	Infrequent	Hazard *should occur* infrequently
3.25 4.0	***High***	Likely	Hazard *likely to occur* regularly
4.25 5.0	***Very High***	Frequent	Hazard is *expected to occur* frequently

City ate's SOC assessments use recent multiple-year hazard response data to determine the probability of hazard occurrence for the ensuing 12-month period.

A.2.2 Impact Severity

Impact severity refers to the extent a hazard occurrence impacts people, buildings, lifeline services, the environment, and the community as a whole. The following table describes the five impact severity categories and related scoring criteria used for this analysis.

Table 60—Impact Severity Criteria

Score	Impact Severity	Example Factors
0 1.0	Insignificant	expected None to a few persons displaced for only a short duration ne or inconsequential damage expected ne to very minimal disruption to community expected expected None to minimal financial loss expected No wildland FHSZs No history of significant hazard impacts
1.25 2.0	Minor	but no fatalities expected may be displaced for less than 24 hours Minor damage expected possible with no loss of lifeline services possible with no lasting effects ss expected No wildland FHSZs No recent history of hazard occurrence with more than minor impacts
2.25 3.0	Moderate	and fatalities expected p to 48 hours possible Not more than moderate localized damage expected expected with some inconvenience possible cts possible with no lasting effects or minor environmental impact with longer-term effects expected Less than 25% in *Moderate* or *High* wildland FHSZ Some history of recent moderate-impact hazard occurrences
3.25 4.0	Major	Numerous serious injuries, hospitalizations, and fatalities expected people for more than 48 hours possible expected requiring external resources with some lifeline services potentially unavailable Moderate environmental impacts with long-term effects possible expected More than 25% in *Moderate* or *High* wildland FHSZ; less than 25% in *Very High* FHSZ
4.25 5.0	Catastrophic	-scale serious injuries and fatalities expected al hospitals significantly impacted ople displaced for an extended duration serious damage expected able to function without significant support ironmental impacts and/or permanent environmental damage possible More than 50% in *High* wildland FHSZ; more than 25% in *Very High* wildland FHSZ

A.2.3 Overall Risk

Overall hazard risk is determined by multiplying the *probability of occurrence score* by the *impact severity score*. The resultant total determines the overall *risk ranking*, as described in the following table.

Table 61—Overall Risk Score and Rating

Overall Risk Score	Overall Risk Rating
0 5.99	*LOW*
6.0 11.99	*MODERATE*
12.0 19.99	*HIGH*
20.0 25.0	*MAXIMUM*

A.3 VALUES AT RISK TO BE PROTECTED

Broadly defined, *values at risk* are those tangibles of significant importance or value to the community or jurisdiction that are potentially at risk of harm or damage from a hazard occurrence. Values at risk typically include people, critical facilities/infrastructure, buildings, and key economic, cultural, historic, and/or natural resources.

A.3.1 People

Residents, employees, visitors, and travelers through a community or jurisdiction are vulnerable to harm from a hazard occurrence. Particularly vulnerable are specific at-risk populations, including those unable to care for themselves or self-evacuate in the event of an emergency. At-risk populations typically include children less than 10 years of age, the elderly, and people housed in institutional settings. Key demographic data for Solano County includes the following:[12]

- Slightly more than 24 percent of the population is under 10 years or over 65 years of age
- The County's popu ation is White (37 percent), followed by Hispanic/Latino (27 percent), Asian (15 percent), Black / African American (13 percent), and other ethnicities (8 percent)
- Of the population over 24 years of age, nearly 89 percent has earned at least a high school diploma or equivalent

[12] Source: ESRI Community Profile Solano County (2019).

- Of the population over 24 years of age, 27 percent has an undergraduate, graduate, or professional degree
- Nearly 94 percent of the population 15 years of age or older is in the workforce; of those, 6.1 percent are unemployed[13]
- The population below the Federal poverty level is 7.3 percent
- Only 4.4 percent of the population does not have health insurance coverage.

A.3.2 Buildings

Unincorporated Solano County consists of predominantly single-family dwellings and agriculture-related buildings. In addition, Solano Community College is a significant value to be protected in Cordelia FPD.

A.4 HAZARD IDENTIFICATION

Citygate utilizes prior risk studies where available, fire and non-fire hazards as identified by the CFAI, and data and information specific to the agency/jurisdiction to identify the hazards to be evaluated for this report.

Following an evaluation of the hazards identified in the 2012 Solano County Local Hazard Mitigation Plan and the fire and non-fire hazards as identified by the CFAI as they relate to services provided by the Districts, Citygate evaluated the following three hazards for this risk assessment:

- Building Fire
- Vegetation/Wildland Fire
- Medical Emergency

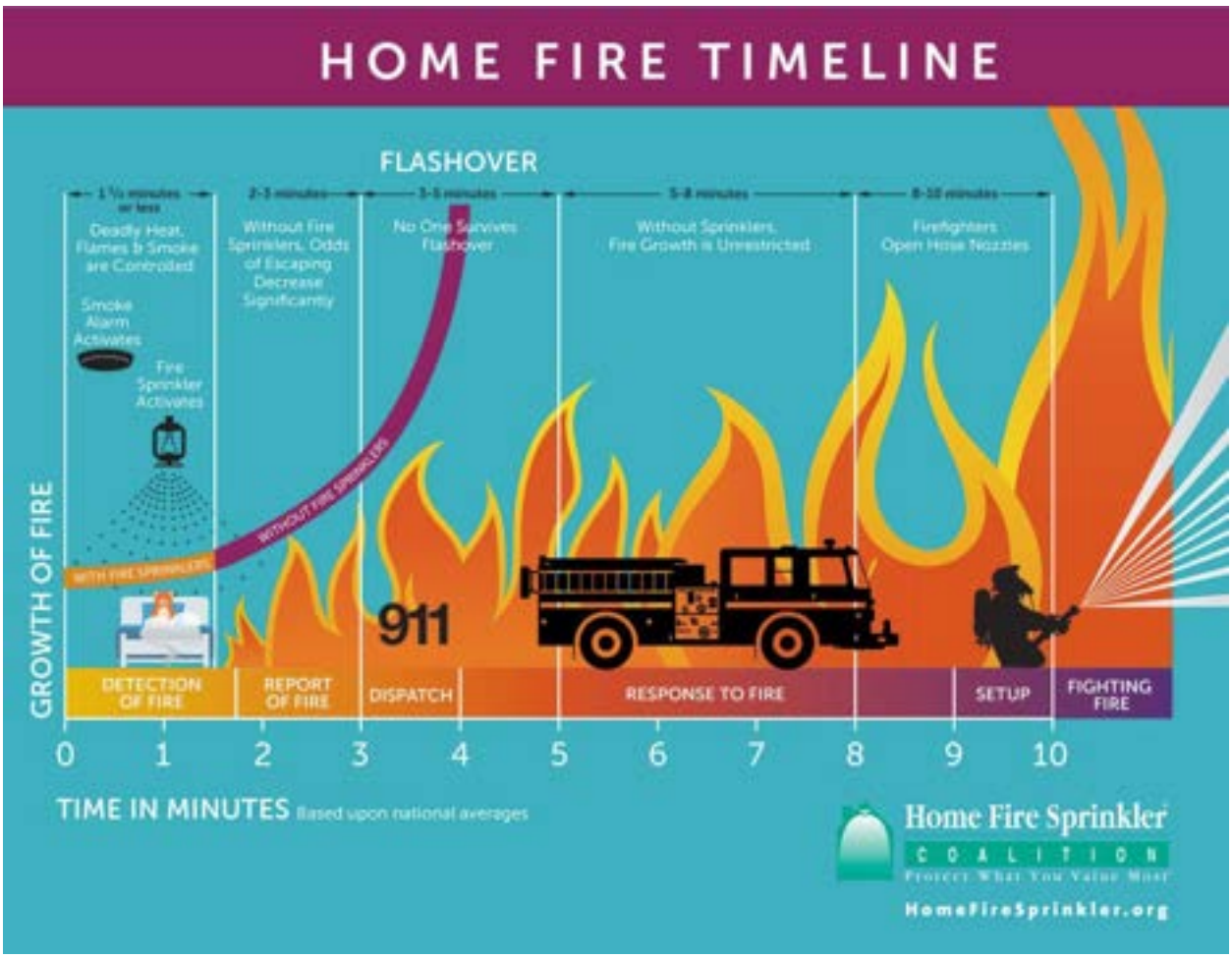
A.5 BUILDING FIRE RISK

One of the primary hazards in any community is building fire. Building fire risk factors include building density, size, age, occupancy, and construction materials and methods, as well as the number of stories, the required fire flow, proximity to other buildings, built-in fire protection/alarm systems, available fire suppression water supply, building fire service capacity, fire suppression resource deployment (distribution/concentration), staffing, and response time.

[13] Prior to the COVID-19 Pandemic.

The following figure illustrates the building fire progression timeline and shows that flashover, which is the point at which the entire room erupts into fire after all the combustible objects in that room reach their ignition temperature, can occur as early as 3:00 to 5:00 minutes from the initial ignition. Human survival in a room after flashover is extremely improbable.

Figure 20—Building Fire Progression Timeline



A.5.1 Building Fire Risk Assessment

Table 62—Building Fire Risk Assessment

Risk Factor	Cordelia 29	Cordelia 31	Suisun 32	Suisun 33	Montezuma 51	Montezuma 52	Vacaville 64	Vacaville 65	Vacaville 67	Vacaville 68
	4	4	8	8	7	7	6	6	6	6
	Low	***Low***	***Low***	***Low***	***Low***	***Low***	***Low***	***Low***	***Low***	***Low***

A.6 VEGETATION/WILDLAND FIRE RISK

Much of unincorporated Solano County is vulnerable to a vegetation/wildland fire, particularly in wildland-urban interface (WUI) areas where human population and related development exist within a predominantly wildland vegetation fuel environment. Vegetation/wildland fire risk factors include vegetative fuel features, weather, topography, fire history, service capacity, water supply, wildland risk mitigation measures, and vegetation/wildland fire service demand.

A.6.1 Vegetative Fuels

Vegetative fuel factors influencing fire intensity and spread include fuel type (vegetation species), height, arrangement, density, and moisture. Vegetative fuels within the Districts consist predominantly of annual weeds/grasses, brush, and oak woodlands. Once ignited, vegetation/wildland fires can burn intensely and contribute to rapid fire spread under the right fuel, weather, and topographic conditions.

A.6.2 Weather

Weather elements, including temperature, relative humidity, wind, and lightning, also affect vegetation/wildland fire potential and behavior. High temperatures and low relative humidity dry out vegetative fuels, creating a situation where fuels will ignite more readily and burn more intensely. Wind is the most significant weather factor influencing vegetation/wildland fire behavior. Summer weather in Solano County includes temperatures averaging in the 90s with northwesterly winds that can significantly influence wildland fire behavior and spread.

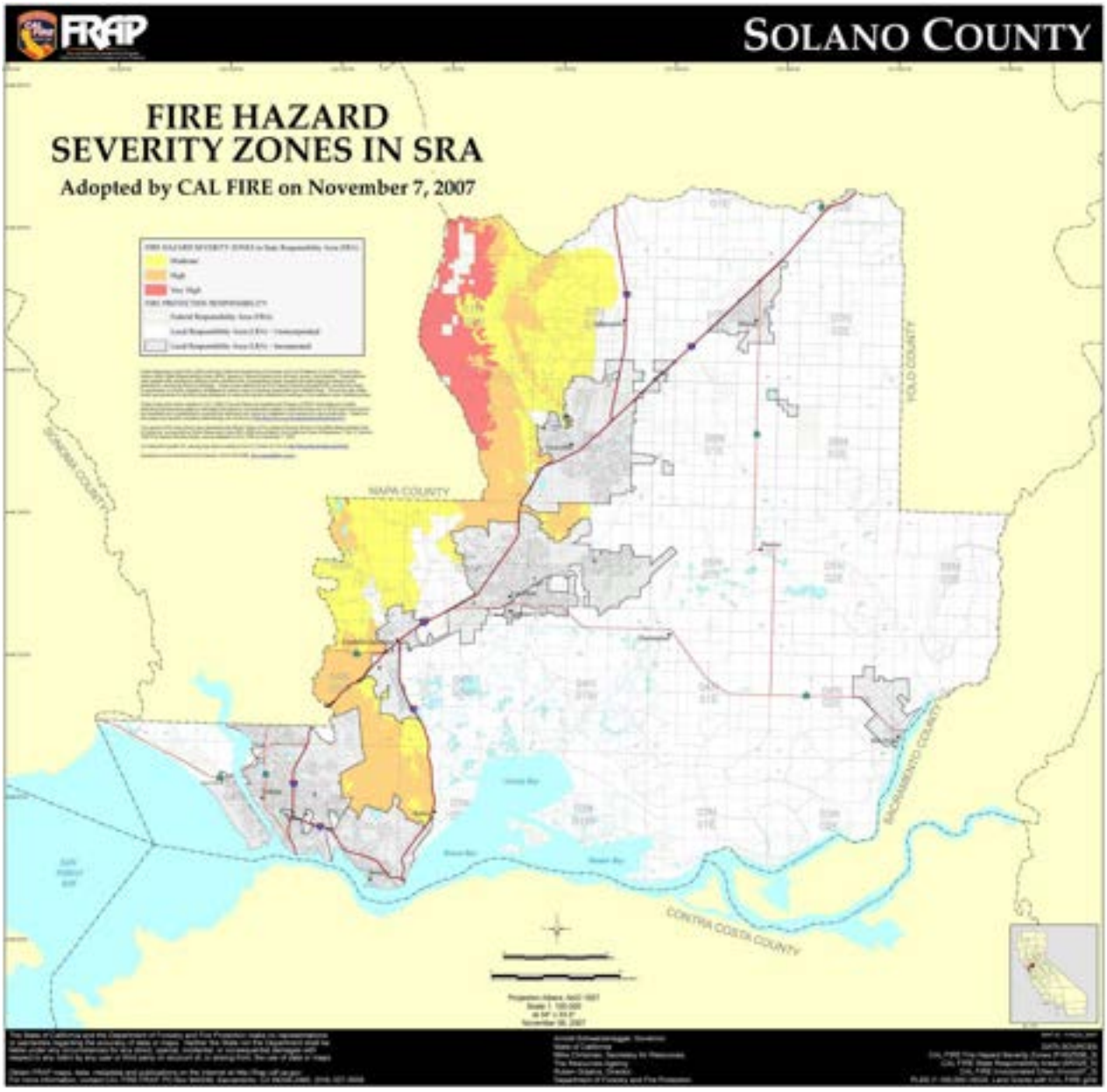
A.6.3 Topography

he istricts' topography can significantly influence vegetation/wildland fire behavior and spread, as fires tend to burn more intensely and spread faster when burning uphill and up-canyon, except for a wind-driven downhill or down-canyon fire.

A.6.4 Wildland Fire Hazard Severity Zones

CAL FIRE designates wildland Fire Hazard Severity Zones (FHSZ) throughout the state based on analysis of multiple wildland fire hazard factors and modeling of potential wildland fire behavior. For State Responsibility Areas (SRAs) where CAL FIRE has fiscal responsibility for wildland fire protection, CAL FIRE designates ***Moderate***, ***High***, and ***Very High*** FHSZs by county, as shown in the following figure for Solano County. Note the large areas of Cordelia, Suisun, and Vacaville FPDs within designated FHSZs.

Figure 21—SRA Fire Hazard Severity Zones Solano County



A.6.5 Vegetation/Wildland Fire Risk Assessment

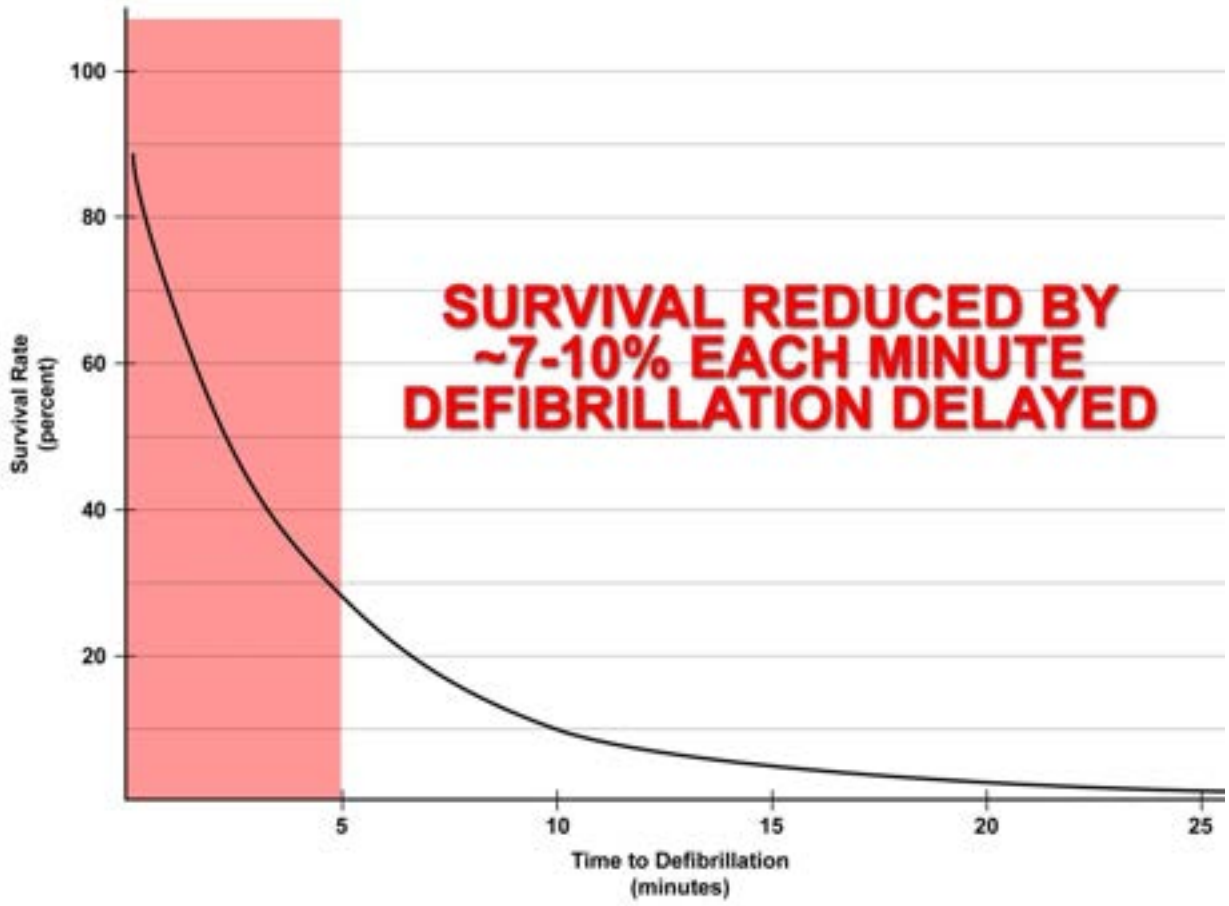
Table 63—Vegetation/Wildland Fire Risk Assessment

Risk Factor	Cordelia 29	Cordelia 31	Suisun 32	Suisun 33	Montezuma 51	Montezuma 52	Vacaville 64	Vacaville 65	Vacaville 67	Vacaville 68
	44	44	61	61	32	32	24	24	24	24

A.7 MEDICAL EMERGENCY RISK

Fire agency service demand in most jurisdictions is predominantly for medical emergencies. The following figure illustrates the reduced survivability of a cardiac arrest victim as time to defibrillation increases.

Figure 22—Survival Rate versus Time of Defibrillation



Source: www.suddencardiacarrest.org

The Districts provide BLS pre-hospital emergency medical services, with operational personnel trained to the First Responder Medical or EMT level.

A.7.1 Medical Emergency Risk Assessment

Table 64—Medical Emergency Risk Assessment

Risk Factor	Cordelia 29	Cordelia 31	Suisun 32	Suisun 33	Montezuma 51	Montezuma 52	Vacaville 64	Vacaville 65	Vacaville 67	Vacaville 68
	262	131	121	121	82	82	122	92	122	73
	Moderate	***Moderate***	***Moderate***	***Moderate***	***Moderate***	***Moderate***	***Moderate***	***Moderate***	***Moderate***	***Moderate***

A.8 RISK ASSESSMENT SUMMARY

City ate's assessment of the va ues at ris an ha ar s i e y to impact the four districts yields the following.

- The Districts serve a predominantly rural population, with densities ranging from mostly less than 500 to nearly 5,000 per square mile in some small district areas
- he County's an use oa s an po icies i resu t in minimal projected growth in the four districts
- he istricts' ui in inventory is pre ominant y sin e-family dwelling units and agriculture-related buildings
- he istricts' overall risk for the three hazards evaluated range from **Low** to **High** as summarized in the following table.

Table 65—Overall Risk by Hazard

Hazard	Cordelia 29	Cordelia 31	Suisun 32	Suisun 33	Montezuma 51	Montezuma 52	Vacaville 64	Vacaville 65	Vacaville 67	Vacaville 68