

SOUTHEAST COUNTY FIRE FEASIBILITY ANALYSIS

Tooele County, Utah

**Final Draft Report
July 2022**



CPSM[®]

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Since its inception in 1914, ICMA has been dedicated to assisting local governments and their managers in providing services to its citizens in an efficient and effective manner.

ICMA advances the knowledge of local government best practices with its website (www.icma.org), publications, research, professional development, and membership. The ICMA Center for Public Safety Management (ICMA/CPSM) was launched by ICMA to provide support to local governments in the areas of police, fire, and emergency medical services.

ICMA also represents local governments at the federal level and has been involved in numerous projects with the Department of Justice and the Department of Homeland Security.

In 2014, as part of a restructuring at ICMA, the Center for Public Safety Management (CPSM) was spun out as a separate company. It is now the exclusive provider of public safety technical assistance for ICMA. CPSM provides training and research for the Association's members and represents ICMA in its dealings with the federal government and other public safety professional associations such as CALEA, PERF, IACP, IFCA, IPMA-HR, DOJ, BJA, COPS, NFPA, and others.

The Center for Public Safety Management, LLC, maintains the same team of individuals performing the same level of service as when it was a component of ICMA. CPSM's local government technical assistance experience includes workload and deployment analysis using our unique methodology and subject matter experts to examine department organizational structure and culture, identify workload and staffing needs, and align department operations with industry best practices. We have conducted 341 such studies in 42 states and provinces and 246 communities ranging in population from 8,000 (Boone, Iowa) to 800,000 (Indianapolis, Ind.).

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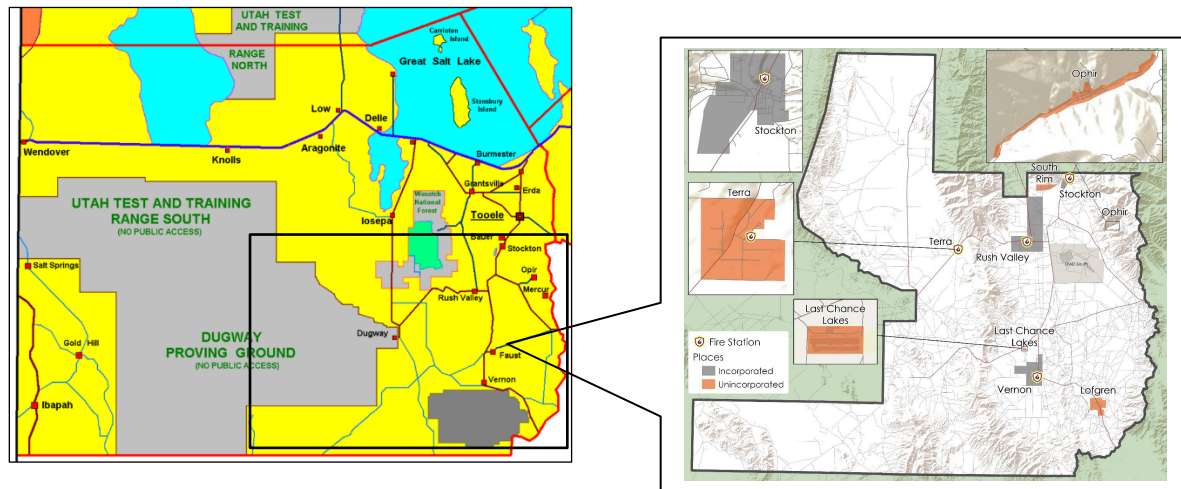
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SECTION 1. EXECUTIVE SUMMARY

The Center for Public Safety Management (CPSM) was retained by Tooele County, Utah, to conduct a feasibility study to determine the most effective and efficient manner to provide fire services in the unincorporated areas of southeast Tooele County. This area includes the unincorporated communities of South Rim, Terra, Ophir, and the incorporated towns of Stockton, Rush Valley, and Vernon. This study is not intended to be a full analysis of the volunteer fire departments in this part of the county and is specific to the unincorporated areas of the county as illustrated here.

FIGURE 1-1: Tooele County and Southeast Tooele County Study Area



The project team conducted an on-site visit on January 26 and 27, 2022, for the purpose of interviewing key county staff, exploring the southeast county study area to understand firsthand the fire and emergency services challenges and hazard risks, and to get a better understanding of the built-upon lands of the unincorporated southeast study area in terms of fire protection services. Additionally, virtual and phone meetings were held throughout the study with senior county staff; indispensable information was provided by the County Manager's Office.

Several meetings (virtual and in person) were held as well with key stakeholders of this project. These stakeholders were the volunteer Fire Chiefs with Stockton, Rush Valley, and Vernon Volunteer Fire Departments; the Tooele County Sheriff; the Tooele County Emergency Manager; the Tooele County Fire Warden and Assistant Fire Warden; and the Mayors of Stockton, Rush Valley, and Vernon.

Regarding fire protection in Utah Counties, State of Utah Code 11-7-1 states that, *the board of commissioners or county council of every county shall provide adequate fire protection within their own territorial limits*. The state code allows for several ways for a county to provide fire protection services:

- Maintain and support a firefighting force or fire department for its own protection.
- Contract to receive fire protection from any contiguous county, municipal corporation, private corporation, fire district, state agency, or federal governmental agency.

- Contract to contribute toward the support of a firefighting force, or fire department in any contiguous county, municipal corporation, private corporation, fire district, state agency, or federal governmental agency in return for fire protection

Currently, the County meets the state code for fire protection services in the southeast area of the county by contracting with three municipalities for fire protection and related services, and through one volunteer fire department in the unincorporated area.

Primary fire protection services in the southeast portion of unincorporated Tooele County are provided by four volunteer fire departments, which are:

- Stockton City Fire Department (municipal agreement and financial support).
- Rush Valley Fire Department (municipal agreement and financial support).
- Vernon City Fire Department (municipal agreement and financial support).
- Terra Fire Department (County provides financial support for Chief, facility, fleet, insurances).

The three town volunteer fire departments provide fire protection and other emergency fire related services to unincorporated areas of Tooele County through agreements with the County. The agreements outline services to be provided and include a response area within a 15-mile radius of each town. However, these volunteer fire departments will at times respond to calls that are more than 15 miles away. The Terra Fire Department does not have an agreement with the County since it is in an unincorporated area of the county and therefore is considered part of the county firefighting force. These four fire departments act as the County's de facto fire department in the southeast area of the county and receive funding from the County to support services. It was learned through the stakeholder meeting with the Mayors that the towns themselves do not provide direct municipal funding to the volunteer fire departments.

Additional fire protection services are provided by federal government agencies through mutual aid agreements. These agencies respond from area military installations pursuant to their agreements. Federal government agencies include (in the southeast county analysis area):

- Dugway Fire Department (will respond when requested).
- Tooele Army Depot Fire Department (provides fire services within a 20-mile radius of the south area of the depot in the unincorporated area of the county).

Wildland fire and wildland urban-interface fire services are organized and coordinated by the County Fire Warden. The Fire Warden organizes and manages the wildland fire prevention, preparation, and mitigation efforts, and as well coordinates and sometimes commands county and municipal assets during the initial attack of a wild fire event.

The County Fire Warden has guided the County in establishing and implementing industry best practices regarding wildland fires and the wildland-urban interface. The County Fire Warden has coordinated the implementation of Community Wildfire Preparedness Plans (CWPP) for significant areas of the southeast county analysis area that includes unincorporated Tooele County, Terra, South Rim, Ophir, Town of Stockton, Town of Rush Valley, and the Town of Vernon. The Fire Warden has also ensured certain memoranda of understanding (MOU) and cooperative agreements (CA) are in place to combat wildland fires. Parties to these agreements include the county itself and the fire departments in the southeast county analysis area. Funding for the County Fire Warden, his staff, and equipment is provided by the county and the state.

A significant component of this report includes a community risk analysis of the southeast county area. Community risk contemplates many factors that cause, create, facilitate, extend, and enhance risk in and to a community. Such an analysis is used in determining appropriate fire department organization and deployment of resources.

Also included in this report is a comprehensive data analysis of fire, fire-related, and emergency medical services (EMS) calls for service in the unincorporated study area. This includes all responses made by the four primary volunteer fire departments. CPSM looked at response data for all of 2019 and 2020 for the analysis. Only calls in the unincorporated area were analyzed.

Directly linked to the data analysis is GIS mapping of call demand and response time overlays in the study area from each fire station. CPSM utilizes this feature extensively in this report. Incident workload in the southeast analysis area is described in the following table. Motor Vehicle Accidents (MVA) and Outside Fires represent the highest incident workload in the unincorporated area studied.

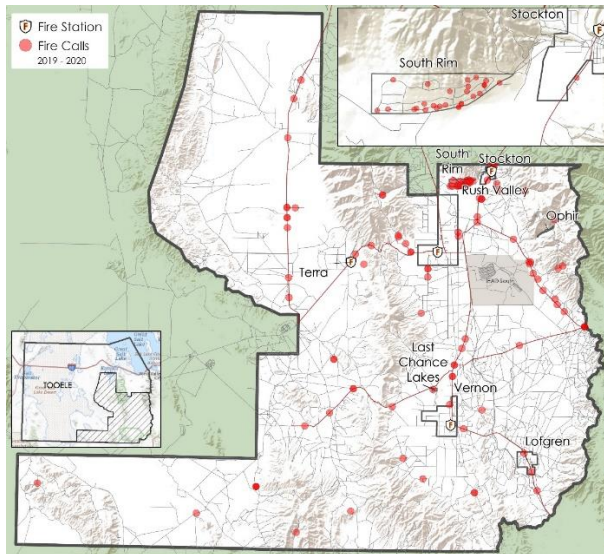
TABLE 1-1: Incident Workload in Southeast Tooele County Study Area, 2019 & 2020

Call Type	2019		2020	
	Total Calls	Pct. Calls	Total Calls	Pct. Calls
Breathing difficulty	4	2.8	1	0.7
Cardiac and stroke	4	2.8	4	2.8
Fall and injury	8	5.7	7	5.0
Illness and other	16	11.3	7	5.0
MVA	42	29.8	41	29.1
Overdose and psychiatric	3	2.1	7	5.0
Seizure and unconsciousness	2	1.4	3	2.1
EMS total	79	56.0	70	49.6
False alarm	3	2.1	3	2.1
Good intent	10	7.1	4	2.8
Hazard	5	3.5	1	0.7
Outside fire	33	23.4	51	36.2
Public service	5	3.5	10	7.1
Structure fire	6	4.3	2	1.4
Fire Total	62	44.0	71	50.4
Total	141	100.0	141	100.0

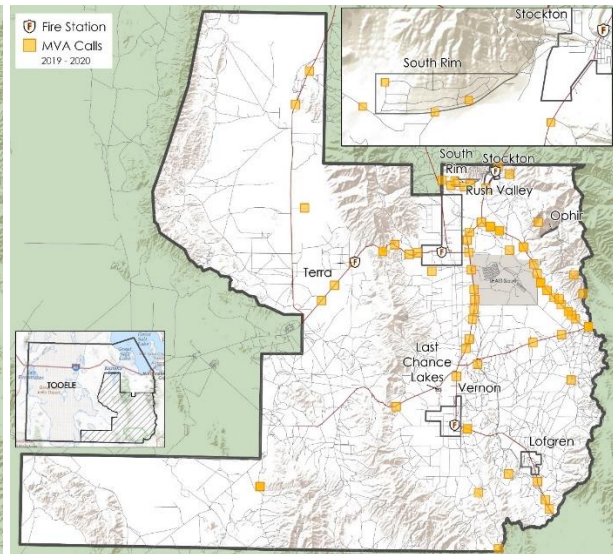
The demand for either fire, fire-related, or EMS calls for service generally originate in the same areas within the study area. Calls in the analysis area are concentrated to the greatest extent along State Roads 36 and 73. The next most concentrated areas are in the South Rim community (highest population density) and along State Roads 196, 199, Faust Road, and Pony Express Road. These patterns of demand are illustrated in the following maps.

FIGURE 1-2: Southeast Tooele County Study Area Call Demand, 2019 & 2020

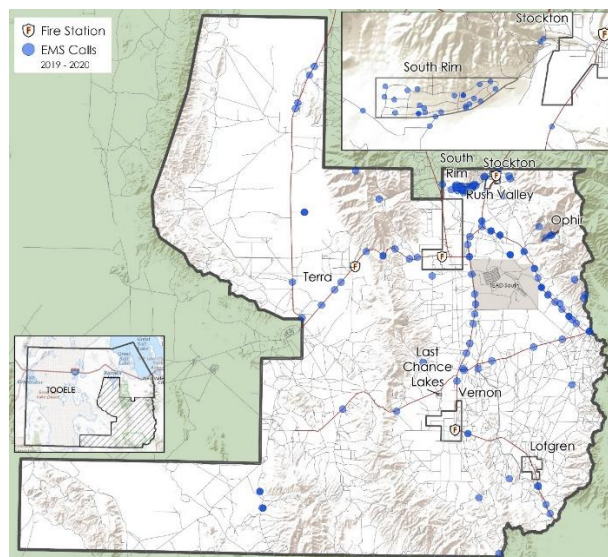
Fire Calls



Motor Vehicle Accidents



EMS Calls



CPSM benchmarked response times for each volunteer fire against the National Fire Protection Association (NFPA) Standard 1720. This standard identifies demand zones based on population per square mile (urban, suburban, rural, and remote) in which the fire department's ability is gauged to assemble an Effective Response Force (ERF) (number of firefighters required for single family dwelling structural fires) in a specific amount of time at the 80th or 90th-percentile. A demand zone is based on population density and severity of risk. The southeast study area is primarily rural and remote, with one suburban area (as benchmarked against NFPA Standard 1720), which is the South Rim community.

Each fire department's response times and the NFPA 1720 demand zone response criterion are explained next.

TABLE 1-2: Response Times for First Arriving Unit by Fire District

District	Average Response Time, Minutes			80th Percentile Response Time, Minutes		
	Turnout	Travel	Total	Turnout	Travel	Total
Rush Valley (RVFD)	13.7	10.9	24.6	13.6	13.4	28.4
Stockton (SCFD)	8.6	10.2	18.8	11.6	15.8	26.2
Terra (TFD)	16.0	13.9	30.0	21.0	17.8	38.3
Vernon (VFD)	16.0	19.9	35.9	18.5	27.7	46.8
Total	12.0	13.3	25.2	15.2	21.1	34.5

TABLE 1-3: NFPA 1720 Demand Zone Response Criterion

Demand Zone	Demographics	Minimum Staff to Respond to Scene	Response Time Standard
Urban Area	>1000 people/mi ²	15	Within 9 minutes 90 percent of the time
Suburban Area	500 to 1000 people/mi ²	10	Within 10 minutes 80 percent of the time
Rural Area	<500 people/mi ²	6	Within 14 minutes 80 percent of the time
Remote Area	Travel Distance > 8 miles	4	Directly dependent on travel distance determined by AHJ, 90 percent of the time

The analysis by CPSM also reviewed certain aspects of the four volunteer fire departments to include training certifications, types of apparatus deployed from each station, and total membership numbers. This review revealed a need for each department to continue to guide members to obtain state certifications in the various fire disciplines to include wildland, haz-mat, firefighter, and officer training.

Our analysis also revealed, and as pointed out by each town fire chief during the stakeholder meeting, the response equipment each currently has, particularly the fleet, is aged or aged out when benchmarked against NFPA standards. Additionally, certain equipment such as self-contained breathing apparatus and structural protective gear is aged out, worn out, or may otherwise not be useable. CPSM further learned that some of the funding the County provides through the response agreements is utilized by the fire departments to pay for such items such as facility utility bills and not necessarily for equipment or towards the replacement of fire apparatus.

CPSM provides three alternatives for County leadership to consider regarding fire protection services in the southeast analysis area, and as well recommendations and planning considerations as the County moves forward from this study. Fire protection alternatives, recommendations, considerations, with estimated costs are discussed in detail in Section 4 of this report. The alternatives developed by CPSM follow.

Alternative 1: Maintain the Status Quo

The status quo is an option that fosters a business-as-usual policy decision where the current agreements stay in place for the deployment of resources in the unincorporated southeast county area. This policy option maintains the current allotment of \$20,000 to each town volunteer fire department and continued financial support to the Terra Fire Department. Because this option does not change any funding or shift any operational responsibilities to the County, it creates the least amount of stress on the budget. The status-quo approach may, however, pose a risky choice since any potential improvements to the overall fire protection services over time will not be realized.

Alternative 2: Enhance the Volunteer Fire Departments in the Southeast County Analysis Area

As already discussed, the four fire departments in the southeast county analysis area serve as the de facto county fire protective services in this geographic area and do so with commitment and great pride, albeit with equipment that is not always aligned with industry standards and/or has significant age. While the County cannot support the entire operation of these fire departments, and should not, as the County relies on each to extend coverage into the unincorporated area, the County should consider providing additional financial or in-kind support to the extent possible.

This alternative includes the purchase/construction (County-funded) of a small facility in the South Rim area that would be utilized by the Stockton Volunteer Fire Department to house emergency equipment. Such a facility would provide a quicker and more efficient response by Stockton members. There is currently a parcel available the developer will donate to be used for this building.

Alternative 3: Implement a County Fire Service

With this alternative the County can consider is the creation of a career fire service in the southeast county analysis area. CPSM suggests this alternative after analysis of the risks, location of calls for service, and to enhance the current deployable resources in the analysis area. Through this service, and if strategically placed, the County can manage many of the responses in the unincorporated area east of Terra and north of Vernon in a timely manner around the clock.

This alternative would require a facility, a Type 1 Engine apparatus, nine career fire service staff, associated equipment, uniforms, and accessories. CPSM will provide estimated implementation and on-going costs for this alternative, as well as what tax and grant funding may be available for the County to consider and utilize to implement one or more of these alternatives.

A complete list of recommendations and considerations that either support the alternatives discussed above or that stand alone are compiled in a separate table in Section 4 of this report.

Alternative 4: Adoption of Utah Code 15-A-5-203

This alternative provides built in fire protection (automatic sprinkler systems) to structures in certain areas of the county as outlined in the code. CPSM Recommends the County consider the adoption of this state code through a County ordinance.

Recommendations include:

1. Linked to Alternative 2, CPSM recommends Tooele County conduct a comprehensive review of all fire protection and hazardous materials service agreements. This review should include the promulgation of new agreements with municipal fire departments, military installations,

and fire departments in the unincorporated areas. The new agreements should define service level response outside of a fire department's respective incorporated or military jurisdictions and reciprocal county payment, equipment, or services for these fire protection responses and services. CPSM further recommends that each agreement have a sunset date that will require future review and updating to address any changes in fire protection services in Tooele County.

(a) CPSM further recommends any future funding distributed to the volunteer departments should be for equipment and operational and maintenance costs of apparatus and equipment.

(b) CPSM also recommends the County work with the Towns regarding Town funding assistance for items such as facility utility bills and facility maintenance to the extent they are capable.

2. Linked to Alternative 2, CPSM recommends the County apply for a FY 2022 Staffing for Adequate Fire and Emergency Response (SAFER) Grant. This grant should be specific to volunteer recruitment and retention purposes to include a countywide Volunteer Recruitment and Retention position, which this grant provides funding for.
3. At a minimum regarding Alternative 2, CPSM recommends the County fund procurement and construction of a fire facility in the South Rim community.
 - (a) The main purpose for this facility is the storage of a ready-to-respond fire apparatus for South Rim and the South Rim area where members respond to the station and then respond the apparatus.
 - (b) A low-cost option is a one- to two-bay prefabricated metal building.
4. Linked to Alternative 3, CPSM recommends one strategically located facility for the career fire service staff, with three staff members (nine staff total) on duty 24 hours/day (crew leader and two firefighters) responding in a Type 1 Engine (structural) or a Type 6 Engine (brush/EMS responses, County wildland fleet unit).

As discussed herein, our analysis CPSM found several areas that could be improved regarding fire protective services in the unincorporated county and with the volunteer fire departments that CPSM reviewed as a part of this analysis. These include:

- Fire protection agreements that have not been updated in more than 30 years.
- County funding distributed to volunteer fire departments as payment for services through the fire protection agreements but with limited or no knowledge of expenditures by the County.
- Critical equipment needs of the southeast county analysis area volunteer fire departments and no county liaison, oversight, guidance, or solutions provided to ensure equipment and apparatus does not reach the critical stages some of the departments are facing.
- Other than the countywide coordinated effort for wildfire preparedness, mitigation, prevention, and response (which is outstanding), there is no overall countywide coordinated effort for the traditional all-hazards fire department responses, which are the highest number of calls fire departments across the County respond to.
- Other than training coordinated among local fire departments and/or training conducted countywide by the Fire Warden, there is no centralized and coordinated countywide all-hazards fire department training.

Given the areas of potential improvement discussed in this report and given the County will benefit from general oversight and coordination at the County Administration level for fire protection services, CPSM recommends the County consider implementing a countywide Fire Services Director position. The purpose of this recommendation is not to create a countywide Fire Chief over all of the fire departments in the County, and it is further not intended to suggest the County move to consolidate all of the volunteer fire departments into one, but rather to provide general oversight, coordination, and assistance to all fire departments in the county with primary attention given to the unincorporated areas and how they are provided service.

5. CPSM recommends the County consider implementing a countywide Fire Services Director position.

(a) As the County already has an Emergency Manager and a Fire Warden, it is imprudent to create and fund another position. CPSM recommends the County combine the function of Fire Services Director with the Emergency Management Director function to create an Emergency Services Director (and Department) who has the responsibility of directing the County's emergency management function and the fire services all-hazards preparedness and response coordination function.

(b) As the County currently has entered into a cooperative fire protection agreement with the state regarding wildland fires (§65A-8-203), the Sheriff is not charged with the direct responsibility to *take appropriate action to suppress wildfires on state or private lands* [§65A-8-209(1)]. Therefore, CPSM also recommends the Fire Warden and his staff merge with the newly created Emergency Services Department with the Fire Warden serving as the Operations Chief for Wildland Fire Services. In this new arrangement the current Assistant Fire Warden position is maintained with the same title and job duties. Additionally, any administrative assistance and budget would transfer to the new department.

In closing, what stands out in the southeast analysis area is the dedication of the volunteer fire departments that deliver fire protective and fire-related response mitigative services on a very limited budget, utilizing aged equipment, and drawing upon a minimal population base from which they can recruit new members. This, coupled with the outstanding work and efforts of the County Fire Warden, have provided considerable fire protective services that now require a next step approach to advance the total fire services program in Tooele County to a more contemporary service delivery system.

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SECTION 2. TOOELE COUNTY FIRE SERVICES

COUNTY FIRE SERVICES OVERVIEW

Tooele County is located in northwest Utah. The county has a total area of 7,286 square miles, of which 6,941 is land area.¹ The county encompasses incorporated cities and towns, unincorporated communities/towns, military installations, the Great Salt Lake Desert, and mountains, valleys, lakes and springs, national forest, and open state and federal land. Tooele County is a desirable destination for outdoor recreational activities.

The County does not have an organized, full-service structural fire department that deploys equipment and personnel. Fire services in the County are provided by ten fire departments that serve the municipalities and unincorporated communities. Municipal departments also provide, through agreement with the County, fire protection to surrounding unincorporated areas. There are also three military fire departments that provide fire protection to their respective military installations and as well will assist the County off base through mutual aid agreements.

The fire departments in Tooele County are outlined in the next table.

TABLE 2-1: Fire Departments in Tooele County

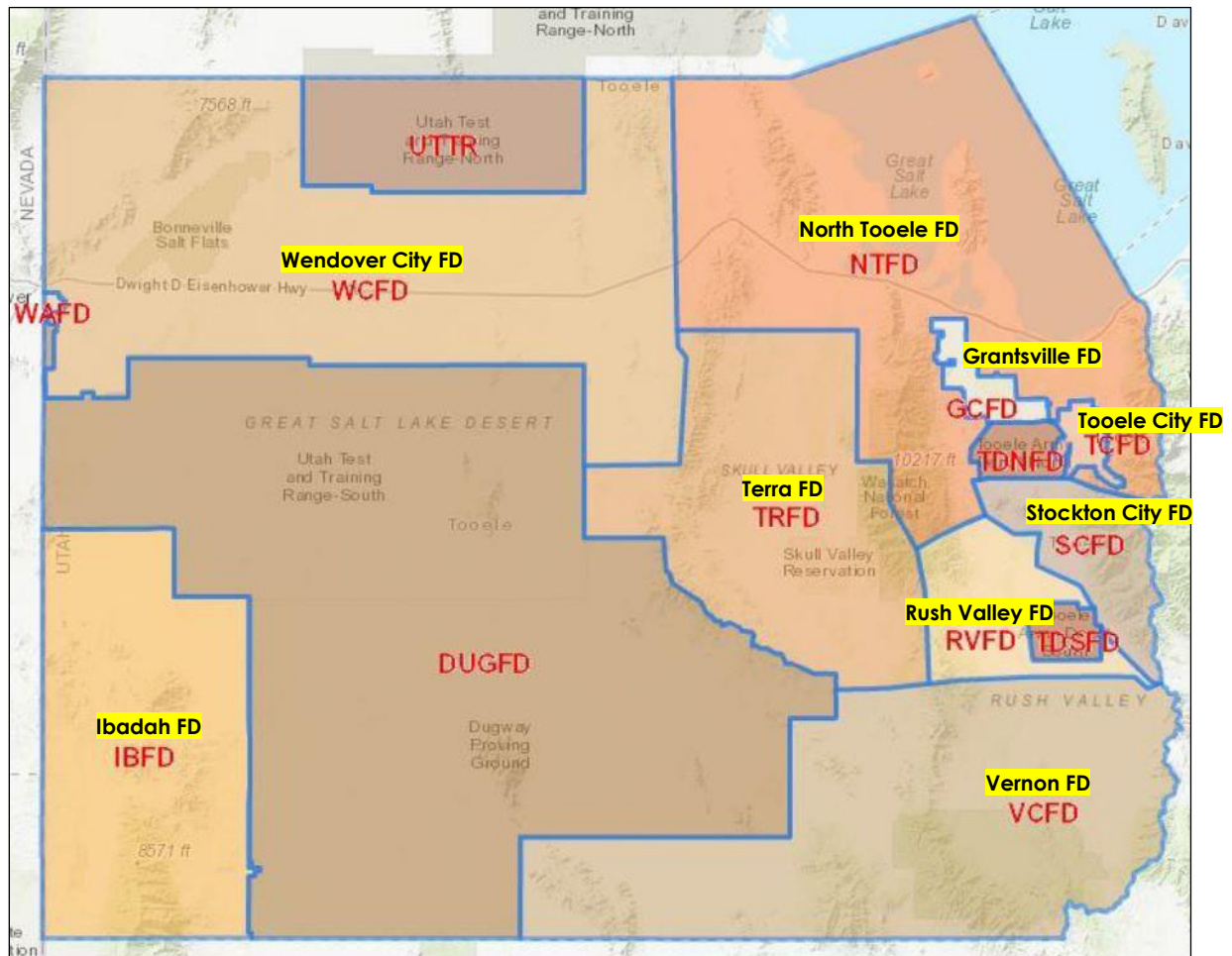
Department	Jurisdiction Type	Career or Volunteer	Number of Stations
Dugway Fire Department	Military	Career	2
Grantsville Fire Department	Incorporated	Volunteer	1
Ibadah Fire Department	Unincorporated	Volunteer	1
North Tooele Fire District	Unincorporated	Career and Volunteer	4
Rush Valley Fire Department	Incorporated	Volunteer	1
Stockton City Fire Department	Incorporated	Volunteer	1
Terra Fire Department	Unincorporated	Volunteer	1
Tooele Army Depot Fire Department	Military	Career	1 North 1 South
Tooele City Fire Department	Incorporated	Volunteer	2
Utah Test and Training Range FD	Military	Career	1
Vernon City Fire Department	Incorporated	Volunteer	1
Wendover Fire Department	Incorporated	Volunteer	1
Wendover Airport Fire Department	Airport Property	Career	1

The following figure illustrates the primary response dispatch zones for each fire department. As shown here, outside of the eastern incorporated cities and towns, response zones for the non-military fire departments are extensive. Not including military departments, other than the North Tooele Fire District (4 stations) and Tooele City Fire Department (2 stations), unincorporated County response zones are managed by a single fire station. Volunteer firefighters make up the bulk of the response force, and when not at the station when an alarm comes in, are

1. Tooele County, Utah - Wikipedia

responding from home or work to the scene of the emergency or to the station to respond the apparatus.

FIGURE 2-1: Fire Department Dispatch Zones in Tooele County



Map Source: Tooele County Wildfire MOB Guide-2020.

COUNTY FIRE SERVICES AGREEMENTS WITH FIRE DEPARTMENTS

Tooele County has several agreements with the fire departments in the county for automatic fire service response, mutual aid upon request, hazardous materials (Haz-Mat) response, and wildland fire response. All agreements are for response into the unincorporated county areas.

The next two tables describe these agreements, who they are with and for what, and when they were implemented. Agreement components listed in the table are germane to fire-related service provided in the unincorporated area.

TABLE 2-2: Fire Protection Agreements with Tooele County

Fire Department	Agreement Date	Agreement Components
Dugway Fire Department	Original: 11/2009 Last Review: 11/2005	Reciprocal fire services when requested by either party.
Grantsville VFD	Original: 4/1990	Provide fire services within a 15-mile radius of the city in the unincorporated area for an established fee. Maintain at least two personnel to serve on the countywide Haz-Mat Team for an established fee.
Ibadah VFD	Original: 4/2003 Between County and Goshute Indian Reservation	Reciprocal fire services agreement. County provides firefighting equipment for the Goshute Tribe to utilize on the reservation; Goshute Tribe provides personnel and county equipment within a 15-mile radius of the reservation in the unincorporated area.
Rush Valley Fire Department	Original: 4/1990	Provide fire services within a 15-mile radius of the city in the unincorporated area for an established fee. Maintain at least one person to serve on the countywide Haz-Mat Team for an established fee.
Stockton City Fire Department	Original: 4/1990	Provide fire services within a 15-mile radius of the city in the unincorporated area for an established fee. Maintain at least one person to serve on the countywide Haz-Mat Team for an established fee.
Tooele Army Depot Fire Department	Original: 1/1978	Reciprocal fire services when requested by either party. Provide fire services within a 20-mile radius of the south area of the depot in the unincorporated area of the county.
Tooele City Fire Department	Original: 4/1990	Provide fire services within a 15-mile radius of the city in the unincorporated area for an established fee. Maintain at least two personnel to serve on the countywide Haz-Mat Team for an established fee.
Utah Test and Training Range FD	Original: 11/99 Last Review: 1/2010	Reciprocal Haz-Mat services. Normal Haz-Mat response areas in county by UTRFD and on base by County Haz-Mat services.
Vernon City Fire Department	Original: 4/1990	Provide fire services within a 15-mile radius of the city in the unincorporated area for an established fee.

Fire Department	Agreement Date	Agreement Components
		Maintain at least one person to serve on the countywide Haz-Mat Team for an established fee.
Wendover City VFD	Original: 8/1991 Last Review: 7/2003	Provide fire services within a 30-mile radius of the city in the unincorporated area for an established fee. Maintain at least two personnel to serve on the countywide Haz-Mat Team for an established fee.
Wendover Airport Fire Department	Original: 9/2008	Mutual aid fire protective and Haz-Mat services. Services provided on request of Utah Test and Training Range FD to Wendover Airport FD in a response jurisdiction of Utah Test and Training Range FD.

TABLE 2-3: Wildland Fire Protection Agreements with Tooele County

Fire Department	Agreement Date	Agreement Components
Grantsville VFD	12/2019	Reciprocal agreement for wildland fire responses.
North Tooele Fire Department	12/2019	County agrees to provide needed equipment and training in wildland firefighting.
Rush Valley Fire Department	12/2019	
Stockton City Fire Department	12/2019	
Tooele City Fire Department	12/2019	Fire department accepts custody of certain equipment purchased by the county and maintains said equipment.
Veron City Fire Department	12/2019	Fire department agrees to provide apparatus, equipment, and personnel when called upon to combat wildland fires in a designated department response zone or in other designated response zones if needed.
Wendover City VFD	12/2019	

CPSM's review of Tooele County fire protection agreements indicates that all of the municipal agreements have been in place since 1990 or 1991. Only the Wendover City agreement has been updated since the original implementation date. The fees associated with these agreements have been adjusted through the years and therefore the agreements in place do not reflect the current practice. Additionally, when some of the agreements were implemented with the municipalities, certain equipment was transferred to the municipality. This equipment is likely may not in place today. **These agreements need to be updated.**

The agreements with the military installations are more current than the municipal agreements; however, these agreements are also dated and need review and updating.

The wildland agreements are current (2019) and relevant to joint county response needed to implement the initial attack on wildland fires and wildland fires in the urban interface. These

agreements also include training provided by the county (County Fire Warden) as well as equipment purchased by the county and transferred to fire departments in the county for use on wildland fire responses.

Planning Recommendation:

- CPSM recommends Tooele County conduct a comprehensive review of all fire protection and hazardous materials service agreements. This review should include the construction of new agreements with municipal fire departments, military installations, and fire departments in the unincorporated areas. The new agreements should define service level response outside of a fire department's respective incorporated or military jurisdiction and reciprocal county payment, equipment, or services for these fire protection responses and services. CPSM further recommends that each agreement have a sunset date that will require future review and updating to address any changes in fire protection services in Tooele County.

CURRENT FUNDING FOR FIRE SERVICES

Tooele County provides financial support to fire services primarily through the general fund. In FY2022, the fire services budget of \$888,950 makes up 6 percent of the overall Public Safety budget, which is \$14,555,940, and which includes the Sheriff's Office, 911-Dispatch, Emergency Management, Search and Rescue, County Jail, and Natural Resources.

Operating expenses for county fire services are budgeted primarily for payment to volunteer departments in the county which provide fire, Haz-Mat, and wildland assets in the unincorporated county through agreements as described above. Other large expenses are targeted to wildland fire preparedness and mitigation. This includes making the wildland-urban interface more defensible when fire occurs, payment to local fire departments for the initial attack of wildland fires in the unincorporated area, and payment to state agencies for fire suppression. Salaries and wages include those for the Fire Warden, Assistant Warden, and administrative assistance. Included in the County fire funding is the Terra Volunteer Fire Department, located in the analysis area. Funding for Terra is directed to the facility, apparatus fleet, insurances to include driving, and workers compensation, equipment, and a stipend for the Fire Chief to assist in the region and countywide firefighting efforts.

Budgeted expenses for county fire services are described in the next table for Fiscal Years 2019 and 2020 (actuals), and 2021 and 2022 (budgeted).

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TABLE 2-4: Tooele County Fire Services Budget, FYs 2019–2022*

	General Fund	2019	2020	2021	2022
Account Number	Title	Actuals	Actuals	Budget	Budget
110	SALARIES & WAGES	19,874	29,358	42,271	59,100
130	EMPLOYEE BENEFITS	1,638	2,390	4,527	5,700
200	STATE WILDFIRE PREVENTION, MIT, PREP PROGRAMS	54,828	104,551	113,532	308,140
201	STATE/INTERAGENCY SUPPRESSION	16,372	142,866	185,258	75,000
202	COUNTY FIRE DEPARTMENT MS&S	43,616	33,816	37,070	30,000
203	FIRE CHIEFS M. S. & S.	1,000	1,000	1,000	-
204	WILDFIRE MITIGATION	284,168	255,981	267,064	
205	WILDFIRE PREPAREDNESS	60,959	127,900	133,532	
230	COUNTY INITIAL ATTACK	47,961	48,085	50,000	50,000
310	STATE FIRE WARDEN & ASST WAGES	39,035	49,561	50,700	73,010
31X	WARDEN PROGRAM SUPPORT	7,874	6,081	10,000	10,000
740	COUNTY FIRE DEPARTMENT EQUIPMENT				18,000
	STATE WILDFIRE PREP, PREV, & MIT EQUIPMENT				120,000
741	CDBG TERRA ROADS	-	-	-	-
	SPECIAL OPERATIONS CONTRACTS	-	-	-	140,000
4220	GENERAL FUND - FIRE DEPARTMENT	577,324	801,588	894,954	888,950

Note: * Approved Tooele County FY 2022 Budget Document

The next table outlines expense lines for payment to volunteer fire departments and the North Tooele Fire District (combination department) for emergency response assistance into the unincorporated area.

TABLE 2-5: Tooele County Fire Department Payments, Fiscal Years 2019, 2020, and 2021

Department	2019 Budgeted/Expended	2020 Budgeted/Expended	2021 Budgeted/Expended
Tooele City VFD	\$20,000	\$20,000	\$20,000
Grantsville City VFD	\$20,000	\$20,000	\$20,000
Wendover City VFD	\$20,000	\$20,000	\$20,000
North Tooele Fire District	\$20,000	\$20,000	\$20,000
Stockton City FD	\$20,000	\$20,000	\$61,600*
Rush Valley FD	\$6,000	\$6,000	\$20,000
Vernon City FD	\$6,000	\$20,000	\$20,000
Total	\$112,000	\$126,000	\$181,600

Note: *One-time increase.

COUNTY FIRE WARDEN

Tooele County has a Fire Warden position that operates out of the Tooele County Sheriff's Office. This position focuses primarily on the wildland fire program in the county pursuant to state statutes and agreements, and Chapter 20 of the Tooele County Code. The Fire Warden coordinates the wildland fire prevention, preparation, and mitigation efforts, and the coordination and sometimes command of county and municipal assets during the initial attack of a wildland fire event.

The Fire Warden works closely with state officials during campaign wildland events in various command roles, ensuring county asset response and support of the event. The Fire Warden as well works closely with state and local officials to ensure the tenets of various wildland fire agreements are met, to include training local fire personnel, ensuring the county and municipal fire departments are equipped for wildland fire events, working with land owners when mitigation of vegetation is needed for defensible space around buildings and to reduce the wildland fire risk, and assures that proper documentation is accomplished for reimbursement of deployed assets used in a wildland fire event.

The Fire Warden's office also has an Assistant Fire Warden assigned, who assists the Fire Warden in the day-to-day activities of the wildland fire prevention, preparation, and mitigation efforts.

Other duties include fire prevention inspections, building and permit plan review, and other tasks related to enforcement of Chapter 20 of the Tooele County Code as it pertains to wildland interface and wildland intermix in the unincorporated county.

The State Department of Natural Resources Division of Forestry, Fire and State Lands (Division) and Tooele County have entered into a cooperative agreement where the county is eligible to receive financial and wildfire management cooperation and assistance from the Division. The tenets of this agreement, as outlined in State Statute 65A-8-203 include, among other items:

- The state shall assume an eligible entity's cost of suppressing catastrophic wildfire as defined in the cooperative agreement if the eligible entity has entered into, and is in full compliance with, a cooperative agreement with the division, as described in this section.
- A county or municipality that is not covered by a cooperative agreement with the division, as described in this section, shall be responsible for wildland fire costs within the county or municipality's jurisdiction, as described in Section 65A-8-203.2.
- If the eligible entity is a county, adopt and enforce on unincorporated land a wildland fire ordinance based upon minimum standards established by the division or Uniform Building Code Commission.
- Require that the fire department or equivalent fire service provider under contract with, or delegated by, the eligible entity on unincorporated land meet minimum standards for wildland fire training, certification, and suppression equipment based upon nationally accepted standards as specified by the division.
- Invest in prevention, preparedness, and mitigation efforts, as agreed to with the division, and which will reduce the eligible entity's risk of catastrophic wildfire.
- If the eligible entity is a county, have a designated fire warden as described in Section 65A-8-209.1.

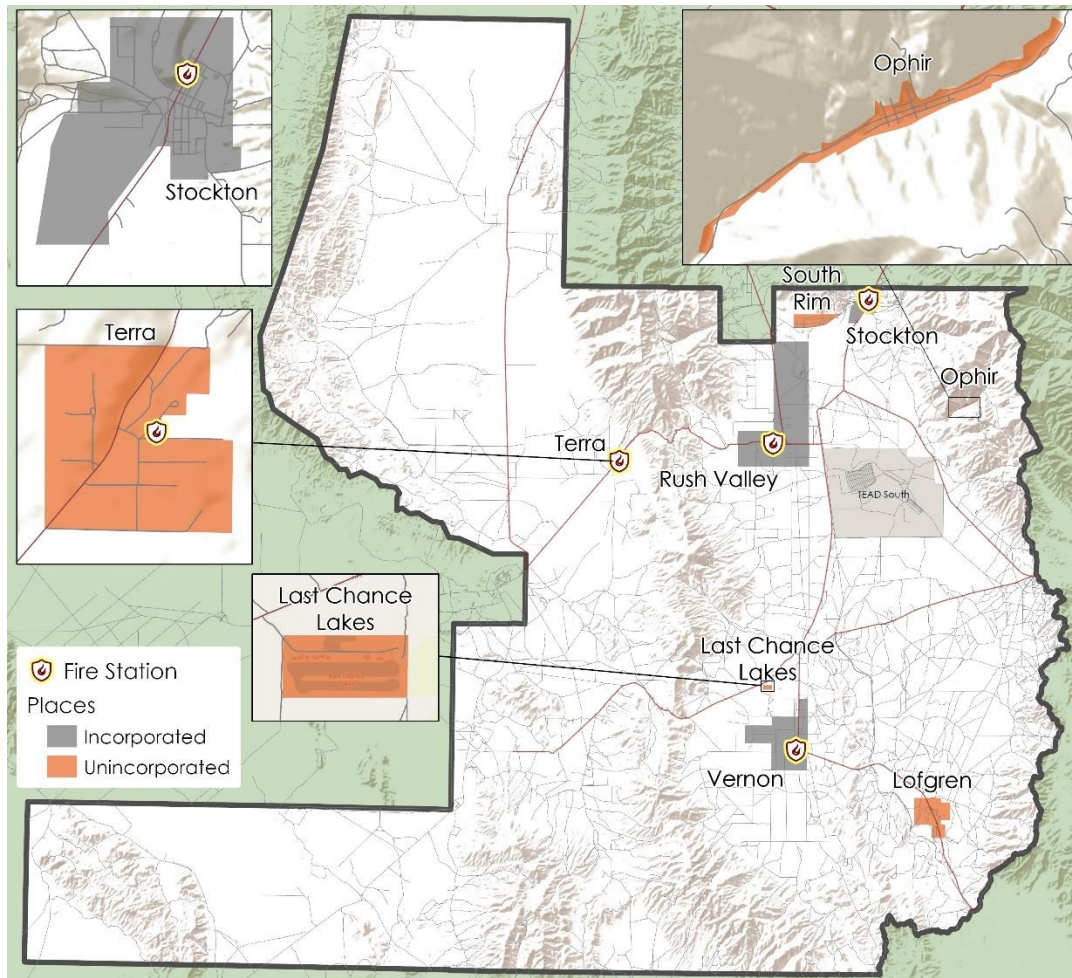
Under this agreement, the County receives funding towards the Fire Warden and Assistant Fire Warden (50 percent of base wages). The Fire Warden is responsible for submitting time sheets to the state regarding these two positions for reimbursement.

SECTION 3. SOUTHEAST ANALYSIS AREA

The geographic area CPSM was asked to analyze for fire services includes the unincorporated areas outside of the Towns of Stockton, Rush Valley, and Vernon, and the communities in the unincorporated area that have some degree of built-upon land and road network that include Terra, Ophir, South Rim, Last Chance Lakes, and all other areas as illustrated in the next figure. South Rim has the greatest building and population density. The land area outside of municipal town limits is largely rural and remote, with the exception of South Rim.

The next figure illustrates the study area with volunteer fire stations marked.

FIGURE 3-1: Southeast County Analysis Area



TOWN-BASED AND UNINCORPORATED FIRE DEPARTMENTS

The southeast county analysis area receives fire protection services primarily from three town-based volunteer fire departments, one volunteer fire department in an unincorporated area, and county wildland fire protection coordination and services. These services are:

- Town of Stockton: Stockton City Fire Department.
- Town of Rush Valley: Rush Valley Fire Department.
- Town of Vernon: Vernon City Fire Department.
- Unincorporated Tooele County: Terra Fire Department.
- Unincorporated Tooele County Wildland Fire: County Fire Warden.

The next table outlines each fire department's staffing resources and associated training/certifications as of January 2022.

TABLE 3-1: Southeast County Area Fire Department's Staffing Resources

Department (Number of Members)	Certified in HazMat Awareness	Certified in HazMat Operations	Certified in Wildland WFF1	Certified in Structural FF1	Certified in Structural FF2	Certified in Driver Operator	Certified in Fire Officer 1
Stockton City FD 10 Members	5	5	8	5	4	3	2
Rush Valley FD 10 Members	4	4	9	4	4	1	1
Vernon City FD 8 Members	2	2	7	3	2	1	1
Terra FD 16 Members	8	7	13	7	7	1	1
Total 44 Members	19	18	37	19	17	6	5

Resources in the southeast county area span the breadth of structural fire pumper apparatus, brush/wildland fire apparatus, and apparatus that transports water to supply fire pumping apparatus. The fire pumper and brush/wildland apparatus have various size fire pumps and on-board water tanks. Because these apparatuses are specialized in function, maneuverability over varying terrain, and the transport of equipment and personnel, they are "typed" to a national standard for easy identification through the national incident command system.

The next table outlines each southeast county area fire department's fire protection equipment resources available to respond to emergencies, to include the unincorporated county, as reported in January 2022.

TABLE 3-2: Southeast County Area Fire Department's Fire Equipment Resources

Department	Type 1 Structural Engine	Type 2 Structural Engine	Type 4 Engine	Type 6 Engine	Type 7 Engine	Type 1 Support Tender	Type 2 Tactical Tender
Stockton City FD	-	Engine 51 Engine 52	HB 51 HB 144 Tender 51	Brush 51 Brush 52	-	-	-
Rush Valley FD		Engine 91	Brush 92 Brush 93	Brush 91	-	Tender 91 Tender 92	-
Vernon City FD	Engine 71	-	Brush 72 WT 71	Aux. 73 EMS Engine	-	-	Tender 74
Terra FD	-	Engine 81	Brush 82 Brush 84 Brush 85	Brush 81	Brush 86	Tender 81 Tender 82 Tender 83	-
Total	2	4	10	5	1	5	1

Note: Includes apparatus inventory from Utah State Forrester's Cooperative Agreement.

ISO-PPC COMMUNITY RATING

The ISO is a national, not-for-profit organization that collects and evaluates information from communities across the United States regarding their capabilities to combat building fires. ISO conducts field evaluations in an effort to rate communities and their relative ability to provide fire protection and mitigate fire risk. This evaluation enables ISO to determine and publish a Public Protection Classification (PPC). The data collected from a community is analyzed and applied to ISO's Fire Suppression Rating Schedule (FSRS) from which a Public Protection Classification (PPC) grade is assigned to a community (1 to 10). Class 1 represents exemplary fire protection; a Class 10 rating indicates that a community's fire suppression program does not meet ISO's minimum criteria.

ISO evaluates all public elements of structural fire prevention and suppression in order to establish a rating. This consists of a review of a community's water supply, call taking and dispatching resources and protocols, response unit staffing, firefighter training, response capacity and coverage, and other factors. A key element of coverage evaluation is the location of engine and ladder apparatus in relation to the development or built-upon area within the jurisdiction. The PPC was developed by the insurance industry and is used to set fire insurance premiums. It does not evaluate EMS capabilities or other emergency services a contemporary fire department routinely provides.

It should be emphasized that for the typical homeowner's policy, fire is only one of many perils, and practices vary from insurer to insurer in terms of utilizing the PPC for insurance rate setting. Most insurers assign the same factor to multiple or bands of ratings, so a change of one grade may not have an immediate impact on insurance premiums. At least one major insurer does not rely on the ISO schedule. The schedule is more influential for commercial fire insurance, but these properties are individually rated.

A community's PPC grade depends on:

- **Needed Fire Flows** (building location in relation to reliable water source such as a fire hydrant; size and building construction are factors used to determine the theoretical amount of water necessary for fire suppression purposes).
- **Emergency Communications** (10 percent of the evaluation). Fire alarm and communication systems, including telephone systems, telephone lines, staffing, and dispatching systems.
- **Fire Department** (50 percent of the evaluation). Fire department apparatus, equipment, staffing, training, and geographic distribution of fire companies
- **Water Supply** (40 percent of the evaluation). Water-supply system, including the condition and maintenance of hydrants, and a careful evaluation of the amount of available water compared with the amount needed to suppress fires.

The following table describes the ISO-PPC ratings for the communities that provide fire protection services to the unincorporated county.

TABLE 3-3: ISO-PPC Ratings for Southeast County Fire Area Communities

Community	ISO-PPC Rating
Town of Stockton	4/4X
Town of Rush Valley	9/9
Town of Vernon	9
Terra Fire Service Area	No ISO Rating
Ophir (Ophir no longer has a Fire Department)	10
Unincorporated Tooele County	No specific rating

An ISO-PPC rating of 9 indicates the community meets the ISO requirements for quality and communications but has an inadequate water supply system, which is greater than 1,000 feet from a fire hydrant and/or a water supply shuttle with water tenders was not conducted during the ISO review to evaluate the gallons per minute flow that could be achieved for structural firefighting. In split categories where a 9 is assigned, the rated community is within five miles of a fire station, but beyond 1,000 feet of a fire hydrant. A rating of 10 indicates the community does not meet the minimum standards in each of the categories. Properties beyond five miles of a fire station regardless of the community rating receive an ISO rating of 10 as well. No specific rating in the unincorporated area means structures are rated separately and not as a whole, such as in a city or town. Residential and agriculture structures beyond five miles from the nearest fire station and beyond 1,000 feet of a reliable water system (fire hydrant) typically are rated as described above.

ISO has created a new classification for communities/properties located more than five but less than seven road miles from a fire station with a creditable water source within 1,000 feet. The new classification, 10W, recognizes the reduced loss potential of these communities and properties. ISO further states:

Class 10W is property-specific. Not all properties in the 5-to-7-mile area around the responding fire station will qualify. The difference between Class 10 and 10W is that the 10W-graded risk or property is within 1,000 feet of a creditable water supply. Water supplies may include fire protection systems using hauled water when those systems meet our minimum criteria for mobile water supplies in the non-hydranted areas. 10W gives credit to those risks and is reflective of the potential for reduced property insurance premiums.

APPLICABLE NFPA STANDARD FOR FIRE RESPONSE

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*, 2020 edition (National Fire Protection Association, Quincy, Mass.), outlines organization and deployment of operations by volunteer and combination (a fire department having emergency service personnel comprising less than 85 percent majority of either volunteer or career membership) fire and rescue organizations.² It serves as a benchmark to measure staffing and deployment of resources to certain structures and emergencies.

The fire departments in the southeast county analysis area are 100 percent volunteer.

The NFPA develops its standards and codes through a consensus-based process utilizing national-level technical committees. Standards are published and subject for adoption by government and private industry. The standards exist as "industry standards" that are used to assess level of service. CPSM references the above NFPA Standard here as a means to assess the service provided in the southeast county analysis area.

The NFPA 1720 standard is organized into several chapters, two of which serve as the operations core of the standard: Chapter 4, Organization, Operations, Staffing, and Deployment; and Chapter 5, Systems within a Combination or Volunteer Fire Department Organization, which covers firefighter safety and health, incident management, training, communications, and pre-incident planning. The standard in and of itself is comprehensive. Chapter 4 is the primary focus here. The following are excerpts from the chapter that are relevant to this analysis.

Staffing and deployment of fire department resources is benchmarked against a 2,000 square foot single-family home without a basement, adjacent homes, or other exposure structures.

The standard identifies demand zones in which the fire department is benchmarked against the capability to assemble an *Effective Response Force* (ERF) in a specific amount of time at the 80th or 90th percentile. A specific demand zone is based on population density or severity of risk. A zone can be a single building or a group of buildings. It is usually defined in terms of geographical boundaries. The standard specifies desired levels of service arriving in a specific time based upon the population density of the area served. As such, it is designed to be sensitive to the realities of protecting large, sparsely-populated areas, while recognizing the need for a higher level of service in urbanized centers.

The standard stipulates firefighters responding to fires and other emergencies are to be organized into company units or response teams, with appropriate apparatus and equipment. Response assignments should be standardized, with procedures including incident management, mutual aid response, and mutual aid agreements predetermined by the location and nature of the reported incident.

The next table summarizes the response capabilities required under the standard. *The southeast county fire analysis area could be characterized as predominantly rural and remote in character, with a limited suburban area (South Rim).*

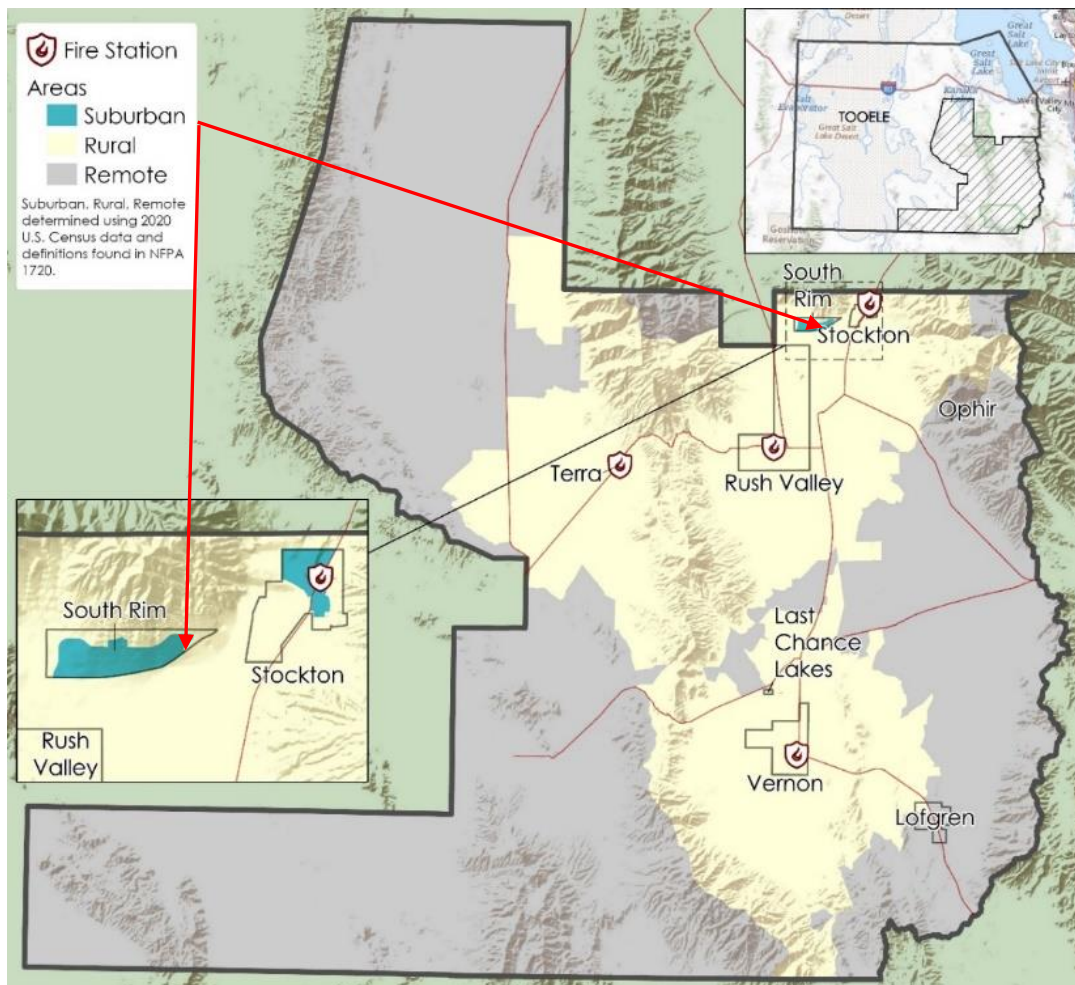
2. NFPA 1720 is a nationally recognized standard, but it has not been adopted as a mandatory regulation by the federal government or the State of Utah. It is a valuable resource for establishing and measuring performance objectives for Tooele County but should not be the only determining factor when making local decisions about the county's fire services.

TABLE 3-4: NFPA 1720 Staffing for Effective Response Force, Typical Residential Structure

Demand Zone	Demographics	Minimum Staff to Respond to Scene	Response Time Standard
Urban Area	>1,000 people/mi ²	15	Within 9 Minutes 90 percent of the time
Suburban Area	500 to 1,000 people/mi ²	10	Within 10 Minutes 80 percent of the time
Rural Area	<500 people/mi ²	6	Within 14 Minutes 80 percent of the time
Remote Area	Travel Distance ≥ 8 miles	4	Directly dependent on travel distance determined by AHJ, 90 percent of the time

The following figure illustrates that the unincorporated southeast county area is predominantly rural and remote, with only one suburban area (South Rim) as benchmarked against NFPA 1720 demographic standards.

FIGURE 3-2: NFPA 1720 Demand Zone Map



SOUTHEAST COUNTY ANALYSIS AREA COMMUNITY RISK³

Community risk assessment begins with the identification of the hazards present within a community or area of response. Community risk includes the understanding that the risk of fire, medical, natural, man-made, or other emergencies cannot be held to zero. Community risk level is typically established through an overall profile of the community based on the mixtures of demographics, socioeconomic factors, building risk, and the overall level of services currently provided.

Tooele County as a whole has completed this process in both the 2021 Tooele County Comprehensive Emergency Management Plan, and the Tooele County Pre-Disaster Mitigation Plan, 2021 Update. This assessment is largely focused on environmental risks and their impacts on dwellings and county population.

Significant risks that create consequences in the southeast county analysis area and that may impact the delivery of fire services include natural hazards, building hazards, transportation hazards, and wildland fires and the wildland-urban interface.

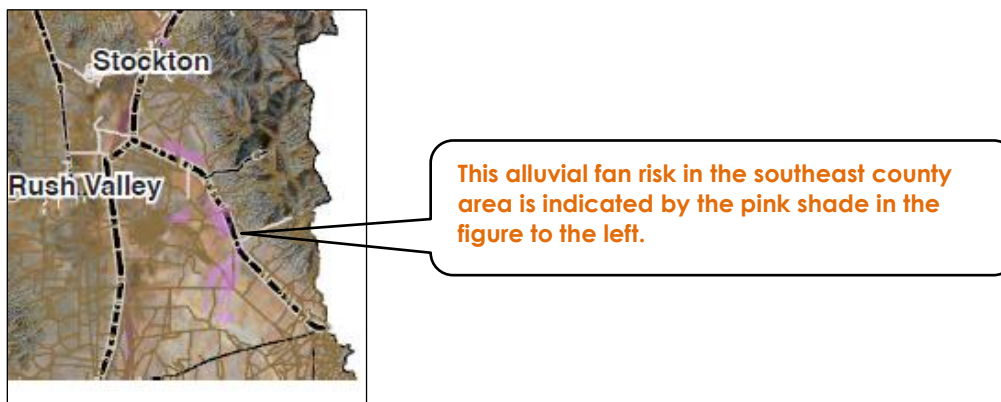
Natural Hazard Risks

Natural hazard risks in the southeast county analysis area that present risk to property and life and that potentially may trigger emergency response of the fire departments in the southeast county area include as indicated in the Tooele County Pre-Disaster Mitigation Plan and include:

Alluvial Fans

The largest area of alluvial fans is present in the foothills of the Oquirrh Range on the eastern side of the county that extend into the southeast county analysis area. During heavy rains or significant snow melt these areas can create violent, sediment-laden flooding.

FIGURE 3-3: Alluvial Fan Risk

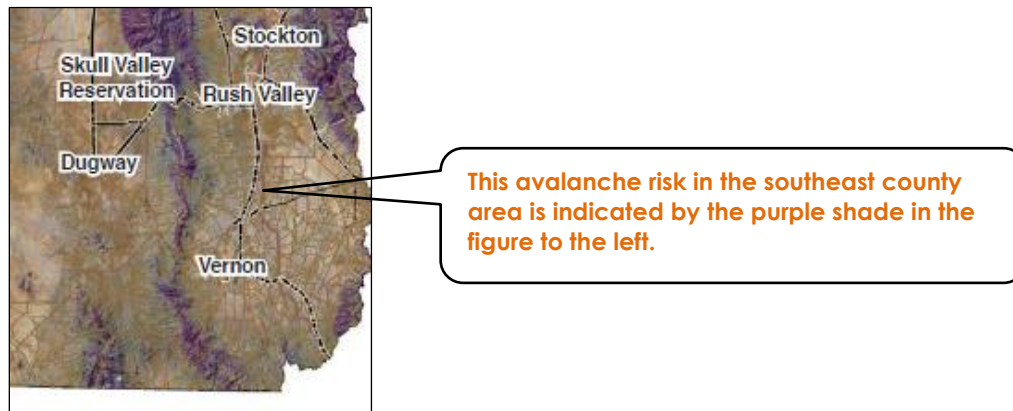


Avalanche

There is risk of avalanche in the southeast county area. According to the Tooele County Pre-Disaster Mitigation Plan, *in Tooele County avalanche deaths have been relatively rare. Most deaths are backcountry recreationist between the months of November and April. As the popularity of backcountry recreation increases, so will risk in Tooele County.*

3. Information from this section cited from the Tooele County Pre-Disaster Mitigation Plan, 2021 Update.

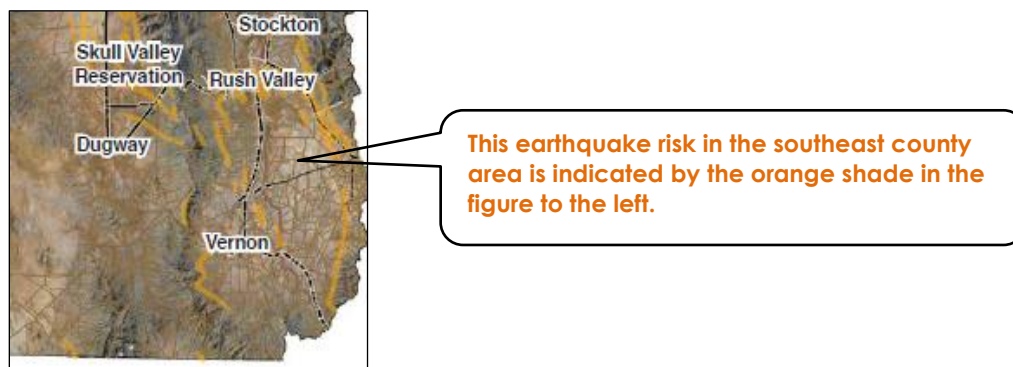
FIGURE 3-4: Avalanche Risk



Earthquake

Tooele County is located in the Intermountain Seismic Belt, which extends from Canada through central Utah. Significant faults within the county include the Oquirrh fault zone, Southern Oquirrh Mountains fault zone, Skull Valley (Mid-valley) faults, and the South Mountain Marginal fault.

FIGURE 3-5: Earthquake Risk



Significant and Severe Weather

Significant weather events occur across Tooele County and include extreme heat; extreme cold; significant winter storms to include snow, ice, sleet, blizzard; tornadoes; and significant summer storms to include thunder, lightning, high winds, and hail.

Drought

A prolonged period of dry weather creates several issues for communities, mainly a decrease in the water supply of surface and subsurface water. A related issue specific to the fire departments in the southeast county analysis area is brush and wildland fires.

Flooding

Flooding occurs in Tooele County particularly during the spring melt of snow on the mountains. Those areas prone to flooding include valley bottoms along streams (floodplains) and in canyons.

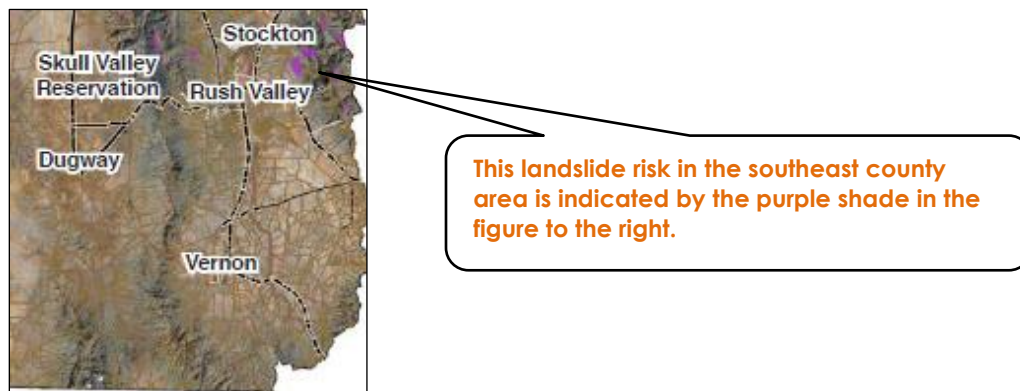
FIGURE 3-6: Flooding Risk



Landslide

Landslides occur in Tooele County naturally in the mountainous areas of the county where there are steep slopes.

FIGURE 3-7: Landslide Risk



Steep Slopes

Other than natural hazards linked to steep slopes, in this case we list steep slopes from an emergency response and rescue perspective such as a vehicle accident off the road and on a steep slope, or a person(s) who has fallen and requires rescue off of a slope. These incidents require special rope rescue and rigging skills to stabilize vehicles and move non-ambulatory patients up the slope to an awaiting EMS unit for transport.

FIGURE 3-8: Steep Slope Risk



Building Risk

Building risk considerations include an evaluation of all buildings and the risk associated with each property in a community, and in this case the southeast county analysis area. According to the NFPA *Fire Protection Handbook*, 2008, these hazards are defined as:

High-hazard occupancies: Schools, hospitals, nursing homes, explosives plants, refineries, high-rise buildings, and other high life-hazard or large fire-potential occupancies.

Medium-hazard occupancies: Apartments, offices, and mercantile and industrial occupancies not normally requiring extensive rescue by firefighting forces.

Low-hazard occupancies: One-, two-, or three-family dwellings and scattered small business and industrial occupancies.

The southeast county analysis area is primarily low hazard building risk, with the greatest percent of buildings being residential with limited if any exposures other than out-buildings and agricultural buildings on the premises. There are light commercial business buildings with various degrees of hazards. There are higher-hazard buildings/occupancies in the analysis area as well.

Commercial buildings in the unincorporated southeast county analysis area and businesses include (some of medium-higher hazard):

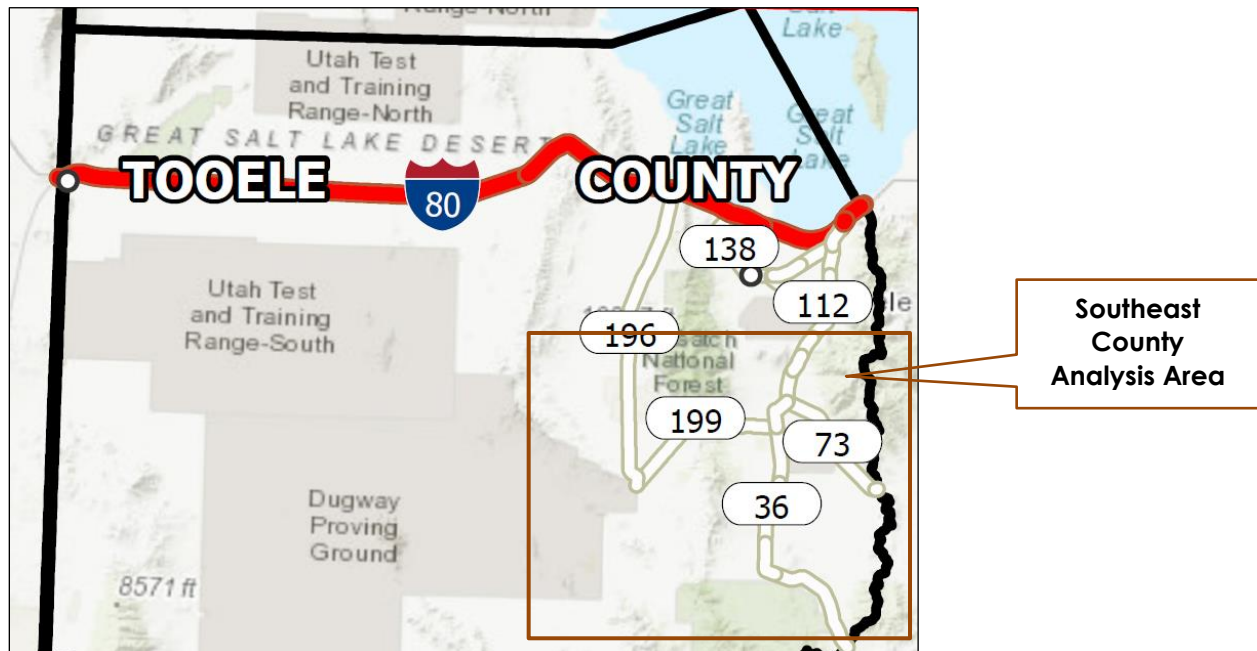
- **Five Mile Waste Facility:** Approximately 4,700 feet northwest of HWY 73 and the Tooele County Line.
 - Construction/demolition waste business: As defined in UAC R3 15-30I-2(17); Yard waste, as defined in UAC R315-301 -2(87); Inert waste, as defined in UAC R315-301 -2(37); Waste tires, when the requirements of UAC R315-320 are met; Petroleum contaminated soil as allowed in UAC R3 15-315-8 and Waste Asphalt.
- **Bickford Explosives:** West of Hwy 73 and North of South Tooele Army Depot: County parcels 6-62-1 through 6-62-5.
 - H-1 Occupancy (Hazard Use-buildings and structures containing materials that pose a detonation hazard). Explosive materials storage and testing, detonators, cartridge high explosives, and blasting agents.
- **Future Dyno Nobel R&D Explosives Site:** Hwy 73 & Stark Road Tooele County, UT.
 - H-1 Occupancy (Hazard Use-buildings and structures containing materials that pose a detonation hazard). Explosives research development and testing.
- **Spartan:** 3280 N. Hwy 36 Tooele County, UT (Multiple Occupancy Classifications).
 - F-2 Occupancy (Factory Industrial F-2 Low-Hazard Occupancy): Metal Fabrication/Assembly.
 - B Occupancy (Business Occupancy): Office building.
- **Penny's Café:** 7760 S. Hwy 36 Tooele County, UT (Multiple Occupancy Classifications).
 - A-2 Occupancy (Assembly Use for food and drink consumption). Commercial Cooking.
 - R-3 Occupancy (Congregate living facilities with 16 or fewer occupants). Accessory living behind A-2 occupancy.

Transportation Risk

Transportation Risk in the southeast county analysis area includes several major roads, a below-grade pipeline transporting petroleum, and rail.

Major roads include State Roads (SR) 36, 73, 196, and 199. SRs 36 and 73 are high-capacity routes that run primarily north-south through the analysis area and carry passenger vehicle and commercial tractor-trailers carrying various commodities to include hazardous materials, and other transportation modes such as passenger buses. The road network in the southeast county analysis area poses risks for a vehicular accident, some at medium to high speeds, as well as vehicular-versus-pedestrian and vehicle-versus animal risks. There are additional transportation risks since tractor-trailer and other commercial vehicles traverse the roadways of Tooele County to deliver mixed commodities to business locations. Fires involving these products can produce smoke and other products of combustion risks that may be hazardous to health. *The greatest percentage of motor vehicle accidents in the analysis area occur on SRs 36 and 73.* The next figure illustrates the major road network in the southeast county analysis area.

FIGURE 3-9: Southeast County Analysis Area Major Road Network



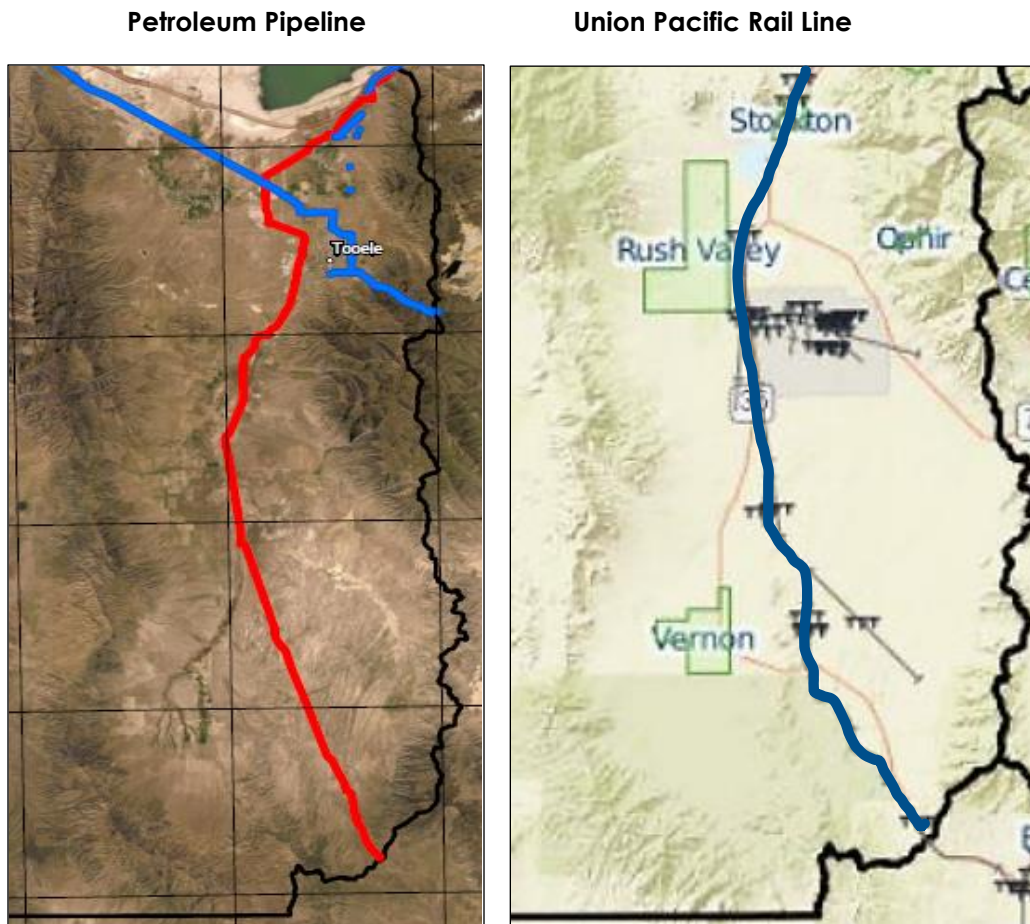
There is a fuel pipeline that runs from a point in southeastern Tooele County, through Rush Valley staying east of South Rim and north and northeast following Interstate 80 as it reaches the northeast point in the county where it continues east. Hazards associated with this pipeline are minimal as long as the pipeline is maintained and is not disturbed. Disruption of the pipeline causing leakage would create an emergency response, but would be focused on identifying the issue, containment, and mitigation monitoring of the repair and cleanup.

A Union Pacific mainline rail line runs through southeast county analysis area following a path much the same as the petroleum pipeline; that is, from a point in southeastern Tooele County, through Rush Valley staying east of South Rim and north and northeast following Interstate 80 as it reaches the northeast point in the county where it continues east. Primary freight (received and shipped) in the state includes intermodal (containers and trailers), minerals, hazardous

wastes, hazardous materials, coal, metallic and non-metallic minerals, and lumber.⁴ Trains using this mainline can be a mile or longer in length with mixed commodities. Fires or other rail emergencies involving the commodities passing through and stored along sidings in the analysis area can produce smoke and other products of combustion risks and vapors that may be hazardous to health. At-grade crossings in the southeast county area also pose a risk for train-motor vehicle accidents.

The next figure illustrates the pipeline and main rail line that runs through the southeast county analysis area.

FIGURE 3-10: Southeast County Analysis Area Fuel Pipeline and Rail Line



Population

Population in the southeast county analysis area is low, with suburban density (as benchmarked against NFPA 1720) only in South Rim. The next table outlines the population in the southeast county area including incorporated and unincorporated areas. This study focuses on the unincorporated population, which is 1,619.

4. www.up.com, State by State Guide, Union Pacific in Utah.

TABLE 3-5: Southeast County Analysis Area Population

Town / Unincorporated Area	Population
Town of Rush Valley	431
Town of Stockton	621
Town of Vernon	256
Total Incorporated	1,308
Unincorporated Area	1,619
Total Study Area	2,927

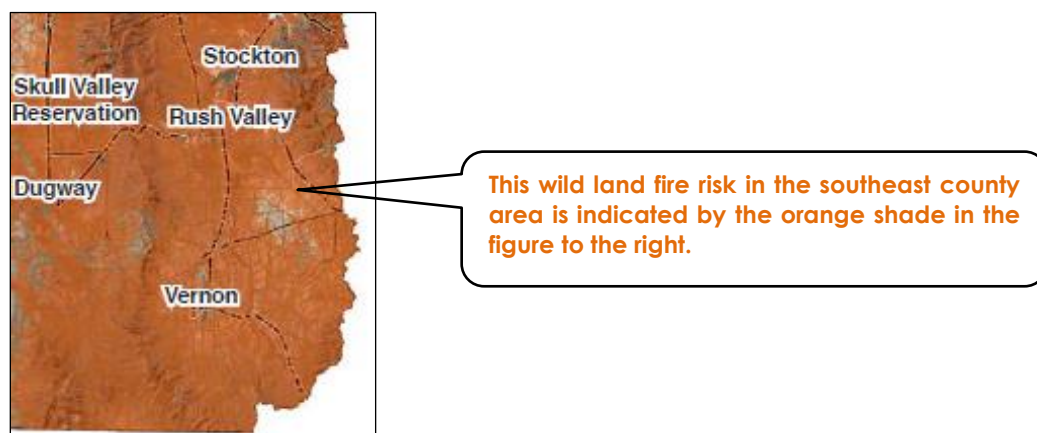
Source: 2020 Census Data

While the resident population is low, the southeast county analysis area is home to large recreation areas due to the vast amount of public federal and state land that allows recreation activities. This includes trails, camping, and all-terrain vehicle riding to name a few of the activities people go to this area to do. It is not uncommon to add several thousand people on a weather-friendly recreation day to this area (typically Easter to Labor Day), which poses transportation, EMS, and fire risks and increases the call demand on the fire and EMS services.

Wildland Fires

Wildland fires are a significant risk in the southeast county fire analysis area. These fires can burn uncontrolled through available fuel that includes natural vegetation and anything that burns, including structures. These fires can be costly and require significant resources to control. Tooele County is prime for fast-moving wildfires as it a high natural fuel load that includes juniper, invasive grasses such as cheat grass, and stands of coniferous and hardwood trees. As well, the County has steep slopes that enable fires to spread through superheating of the fuel up the slope and in advance of the fire, and canyons that generate wind channels that push a fire across the open land.

FIGURE 3-11: Wildland Fire Risk



The wildland fire risk in the southeast county area is indicated by the orange shade in the figure.

Significant wildland fires in recent years include:

- Middle Canyon Wildland Fire, July 2018.
- Cedar Mountain Fire, July 2018.

- Green Ravine Wildland Fire, August 2019.
- Stansbury Island Fire, May 2020.
- Puddle Valley Fire, May 2021.

The wildland-urban interface is another significant challenge in Tooele County. When a wildland fire moves from unoccupied and open land to an area with development, property and lives in this space are at risk. This risk is increased in South Rim, Ophir, Terra, and Last Chance Lakes, as clusters of buildings exist in these locations.

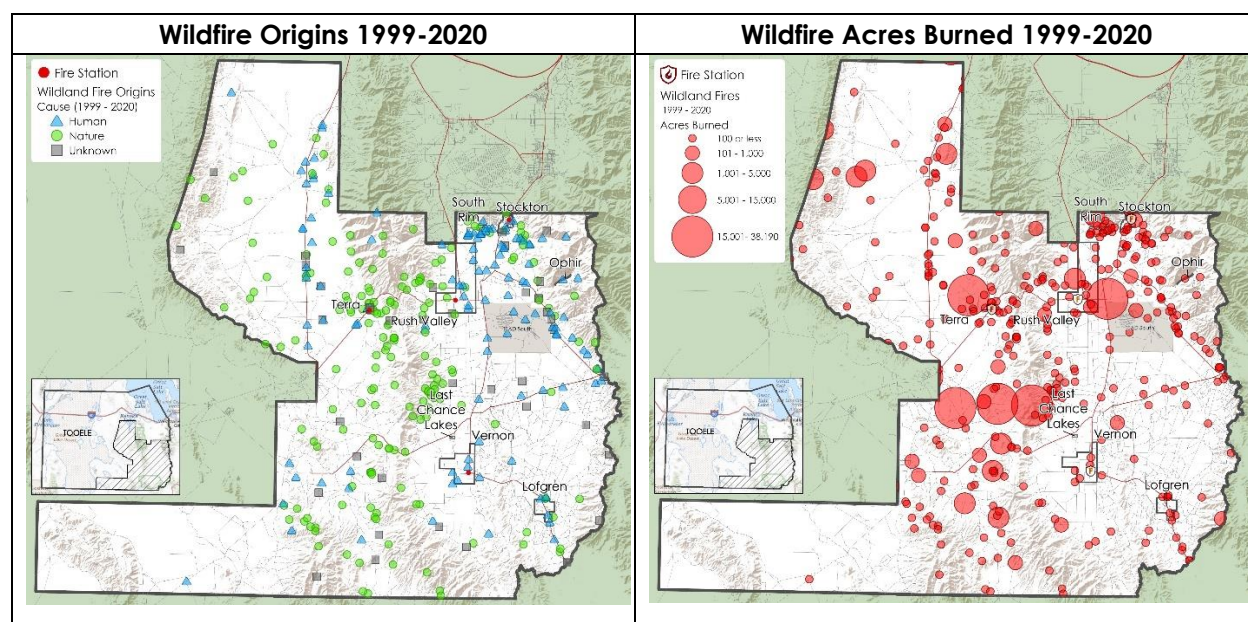
Communities or single homes and structures adjacent to and surrounded by wildland vegetation are at varying degrees of risk from wildfires as illustrated in the next figure.

FIGURE 3-12: Wildland Urban Interface Risk



The next figure illustrates Tooele County historical wildland fire origins and size (acres burned).

FIGURE 3-13: Southeast County Analysis Area Wildland Fire Origins and Acres Burned, 1999–2020



Tooele County, through the County Fire Warden, has established and implemented industry best practices regarding wildland fires and the wildland-urban interface. Community wildfire protection planning is one of the most important components of a wildfire safety strategy. Understanding this, the County Fire Warden has coordinated the implementation of Community Wildfire Preparedness Plans (CWPPs) for significant areas of the southeast county analysis area including unincorporated Tooele County, Terra, South Rim, Ophir, Town of Stockton, Town of Rush Valley, and the Town of Vernon. The purpose of these plans is to:

- Enhance levels of fire resilience and protection to the communities and infrastructure.
- Identify the threat of wildland fires in the area.
- Identify strategies to reduce the risks to structures, infrastructure, and commerce in the community during a wildfire.
- Identify wildfire hazards, education, and mitigation actions needed to reduce risk.
- Transfer practical knowledge through collaboration between stakeholders toward common goals and objectives.

Communities that understand the wildland-urban interface and create defensible spaces around vulnerable property through vegetation mitigation will reduce wildland fire risks.

In addition to the CWPP planning effort the Fire Warden has initiated, the Fire Warden has also ensured certain memorandums of understanding (MOU) and cooperative agreements (CA) are in place to combat wildland fires. These agreements involve the County and the fire departments in the southeast county analysis area.

These MOUs and CAs include:

- Cooperative Agreement between the Utah Division of Forestry, Fire, and State Lands and:

- Tooele County Fire Department.
- Vernon City Fire Department.
- Stockton City Fire Department.
- Rush Valley Fire Department.

This agreement is required for a county, municipality, or any other eligible entity under state statutes to cooperatively work together to protect non-federal land from wildland fire. Linked to this agreement among other items are requirements for the participating entity to adopt a CWWP; complete certain wildland-related training and certifications; implement certain wildland prevention, preparedness, and mitigation actions and programs if a county has adopted a wildland fire ordinance and has a designated fire warden and has entered into a County Fire Warden Agreement; and agree to participate in initial attack efforts with personnel and equipment.

- Utah Wildfire Resource Memorandum of Understanding Between the Utah Division of Forestry, Fire, and State Lands and:
 - Tooele County Fire Department.
 - Vernon City Fire Department.
 - Stockton City Fire Department.
 - Rush Valley Fire Department.

This MOU is an addendum to the CA described above. The principal purpose of this MOU is to establish a *mechanism for procurement, use, and compensation for services provided to the State of Utah and its cooperators by the Department (in this case each of the volunteer fire departments and the County's Wildland Fire Department) or District* to support fire management activities with "closest forces" suppression personnel and equipment for initial attack of a wildland fire, and to renumerate each department that may participate in wildland mitigation and/or prescribed burn projects. Participating fire departments have strict guidelines they must follow to include specific training and qualifications of personnel involved in direct firefighting such as Red Card certification, apparatus and equipment that meets the standards of the Utah Division of Forestry, Fire, and State Lands, and specific insurance requirements.

SOUTHEAST COUNTY ANALYSIS AREA CALLS FOR SERVICE

Fire and EMS calls for service are a measure of fire department workload in the narrow focus, but also have a role in measuring specific public safety risk. Nationally, fire-related calls for service typically represent the lesser percentage of overall fire department workload. EMS calls for service represent the greater percentage of these calls. Motor vehicle accidents sometimes are grouped with fire-related calls for service.

Regardless of where motor vehicle accidents are grouped, it is important to measure these calls for service separately, as they are a leading cause of death in the United States. The National Highway Transportation Traffic Safety Administration reports that in 2020, 38,680 people died in motor vehicle traffic accidents. This is the largest number of deaths due to traffic accidents since

2007, and a 7.2 percent increase from 2019, although it is estimated that miles travelled on the road were 13.2 percent less than 2019.⁵

The next set of tables describes the calls for service and fire department workload in the southeast fire area analysis area (unincorporated area only) in 2019 and 2020.

TABLE 3-6: Calls by Type

Call Type	2019		2020	
	Total Calls	Pct. Calls	Total Calls	Pct. Calls
Breathing difficulty	4	2.8	1	0.7
Cardiac and stroke	4	2.8	4	2.8
Fall and injury	8	5.7	7	5.0
Illness and other	16	11.3	7	5.0
MVA	42	29.8	41	29.1
Overdose and psychiatric	3	2.1	7	5.0
Seizure and unconsciousness	2	1.4	3	2.1
EMS Total	79	56.0	70	49.6
False alarm	3	2.1	3	2.1
Good intent	10	7.1	4	2.8
Hazard	5	3.5	1	0.7
Outside fire	33	23.4	51	36.2
Public service	5	3.5	10	7.1
Structure fire	6	4.3	2	1.4
Fire Total	62	44.0	71	50.4
Total	141	100.0	141	100.0

TABLE 3-7: Annual Call Volume and Workload by Department and Year

District	2019			2020		
	Calls	Runs	Hours	Calls	Runs	Hours
RVFD	20	48	81.7	11	28	39.4
SCFD	65	102	148.7	67	119	161.8
TRFD	17	35	57.9	22	27	33.7
VFD	39	78	276.4	41	101	239.5
Total	141	263	564.7	141	275	474.4

Key takeaways from these tables are:

- Motor vehicle accidents made up the largest single number of EMS and fire calls for service in 2019 and were the largest number of EMS calls for service in 2020.

5. 2020 Fatality Data Show Increased Traffic Fatalities During Pandemic | NHTSA

- Outside fires (brush, wildland, dumpster, trash, vehicle) were the largest number of actual fire calls.
- Structure fires were minimal in 2019 and 2020.

The next figures illustrate calls per hour by time of day for 2019 and 2020 and calls per day by month for 2019 and 2020.

FIGURE 3-14: Calls per Hour by Time of Day, 2019 and 2020

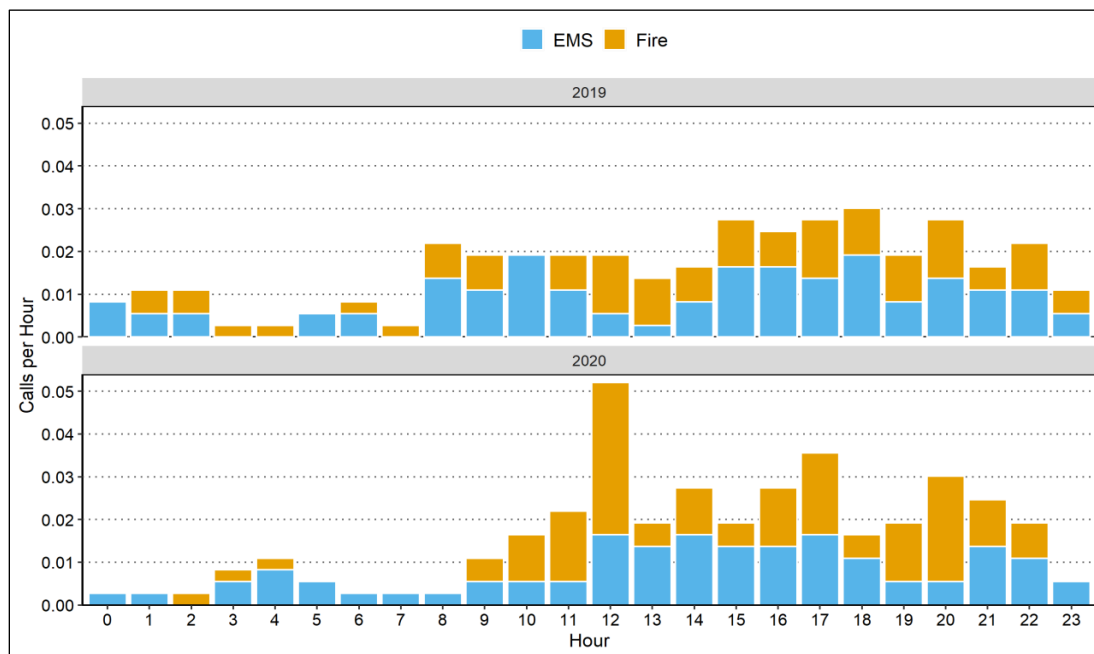
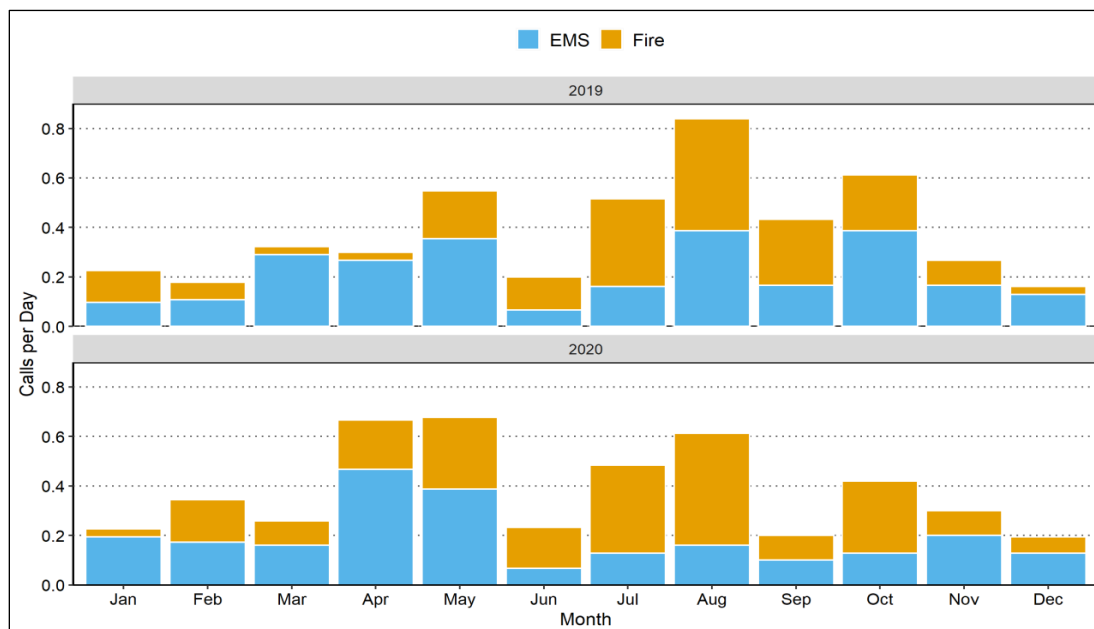


FIGURE 3-15: Calls per Day by Month, 2019 and 2020



The key takeaway from these figures is:

- Peak times for fire and EMS calls are generally from 8:00 a.m. to 9:00 a.m. through 10:00 p.m. to 11:00 p.m.
- The busiest months for EMS and fire calls for service are April, May, July, August, and October, which are also the prime months for recreational activities in the southeast county analysis area.

Where calls occur is important to understand and is linked to proximity of fire stations, response travel time, and in the case of rural and remote areas, road access, road conditions, and terrain.

The next set of figures illustrates the location and demand of certain call types in the southeast county analysis area. Key takeaways from these figures tell us:

- Calls in the southeast county analysis area are concentrated mostly along State Roads 36 and 73. The next most concentrated areas are South Rim and along State Roads 196, 199, Faust Road, and Pony Express Road.
- Motor Vehicle Accidents and Outside Fires make up the greatest percentage of overall calls in this area as illustrated on the maps.
- Calls are less frequent in rural and remote areas off of these main roads.

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FIGURE 3-16: All Fire Calls, 2019 and 2020

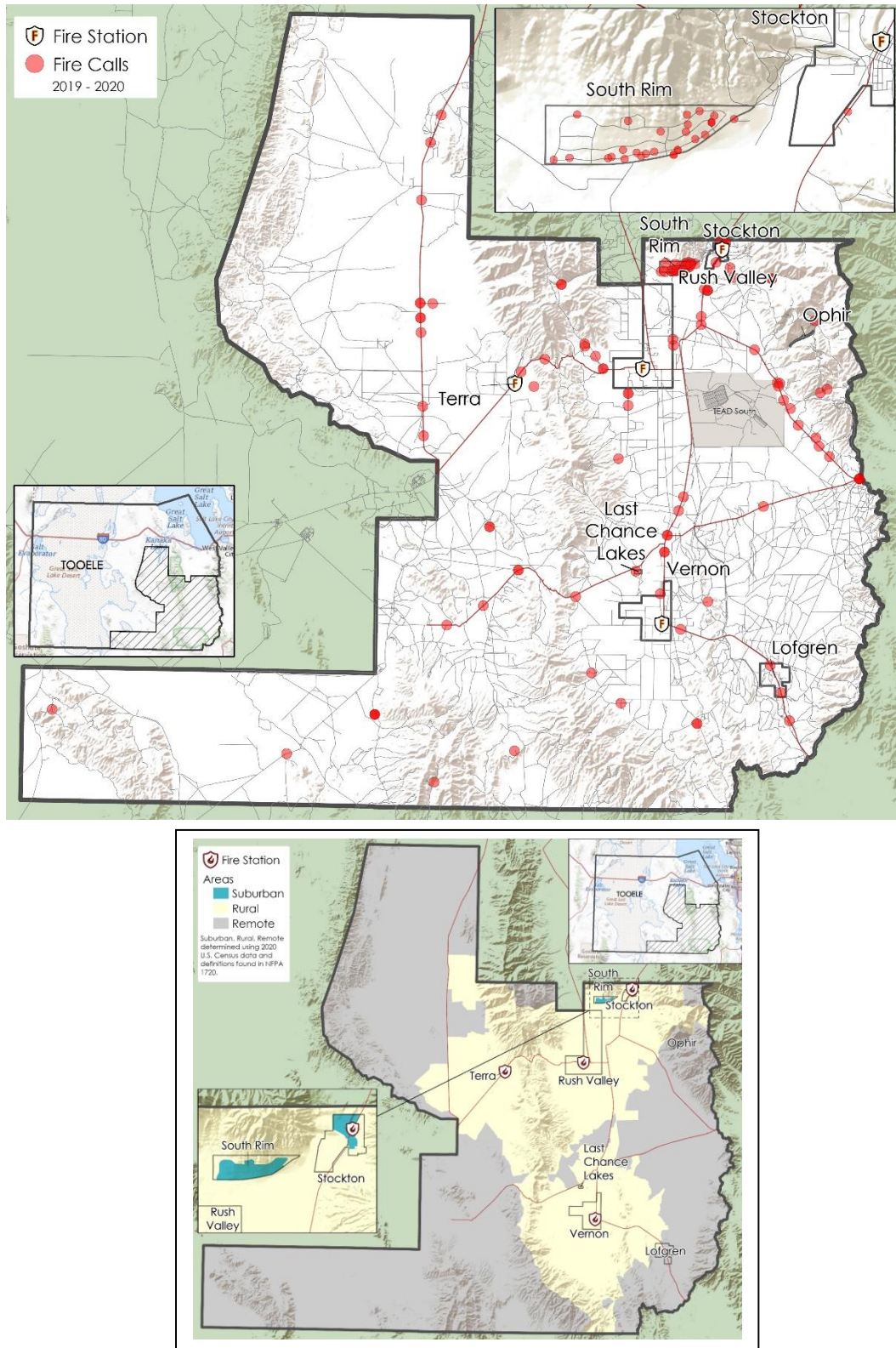


FIGURE 3-17: All MVA Calls, 2019 and 2020

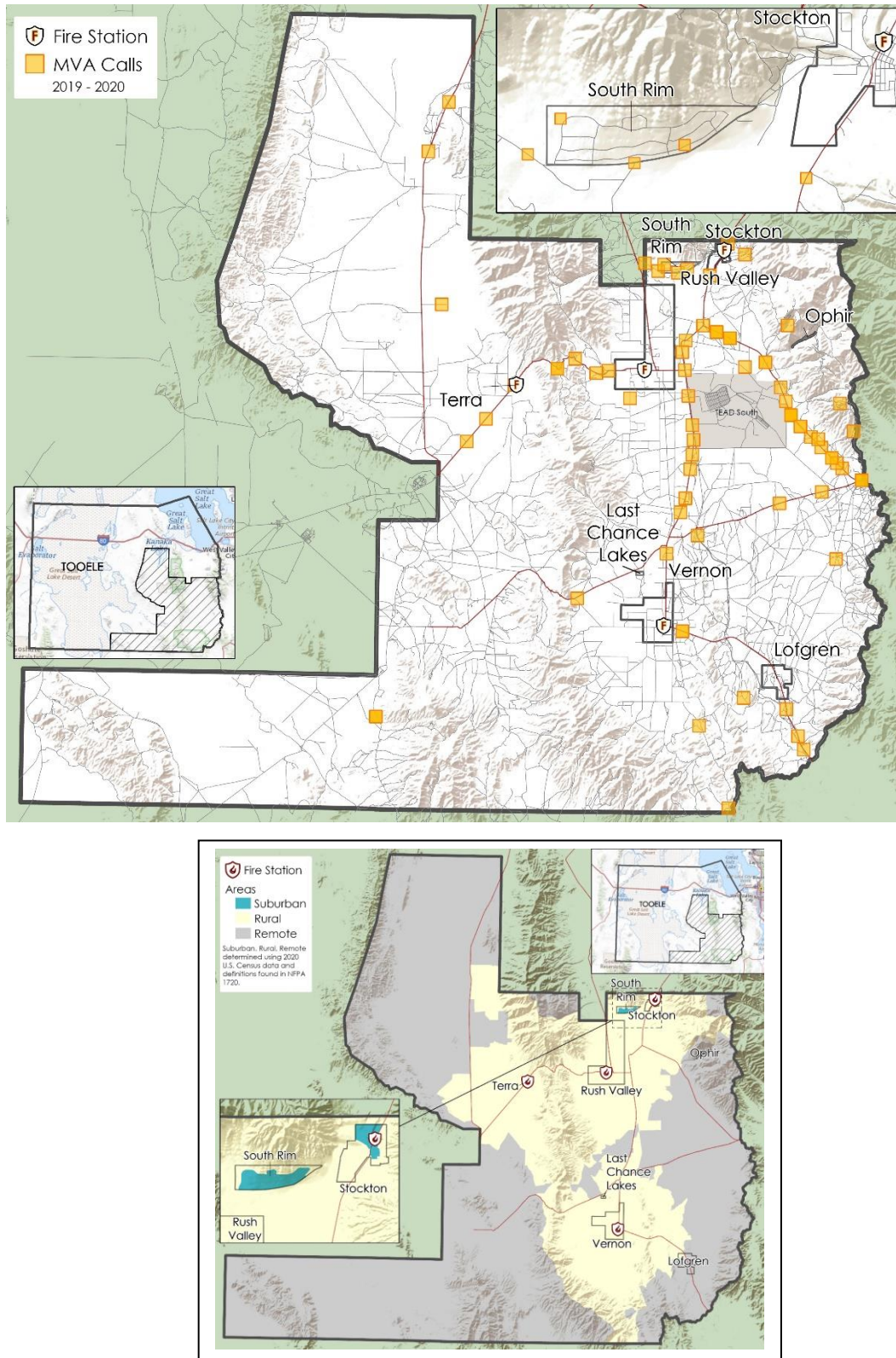


FIGURE 3-18: All EMS Calls, 2019 and 2020

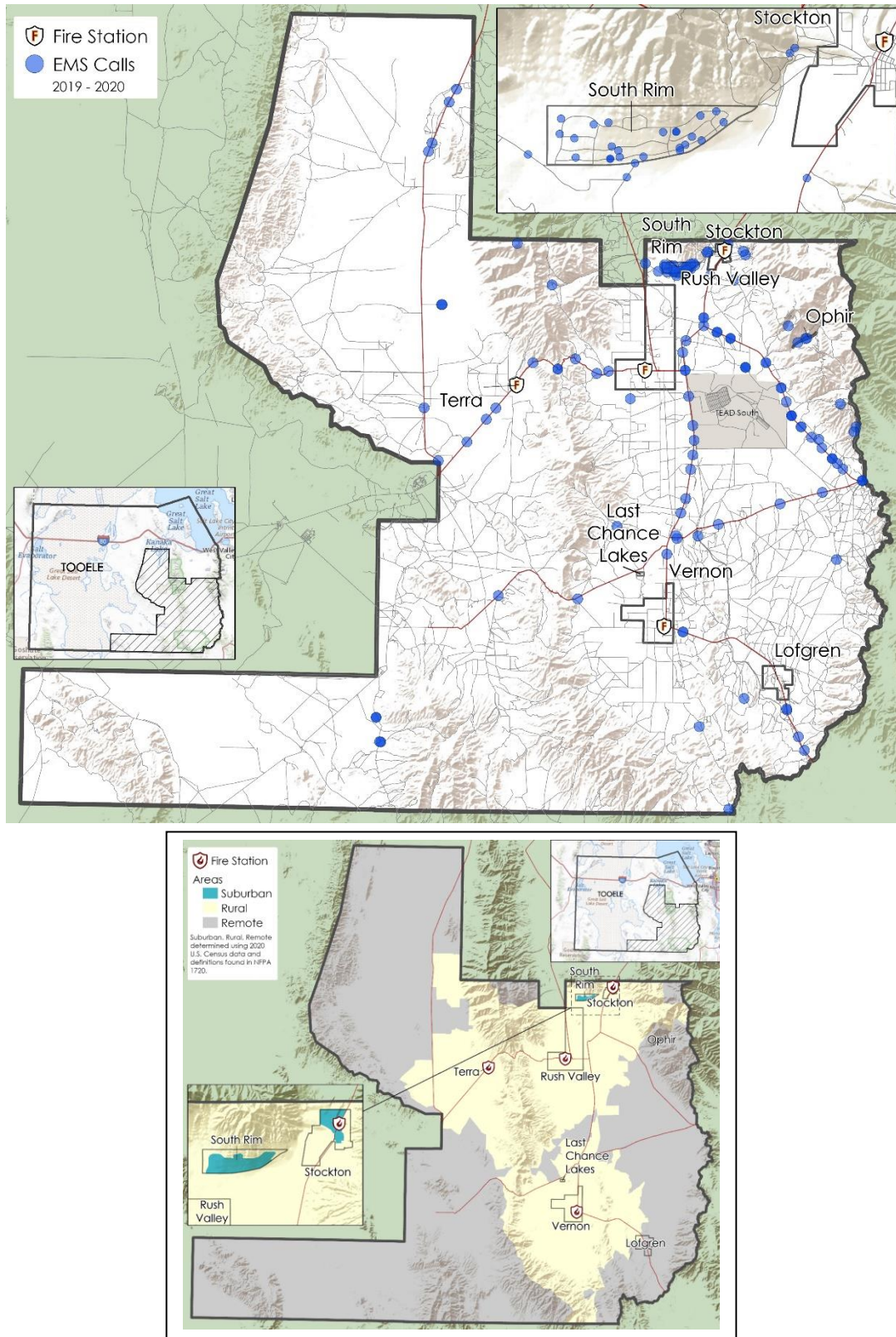
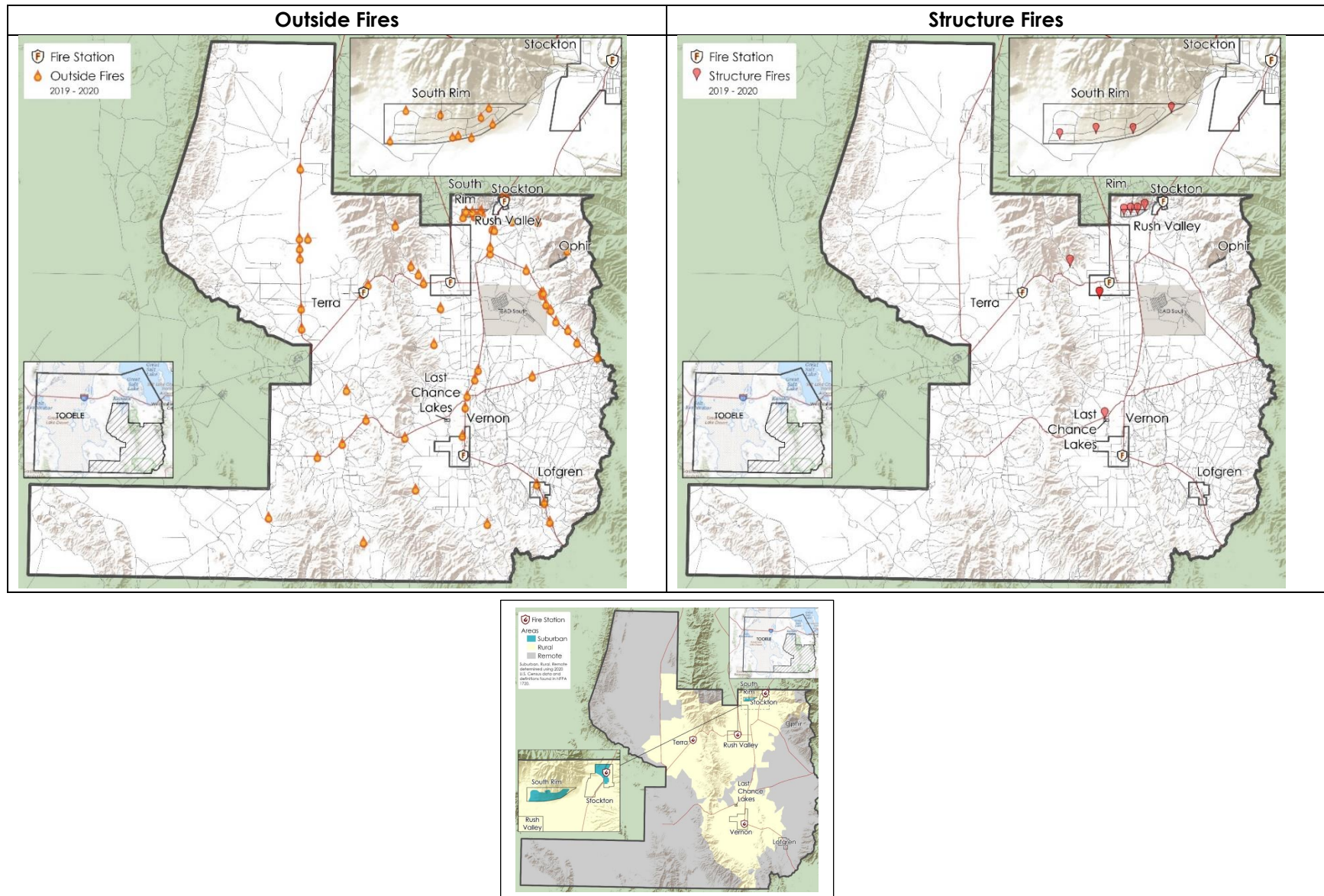


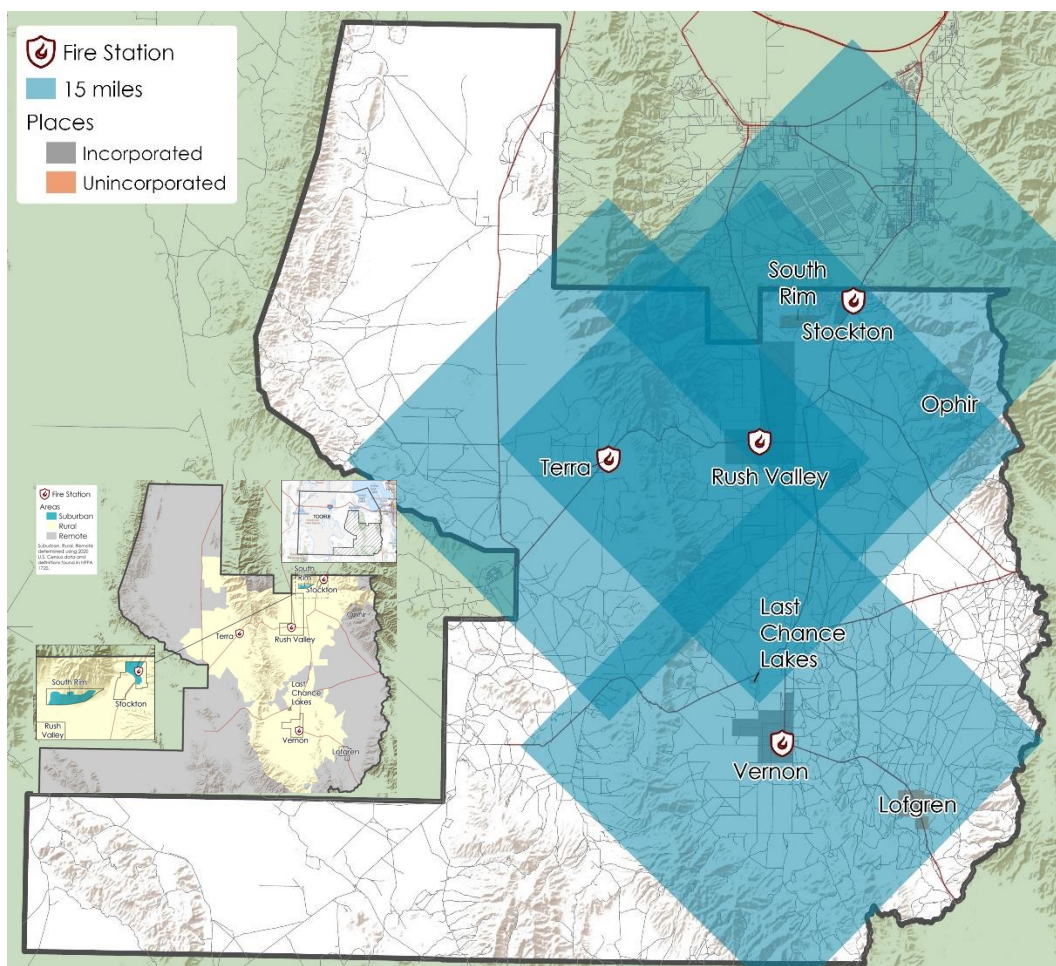
FIGURE 3-19: All Outside and Structure Fire Calls, 2019 and 2020



Response Times into Unincorporated Southeast County Analysis Area

As discussed earlier, the County has agreements with the four volunteer departments in the southeast county analysis area. Through these agreements the four volunteer departments provide fire services within a 15-mile radius of their municipal boundaries into the unincorporated area. The coverage areas through these agreements are illustrated in the next figure. In comparison to the NFPA 1720 suburban, rural, remote map, one can see that the suburban and rural areas are nearly 100% covered other than a small area north of Terra VFD.

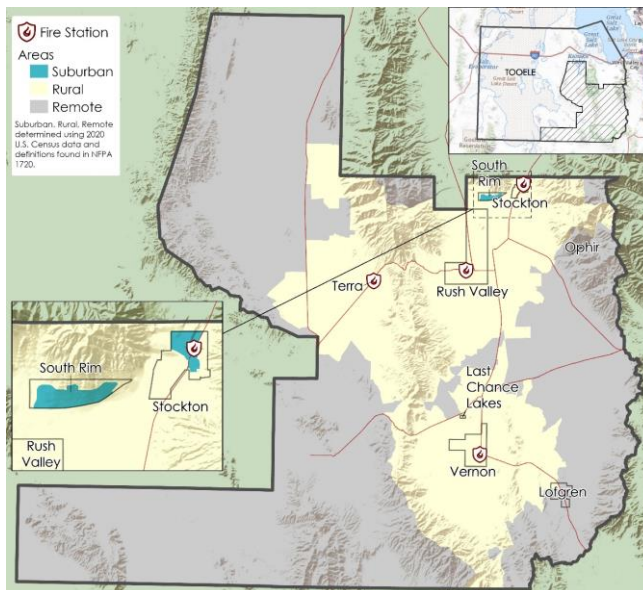
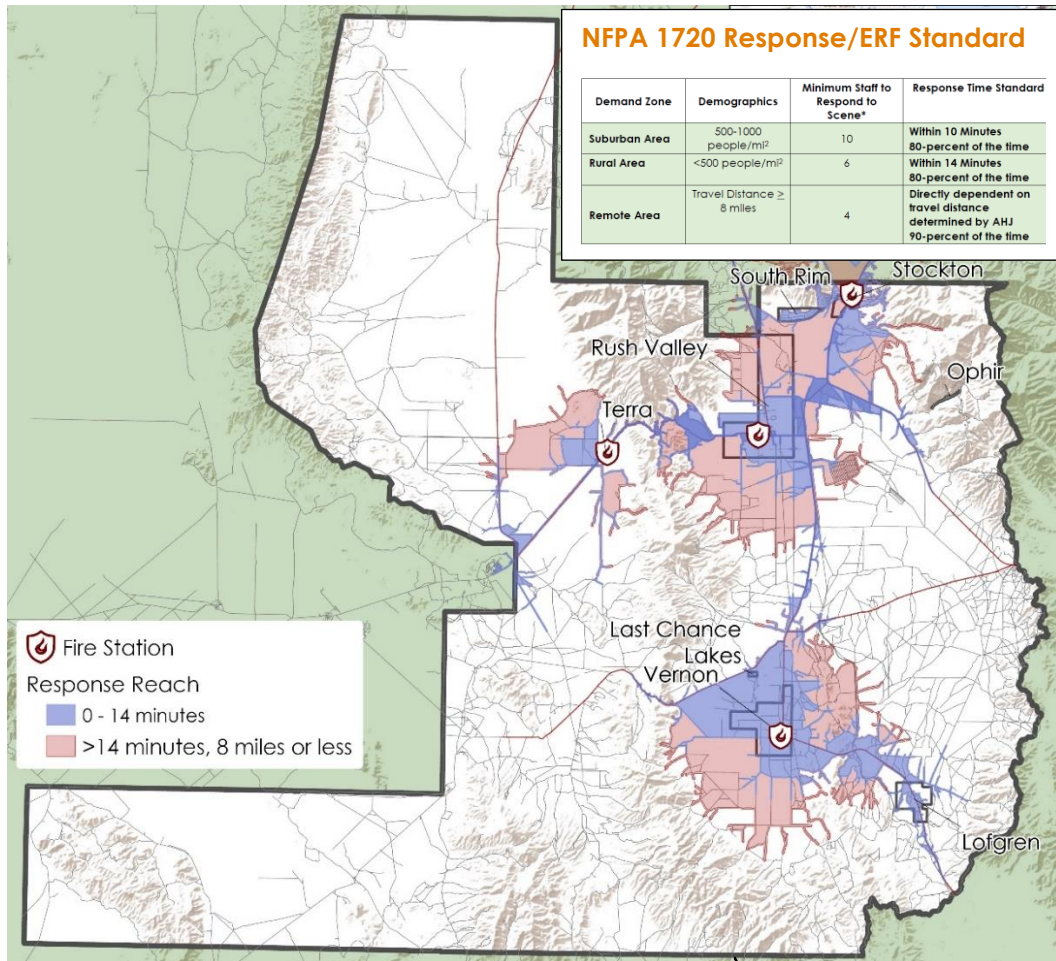
FIGURE 3-20: 15-Mile Southeast County VFD Response Reach



As volunteer response is typically through members responding from home or work when the alarm sounds. The typical scenario is the volunteer member will either respond to the station and respond with the fire apparatus or respond directly to the scene. All together this system forms the Effective Response Force as outlined above in NFPA 1720. CPSM mapped response travel times from each fire station in the southeast county analysis area to illustrate how, from each station, the response of apparatus to meet the intent of the standard into the unincorporated areas may or may not be met.

The first map provides an overview of the predominant response, which is rural and remote.

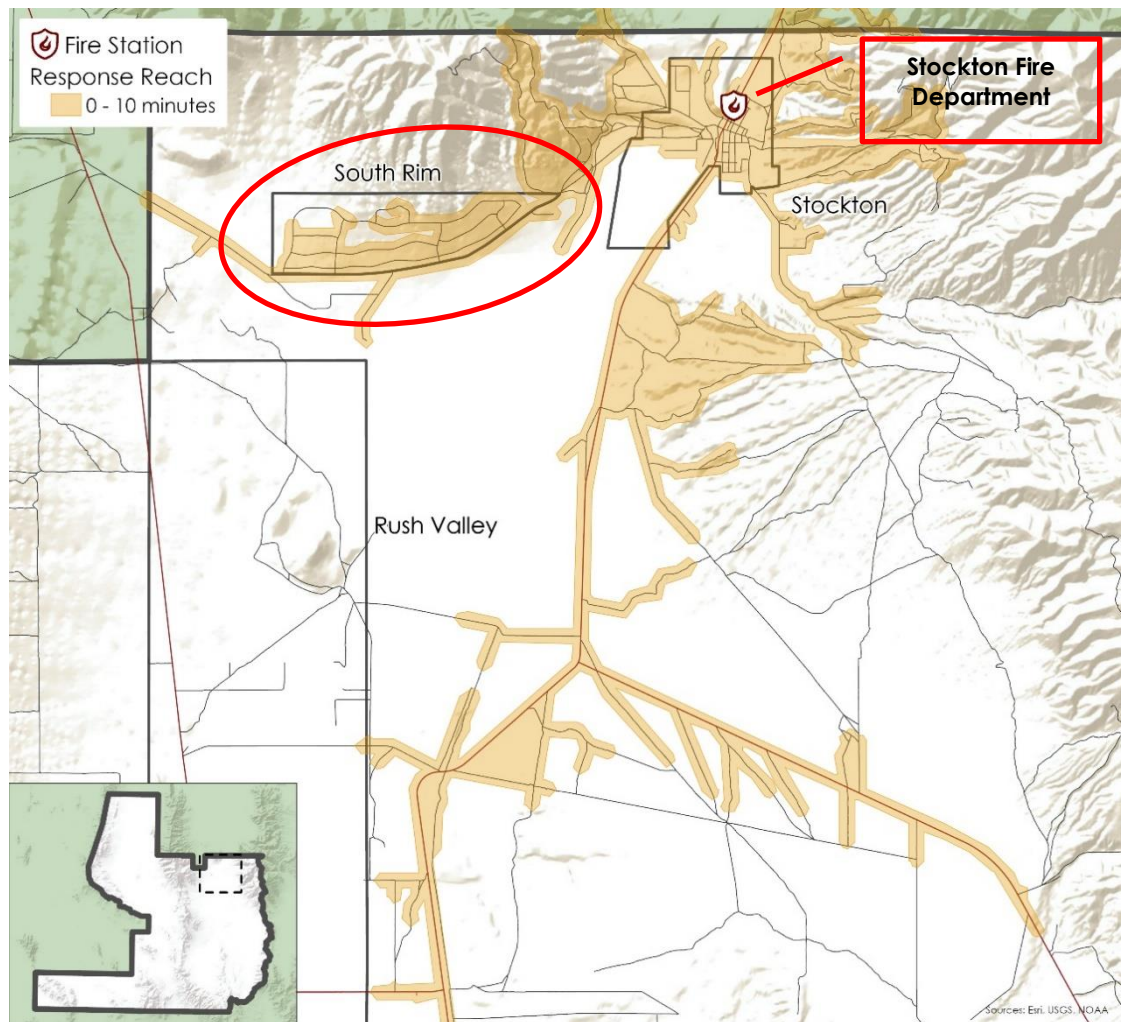
FIGURE 3-21: Southeast County Area VFD Rural and Remote Response



In review of the two maps, the rural reach of the stations is limited to road networks and distance; the built-upon areas in the unincorporated areas directly contiguous to a municipality with accessible roads are the most consistently covered by the NFPA 1720 metric. Due to the expanse of the area, remote built-upon areas have extended response times.

The next figure looks at the only suburban area in the southeast county analysis area (South Rim).

FIGURE 3-22: South Rim Response from Stockton Fire Department



Demand Zone	Demographics	Minimum Staff to Respond to Scene*	Response Time Standard
Suburban Area	500 to 1,000 people/mi ²	10	Within 10 Minutes 80 percent of the time

The response travel time from the Stockton Fire Department to South Rim is within the 10-minute benchmark of the NFPA 1720 standard. CPSM was advised, however, that many members of the Stockton Fire Department live in South Rim, and have to respond to the fire station, pick up the apparatus, and then deploy. Some members, weather permitting, keep a light fire suppression apparatus at their home for quicker response. Response alternatives are addressed later in the analysis.

Individual agency response times of the initial fire unit into the unincorporated area are described in the next tables. Due to the lack of recorded dispatch times, *turnout time* is defined as the difference between the time a call is received and the earliest time a primary fire and

rescue response apparatus went en route to a call's location. This turnout time includes call processing time, which is the time required to determine the nature of the emergency and the types of resources to dispatch. *Travel time* is the difference between the earliest en route time and the earliest arrival time. *Response time* is the total time elapsed between receiving a call and arriving on scene.

TABLE 3-8: Response Time of First Arriving Unit, by Fire Call Type (Minutes)

Call Type	Average, Minutes			80 Percentile Suburban and Rural Response, Minutes			Call Count
	Turnout	Travel	Total	Turnout	Travel	Total	
False alarm	7.8	6.9	14.7	9.3	8.1	16.4	5
Good intent	15.7	21.4	37.2	20.9	20.2	41.2	6
Hazard	9.4	10.1	19.4	12.6	13.8	26.4	3
Outside fire	10.3	16.1	26.4	15.3	26.6	39.7	52
Public service	22.3	9.1	31.4	41.8	18.9	44.6	6
Structure fire	9.4	7.6	17.0	13.6	17.0	27.1	4
Fire Total	11.4	14.7	26.1	15.4	20.2	39.7	76
EMS Total	12.4	12.2	24.6	15.1	21.1	34.1	100
Total	12.0	13.3	25.2	15.2	21.1	34.5	176

As a reminder, here are the NFPA 1720 Response/ERF Standards:

Demand Zone	Demographics	Minimum Staff to Respond to Scene*	Response Time Standard
Suburban Area	500 to 1,000 people/mi ²	10	Within 10 Minutes 80 percent of the time
Rural Area	<500 people/mi ²	6	Within 14 Minutes 80 percent of the time
Remote Area	Travel Distance ≥ 8 miles	4	Directly dependent on travel distance determined by AHJ, 90 percent of the time

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TABLE 3-9: Response Time of First Arriving Unit, by Time of Day

Time	Average, Minutes			80 Percentile Suburban and Rural Response, Minutes			Call Count
	Turnout	Travel	Total	Turnout	Travel	Total	
00:00 - 03:59	15.8	7.6	23.4	13.6	8.7	24.0	11
04:00 - 07:59	10.3	15.8	26.2	15.1	23.2	38.3	11
08:00 - 11:59	12.6	10.2	22.8	17.8	16.1	29.5	31
12:00 - 15:59	8.9	11.6	20.5	13.0	21.2	30.6	38
16:00 - 19:59	13.7	15.7	29.4	17.0	26.9	43.8	52
20:00 - 23:59	11.5	15.3	26.7	13.0	21.2	33.0	33
Total	12.0	13.3	25.2	15.2	21.1	34.5	176

TABLE 3-10: Response Time of First Arriving Fire Unit by Fire District

District	Average, Minutes			80 Percentile Suburban and Rural Response, Minutes			Call Count
	Turnout	Travel	Total	Turnout	Travel	Total	
RVFD	13.7	10.9	24.6	13.6	13.4	28.4	22
SCFD	8.6	10.2	18.8	11.6	15.8	26.2	89
TRFD	16.0	13.9	30.0	21.0	17.8	38.3	19
VFD	16.0	19.9	35.9	18.5	27.7	46.8	49
Total	12.0	13.3	25.2	15.2	21.1	34.5	176

Key takeaways from these tables tell us:

- The average turnout time of the first fire unit for fire calls was 11.4 minutes (aggregate of all southeast area fire departments).
- The average travel time of the first fire unit for fire calls was 14.7 minutes (aggregate of all southeast area fire departments).
- The 80th percentile turnout time of the first fire unit for fire calls was 15.4 minutes (aggregate of all southeast area fire departments).
- The 80th percentile travel time of the first fire unit for fire calls was 20.2 minutes (aggregate of all southeast area fire departments).
- The average turnout time of the first unit for EMS calls was 12.4 minutes (aggregate of all southeast area fire departments).
- The average travel time of the first fire unit for EMS calls was 12.2 minutes (aggregate of all southeast area fire departments).
- The 80th percentile turnout time of the first unit for EMS calls was 15.1 minutes (aggregate of all southeast area fire departments).
- The 80th percentile travel time of the first unit for EMS calls was 21.1 minutes (aggregate of all southeast area fire departments).

SECTION 4. SOUTHEAST COUNTY ANALYSIS AREA CONSIDERATIONS & ALTERNATIVES

As discussed, the southeast county fire analysis area is currently served by four volunteer fire departments, three of which have a primary service area of the incorporated town in which they are located. These are the towns of Stockton, Rush Valley, and Vernon. The Terra Volunteer Fire Department is the lone fire department serving unincorporated Tooele County in the southeast area. Collectively, these towns make up 45 percent of the total population (2,927) of the analysis area. The volunteer fire departments in the towns have 44 members (as of January 2022) and a variety of response equipment.

Counties (and cities) in Utah have the responsibility to provide fire protection as outlined here:

Pursuant to 11-7-1 of the State of Utah Code:

- (1) The governing body of every incorporated municipality and the board of commissioners or county council of every county shall:
 - (a) provide adequate fire protection within their own territorial limits; and
 - (b) cooperate with all contiguous counties, municipal corporations, private corporations, fire districts, state agencies, or federal governmental agencies to maintain adequate fire protection within their territorial limits.
- (2) Every incorporated municipality and every county may:
 - (a) require that persons obtain a burning permit before starting a fire on any forest, wildland urban interface, brush, range, grass, grain, stubble, or hay land, except that a municipality or county may not require a burning permit for the burning of fence lines on cultivated lands, canals, or irrigation ditches, provided that the individual notifies the nearest fire department of the approximate time that the burning will occur;
 - (b) maintain and support a firefighting force or fire department for its own protection;
 - (c) contract to furnish fire protection to any proximate county, municipal corporation, private corporation, fire district, state agency, or federal agency;
 - (d) contract to receive fire protection from any contiguous county, municipal corporation, private corporation, fire district, state agency, or federal governmental agency;
 - (e) contract to jointly provide fire protection with any contiguous county, municipal corporation, private corporation, fire district, state agency, or federal governmental agency; or
 - (f) contract to contribute toward the support of a fire-fighting force, or fire department in any contiguous county, municipal corporation, private corporation, fire district, state agency, or federal governmental agency in return for fire protection.

As the county does not have a fire department to provide fire protection services, it has agreements with the town fire departments to respond outside of their municipal jurisdictions (15-mile radius) on fire, motor vehicle accident and EMS-related calls. This agreement includes an annual stipend (currently \$20,000) for each municipal fire department. Terra VFD acts as a

county fire service provider and responds to fires, motor vehicle accidents, and EMS calls in a large unincorporated area district and receives some funding from the county.

In 2019 and 2020, the four departments combined responded to 141 fire, motor vehicle accident and EMS calls each year in the unincorporated area. In 2019, fire-related calls made up 44 percent of all calls, and in 2020, fire calls made up 50 percent of all calls. In both years motor vehicle accidents made up the highest number of calls.

There are number of environmental risks in the unincorporated analysis area, to include wildland fires, which when they intermingle with structures can lead to property loss and even sometimes, depending on the environmental conditions and location of the fire with respect to private homes and business, pose life-safety risks. Building risks are primarily low in the analysis area as the building stock is primarily single family dwellings. There are limited clusters of homes and buildings with building densities located in South Rim (largest density), Ophir (lower density but several buildings in closer proximity to one another), Terra, and Last Chance Lakes (less dense).

The southeast county analysis area fire departments currently act as a regional response force, often responding together to calls for service and providing back-up to each other when needed. This includes responses in the unincorporated area. **These four fire departments function as the de-facto County fire department in the southeast county analysis area.**

During a stakeholder meeting with the Fire Chiefs of the southeast county analysis area (the Terra Fire Chief was invited but did not attend), CPSM learned the following:

- Each of the town fire departments stated they were committed to the 15-mile radius and responding to calls for service and have a vision to build the current departments to solve current and future fire protection issues.
- Each of the town fire departments communicated several needs that include:
 - New/updated fire apparatus.
 - New/updated self-contained breathing apparatus (SCBA). Some communicated that they have cylinders and harnesses that are out of date. This means they no longer meet the standards of the edition of NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*, under which they were purchased.
 - New/updated structural protective clothing (turnout gear). Some communicated that they have older gear that is out of date. This means they no longer meet the standards of the edition of NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, under which they were purchased.
 - The need to update/replace vehicle extrication equipment, which is critical to gaining entry to and disentangling patients entrapped or pinned in a vehicle from a motor vehicle accident. This includes stabilization struts, cribbing, hydraulic spreaders, hydraulic cutters, hydraulic rams, and the like.
 - Assistance with recruitment and retention of volunteer staff.
 - Centralized training center or training area where training props and a classroom can be established for fire and related training. Such a resource would reduce travel to state-operated sites and could be used to offer state certification training in Tooele County on a more regional level.

CPSM asked the Fire Chiefs for more detailed information such as the year of manufacture of current fire apparatus (Type 1 engines primarily) and expiration of SCBA. We received the following:

■ Vernon FD⁶

- 1996 Type 1 Engine, Structural Fire Protection (26 years old).
- 1973, 1998 Type 4 Engines (Brush/Wildland).
- 2000 Type 6 Engine (Brush/Wildland).
- 1990 Type 2 Water Tender (Portable Water).
- 8 of 8 SCBA harnesses expired.
- 12 SCBA cylinders, none expired.

■ Rush Valley FD⁷

- 2013 Type 2 Engine.
- 1997, 1996 Type 4 Engines (Brush/WildLand).
- 1997 Type 6 Engine (Brush/Wildland).
- 1967, 1982 Type 1 Water Tenders (Portable Water).
- 8 SCBA harnesses; unknown number expired.
- 8 of 13 SCBS cylinders expired.

■ Stockton City FD⁸

- 1994 Type 2 Engine (28 years old) (Structural).
- 1988 Type 2 Engine (34 years old) (Structural).
- 1980, 1991, 1991 Type 4 Engines (Brush/Wildland).
- 1994, 2011 Type 6 Engines (Brush/Wildland).

■ Terra FD⁹

- 1987 Type 2 Engine (35 years old) (Structural).
- 1990, 1996, 1998 Type 4 Engines (Brush/Wildland).
- 1997, 1997, 2003 Type 6 Engines (Brush/Wildland).
- 1998, 1999, 1999 Type 1 Water Tender (Portable Water).

The list of needs of the volunteer fire departments as discussed here is costly. For their service in the unincorporated area of the county, each town fire department receives \$20,000 or \$142.00/call for 2019 and 2020 (141 calls per year). During a stakeholder meeting with the Mayors of the Towns of Stockton, Rush Valley, and Vernon, CPSM learned that the towns do not provide any or very limited funding to the volunteer fire departments other the Town of Stockton,

6. Apparatus information from: Utah State Forrester's Cooperative Agreement UT-45009-2021

7. Apparatus information from: Utah State Forrester's Cooperative Agreement UT-45014-2021

8. Apparatus information from: Utah State Forrester's Cooperative Agreement UT-45005-2021

9. Apparatus information from: Utah State Forrester's Cooperative Agreement UT-45015-2022

which provides a small stipend for the Fire Chief. CPSM also learned during the Fire Chiefs' stakeholder meeting the town volunteer fire departments use the County stipend for utility bills, small equipment, turnout gear, and fuel for apparatus. No volunteer fire department has a capital replacement fund, and really cannot afford one. The departments try to prioritize the County allotment and stretch the funds as far as they can on expenses as discussed above.

Industry standards for fire apparatus, and more specifically structural firefighting apparatus (engines and ladders), is designed to maintain safety for vehicle occupants, and safety for the road shared with the public. NFPA 1901, *Standard for Automotive Fire Apparatus*, serves as a guide to the manufacturers that build fire apparatus and the fire departments that purchase them. The Annex Material in NFPA 1901 (2016) contains recommendations and work sheets to assist in decision making in vehicle purchasing. With respect to recommended vehicle service life, the following excerpt is noteworthy:

"It is recommended that apparatus greater than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status and upgraded in accordance with NFPA 1912, Standard for Fire Apparatus Refurbishing (2016), to incorporate as many features as possible of the current fire apparatus standard. This will ensure that, while the apparatus might not totally comply with the current edition of the automotive fire apparatus standards, many improvements and upgrades required by the recent versions of the standards are available to the firefighters who use the apparatus."

The impetus for these recommended service-life thresholds is the continual industry advances in vehicle and occupant safety. Despite good stewardship and maintenance of emergency vehicles in sound operating condition, there are many advances in occupant and vehicle component safety, such as fully enclosed cabs, enhanced rollover protection and air bags, three-point restraints, antilock brakes, increased visibility, cab noise abatement/hearing protection, a clean cab free from carbon products, and a host of other improvements as reflected in each revision of NFPA 1901. These improvements provide safer response vehicles for those providing emergency services within the community, as well those "sharing the road" with these responders.

One important NFPA 1912 standard consideration is pointed out here. Apparatus that was not manufactured to applicable NFPA fire apparatus standards or that is 25 years old should be replaced. Four of the six Type 1 or 2 structural engines currently operated in the southeast county analysis area exceed 25 years of age.

These same age standards are provided for informational purposes for brush and wildland firefighting apparatus in the NFPA 1906 *Standard For Wildland Apparatus*, 2016 edition. This standards states:

Apparatus more than 15 years old might include only a few of the safety upgrades required by the most recent editions of the NFPA wildland apparatus standards or the equivalent Underwriters Laboratories of Canada (ULC) standards. Because of changes, upgrades, and fine-tuning to NFPA 1906, Standard for Wildland Fire Apparatus, especially in the area of safety, fire departments should seriously consider the value (or risk) to fire fighters by keeping apparatus more than 15 years old in first-line service.

Apparatus that were not manufactured to the applicable NFPA wildland fire apparatus standards or that are over 25 years old should be replaced.

FIRE SERVICE DELIVERY ALTERNATIVES

Alternative 1: Maintain the Status Quo

There are several practical policy options when considering how the County can align better with 11-7-1 of the state statutes. Certainly, one option is to do nothing, that is, continue with the status quo. The status quo is an option that fosters a business-as-usual policy decision where the current agreements stay in place for the deployment of resources in the unincorporated southeast county area. This policy option maintains the current allotment of \$20,000 to each town volunteer fire department. Because this option does not change any funding or shift any operational responsibilities to the County, it creates the least amount of stress on the budget. The status-quo approach may, however, pose a riskier decision as any potential improvements to the overall fire protection services in totality over time will not be realized.

Alternative 2: Enhance Volunteer Fire Departments In the Southeast County Analysis Area

As already discussed, the four fire departments in the southeast county analysis area serve as the de facto County fire protective services in the southeast analysis area and do so with commitment and great pride, and with equipment that is not 100 percent to industry standard and/or has significant age. While the County cannot support the entire operation of these fire departments, and should not, since the County relies on each to extend coverage into the unincorporated area, the County should consider providing additional financial or in-kind support.

Linked to this alternative is the recommendation CPSM makes that the County conduct a comprehensive review of all fire protection and hazardous materials service agreements, as many are several years old and require significant updating. This of course includes the current agreements with the three town volunteer fire departments in the southeast county analysis area (Stockton VFD, Rush Valley VFD, Vernon VFD). This exercise could also be used to enhance the three town volunteer fire departments and Terra VFD, which does not have an agreement, but provides fire response beyond their immediate community, the same as the town VFDs.

Any renewal or implementation of new volunteer fire department agreements where an annual allotment is provided by the County should stipulate how the County funds are to be used, which CPSM further recommends should be for equipment and operational and maintenance costs of apparatus and equipment. CPSM also recommends the County work with the Towns regarding Town funding assistance for items such as facility utility bills and facility maintenance to the extent they are capable.

Overall, County funding directed to the volunteer fire departments in the southeast analysis area is the primary funding for these departments. In actuality however, these are Town fire departments located within municipal boundaries. That said, the following represents Town budgets for fire departments.

TABLE 4-0: Town Budgets for Southeast Volunteer Fire Departments

Stockton Fire	2021	2022
Revenues		
Wild Land Reimbursement	\$ 1,500	\$ 6,000
County Fire Reimbursement	\$ 20,000	\$ 41,600
Expenditure		
Fire Salaries	\$ 7,200	\$ 19,200
Benefits	\$ 600	\$ 1,599
Travel Training	\$ 3,700	\$ 7,400
Office Supplies	\$ 200	\$ 200
Building Grounds	\$ 500	\$ 1,500
Utilities	\$ 2,800	\$ 3,000
Equipment-Supplies- Maint.	\$ 6,000	\$ 17,551
Fuel	\$ 1,800	\$ 2,500
Vehicle Repairs	\$ 3,000	\$ 9,000
Telephone	\$ 650	\$ 650
Prof & Tech	\$ 3,500	\$ 3,500
Miscellaneous	\$ 200	\$ 500
	\$ 30,150	\$ 66,600
Rush Valley Fire Revenue	2021	2022
Fire Grants	\$ 2,848	\$ 4,800
Fire Income	\$ 16,928	\$ 20,000
Expenditure		
Fire Department	\$ 13,820	\$ 22,000
Fire truck Lease	\$ 15,924	\$ 15,300
	\$ 29,744	\$ 37,300
Vernon Fire Revenue	2021	2022
Fire Dept Revenues	\$ 13,000	\$ 13,000
Expenditure		**

** According to the Vernon Town Clerk, in 2019 the Town purchased a new Engine apparatus for the VFD at a cost of \$48,000. In 2019 the Town also allotted \$21,000 of Town ARPA funds to the VFD for new pumps and skids. Lastly, the Town budgets \$8,000 annually for facility utilities.

As a note, revenues shown in this Table only identify grant funds, wild land reimbursement, and County funding.

County support could continue and/or come in the form of:

- Increased annual allotment to the extent possible (greater than \$20,000), through new agreements. New agreements should stipulate this funding is for apparatus operating and maintenance costs and maintaining and upgrading expired and aged equipment. No increase however should be approved without specific justification from the volunteer fire department.
- Implement funding and operational guidelines with the Terra VFD that outlines the coverage of this department's current and expanded district and how County funds are utilized.
- Implementation of a County grant program where the County allocates an amount of money each year, to the extent possible, which the volunteer fire departments can apply for through a formal process. This grant program should be designed for specific equipment such as SCBA upgrades, turnout gear purchases for new and incumbent members, capital equipment (equipment that meets a designated dollar threshold), and fire apparatus. This grant program could range from \$25,000-\$100,000 annually dependent on availability of funds and be open competitively to volunteer fire departments.
- The County should apply for a FY 2022 Staffing for Adequate Fire and Emergency Response (SAFER) Grant. This grant should be specific to volunteer recruitment and retention and could be for a Countywide Volunteer Recruitment and Retention position, which this grant provides funding for, or the grant could be for certain volunteer recruitment and retention materials and program support.

Facility in South Rim

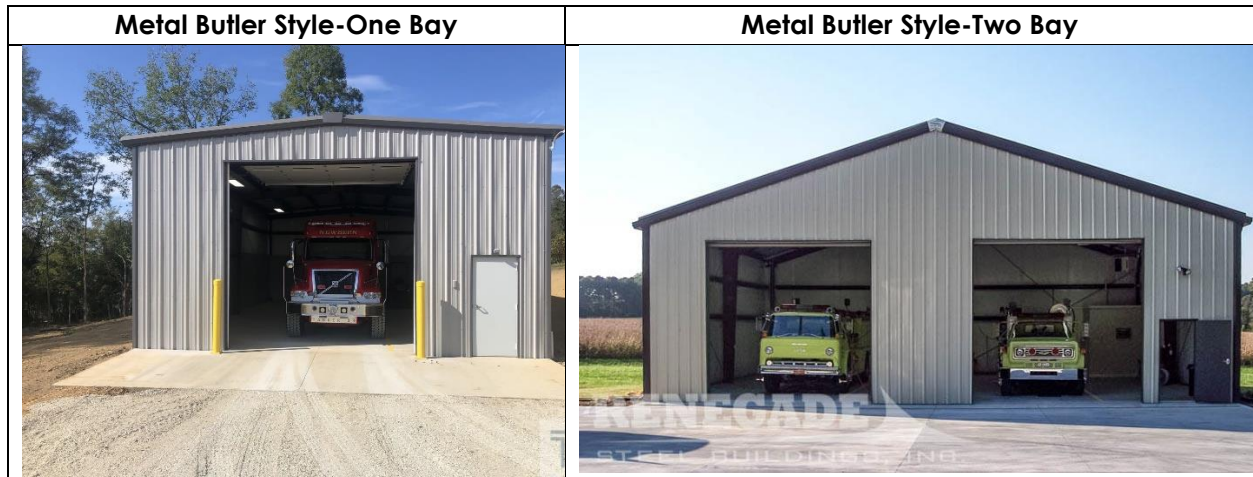
One suggestion by the Stockton Fire Chief the County should consider in support of what Stockton VFD provides to the unincorporated area is the construction of a fire facility in the South Rim community. According to the Chief, many members of the Stockton VFD live in South Rim, so when an alarm is sounded for incident in and around this area, members have to respond into Stockton, pick up the apparatus, and then respond back to South Rim or the South Rim area. Additionally, the Chief reported that when weather permits (non-freezing temps), members will bring a small brush apparatus to their homes in South Rim for quicker response.

One low-cost option is to build a one- to two-bay prefabricated metal building. The facility will have to be heated and will require some storage area. Needed site work will include a concrete pad and small parking area (4-6 spaces). The facility will require electrical utilities.

The main purpose for this facility is the storage of a ready to respond fire apparatus for South Rim and the South Rim area where members respond to the station and then respond the apparatus.

The County is currently building a 109-foot x150-foot Butler style building for just under \$850,000. Estimated cost for a 40-foot x45-foot building in South Rim to include engineering and project management, the building, permitting, and erection is \$350,000 to \$450,000, which is dependent on the actual size of the building and materials and labor costs at the time of purchase and build.

FIGURE 4-1: South Rim Fire Facility Alternatives



Alternative 3: Implement a County Fire Service

Another alternative the County can consider is the creation of a career fire service in the southeast county analysis area. CPSM suggests this alternative after analysis of the risks, location of calls for service, and to enhance the current deployable resources in the analysis area. Through this service, and if strategically placed, the County can manage many of the responses in the unincorporated area east of Terra and north of Vernon in a timely manner. Response can be made around the clock with a more immediate turnout time, which reduces overall response time.

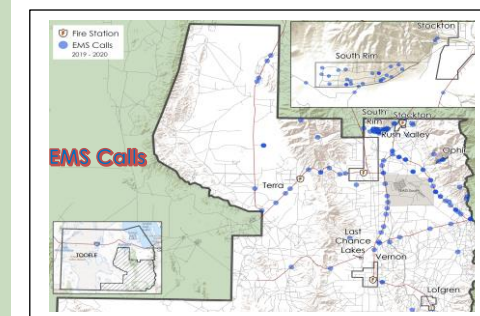
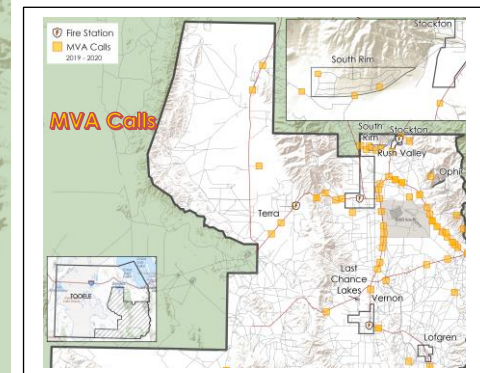
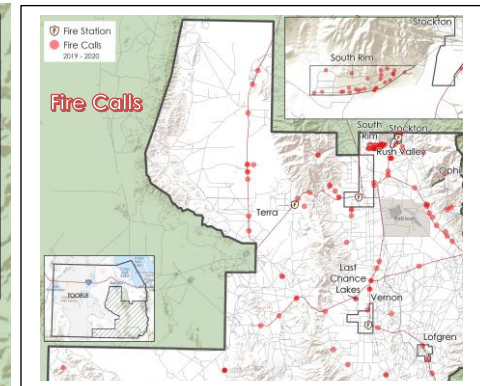
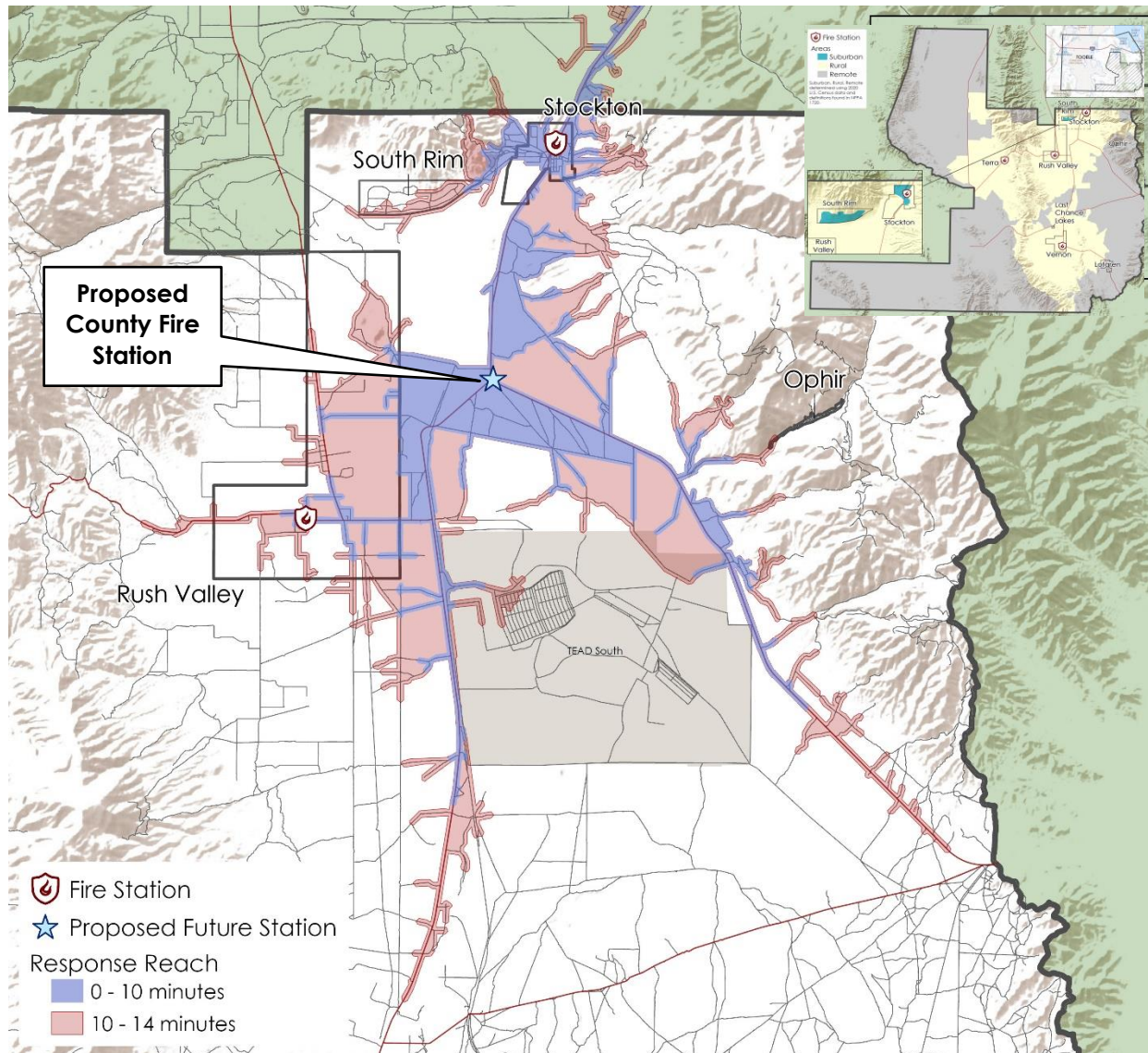
Under this alternative, CPSM recommends one strategically located facility for the career fire service staff, with three staff members on duty 24 hours/day (crew leader and two firefighters) responding in a Type 1 Engine (Structural) or a Type 6 Engine (Brush/EMS responses).

When formulating this recommendation CPSM took into consideration where the call workload is occurring in the southeast county analysis area and recommends should the County consider implementing this alternative a site be selected somewhere in the vicinity of the intersection of SR 36 and SR 73. This location provides rural response coverage along these two busy corridors to and including Faust Road, to Ophir, and as well-north to South Rim as a primary response should Stockton VFD be busy on another incident or unable to respond (just over a suburban response travel time) and/or to provide a more expedient back up to Stockton VFD for an incident in this area.

The next figure illustrates this location and how response would be able to cover a very large share of calls for service in the southeast county analysis area.

§ § §

FIGURE 4-2: Proposed Southeast County Fire Station Location



Under this alternative CPSM recommends the following staffing arrangement:

- Staffing complement of three personnel per shift.
 - Crew Leader (Officer rank, i.e., lieutenant).
 - Firefighter-EMT.
 - Firefighter-EMT.
- 24-hour work shift.
- 24/48 schedule (work 24-hours, off for 48 hours)
 - This schedule averages 56 hours/week over the work cycle and year.
 - This shift arrangement comprises three shifts (A, B, C shifts) and **nine total staff**. The 24/48 three-shift arrangement is the most efficient in the fire service in terms of the number of people or shifts required. Any other arrangement such as 12-hour shifts with around-the-clock coverage, or a 10-14 arrangement (one shift works 10 hours and the other shift works 14 hours) would require four shifts of personnel.
 - Under this workday schedule and as firefighters,¹⁰ personnel are covered under 29 USC Section 207(k) of the Fair Labor Standards Act. According to the U.S. Department of Labor, *Section 207(k) of the FLSA provides that employees engaged in fire protection (or law enforcement) may be paid overtime on a “work period” basis. A “work period” may be from 7 consecutive days to 28 consecutive days in length. For work periods of at least 7 but less than 28 days, overtime pay is required when the number of hours worked exceeds the number of hours that bears the same relationship to 212 (fire) (or 171 police) as the number of days in the work period bears to 28. For example, fire protection personnel are due overtime under such a plan after 106 hours worked during a 14-day work period, while law enforcement personnel must receive overtime after 86 hours worked during a 14-day work period.*¹¹

There are many intricate details to the Fair Labor Standards Act with regards to firefighter work schedules. CPSM recommends should the County choose this alternative, or any variation that includes full-time firefighters, that the County consult with a labor attorney experienced in this area.

The next chart shows the estimated annualized cost for nine career firefighter staff. As a starting point for the County to consider, CPSM utilized current starting hourly rates utilized by the North Tooele Fire District for firefighters, which in December 2021, was 15.00/hour (Firefighter/EMT). For the crew leader position, we added 10 percent as this is a supervisory position (16.50/hour) which will have many station and equipment management responsibilities, as well as incident command responsibilities.

10. Are trained in fire suppression; have the legal authority and responsibility to engage in fire suppression; are employed by a fire department of a municipality, county, fire district, or State; and are engaged in the prevention, control and extinguishment of fires or response to emergency situations where life, property, or the environment is at risk: U.S. Department of Labor, Fact Sheet #8, Law Enforcement and Protection Employees Under the Fair Labor Standards Act.

11. Ibid

TABLE 4-1: Estimated Annualized Salary Cost for Career Firefighters

Position	Base Salary	Base Salary + Benefits	Overtime Rate	FLSA OT + Benefit Costs	Total Base Salary + Benefits + FLSA OT + Benefits	Potential OT for Shift Coverage, Training, Off Duty Functions 150 hours/year	Salary and Benefits Grand Total
	2,756 hours per year, 28-day FLSA cycle Firefighter, \$15/hr. Crew Leader, \$16.50/hr.	Benefits=45%	Firefighter 22.50/hr. Crew Leader 24.75/hr.	156 hrs. per year			3 Crew Leaders 6 Firefighters
Crew Leader A Shift	\$45,474.00	\$65,937.30	\$24.75	\$5,598.45	\$71,535.75	\$5,383.13	\$76,918.88
Firefighter A Shift	\$41,340.00	\$59,943.00	\$22.50	\$5,089.50	\$65,032.50	\$4,893.75	\$69,926.25
Firefighter A Shift	\$41,340.00	\$59,943.00	\$22.50	\$5,089.50	\$65,032.50	\$4,893.75	\$69,926.25
Crew Leader B Shift	\$45,474.00	\$65,937.30	\$24.75	\$5,598.45	\$71,535.75	\$5,383.13	\$76,918.88
Firefighter B Shift	\$41,340.00	\$59,943.00	\$22.50	\$5,089.50	\$65,032.50	\$4,893.75	\$69,926.25
Firefighter B Shift	\$41,340.00	\$59,943.00	\$22.50	\$5,089.50	\$65,032.50	\$4,893.75	\$69,926.25
Crew Leader C Shift	\$45,474.00	\$65,937.30	\$24.75	\$5,598.45	\$71,535.75	\$5,383.13	\$76,918.88
Firefighter C Shift	\$41,340.00	\$59,943.00	\$22.50	\$5,089.50	\$65,032.50	\$4,893.75	\$69,926.25
Firefighter C Shift	\$41,340.00	\$59,943.00	\$22.50	\$5,089.50	\$65,032.50	\$4,893.75	\$69,926.25
Estimated Annualized Year 1	\$384,462.00	\$557,469.90	-	\$47,332.35	\$604,802.25	\$45,511.88	\$650,314.13

In addition to salary cost, each career staff member requires uniforms, one set of structural firefighting ensemble and one set of wildland fire ensemble to start, and then annualized uniform replacement cost.

Station wear (uniform shirt and pants) should be of made from thermally stable materials (materials that will not contribute to burn injury, will not rapidly deteriorate, and will not melt, shrink, ignite, adhere to skin, and cause a more severe burn injury).¹²

Structural firefighting ensemble should be purchased in accordance with NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2018 edition, and cared for and retired in accordance with NFPA 1851, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2020 or current edition at the time of purchase in out years (currently retirement is at the ten-year mark or when worn or damaged to the extent the organization deems it not possible or cost effective to repair).

12. NFPA 1975, *Emergency Service Work Apparel*, 2019 Edition.

Wildland firefighting ensembles should be purchased in accordance with NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Firefighting and Urban Interface Fire Fighting*, 2022 edition, and cared for and retired in accordance with NFPA 1877, *Standard on Selection, Care, and Maintenance of Wildland Firefighting Protective Clothing and Equipment*, 2022 edition (when worn or damaged to the extent the organization deems it not possible or cost effective to repair).

The next table outlines these costs.

TABLE 4-2: Estimated Uniform and Protective Clothing Costs

Item	Individual Cost	Start-Up Needed, Nine Sets	Total Estimated Start-Up Cost	Annualized Costs
Structural Ensemble	\$3,850.00	\$34,650.00	\$34,650.00	\$7,700
Wildland Ensemble	\$2,800.00	\$25,200.00	\$24,200.00	\$5,600
Station Wear	\$800.00	\$7,200.00	\$7,200.00	\$3,600
Total	\$7,450.00	-	\$67,050.00	\$16,900

- Structural Ensemble includes: Coat, Pants, Gloves, Boots, Nomex Hood, Helmet.
- Wildland Ensemble includes: Coat, Pants, Boots, Gloves.
- Annual Costs include:
 - Three sets of Structural Ensemble for damaged or contaminated gear that may need to be retired.
 - Three sets of Wildland Ensemble for damaged or contaminated gear that may need to be retired.
 - \$400.00 annual funding for each staff member for station wear replacement.

Regarding the hiring qualifications for the career fire staff, CPSM recommends in addition to any Tooele County requirements, the following certification requirements for Firefighter and Crew Leader candidates:

- Firefighter: High School Diploma or GED equivalent, State of Utah or state equivalent Haz-Mat Awareness, Haz-Mat Operations, Firefighter I, Firefighter II, Wildland Firefighter I, Emergency Vehicle Operator Course. Preference for Apparatus Driver Operator-Pumper.
- Crew Leader: All certifications for firefighter plus State of Utah or state equivalent Fire Officer I certification and Wildland Firefighter II certification. Preference for Apparatus Driver Operator-Pumper and Fire Officer II.

This alternative also requires the County to construct a facility, preferably at the intersection of SR 36 and SR 73, or in this general vicinity. This facility operated as a County fire station and if placed in the area recommended, will likely become more than a facility to house a crew and fire apparatus. This facility likely will store and provide space for the County's wildland fire protection and mitigation efforts, serve as a command center during large campaign events in the southeast county area, and serve as a de facto "safe haven" during local community emergencies. That said, design details and construction materials and methods should embrace a goal of building a facility that can perform in an uninterrupted manner despite prevailing climatic conditions and/or disruption of utilities

CPSM routinely discusses in our reports the following key crew and facility use items we feel are important considerations when planning a new or remodeling a current fire facility:

- Design the facility for current as well as forecast future trends in fire service vehicle type and manufactured dimensions. What fits in the station today may not tomorrow.
- Include the provision of an emergency generator connected to automatic transfer switching, and also consider the provision of tertiary redundancy of power supply via a “piggyback” roll-up generator with manual transfer (should the primary generator fail).
- Design the facility for vehicle maintenance and repair. This includes a shop area with appropriate tools and OSHA-approved storage cabinets.
- Include storage areas for essential equipment and supplies such as additional fire hose, wildland gear, fire hand tools, and community fire education and EMS supplies.
- Consider adequate space and amenities for administrative work, training, physical fitness, laundering uniforms, meal preparation, crew bunking, and personal hygiene/comfort. These spaces are often reduced, and every consideration should be given to the overall facility use, and potential use. Any station built by the County in this area should include a multipurpose room to be used by the on-duty crew, as a command center for large multijurisdictional campaign events, as an Emergency Management Operations room, and by the community.
- Sufficiently-sized apparatus bays and bay doors, circulation space between garaged vehicles, departure and return aprons of adequate length and turn geometry to ensure safe response, particularly if sited on a main road. Any station built by the County in this area should include sufficient apparatus bays to accommodate a Type 1 Engine, Type 6 Engine, and County wildland apparatus. That said, CPSM recommends at least three double-length bays.
- Design the facility with personnel/occupant safety as a top consideration. A design should thoughtfully incorporate best practices for achieving a safe and hygienic work environment.
 - National standards such as NFPA 1500, *Standard on Fire Department Occupational Safety, Health, and Wellness Program*, outlines standards that transfer to facilities such as infection control, personnel and equipment decontamination, cancer prevention, storage of protective clothing, and employee fitness.
 - NFPA 1851, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Firefighting and Proximity Fire Fighting*, further delineates laundering standards for protective clothing and station wear.
 - Laundry areas in fire facilities continue to evolve and are being separated from living areas to reduce contamination. Factors such as wastewater removal and air flow need to be considered in a facility design.

Tooele City has in hand a preliminary design for a new fire facility which could serve well as a starting point for the County to consider should this alternative be chosen. The city worked with Jones & DeMille Engineering and Campbell Architecture for this project.

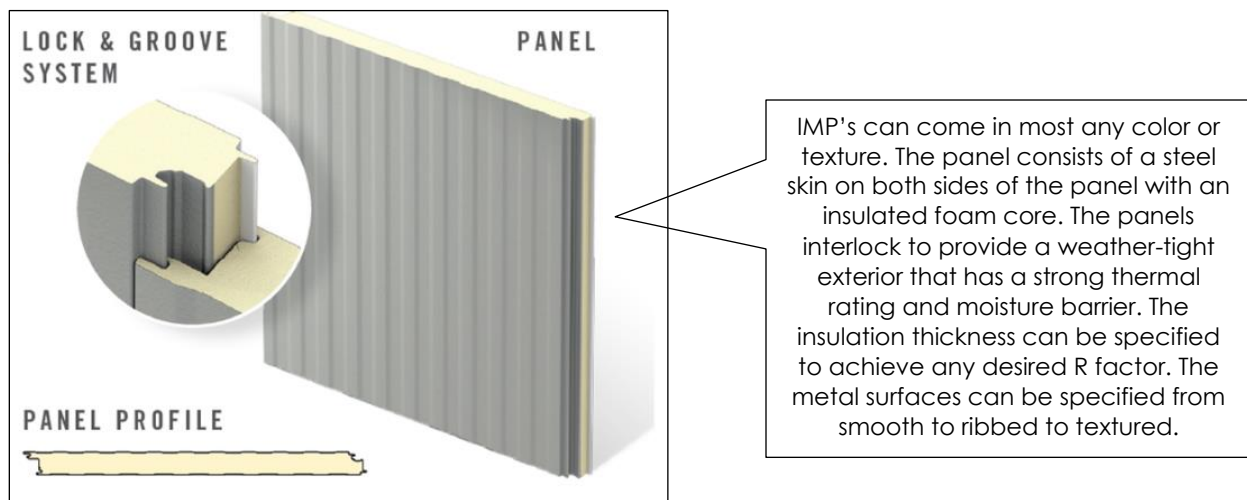
The next table describes the facility elements needed for a 24-hour service facility. Essentially, the building should be built to accommodate this alternative to its fullest extent.

TABLE 4-3: Immediate Facility Needs

Element	Description
Fire Bays	<ul style="list-style-type: none"> ■ Three 80-ft. x 16-ft. pull-through bays with 20-foot ceilings. ■ Trench floor drains under the center of each truck. ■ Drying shelves on the walls for hoses. ■ Skylights to light full area. ■ Exhaust system for emissions.
Office Space	<ul style="list-style-type: none"> ■ For crew leader and crew members.
Kitchen	<ul style="list-style-type: none"> ■ Sized properly for shift ops and other potential uses. ■ Commercial appliances. ■ NFPA 1500 compliant non-porous surfaces.
Multipurpose room	<ul style="list-style-type: none"> ■ Combined 24-hour crew day room, training room, incident command/emergency management room for campaign operations, community room.
Bunk Rooms	<ul style="list-style-type: none"> ■ Four separate bunkrooms to ensure gender separation. ■ Appropriate adjacent bathrooms with showers.
Turnout Gear Room	<ul style="list-style-type: none"> ■ Storage for structural and wildland protective clothing. ■ Minimum of nine racks sufficient to store gear.
Laundry Room	<ul style="list-style-type: none"> ■ Commercial washer used for decontamination. ■ Commercial dryer.
Decontamination Room	<ul style="list-style-type: none"> ■ Two personal showers for decontamination. ■ Elevated slop sink. ■ Shelving.
Equipment Room	<ul style="list-style-type: none"> ■ Minimum 6-foot work bench. ■ Hose storage area. ■ Elevated utility sink. ■ Storage cabinets ■ Accessible from the apparatus bays only.
Restrooms	<ul style="list-style-type: none"> ■ Common area restrooms separate from shift ops bunk room restrooms. ■ Sized properly for shift ops and adjacent to bunk rooms- includes showers for 24-hr crew members.
Custodial Closet	<ul style="list-style-type: none"> ■ Sized properly for shift ops and other potential uses.
Mechanical Room	<ul style="list-style-type: none"> ■ Sized properly for shift ops and other potential uses.
Electrical Room	<ul style="list-style-type: none"> ■ Sized properly for shift ops and other potential uses.
Site Design	<ul style="list-style-type: none"> ■ Backup generator. ■ On-site dumpster. ■ Apron on front and back of building for pull-through bays. ■ Appropriate number of parking stalls for shift ops and other potential uses. ■ Utility connections. ■ Retention basin.

Building materials would include a metal building skeleton with Insulate Metal Panels (IMP). According to the Jones & DeMille firm in a station report to Tooele City, *metal buildings can be erected in a short period of time and can span large distances without internal columns such as what is required in the Fire Bays*. The engineering firm further states *metal buildings have been a less expensive option in the past, however, often they are associated with unattractive metal paneling that gives it an industrial look. Using IMP in lieu of traditional paneling not only serves as a great function to the building but can also give the building an architectural look that is pleasing to the public*. The next figure illustrates an example of IMP.

FIGURE 4-3: Insulate Metal Panel¹³



The next figure illustrates examples of a combined public use and public safety building in Fountain Green Utah, using, IMPs.¹⁴

FIGURE 4-4: Insulate Metal Panel Building



13. Tooele City Fire Station #3-Phased Approach, Jones & DeMille Engineering, 2021.

14. Tooele City Fire Station #3-Phased Approach, Jones & DeMille Engineering, 2021.

The estimated cost for a three-bay fire station designed to be occupied 24-hours/day, house County fire and wildland equipment, and have the capability to serve as a command center for campaign operations in the southeast county area is \$3.4 and \$4.0 million.¹⁵ This cost can be reduced by eliminating one apparatus bay and may have potential site development reductions or additions dependent on the site. This does not include furniture, fixtures, and equipment, estimated at \$500,000. Annualized maintenance and utilities are \$15,000.

Lastly, this alternative requires the purchase of apparatus, equipment, materials, and accessories for a County Fire Operation. This includes a Type 1 engine apparatus to include hose and firefighting equipment, radios, self-contained breathing apparatus (SCBA), and other accessories. The next table outlines these costs.

TABLE 4-4: Estimated Start-up Costs for Fire Apparatus and Equipment, County Fire Department

Item	Estimated Start-Up Cost	Annualized Costs
Type 1 Engine with minimum 1250 gpm pump and 1000 gallon tank.	\$650,000 to \$850,000	\$55,000 (fuel, maintenance, fleet replacement)
Hose, Ladders, and Loose Equipment	\$75,000 to \$100,000	\$5,000
SCBA, 8 Fire Service, \$6,500 ea.	\$52,000	\$6,500
SCBA Cylinders (10), \$950	\$9,500	\$1,900
SCBA Masks (12) \$250 ea.	\$3,000	\$500
Mobile Radio-Engine-1	\$5,831	
Portable Radios (5), \$5,240 ea.	\$26,200	
Total	\$821,531 to \$1,046,531	\$68,900

- Type 1 Engine cost dependent on manufacture, custom or commercial chassis, and bid specifications.
- SCBA: MSA G1 4500. Total number includes five assigned to Type 1 Engine, and three spare.
- SCBA Mask: MSA G1 Mask (sized to fit).
- SCBA Cylinders: 45 minute-4500 G1 low profile cylinder. Eight assigned to Type 1 Engine, and four spare.
- Hose, ladders, loose equipment in accordance with NFPA 1901 standards with additional equipment as specified at the local level that may include hydraulic motor vehicle extrication equipment, rope rigging equipment for mountainous and canyon rescue, etc.

Southeast County Analysis Area Funding Considerations

Funding options for the southeast county fire area considerations include, either in full or in part:

General Fund. The state statutes allow General Fund expenditures for a Third-Class County for municipal type services as follows:

15. Cost estimates plus 4.5 percent from the Tooele City Fire Station #3-Phased Approach, Jones & DeMille Engineering, 2021.

Effective 5/14/2019

17-34-1. Counties may provide municipal services -- Limitation -- First-class counties to provide certain services -- **Counties allowed to provide certain services in recreational areas**. Under this statute:

- Fire protection is considered a municipal service.
- Counties can provide municipal-type services to areas of the county outside the limits of cities and towns without providing the same services to cities or towns.
- Counties can levy a tax on taxable property in the county outside the limits of cities and towns.
- Counties can charge a service charge or fee to persons benefitting from the municipal-type services.
- Counties can provide funds to a municipal services district in accordance with Section 17B-2a-1109.
- A county may provide fire, paramedic, and police protection services in any area of the county outside the limits of cities and towns that is designated as a recreational area in accordance with the provisions of Subsection 5 of this statute.
- A county legislative body may designate any area of the county outside the limits of cities and towns as a recreational area if:
 - The area has fewer than 1,500 residents and is primarily used for recreational purposes, including canyons, ski resorts, wilderness areas, lakes and reservoirs, campgrounds, or picnic areas.
 - The county legislative body makes a finding that the recreational area is used by residents of the county who live both inside and outside the limits of cities and towns.
- Fire, paramedic, and police protection services needed to primarily serve those involved in the recreation activities in areas designated as recreational areas by the county legislative body in accordance with Subsection (5)(b) of 17-34-1 **may be funded from the county general fund**.
- A county legislative body may determine that fire, paramedic, and police protection services within a municipality that is located in an area designated as a recreational area, in accordance with this Subsection (5), may be funded with county general funds if the county legislative body makes a finding that a disproportionate share of public safety service needs within the municipality are generated by residents of the county who live both inside and outside the limits of cities and towns.

Municipal Service Fund. The state statutes allow Municipal Service Fund expenditures for a Third-Class County for municipal type services as follows:

Effective 1/1/2015

17-36-9. Budget -- Financial plan -- Contents -- Municipal services and capital projects funds. Under this statute:

- (2)(a) Each first, second, and third class-county that provides municipal-type services under Section 17-34-1 (above) shall:

- Establish a special revenue fund, "Municipal Services Fund," and a capital projects fund, "Municipal Capital Projects Fund," or establish a local district or special service district to provide municipal services.
- Budget appropriations for municipal services and municipal capital projects from these funds.
- The Municipal Services Fund is subject to the same budgetary requirements as the county general fund.

The County currently has a Municipal Service Fund (Fund 23-Tooele County Budget) for the purpose of funding for municipal services.

TRT Funding. A question was raised as to the use of Transient Room Tax (TRT) funds for fire and EMS in the southeast analysis area. TRT revenues can be utilized to fund mitigation of tourism impacts, which includes emergency medical services, search and rescue, and law enforcement. However, the use of these funds for these purposes is restricted to counties of the 4th, 5th, and 6th class. Tooele is a class 3 county and currently restricted from using these funds for fire and EMS services.

FEMA Staffing for Adequate Fire and Emergency Response (SAFER) Grant. The SAFER grants were created to provide funding directly to fire departments (career and volunteer) to assist these departments increase or maintain the number of trained, "front-line" firefighters available in their communities. The goal of SAFER is to enhance a fire department's capabilities to comply with staffing, response, and operational standards established in the NFPA 1710 and 1720 standards.¹⁶

Should the County decide to implement this alternative, funding is potentially available as well to assist with construction of a fire facility. The United States Department of Agriculture, Rural Development, administers a program that provides grant and low-interest direct loan funding to qualifying rural areas for essential community facilities, which includes fire stations.

Key program elements include:¹⁷

- Public bodies are eligible to apply for grants and low-interest direct loans.
- Rural areas including cities, villages, townships, and towns including Federally Recognized Tribal Lands with no more than 20,000 residents according to the latest U.S. Census Data are eligible for this program. The southeast county analysis area population is 2,927.
- Funds can be used to purchase, construct, and / or improve essential community facilities, purchase equipment, and pay related project expenses.
- Funds can be used for public safety services such as fire departments, police stations, prisons, police vehicles, fire trucks, public works vehicles, or equipment.
- Priority point system includes small communities with a population of 5,500 or less and low-income communities having a median household income below 80 percent of the state nonmetropolitan median household income.
- Grants and loans are provided on a graduated scale with smaller communities with the lowest median household income being eligible for projects with a higher proportion of grant funds.

16. <https://www.fema.gov/grants/preparedness/firefighters/safer>

17. USDA, Rural Development, Community Facilities Direct Loan & Grant Program in Utah

County Fire Services Director

Public safety services are core local government services. These critical services require sound management practices, constant oversight, and coordination. Currently and as discussed in this report, the County does not have a traditional all-hazards fire department. The County meets its obligation of the state statutes regarding fire protection in the unincorporated area through agreements with municipal-based volunteer fire departments, volunteer fire departments that operate in communities/areas of unincorporated Tooele County, and through a special district fire department (North Tooele). As also discussed, the wildland preparedness, mitigation, prevention, and response to wildland fires is coordinated and directed by the County Fire Warden and Assistant County Fire Warden.

During our analysis we found several areas that could be improved and would benefit from general oversight and coordination at the County administration level. These include:

- Fire protection agreements that have not been updated in more than thirty years.
- County funding is distributed to volunteer fire departments as payment for services through the fire protection agreements with limited or no knowledge of expenditures.
- Critical equipment needs of the southeast county analysis area volunteer fire departments and no oversight, guidance, or solutions provided to ensure equipment and apparatus does not reach the critical stages some are facing.
- Other than countywide coordinated effort for wildfire preparedness, mitigation, prevention, and response (which is outstanding), there is no overall countywide coordinated effort for the traditional all-hazards fire department responses, which are the highest number of calls fire departments across the County respond to.
- Other than training coordinated among local fire departments and/or training conducted countywide by the Fire Warden, there is no centralized and coordinated countywide all-hazards fire department training.

Given this, CPSM recommends the County consider implementing a Countywide Fire Services Director position. The purpose of this recommendation is not to create a countywide Fire Chief over all of the fire departments in the County, and it is further not intended to suggest the County move to consolidate all of the volunteer fire departments into one. The purposes of the position would be to:

- Manage the construction of updated fire protection agreements and then administer these agreements, ensuring each fire department remains capable through trained personnel and up-to-date equipment that meets national and industry standards to respond to incidents and meet the intent of the agreements.
- Provide oversight and accountability to any funding the County provides to volunteer fire departments.
- Provide oversight and accountability to any equipment the County provides to volunteer fire departments.
- Maintain an updated list of available response apparatus, equipment, and members of fire departments that receive County funding. Provide guidance and assist with funding solutions to apparatus and equipment issues the volunteer fire departments may encounter.

- Coordinate countywide all-hazards fire department training, with a focus on fire certifications commensurate with the firefighter, driver-operator, and officer positions for those fire departments that receive County funding.
- Coordinate and ensure countywide radio interoperability is maintained between fire departments.
- Coordinate and ensure a countywide incident command system is in place and utilized, and further ensure all county fire department members are trained in the system.
- Coordinate and ensure a countywide emergency scene accountability system is in place and utilized and ensure all county fire department members are trained in the system.
- Coordinate and ensure mutual and automatic aid agreements (preferably one countywide agreement creating a seamless compact) is in place and all fire departments in the county are signatory, and that the mutual aid compact includes the use of a countywide incident command and emergency scene accountability systems.
- Provide guidance and assistance on and seek available Federal and State grant funding to supplement any County fire service and the volunteer fire departments.
- Provide guidance and assistance on the recruitment and retention of volunteer firefighters to include seeking and implementing grant funding to support this endeavor on a countywide basis.
- Act as the technical advisor to the County Council, County Manager, and County Executive Team regarding all-hazards fire protection in the County.
- Provide regular updates to the County Council on the state of the countywide all-hazards segment of fire protection.

As the County already has an Emergency Manager and a Fire Warden, it is imprudent to create and fund another position. It may be more prudent to combine the function of Fire Services Director with the Emergency Management Director function, thus creating an Emergency Services Director (and Department) who has the responsibility of directing the County's emergency management function and the fire services all-hazards preparedness and response coordination function.

As the County currently has entered into a cooperative fire protection agreement with the state regarding wildland fires (§65A-8-203), the Sheriff is not charged with the direct responsibility to *take appropriate action to suppress wildfires on state or private lands* [§65A-8-209(1)]. Therefore, CPSM also recommends the Fire Warden and his staff merge with the newly created Emergency Services Department with the Fire Warden serving as the Operations Chief or Chief of Wildland Fire Services. In this new arrangement the current Assistant Fire Warden position is maintained with the same title and job duties. Additionally, any administrative assistance and budget would transfer to the new department.

Summary of Alternatives, Recommendations, and Costs

In summary, CPSM has provided three alternatives, associated recommendations, and estimated start-up and annualized costs to provide fire protective services in the southeast county analysis area. The following table frames these alternatives, recommendations, and costs. Table 4.5 can and should also be used as a master planning matrix for the near, mid, and longer term fire protection services in the southeast analysis area, as well countywide.

TABLE 4-5: Summary of Alternatives, Considerations, Recommendations and Costs

Service Alternative	Considerations	Cost
Alternative 1: Maintain the Status Quo	<p>The status quo is an option for consideration and fosters a business-as-usual policy decision where the current agreements stay in place for the deployment of resources in the unincorporated southeast county area.</p> <p>This policy option maintains the current allotment of \$20,000 to each town volunteer fire department. Because this option does not change any funding or shift any operational responsibilities to the County, it creates the least amount of stress on the budget.</p> <p>The status-quo approach may, however, pose a riskier decision as any potential improvements to the overall fire protection services in totality over time will not be realized.</p>	Cost Neutral

Service Alternative	Recommendations	Cost
<p>Alternative 2: Enhance Volunteer Fire Departments In the Southeast County Analysis Area.</p>	<p>CPSM recommends Tooele County conduct a comprehensive review of all fire protection and hazardous materials service agreements. This review should include the construction of new agreements with municipal fire departments, military installations, and fire departments in the unincorporated areas. The new agreements should define service level response outside of a fire department's respective incorporated or military jurisdictions and reciprocal county payment, equipment, or services for these fire protection responses and services. CPSM further recommends that each agreement have a sunset date that will require additional review and update to address changes in fire protection services in Tooele County.</p> <p>CPSM further recommends any future funding distributed to the volunteer departments should be for equipment and operational and maintenance costs of apparatus and equipment only.</p> <p>CPSM also recommends the County work with the Towns regarding Town funding assistance for items such as facility utility bills and facility maintenance to the extent they are capable. This will free up County funding for operational equipment and equipment/apparatus maintenance.</p> <p>CPSM Recommends the County apply for a FY 2022 Staffing for Adequate Fire and Emergency Response (SAFER) Grant. This grant should be specific to volunteer recruitment and retention purposes to include a Countywide Volunteer Recruitment and Retention position, which this grant provides funding for.</p>	<p>Increased annual allotment to the extent possible (greater than \$20,000), through new agreements. No increase however should be approved without specific justification from the volunteer fire department.</p> <p>Implementation of a County Volunteer Fire Department Grant Program where the County allocates specific funding each year, as approved by the County Council and to the extent possible, for volunteer fire departments to apply for through a formal process. Awarded grant funds to be used specifically for firefighting equipment and subject to audit by the County.</p> <p>Total grant fund costs: \$25,000 to \$100,000 annually.</p>

Service Alternative	Recommendations	Cost
	<p>At a minimum regarding Alternative 2, CPSM recommends the County fund procurement and construction of a fire facility in the South Rim community.</p> <p>The main purpose for this facility is the storage of a ready to respond fire apparatus for South Rim and the South Rim area where members respond to the station and then respond the apparatus.</p> <p>Low cost option is a one- to two-bay prefabricated metal building.</p>	<p>Estimated cost for a 40-foot by 45-foot building in South Rim to include engineering and project management, the building, permitting, and site building erection is \$350,000 to \$450,000.</p> <p>Cost dependent on the actual size of the building and materials and labor costs at the time of purchase and build.</p>

Service Alternative	Recommendations	Cost
Alternative 3: County Fire Service	<p>CPSM recommends the County consider creating and implementing a career fire service in the southeast county analysis area.</p> <p>CPSM recommends one strategically located facility for the career fire service staff, with three staff members on duty 24 hours/day (crew leader and two firefighters; nine total staff) responding in a Type 1 Engine (Structural) or a Type 6 Engine (Brush/EMS responses, current County wildland fleet unit).</p>	<p>Salary and benefits: \$650,314</p> <p>Station Wear and Fire Gear \$67,050</p> <p>Facility \$3.4 to \$4.0 million FF&E: \$500,000</p> <p>Type 1 Engine + Equipment \$821,531 to \$1,046,531</p> <p>Total Start-Up Costs \$4,938,895 to \$5,763,895</p> <p>Annualized Costs \$750,000 to \$900,000</p>
	<p>CPSM recommends the County consider implementing a Countywide Fire Services Director position.</p> <p>As the County already has an Emergency Manager and a Fire Warden, it is imprudent to create and fund another position. CPSM recommends the County combine the function of Fire Services Director with the Emergency Management Director function, creating an Emergency Services Director (and Department) who has the responsibility of directing the County's emergency management function and the fire services all-hazards preparedness and response coordination function.</p>	<p>Cost Neutral</p> <p>Cost Neutral</p>

Service Alternative	Recommendations	Cost
	As the County currently has entered into a cooperative fire protection agreement with the state regarding wildland fires (§65A-8-203), the Sheriff is not charged with the direct responsibility to <i>take appropriate action to suppress wildfires on state or private lands</i> [§65A-8-209(1)]. Therefore, CPSM also recommends the Fire Warden and his staff merge with the newly created Emergency Services Department with the Fire Warden serving as the Operations Chief for Wildland Fire Services. In this new arrangement the current Assistant Fire Warden position is maintained with the same title and job duties. Additionally, any administrative assistance and budget would transfer to the new department.	Cost Neutral

Service Alternative	Recommendations	Cost
<p>Alternative 4: Adoption of Utah Code 15-A-5-203 Amendments and Additions to IFC related to fire safety, building, and site requirements.</p> <p>This alternative provides built in fire protection to structures in certain areas of the county that are in the wildland-urban interface, and where fire response is extended. This <u>may</u> reduce insurance premiums in areas of the county that are rural and remote and where automatic sprinkler systems have been installed, and where there is no ISO rating, or a rating of 10.</p>	<p>CPSM Recommends the County <u>consider</u> the adoption of Utah Code 15-A-5-203 as a County ordinance. This state code if adopted by the County, would require automatic sprinkler systems in structures in certain areas of the county that are:</p> <p>(1) For IFC, Chapter 5, Fire Service Features:</p> <p>(a) In IFC, Chapter 5, a new Section 501.5, Access grade and fire flow, is added as follows: "An authority having jurisdiction over a structure built in accordance with the requirements of the International Residential Code as adopted in the State Construction Code, may require an automatic fire sprinkler system for the structure only by ordinance and only if any of the following conditions exist:</p> <p>(i) the structure:</p> <p>(A) is located in an urban-wildland interface area as provided in the Utah Wildland Urban Interface Code adopted as a construction code under the State Construction Code; and</p>	<p>No cost to County other than plans review and site inspection.</p> <p>Cost to building owner for design, installation, and maintenance of sprinkler system.</p>

Service Alternative	Recommendations	Cost
	<p>(B) does not meet the requirements described in Utah Code, Subsection 65A-8-203(4)(a) and Utah Administrative Code, R652-122-1300, Minimum Standards for County Wildland Fire Ordinance;</p> <p>(ii) the structure is in an area where a public water distribution system with fire hydrants does not exist as required in Utah Administrative Code, R309-550-5, Water Main Design;</p> <p>(iii) the only fire apparatus access road has a grade greater than 10% for more than 500 continual feet;</p> <p>(iv) the total floor area of all floor levels within the exterior walls of the dwelling unit exceeds 10,000 square feet; or</p> <p>(v) the total floor area of all floor levels within the exterior walls of the dwelling unit is double the average of the total floor area of all floor levels of unsprinkled homes in the subdivision that are no larger than 10,000 square feet.</p> <p>(vi) Exception: A single family dwelling does not require a fire sprinkler system if the dwelling:</p> <p>(A) is located outside the wildland urban interface;</p> <p>(B) is built in a one-lot subdivision; and</p> <p>(C) has 50 feet of defensible space on all sides that limits the propensity of fire spreading from the dwelling to another property."</p>	

SECTION 5. DATA ANALYSIS

This data analysis was prepared as a key component of the study of Tooele County's fire service response to the unincorporated area within the southeastern portion of the county. This includes areas within the following four fire districts: Rush Valley Fire Department (RVFD), Stockton City Fire Department (SCFD), Terra Fire Department (TRFD), and Vernon City Fire Department (VCFD). This analysis examines all calls for service within the defined area between January 1, 2019, and December 31, 2020, as recorded in the Tooele County Sheriff's computer-aided dispatch (CAD) system, and the National Fire Incident Reporting System (NFIRS).

The study area includes unincorporated locations such as Ophir, Skull Valley, South Rim, and Terra. There were additional fire agencies that provided mutual aid into this area including Dugway FD, North Tooele FD, Tooele Army FD, Tooele City FD, and Wendover FD.

This analysis is made up of four parts. The first part focuses on call types and dispatches. The second part explores the time spent and the workload of individual units. The third part presents an analysis of the busiest hours in the year studied. The fourth and final part provides a response time analysis to calls within the area.

In 2019, there were 141 calls within the study area of which 44 percent were fire calls. The total workload of primary fire and rescue response apparatus was 564.7 hours. In 2020, there were 141 calls within the study area of which 50 percent were fire calls. The total workload of primary fire and rescue response apparatus was 474.7 hours. Over the two years, the average response time was 25.2 minutes, the 80th percentile response time was 34.5 minutes, and the 90th percentile response time was 46.5 minutes.

METHODOLOGY

In this report, CPSM analyzes calls and runs. A call is an emergency service request or incident. A run is a dispatch of a unit (i.e., a unit responding to a call). Thus, a call may include multiple runs.

We received CAD data from the Tooele County Sheriff's Communications Center. We also received NFIRS data from the annual NFIRS public data release (PDR) and the Utah State Fire Marshal's Office.

The provided NFIRS data did not include records for Stockton FD and Vernon FD. It included records for Tooele City FD in 2019 and records for North Tooele FD, Rush Valley FD, Terra FD, and Wendover FD in both 2019 and 2020.

Our study area included the unincorporated area located within four fire districts: RVFD, SCFD, TRFD, and VCFD. We used each call's recorded latitude and longitude to determine its fire district. In the CAD system, there were 327 calls within the study area in two years. We removed 45 calls for various reasons (see below). This left a total of 282 calls (141 calls in 2019 and 141 calls in 2020) in our analysis. Out of these 282 calls within the CAD system, only 128 calls had a matching NFIRS record. When possible, we used the NFIRS incident type to categorize matching calls. Otherwise, we used the CAD's nature description to categorize them. This method is described in Attachment IV.

The main analysis focuses on primary fire and rescue response apparatus. This includes fire engines, brush trucks, tender trucks, fire medic units, and fire rescue units. The workload of other units is not presented in the main analysis but included in the analysis of additional personnel in Attachment II. We encountered a few issues and addressed them as follows:

- We began with 327 calls in the study area for two years. We removed 45 calls leaving 282 calls for our analysis. This included:
 - One test call.
 - 29 calls lacking a responding unit.
 - 15 calls where an agency was notified, but no unit went en route to the call's location.
- Since 90 percent of responding units did not record a dispatch time, we measured a unit's workload from its en route time until its available time.
- Since there were only two canceled calls in two years, we grouped these calls with "good intent" calls.
- While there were 282 calls in two years, there were only 178 calls (88 in 2019 and 90 in 2020) where a primary fire and rescue response apparatus arrived.

The analysis results are primarily presented for 2019. Attachment I compares the results for 2020 against corresponding results for 2019.

AGGREGATE CALL TOTALS AND RUNS

In 2019, there were 141 calls in the studied incorporated fire districts. Of these, six were structure fire calls and 33 were outside fire calls.

Calls by Type

The following table and figures show the number of calls by call type and the percentage of calls that fall into each call type category for 2019.

TABLE 5-1: Calls by Type

Call Type	Total Calls	Calls per Day	Call Percentage
Breathing difficulty	4	0.01	2.8
Cardiac and stroke	4	0.01	2.8
Fall and injury	8	0.02	5.7
Illness and other	16	0.04	11.3
MVA	42	0.12	29.8
Overdose and psychiatric	3	0.01	2.1
Seizure and unconsciousness	2	0.01	1.4
EMS Total	79	0.22	56.0
False alarm	3	0.01	2.1
Good intent	10	0.03	7.1
Hazard	5	0.01	3.5
Outside fire	33	0.09	23.4
Public service	5	0.01	3.5
Structure fire	6	0.02	4.3
Fire Total	62	0.17	44.0
Total	141	0.39	100.0

FIGURE 5-1: EMS Calls by Type

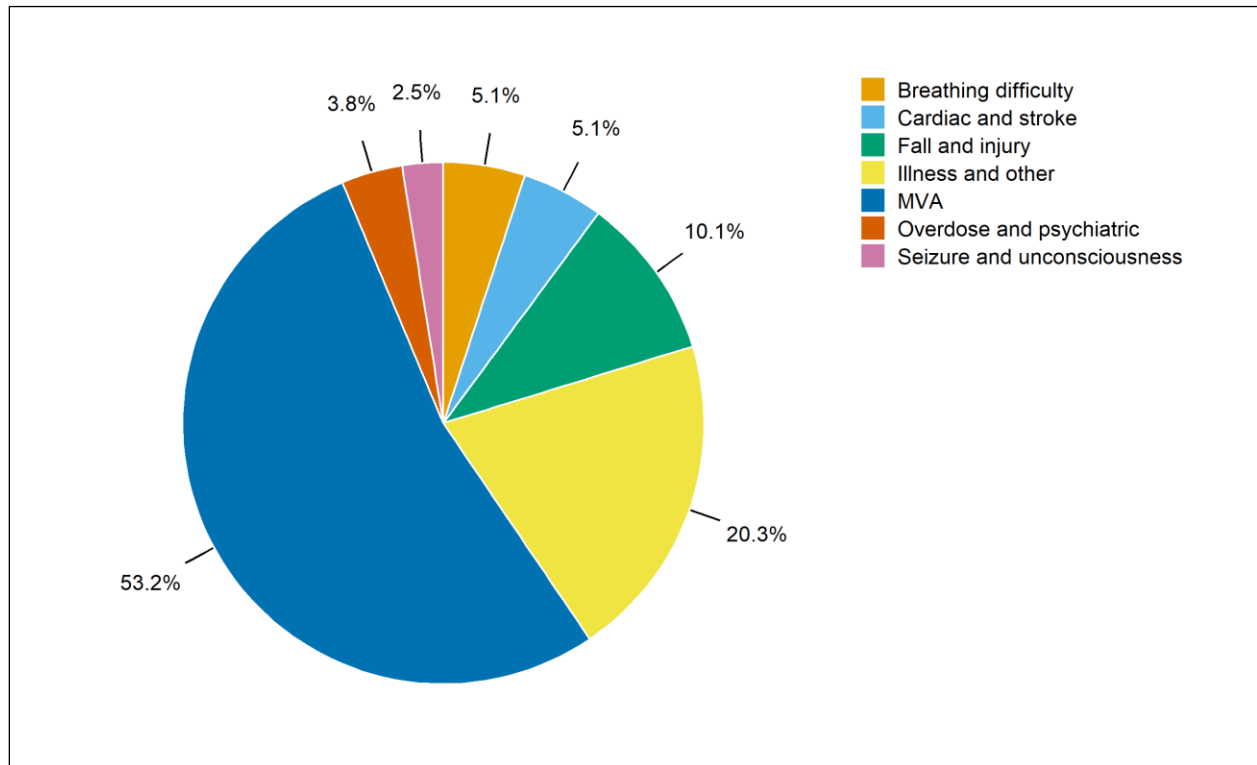
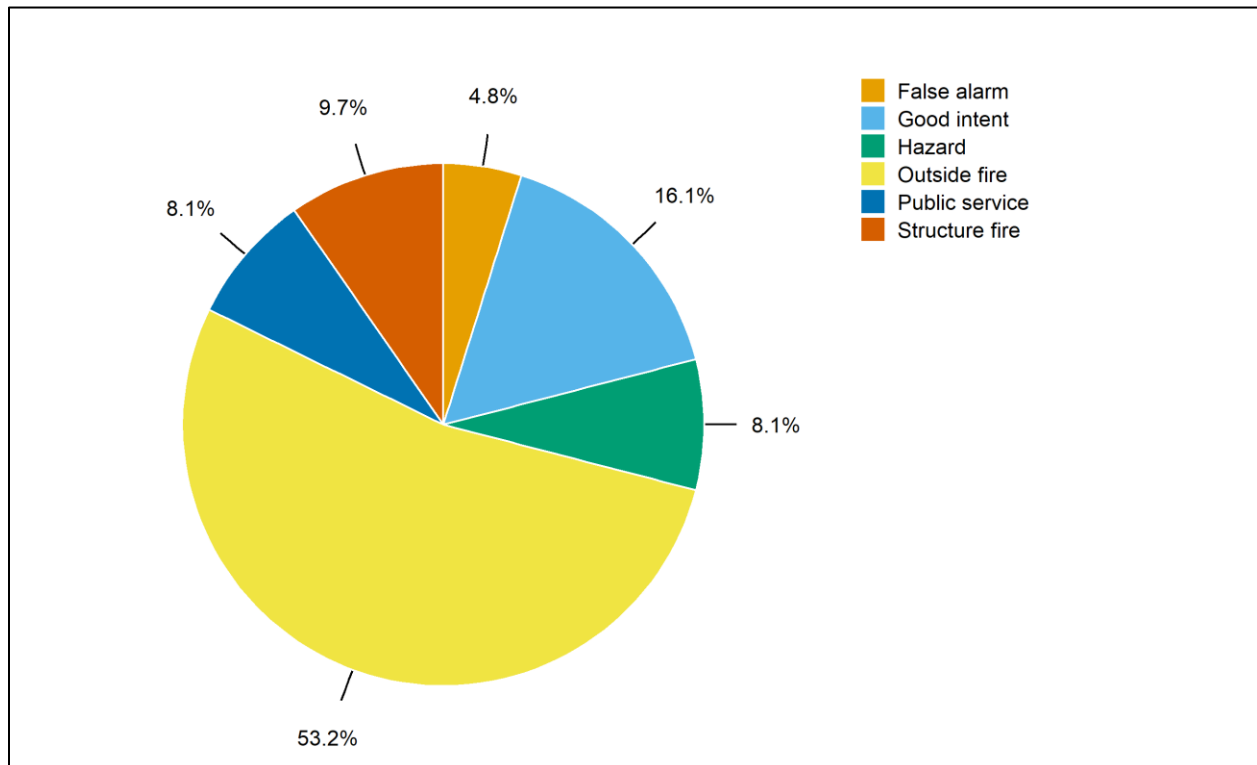


FIGURE 5-2: Fire Calls by Type



Observations:

- In 2019, an average of 0.39 calls per day occurred within the study area.
- EMS calls for the year totaled 79 (56 percent of all calls), an average of 0.22 calls per day.
- Motor vehicle accidents were the largest category of EMS calls at 30 percent of total calls (53 percent of EMS calls).
- Cardiac and stroke calls made up 4 percent of total calls (5 percent of EMS calls).
- Fire calls for the year totaled 62 (44 percent of all calls), or an average of 0.17 calls per day.
- False alarm calls made up 2 percent of total calls (5 percent of fire calls).
- Structure and outside fire calls combined made up 28 percent of total calls (63 percent of fire calls), or an average of 0.11 calls per day, or one call every nine days.

Calls by Type and Duration

The following table shows the duration of calls by type using five duration categories: less than 30 minutes, 30 minutes to one hour, one to two hours, two to three hours, and more than three hours.

TABLE 5-2: Calls by Type and Duration

Call Type	Less than 30 Minutes	30 Minutes to One Hour	One to Two Hours	Two to Three Hours	More Than Three Hours	Total
Breathing difficulty	1	2	1	0	0	4
Cardiac and stroke	1	0	2	0	1	4
Fall and injury	1	5	2	0	0	8
Illness and other	3	8	3	1	1	16
MVA	7	12	15	3	5	42
OD	0	3	0	0	0	3
Seizure and UNC	0	0	2	0	0	2
EMS Total	13	30	25	4	7	79
False alarm	0	3	0	0	0	3
Good intent	1	3	2	1	3	10
Hazard	1	2	0	1	1	5
Outside fire	5	3	7	5	13	33
Public service	1	2	1	1	0	5
Structure fire	0	1	2	2	1	6
Fire Total	8	14	12	10	18	62
Total	21	44	37	14	25	141

Note: OD = Overdose and psychiatric; UNC = Unconsciousness.

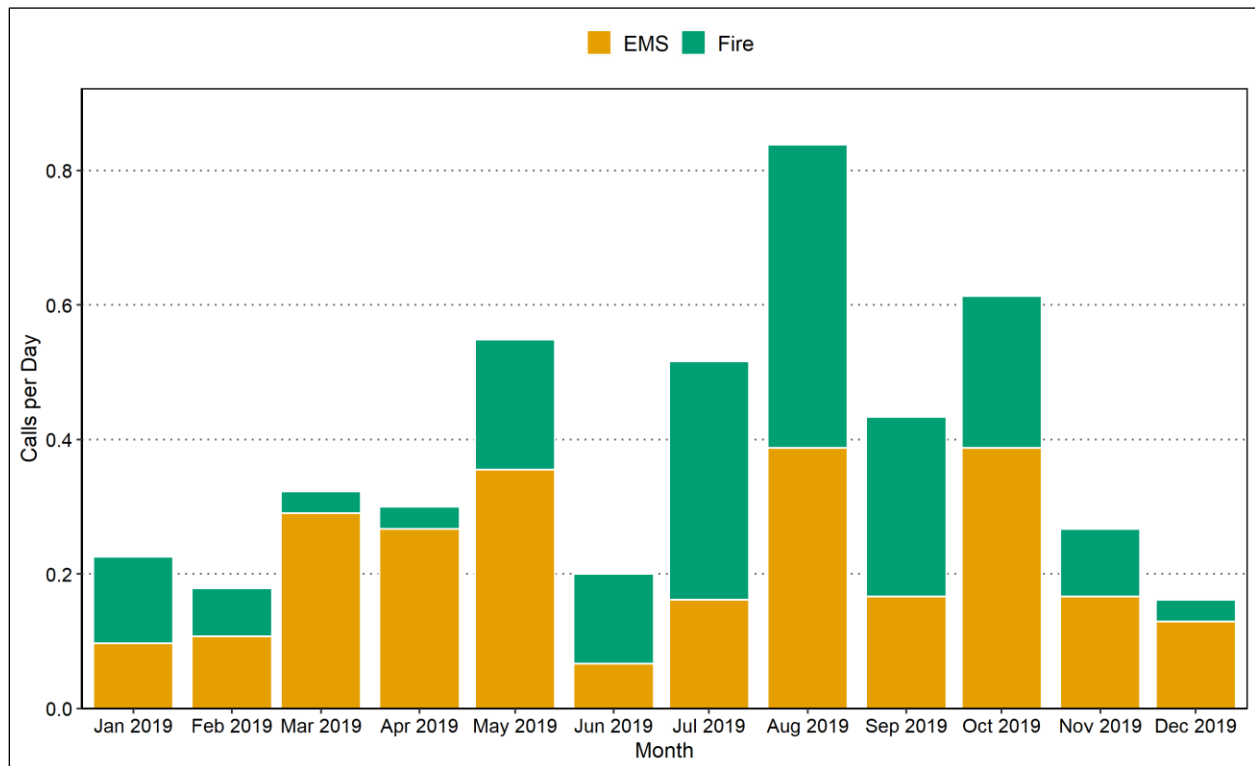
Observations:

- A total of 43 EMS calls (54 percent) lasted less than one hour, 25 EMS calls (32 percent) lasted one to two hours, four EMS calls (5 percent) lasted two to three hours, and seven EMS calls (9 percent) lasted three or more hours.
- A total of 22 fire calls (35 percent) lasted less than one hour, 12 fire calls (19 percent) lasted one to two hours, 10 fire calls (16 percent) lasted two to three hours, and 18 fire calls (29 percent) lasted three or more hours.
- A total of eight outside fire calls (24 percent) lasted less than one hour, seven outside fire calls (21 percent) lasted one to two hours, five outside fire calls (15 percent) lasted two to three hours, and 13 outside fire calls (39 percent) lasted three or more hours.
- A total of one structure fire call (17 percent) lasted less than one hour, 2 structure fire calls (33 percent) lasted one to two hours, two structure fire calls (33 percent) lasted two to three hours, and one structure fire call (17 percent) lasted three or more hours.

Calls by Month and Hour of Day

Figure 5-3 shows the monthly variation in the average daily number of calls in 2019. Similarly, Figure 5-4 illustrates the average number of calls received each hour of the day over the year.

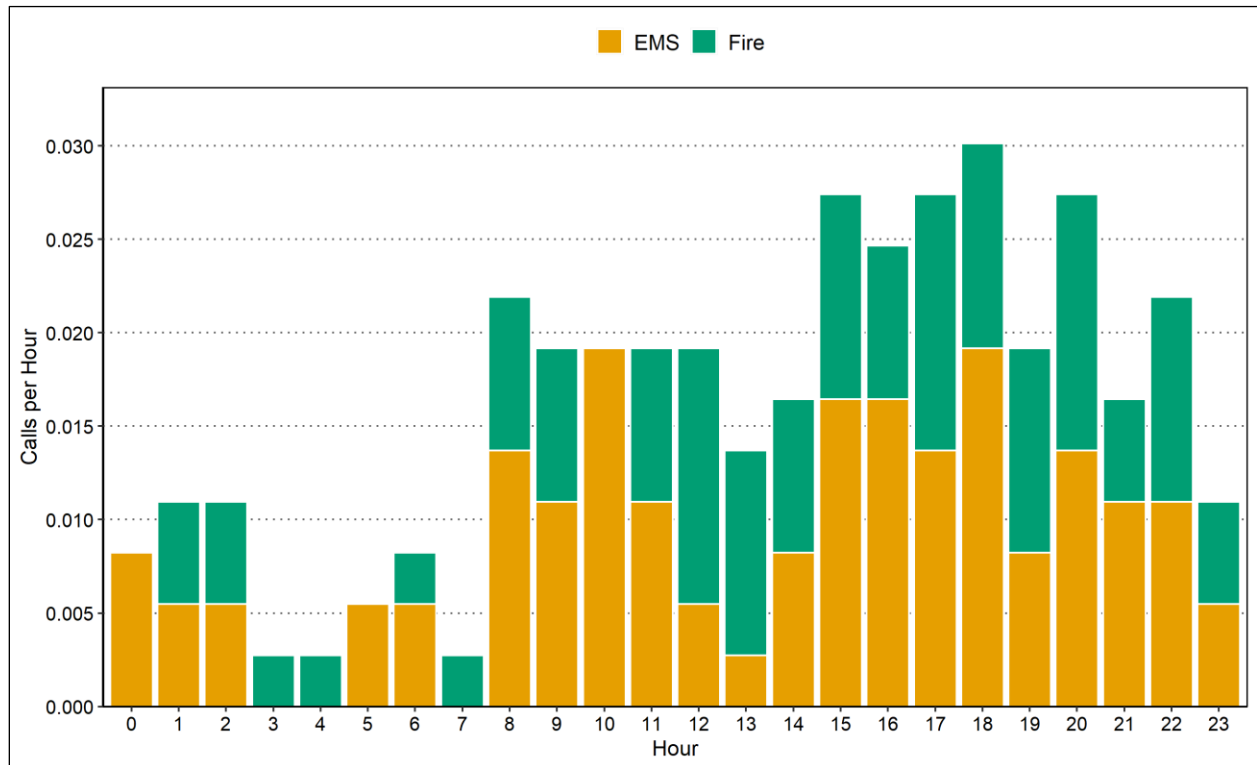
FIGURE 5-3: Calls per Day by Month



Observations:

- Average EMS calls per day ranged from 0.07 in June 2019 to 0.39 in both August and October 2019.
- Average fire calls per day ranged from 0.03 in both March and December 2019 to 0.45 in August 2019.
- Average calls per day overall ranged from 0.16 in December 2019 to 0.84 in August 2019.

FIGURE 5-4: Calls by Hour of Day



Observations:

- Average calls per hour overall ranged from 0.003 between 3:00 a.m. and 5:00 a.m. and 7:00 a.m. and 8:00 a.m. to 0.030 between 6:00 p.m. and 7:00 p.m.

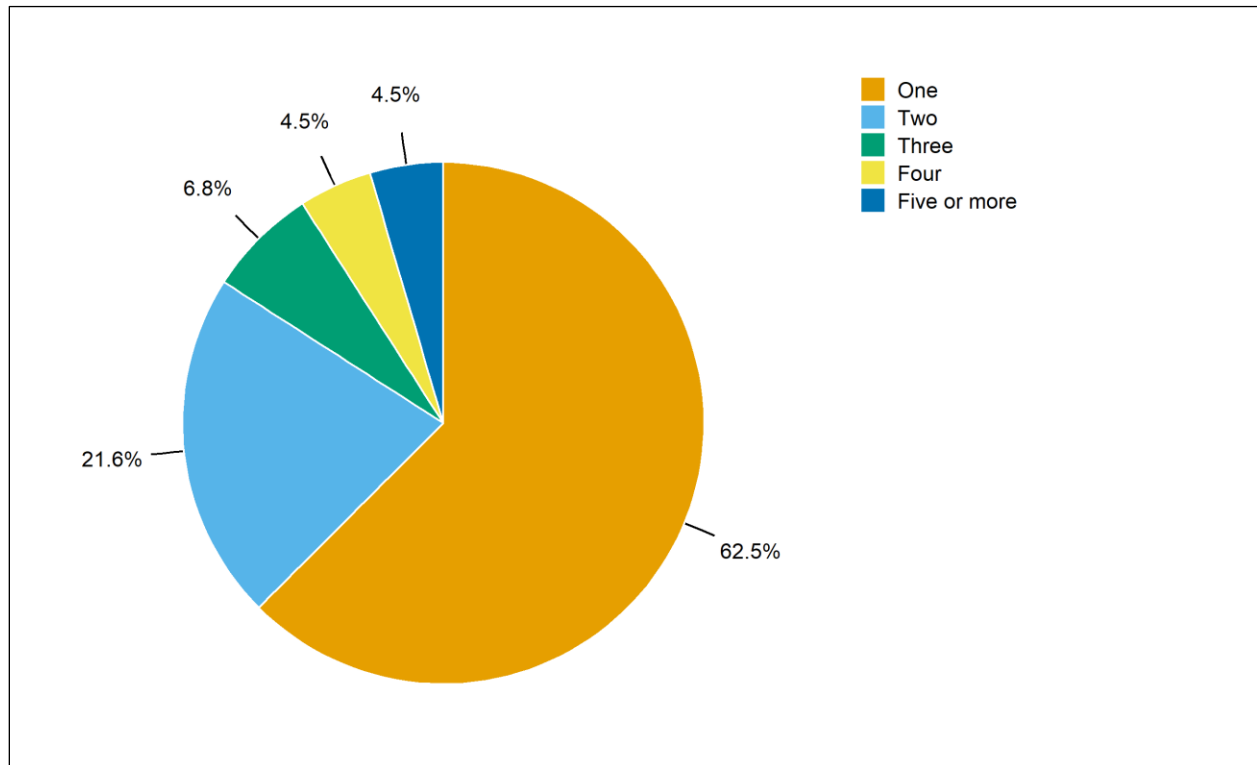
Units Arriving at Calls

The next table and figure detail the number of calls with one, two, three, and four or more units arriving at a call, broken down by call type. In this section, we limit ourselves to calls where only primary fire and rescue response apparatus arrived. Out of 141 total calls in 2019, 53 calls lacked an arriving unit. This left a total of 88 calls in the table. A similar count for all responding units is given in Attachment III.

TABLE 5-3: Calls by Call Type and Number of Arriving Primary Fire and Rescue Response Apparatus

Call Type	Number of Units					Total Calls
	One	Two	Three	Four	Five or More	
Breathing difficulty	4	0	0	0	0	4
Cardiac and stroke	2	0	0	0	0	2
Fall and injury	3	0	0	0	0	3
Illness and other	4	1	0	0	0	5
MVA	25	8	2	0	0	35
Overdose and psychiatric	1	1	0	0	0	2
Seizure and unconsciousness	2	0	0	0	0	2
EMS Total	41	10	2	0	0	53
False alarm	3	0	0	0	0	3
Good intent	2	2	0	1	0	5
Hazard	2	0	0	1	0	3
Outside fire	6	5	3	1	4	19
Public service	1	1	0	0	0	2
Structure fire	0	1	1	1	0	3
Fire Total	14	9	4	4	4	35
Total	55	19	6	4	4	88
Percentage	62.5	21.6	6.8	4.5	4.5	100.0

FIGURE 5-5: Calls by Number of Arriving Units



Observations:

Overall

- On average, 1.7 units arrived at all calls; for 63 percent of calls, only one unit arrived.
- Overall, five or more units arrived at five percent of calls.

EMS

- On average, 1.3 units arrived per EMS call.
- For EMS calls, one unit arrived 77 percent of the time, two units arrived 19 percent of the time, and three units arrived 4 percent of the time.

Fire

- On average, 2.4 units arrived per fire call.
- For fire calls, one unit arrived 40 percent of the time, two units arrived 26 percent of the time, three units arrived 11 percent of the time, four units arrived 11 percent of the time, and five or more units arrived 11 percent of the time.
- For outside fire calls, three or more units arrived 42 percent of the time.
- For structure fire calls, three or more units arrived 67 percent of the time.

WORKLOAD: RUNS AND TOTAL TIME SPENT

The workload of each unit is measured in two ways: runs and deployed time. The deployed time of a run is measured from the time a unit is en route through the time the unit is cleared. Because multiple units respond to some calls, there are more runs than calls and the average deployed time per run varies from the total duration per call.

Runs and Deployed Time – All Units

Deployed time, also referred to as deployed hours, is the total deployed time for all units deployed on all runs. Table 5-4 shows the total deployed time, both overall and broken down by type of run, for all responding primary fire and rescue response apparatus in 2019. Table 5-5 and Figure 5-6 present the average deployed minutes by hour of day.

TABLE 5-4: Annual Runs and Deployed Time by Run Type

Call Type	Deployed Minutes per Run	Annual Hours	Percent of Total Hours	Deployed Minutes per Day	Annual Runs	Runs per Day
Breathing difficulty	41.1	2.7	0.5	0.5	4	0.01
Cardiac and stroke	115.3	5.8	1.0	0.9	3	0.01
Fall and injury	69.2	5.8	1.0	0.9	5	0.01
Illness and other	63.2	16.9	3.0	2.8	16	0.04
MVA	75.3	97.9	17.3	16.1	78	0.21
Overdose and psychiatric	42.4	2.8	0.5	0.5	4	0.01
Seizure and unconsciousness	83.2	2.8	0.5	0.5	2	0.01
EMS Total	72.1	134.7	23.8	22.1	112	0.31
False alarm	39.4	2.0	0.3	0.3	3	0.01
Good intent	303.4	80.9	14.3	13.3	16	0.04
Hazard	53.0	9.7	1.7	1.6	11	0.03
Outside fire	176.6	314.9	55.8	51.8	107	0.29
Public service	82.7	5.5	1.0	0.9	4	0.01
Structure fire	102.6	17.1	3.0	2.8	10	0.03
Fire Total	170.9	430.1	76.2	70.7	151	0.41
Total	128.8	564.7	100.0	92.8	263	0.72

Observations:

Overall

- The total deployed time for the year was 564.7 hours. The daily average was 92.8 minutes for all units combined.
- There were 263 runs. The daily average was 0.72 runs.

EMS

- EMS runs accounted for 24 percent of the total workload (43 percent of total runs).
- The average deployed time for EMS runs was 72.1 minutes. The deployed time for all EMS runs averaged 22.1 minutes per day.

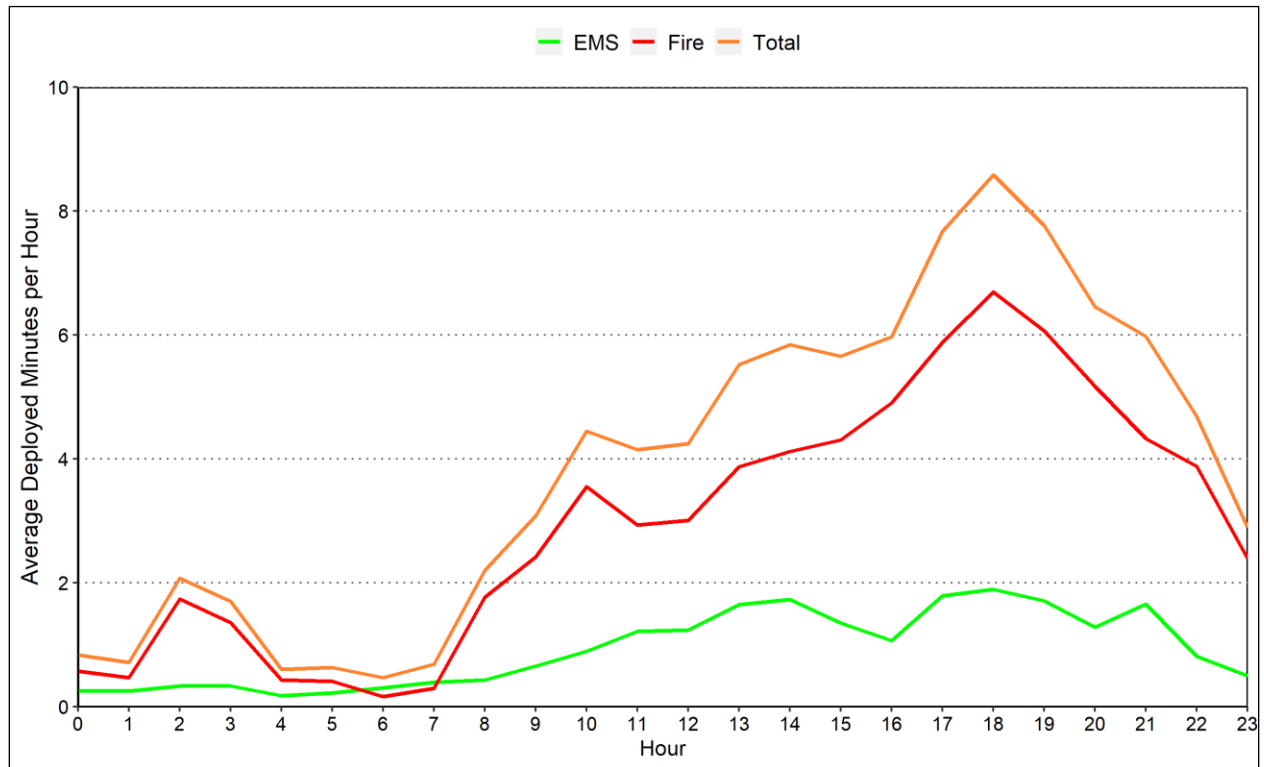
Fire

- Fire runs accounted for 76 percent of the total workload (57 percent of total runs).
- The average deployed time for fire runs was 170.9 minutes. The deployed time for all fire runs averaged 70.7 minutes per day.
- There were 117 runs for structure and outside fire calls combined (44 percent of total runs), with a total workload of 332.0 hours. This accounted for 59 percent of the total workload.
- The average deployed time for outside fire runs was 176.6 minutes per run, and the average deployed time for structure fire runs was 102.6 minutes per run.

TABLE 5-5: Average Deployed Minutes by Hour of Day

Hour	EMS	Fire	Total
0	0.3	0.6	0.8
1	0.2	0.5	0.7
2	0.3	1.7	2.1
3	0.3	1.4	1.7
4	0.2	0.4	0.6
5	0.2	0.4	0.6
6	0.3	0.2	0.5
7	0.4	0.3	0.7
8	0.4	1.8	2.2
9	0.7	2.4	3.1
10	0.9	3.6	4.4
11	1.2	2.9	4.1
12	1.2	3.0	4.2
13	1.6	3.9	5.5
14	1.7	4.1	5.8
15	1.4	4.3	5.7
16	1.1	4.9	6.0
17	1.8	5.9	7.7
18	1.9	6.7	8.6
19	1.7	6.1	7.8
20	1.3	5.2	6.5
21	1.7	4.3	6.0
22	0.8	3.9	4.7
23	0.5	2.4	2.9
Daily Avg.	22.1	70.7	92.8

FIGURE 5-6: Average Deployed Minutes by Hour of Day



Observations:

- Hourly deployed time was highest during the day from 5:00 p.m. to 8:00 p.m., averaging more than 7 minutes per hour.
- Average deployed time peaked between 6:00 p.m. and 7:00 p.m., averaging 8.6 minutes.
- Average deployed time was lowest between 6:00 a.m. and 7:00 a.m., averaging 0.5 minutes.

Workload by Location

Table 5-6 breaks down the workload by fire district. Table 5-7 provides further detail on the workload associated with structure and outside fires calls, also broken down by fire district.

TABLE 5-6: Annual Workload by District

District	Calls	Pct. Annual Calls	Runs	Runs Per Day	Deployed Minutes Per Run	Annual Hours	Pct. Annual Work	Deployed Minutes Per Day
RVFD	20	14.2	48	0.13	102.2	81.7	14.5	13.4
SCFD	65	46.1	102	0.28	87.5	148.7	26.3	24.4
TRFD	17	12.1	35	0.10	99.3	57.9	10.3	9.5
VCFD	39	27.7	78	0.21	212.6	276.4	48.9	45.4
Total	141	100.0	263	0.72	128.8	564.7	100.0	92.8

TABLE 5-7: Structure and Outside Fire Runs by District

District	Structure Fire Runs	Structure Fires Deployed Min. per Run	Outside Fire Runs	Outside Fires Deployed Min. per Run	Hours for Structure and Outside Fires	Pct. of Structure and Outside Fire Workload
RVFD	7	93.8	12	115.3	34.0	10.2
SCFD	3	123.4	27	170.8	83.0	25.0
TRFD	0	NA	24	102.6	41.0	12.4
VCFD	0	NA	44	237.1	173.9	52.4
Total	10	102.6	107	176.6	332.0	100.0

Observations:

RVFD:

- There were 20 calls or 14 percent of the total calls.
- There were 48 runs. The daily average was 0.13 runs.
- Total deployed time for the year was 81.7 hours or 14 percent of the total annual workload. The daily average was 13.4 minutes for all units combined.

SCFD:

- There were 65 calls or 46 percent of the total calls.
- There were 102 runs. The daily average was 0.28 runs.
- Total deployed time for the year was 148.7 hours or 26 percent of the total annual workload. The daily average was 24.4 minutes for all units combined.

TRFD:

- There were 17 calls or 12 percent of the total calls.
- There were 35 runs. The daily average was 0.10 runs.
- Total deployed time for the year was 57.9 hours or 10 percent of the total annual workload. The daily average was 9.5 minutes for all units combined.

VCFD:

- There were 39 calls or 28 percent of the total calls.
- There were 78 runs. The daily average was 0.21 runs.
- Total deployed time for the year was 276.4 hours or 49 percent of the total annual workload. The daily average was 45.4 minutes for all units combined.

Workload by Location

Table 5-8 breaks down the workload by the location of the call. Table 5-9 provides further detail on the workload associated with structure and outside fires calls, also broken down by location.

TABLE 5-8: Annual Workload by Location

Location	Calls	Pct. Annual Calls	Runs	Runs Per Day	Deployed Minutes Per Run	Annual Hours	Pct. Annual Work	Deployed Minutes Per Day
Ophir	3	2.1	3	0.01	79.2	4.0	0.7	0.7
Skull Valley	5	3.5	13	0.04	92.5	20.1	3.6	3.3
Terra	3	2.1	7	0.02	126.2	14.7	2.6	2.4
Tooele County	130	92.2	240	0.66	131.5	526.0	93.1	86.5
Total	141	100.0	263	0.72	128.8	564.7	100.0	92.8

TABLE 5-9: Structure and Outside Fire Runs by Location

Location	Structure Fire Runs	Structure Fires Deployed Min. per Run	Outside Fire Runs	Outside Fires Deployed Min. per Run	Hours for Structure and Outside Fires	Pct. of Structure and Outside Fire Workload
Skull Valley	0	NA	10	68.4	11.4	3.4
Terra	0	NA	6	139.8	14.0	4.2
Tooele County	10	102.6	91	190.9	306.6	92.4
Total	10	102.6	107	176.6	332.0	100.0

Workload by Agency and Unit

Table 5-10 provides a summary of each agency's workload overall within the study area. Again, only primary fire and rescue response apparatus were considered here. The workloads of other types of units are shown in Attachment II for all responding agencies. Tables 5-11 and 5-12 provide a more detailed view of workload, showing each agency's runs broken out by run type (Table 5-11) and the average deployed time by run type (Table 5-12). For the four primary agencies, Table 5-13 examines their units' overall workload in 2019.

TABLE 5-10: Annual Workload by Agency

Agency	Deployed Minutes per Run	Total Hours	Total Pct.	Deployed Minutes per Day	Total Runs	Runs per Day
Rush Valley FD	123.2	76.0	13.5	12.5	37	0.10
Stockton FD	101.8	132.3	23.4	21.8	78	0.21
Terra FD	199.5	246.1	43.6	40.5	74	0.20
Vernon FD	96.9	40.4	7.2	6.6	25	0.07
Primary Agency Total	138.7	494.8	87.6	81.3	214	0.59
Dugway FD	124.1	10.3	1.8	1.7	5	0.01
Tooele Army FD	71.3	48.7	8.6	8.0	41	0.11
Tooele FD	217.9	10.9	1.9	1.8	3	0.01
Other Agency Total	85.6	69.9	12.4	11.5	49	0.13
Total	128.8	564.7	100.0	92.8	263	0.72

TABLE 5-11: Annual Runs by Run Type and Agency

Agency	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	EMS	Total
Rush Valley FD	0	1	2	16	0	1	17	37
Stockton FD	3	4	5	15	1	4	46	78
Terra FD	0	9	1	49	0	1	14	74
Vernon FD	0	0	0	14	2	1	8	25
Primary Agency Total	3	14	8	94	3	7	85	214
Dugway FD	0	0	0	3	0	0	2	5
Tooele Army FD	0	2	3	8	1	2	25	41
Tooele FD	0	0	0	2	0	1	0	3
Other Agency Total	0	2	3	13	1	3	27	49
Total	3	16	11	107	4	10	112	263

TABLE 5-12: Average Deployed Minutes by Run Type and Agency

Agency	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	EMS	Total
Rush Valley FD	0.0	0.1	0.6	8.6	0.0	0.4	2.8	12.5
Stockton FD	0.3	1.8	0.7	9.8	0.1	1.3	7.8	21.8
Terra FD	0.0	11.1	0.1	24.2	0.0	0.3	4.7	40.5
Vernon FD	0.0	0.0	0.0	4.4	0.7	0.2	1.3	6.6
Primary Agency Total	0.3	13.0	1.4	47.0	0.8	2.2	16.6	81.4
Dugway FD	0.0	0.0	0.0	0.7	0.0	0.0	1.0	1.7
Tooele Army FD	0.0	0.2	0.2	2.5	0.1	0.4	4.6	8.0
Tooele FD	0.0	0.0	0.0	1.5	0.0	0.2	0.0	1.8
Other Agency Total	0.0	0.3	0.2	4.8	0.1	0.6	5.6	11.4
Total	0.3	13.3	1.6	51.8	0.9	2.8	22.1	92.8

Observations:

Primary Agency

- Stockton FD made the most runs (78 or an average of 0.21 runs per day) and had the second-highest total annual deployed time (132.3 or an average of 21.7 minutes per day).
 - Structure and outside fire calls accounted for 24 percent of runs and 51 percent of total deployed time.
- Terra FD made the second most runs (74 or an average of 0.20 runs per day) and had the highest total annual deployed time (246.1 or an average of 40.5 minutes per day).
 - Structure and outside fire calls accounted for 68 percent of runs and 60 percent of total deployed time.

Other Agency

- Tooele Army FD made the most runs (41 or an average of 0.11 runs per day) and had the highest total annual deployed time (48.7 hours or an average of 8.0 minutes per day).
 - Structure and outside fire calls accounted for 24 percent of runs and 36 percent of total deployed time.

TABLE 5-13: Annual Workload by Unit

Agency	Unit	Unit Type	Deployed Minutes per Run	Total Hours	Total Pct.	Deployed Minutes per Day	Total Runs	Runs per Day
Rush Valley FD	BR91	Brush	154.8	23.2	4.1	3.8	9	0.02
	BR92	Brush	259.4	13.0	2.3	2.1	3	0.01
	EN91	Engine	108.0	7.2	1.3	1.2	4	0.01
	ME9	Medic	38.6	0.6	0.1	0.1	1	0.00
	RE91	Rescue	63.4	18.0	3.2	3.0	17	0.05
	TE91	Brush	8.9	0.1	0.0	0.0	1	0.00
	TE92	Brush	415.8	13.9	2.5	2.3	2	0.01
	Total		123.2	76.0	13.5	12.5	37	0.10
Stockton FD	BR51	Brush	119.7	71.8	12.7	11.8	36	0.10
	BR52	Brush	558.5	27.9	4.9	4.6	3	0.01
	BR502	Brush	5.0	0.1	0.0	0.0	1	0.00
	EN51	Engine	58.1	5.8	1.0	1.0	6	0.02
	RE51	Rescue	50.1	26.7	4.7	4.4	32	0.09
	Total		101.8	132.3	23.4	21.8	78	0.21
Terra FD	BR81	Brush	261.1	52.2	9.2	8.6	12	0.03
	BR82	Brush	242.2	52.5	9.3	8.6	13	0.04
	BR83	Brush	447.9	14.9	2.6	2.5	2	0.01
	BR84	Brush	244.9	32.7	5.8	5.4	8	0.02
	BR85	Brush	203.7	40.7	7.2	6.7	12	0.03
	EN28	Engine	86.6	8.7	1.5	1.4	6	0.02
	RE81	Rescue	162.0	10.8	1.9	1.8	4	0.01
	RE82	Rescue	110.4	27.6	4.9	4.5	15	0.04
	TE81	Tend	180.3	6.0	1.1	1.0	2	0.01
	Total		199.5	246.1	43.6	40.5	74	0.20
Vernon FD	BR71	Brush	308.7	5.1	0.9	0.8	1	0.00
	BR72	Brush	129.1	15.1	2.7	2.5	7	0.02
	BR73	Brush	95.4	3.2	0.6	0.5	2	0.01
	EN71	Engine	63.1	7.4	1.3	1.2	7	0.02
	ME7	Medic	52.6	1.8	0.3	0.3	2	0.01
	TE71	Tender	97.4	3.2	0.6	0.5	2	0.01
	TE74	Tender	69.7	4.6	0.8	0.8	4	0.01
	Total		96.9	40.4	7.2	6.6	25	0.07

Observations:

- BR51 was the busiest unit, making the most runs (36 or an average of 0.10 runs per day) and having the highest total deployed time (71.8 hours or an average of 11.8 minutes per day).
- Structure and outside fire calls accounted for 25 percent of runs and 38 percent of total deployed time.

ANALYSIS OF BUSIEST HOURS

There is significant variability in the number of calls from hour to hour. One special concern relates to the resources available for hours with the heaviest workload. We tabulated the data for each of the 8,760 hours in the year. Table 5-14 shows the number of hours in the year in which there were zero to two calls during the hour. Table 5-15 shows the three one-hour intervals which had the most calls during the year. Table 5-16 examines the number of times a call overlapped with another call within the studied unincorporated fire districts.

TABLE 5-14: Frequency Distribution of the Number of Calls

Calls in an Hour	Frequency	Percentage
0	8,622	98.4
1	135	1.5
2	3	0.0
Total	8,760	100.0

TABLE 5-15: Top Three Hours with the Most Calls Received

Hour	Number of Calls	Number of Runs	Total Deployed Hours
8/4/2019, 8:00 p.m. to 9:00 p.m.	2	16	18.2
5/11/2019, 9:00 a.m. to 10:00 a.m.	2	7	11.7
3/3/2019, 8:00 a.m. to 9:00 a.m.	2	4	0.6

Note: Total deployed hours are a measure of the total time spent responding to calls received in the hour. The deployed time from these calls may extend into the next hour or hours. The number of runs and deployed hours includes all units from the studied agencies.

TABLE 5-16: Frequency of Overlapping Calls

Scenario	Number of Calls	Percent of All Calls	Total Hours
No overlapped call	128	90.8	303.2
Overlapped with one call	13	9.2	15.7

Observations:

- During 3 hours, two calls occurred; in other words, the department responded to two calls in an hour roughly once every four months.
 - The highest number of calls to occur in an hour was two, which happened three times.

The following table focuses on the four primary agencies' availability to respond to calls within the unincorporated areas of their fire districts. At the same time, the table focuses on calls where a unit eventually arrived and ignores calls where no unit arrived.

TABLE 5-17: Agency's Availability to Respond to Calls

District	Calls	Agency Responded	Pct. Responded	Agency Arrived	Pct. Arrived	Agency First	Pct. First
RVFD	14	9	64.3	7	50.0	7	50.0
SCFD	43	36	83.7	32	74.4	26	60.5
TRFD	8	7	87.5	7	87.5	7	87.5
VCFD	23	11	47.8	4	17.4	3	13.0
Total	88	63	71.6	50	56.8	43	48.9

Note: For each fire agency, we count the number of calls within its fire district where at least one unit arrived. Next, we focus on units from the agency to see if any unit responded, arrived, or arrived first.

Table 5-18 summarizes the number of runs made by the primary fire and rescue response apparatus, broken out by agency and fire districts. The total number of runs for each agency agrees with the results shown in Tables 5-10 and 5-11 and the total number of runs for each fire district agrees with the corresponding counts in Table 5-6. Table 5-18 also includes the number of arrivals broken out by agency and fire district. Out of 263 total runs in 2019, 110 units went en route but did not arrive, this left 153 total arrivals.

TABLE 5-18: Agency Response to Calls by District

Agency	Number of Runs					Number of Arrivals				
	Fire District				Total	Fire District				Total
	RVFD	SCFD	TRFD	VCFD		RVFD	SCFD	TRFD	VCFD	
Rush Valley FD	13	11	1	12	37	8	2	1	7	18
Stockton FD	14	52	0	12	78	8	38	0	6	52
Terra FD	8	4	30	32	74	5	1	16	19	41
Vernon FD	4	2	3	16	25	1	0	3	5	9
Dugway FD	0	0	1	4	5	0	0	0	1	1
Tooele Army FD	8	31	0	2	41	6	22	0	2	30
Tooele FD	1	2	0	0	3	1	1	0	0	2
Total	48	102	35	78	263	29	64	20	40	153

Note: The number of runs and arrivals by each primary agency within its fire district are highlighted.

RESPONSE TIME

In this part of the analysis, we present response time statistics for different call types. We separate response time into its identifiable components. Due to the lack of recorded dispatch times, we defined *turnout time* as the difference between the time a call is received and the earliest time a primary fire and rescue response apparatus went en route to a call's location. This turnout time includes call processing time, which is the time required to determine the nature of the emergency and the types of resources to dispatch. *Travel time* is the difference between the earliest en route time and the earliest arrival time. *Response time* is the total time elapsed between receiving a call and arriving on scene.

In this analysis, we included all calls within the study area where at least one primary unit arrived. We focused on primary fire and rescue response apparatus that had complete timestamps so that we could calculate each segment of response time. In addition, due to the small sample size, we used all calls in two years in this analysis.

Based on the methodology above, for the total 297 calls in 2019 and 2020, we excluded 119 calls where no responding primary fire and rescue response apparatus arrived on scene. In addition, we excluded two calls to which the response times are significantly longer than other calls. These two removed calls are shown in Attachment V. As a result, the analysis in this section includes 176 calls.

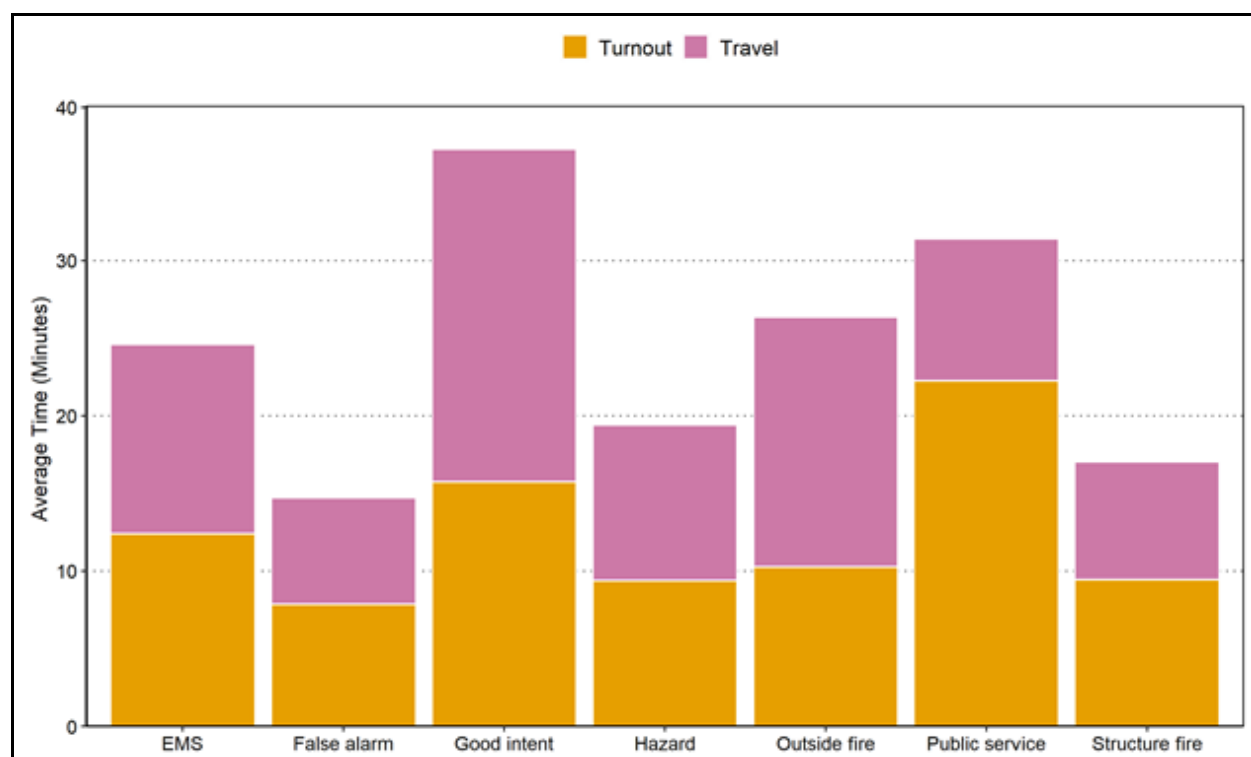
Response Time by Type of Call

The involved fire agencies follow the NFPA 1720 standard that benchmarks both 80th and 90th percentile response times. Table 5-19 breaks down the average, 80th percentile, and 90th percentile response times by call type. In the table, the total response time is the summation counts of turnout and travel times. Figure 5-7 illustrates the components of the average response time by call type.

TABLE 5-19: Response Time of First Arriving Unit, by Call Type (Minutes)

Call Type	Average			80 Percentile			90 Percentile			Call Count
	Turnout	Travel	Total	Turnout	Travel	Total	Turnout	Travel	Total	
False alarm	7.8	6.9	14.7	9.3	8.1	16.4	14.0	11.8	20.4	5
Good intent	15.7	21.4	37.2	20.9	20.2	41.2	30.3	62.4	81.7	6
Hazard	9.4	10.1	19.4	12.6	13.8	26.4	12.6	13.8	26.4	3
Outside fire	10.3	16.1	26.4	15.3	26.6	39.7	19.0	31.3	48.8	52
Public service	22.3	9.1	31.4	41.8	18.9	44.6	53.0	21.1	74.1	6
Structure fire	9.4	7.6	17.0	13.6	17.0	27.1	13.6	17.0	27.1	4
Fire Total	11.4	14.7	26.1	15.4	20.2	39.7	22.2	30.7	48.8	76
EMS Total	12.4	12.2	24.6	15.1	21.1	34.1	19.6	26.0	44.6	100
Total	12.0	13.3	25.2	15.2	21.1	34.5	20.9	27.7	46.5	176

FIGURE 5-7: Average Response Time of First Arriving Unit, by Call Type



Observations:

- The average turnout time for fire calls was 11.4 minutes.
- The average travel time for fire calls was 14.7 minutes.
- The average response time was 26.1 minutes.
- The 80th percentile turnout time for fire calls was 15.4 minutes.
- The 80th percentile travel time for fire calls was 20.2 minutes.
- The 80th percentile total response time for fire calls was 39.7 minutes.
- The 90th percentile turnout time for fire calls was 22.2 minutes.
- The 90th percentile travel time for fire calls was 30.7 minutes.
- The 90th percentile total response time was 48.8 minutes.
- The average total response time was 25.2 minutes.
- The 80th percentile response time was 34.5 minutes.
- The 90th percentile response time was 46.5 minutes.

Response Time by Time of Day

Table 5-20 examines the average, 80th, and 90th response times of the first arriving units by the time of day (in four-hour intervals).

TABLE 5-20: Response Time of First Arriving Unit, by Time of Day (Minutes)

Time	Average			80 Percentile			90 Percentile			Call Count
	Turnout	Travel	Total	Turnout	Travel	Total	Turnout	Travel	Total	
00:00 - 03:59	15.8	7.6	23.4	13.6	8.7	24.0	15.3	21.2	31.1	11
04:00 - 07:59	10.3	15.8	26.2	15.1	23.2	38.3	18.5	26.6	46.2	11
08:00 - 11:59	12.6	10.2	22.8	17.8	16.1	29.5	19.6	19.8	34.1	31
12:00 - 15:59	8.9	11.6	20.5	13.0	21.2	30.6	15.3	35.6	44.6	38
16:00 - 19:59	13.7	15.7	29.4	17.0	26.9	43.8	22.7	31.8	50.7	52
20:00 - 23:59	11.5	15.3	26.7	13.0	21.2	33.0	24.5	23.9	46.5	33
Total	12.0	13.3	25.2	15.2	21.1	34.5	20.9	27.7	46.5	176

Response Time by Fire District

Table 5-21 examines the average, 80th percentile, and 90th percentile response times broken out by fire district.

TABLE 5-21: Response Time by Fire District

District	Average			80 Percentile			90 Percentile			Call Count
	Turnout	Travel	Total	Turnout	Travel	Total	Turnout	Travel	Total	
RVFD	13.7	10.9	24.6	13.6	13.4	28.4	30.3	17.0	40.1	22
SCFD	8.6	10.2	18.8	11.6	15.8	26.2	14.0	21.1	31.6	89
TRFD	16.0	13.9	30.0	21.0	17.8	38.3	22.5	23.1	70.7	19
VCFD	16.0	19.9	35.9	18.5	27.7	46.8	28.0	35.1	60.1	49
Total	12.0	13.3	25.2	15.2	21.1	34.5	20.9	27.7	46.5	176

Response Time Distribution

Here, we present a more detailed look at how response times are distributed. The cumulative distribution of total response time for the first arriving unit to structure and outside fire calls is shown in Figure 5-8 and Table 5-22.

The cumulative percentages here are read in the same way as a percentile. In Figure 5-8, the 80th percentile of 39.5 minutes means that 80 percent of structure and outside fire calls had a response time of 39.5 minutes or less, and the 90th percentile of 48.8 minutes means that 90 percent of structure and outside fire calls had a response time of 48.8 minutes or less. In Table 5-22, the cumulative percentage of 8.9 represents that 8.9 percent of structure and outside fire calls had a response time under 8 minutes.

FIGURE 5-8: Cumulative Distribution of Response Time – First Arriving Unit – Outside and Structure Fires

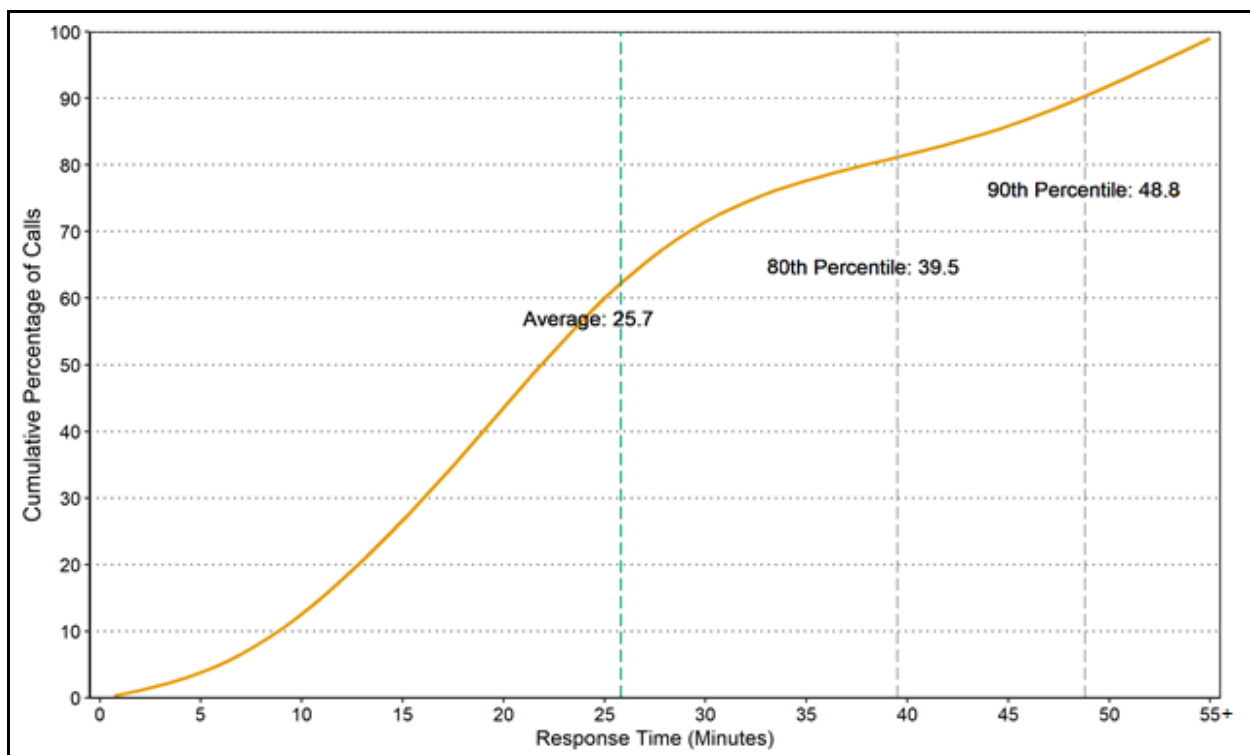


TABLE 5-22: Cumulative Distribution of Response Time – First Arriving Unit – Outside and Structure Fires

Response Time (minute)	Frequency	Cumulative Percentage
2	0	1.8
4	0	1.8
6	1	5.4
8	2	8.9
10	0	10.7
12	1	17.9
14	3	26.8
16	0	28.6
18	4	35.7
20	3	48.2
22	1	50.0
24	4	58.9
26	0	64.3
28	2	69.6
30	1	71.4
32	2	76.8
34	0	76.8
36	0	78.6
38	0	78.6
40	2	82.1
42	0	82.1
44	0	83.9
46	0	85.7
48	0	89.3
50	0	91.1
52	0	94.6
54	0	94.6
55+	3	100.0

ATTACHMENT I: 2019 & 2020 COMPARISON

In this analysis, we compare our previous analysis with similar records for 2020. We compare calls by type, unit workload, and agency's availability in responding to calls.

Call Volume by Year

Table 5-23 shows the number of calls for both 2019 and 2020. Figure 5-9 shows the monthly variation in the calls per day for both years. Similarly, Figure 5-10 illustrates the number of calls per hour for both years.

TABLE 5-23: Calls by Type and Year

Call Type	2019		2020	
	Total Calls	Pct. Calls	Total Calls	Pct. Calls
Breathing difficulty	4	2.8	1	0.7
Cardiac and stroke	4	2.8	4	2.8
Fall and injury	8	5.7	7	5.0
Illness and other	16	11.3	7	5.0
MVA	42	29.8	41	29.1
Overdose and psychiatric	3	2.1	7	5.0
Seizure and unconsciousness	2	1.4	3	2.1
EMS Total	79	56.0	70	49.6
False alarm	3	2.1	3	2.1
Good intent	10	7.1	4	2.8
Hazard	5	3.5	1	0.7
Outside fire	33	23.4	51	36.2
Public service	5	3.5	10	7.1
Structure fire	6	4.3	2	1.4
Fire Total	62	44.0	71	50.4
Total	141	100.0	141	100.0

FIGURE 5-9: Calls per Day by Month and Year

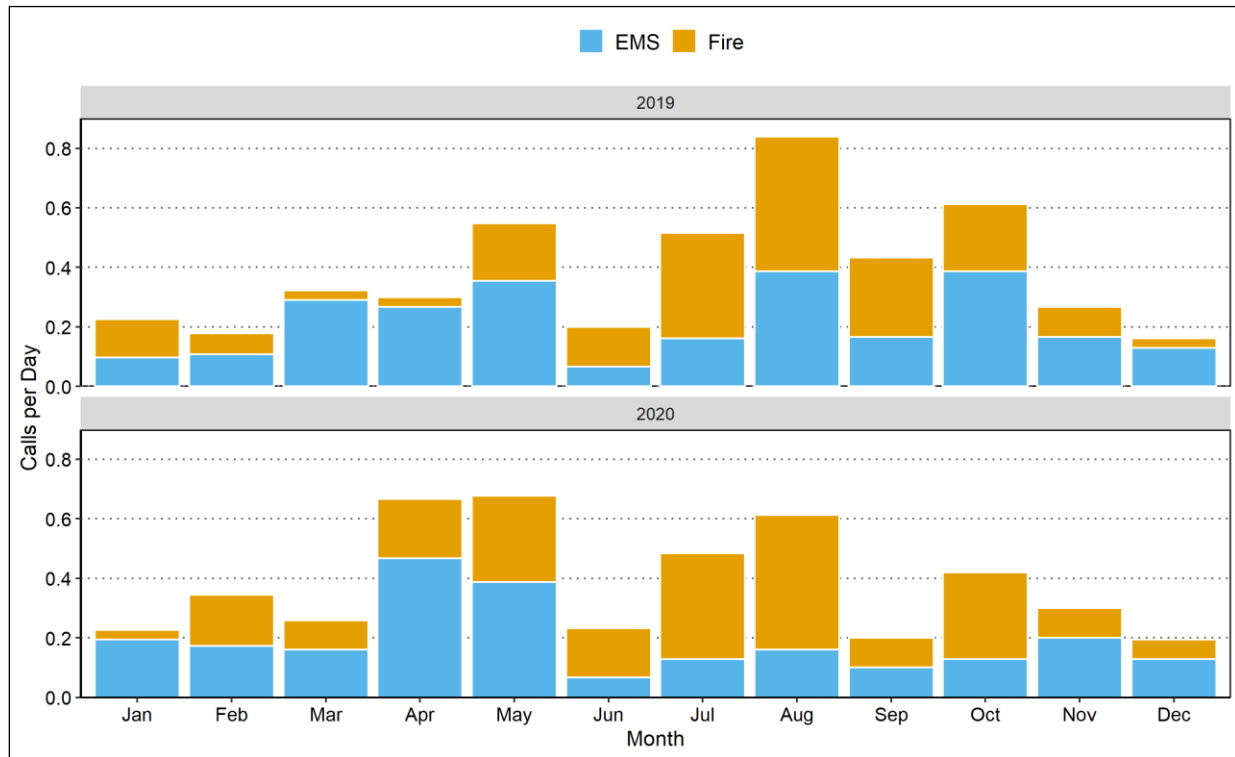
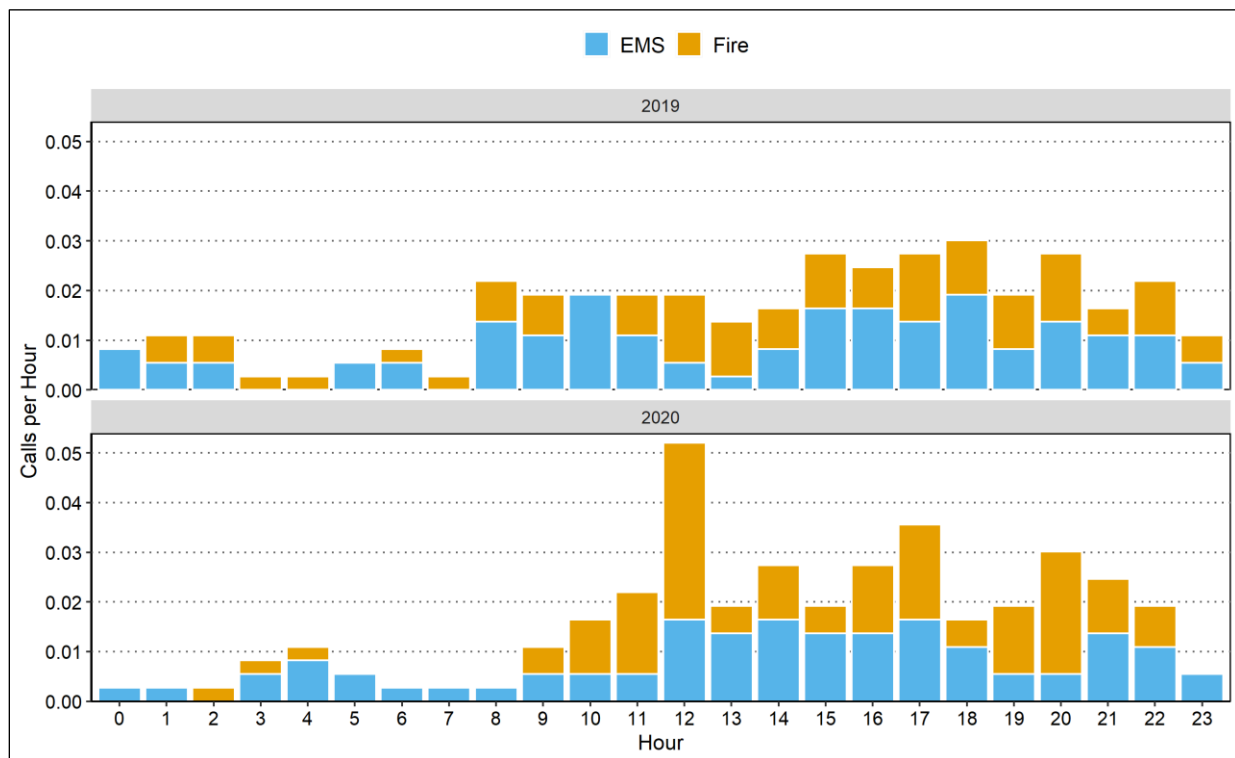


FIGURE 5-10: Calls per Hour by Time of Day and Year



Workload by Year

Table 5-24 compares the call volume, annual runs, and workload in the unincorporated districts for RVFD, SCFD, TRFD, and VCFD in 2019 and 2020. Table 5-25 compares the annual runs and workload for responding fire agencies in two years. Tables 5-26 and 5-27 compare the runs and workload of the primary fire and rescue apparatus of the four primary agencies in two years. Figure 5-11 compares the average deployed minutes by the time of the day in two years.

TABLE 5-24: Annual Call Volume and Workload by District and Year

District	2019			2020		
	Calls	Runs	Hours	Calls	Runs	Hours
RVFD	20	48	81.7	11	28	39.4
SCFD	65	102	148.7	67	119	161.8
TRFD	17	35	57.9	22	27	33.7
VCFD	39	78	276.4	41	101	239.5
Total	141	263	564.7	141	275	474.4

TABLE 5-25: Annual Workload by Agency and Year

Agency	2019		2020	
	Hours	Runs	Hours	Runs
Rush Valley FD	76.0	37	56.8	33
Stockton FD	132.3	78	116.3	89
Terra FD	246.1	74	122.8	45
Vernon FD	40.4	25	75.2	28
Primary Agency Total	494.8	214	371.1	195
Dugway FD	10.3	5	18.3	14
North Tooele FD	0.0	0	2.9	3
Tooele Army FD	48.7	41	73.8	58
Tooele FD	10.9	3	7.8	4
Wendover FD	0.0	0	0.4	1
Other Agency Total	69.9	49	103.3	80
Total	564.7	263	474.4	275

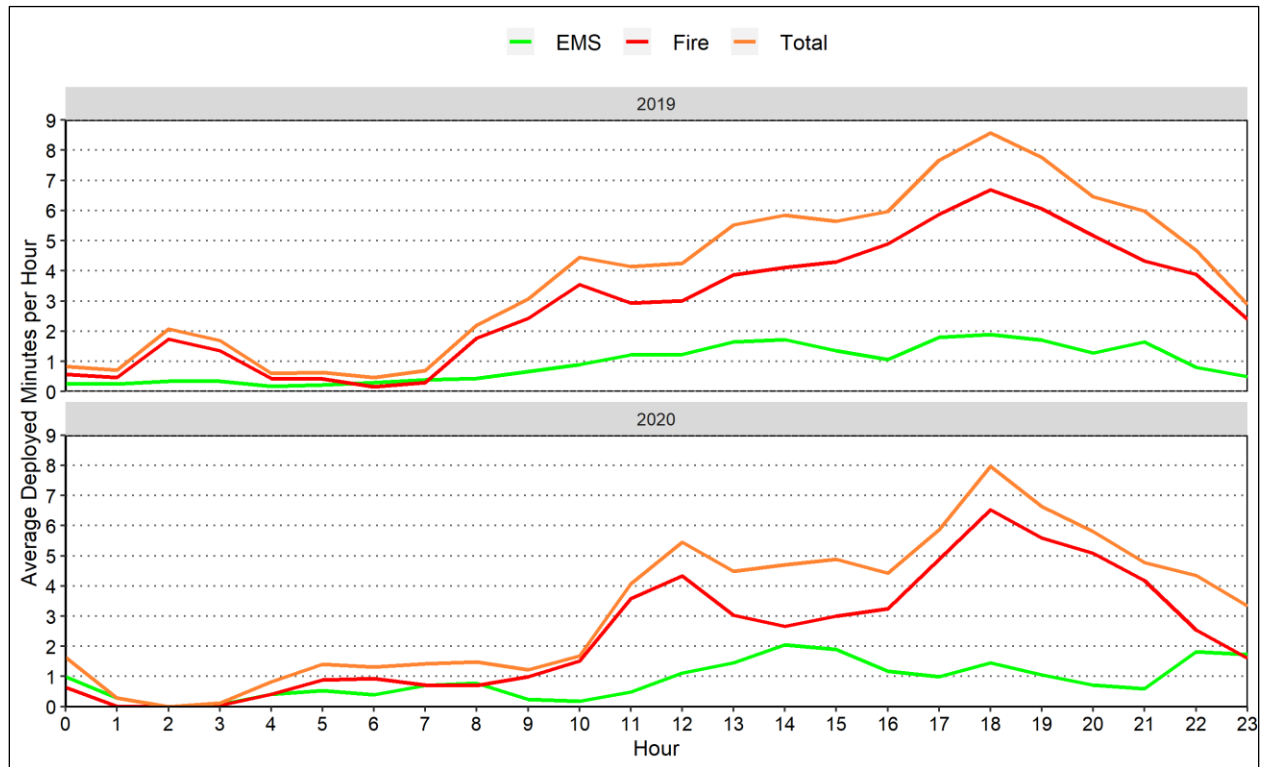
TABLE 5-26: Annual Workload by Unit and Year, Rush Valley FD and Stockton FD

Agency	Unit	Unit Type	2019		2020	
			Annual Hours	Annual Runs	Annual Hours	Annual Runs
Rush Valley FD (RVFD)	BR91	Brush	23.2	9	25.1	14
	BR92	Brush	13.0	3	9.4	7
	BR93	Brush	0.0	0	11.3	4
	BR910	Brush	0.0	0	1.9	1
	EN91	Engine	7.2	4	5.0	4
	ME91	Medic	0.6	1	2.2	1
	RE91	Brush	18.0	17	0.0	1
	TE91	Brush	0.1	1	1.7	1
	TE92	Brush	13.9	2	0.0	0
	Total		76.0	37	56.8	33
Stockton FD (SCFD)	BR51	Brush	71.8	36	24.8	19
	BR52	Brush	27.9	3	10.6	8
	BR502	Brush	0.1	1	0.0	0
	EN51	Engine	5.8	6	7.8	6
	HE51	Brush	0.0	0	0.6	2
	RE51	Rescue	26.7	32	68.1	52
	RE52	Rescue	0.0	0	3.7	1
	TE51	Tender	0.0	0	0.7	1
	Total		132.3	78	116.3	89

TABLE 5-27: Annual Workload by Unit and Year, Terra FD and Vernon FD

Agency	Unit	Unit Type	2019		2020	
			Annual Hours	Annual Runs	Annual Hours	Annual Runs
Terra FD (TRFD)	BR81	Brush	52.2	12	14.3	3
	BR82	Brush	52.5	13	17.0	7
	BR83	Brush	14.9	2	0.0	0
	BR84	Brush	32.7	8	19.2	6
	BR85	Brush	40.7	12	17.3	5
	BR86	Brush	0.0	0	20.1	12
	EN28	Engine	8.7	6	2.3	1
	EN81	Engine	0.0	0	0.8	1
	EN84	Engine	0.0	0	1.2	1
	RE81	Rescue	10.8	4	8.3	4
	RE82	Rescue	27.6	15	17.9	4
	TE81	Tender	6.0	2	0.0	0
	TE83	Tender	0.0	0	4.3	1
	Total		246.1	74	122.8	45
Vernon FD (VCFD)	BR71	Brush	5.1	1	9.9	4
	BR72	Brush	15.1	7	16.9	4
	BR73	Brush	3.2	2	17.2	5
	BR74	Brush	0.0	0	0.8	1
	EN71	Engine	7.4	7	19.5	10
	ME7	Medic	1.8	2	2.1	1
	TE71	Tender	3.2	2	0.0	0
	TE74	Tender	4.6	4	8.9	3
	Total		40.4	25	75.2	28

FIGURE 5-11: Average Deployed Minutes by Hour of Day and Year



Agency Availability by Year

Table 5-28 compares the four primary agencies' availability to respond to calls within their fire districts. Again, the table focuses on calls where a unit eventually arrived and ignores calls where no unit arrived. Tables 5-29 and 5-30 compare the number of total runs (Table 5-29) and arrivals (Table 5-30) in 2019 and 2020, broken out by agency and fire districts. Tables 5-28 through 5-30 all focus on the primary fire and rescue apparatus of the involved agencies.

TABLE 5-28: Calls That Agency Responded by District and Year

Fire District	2019				2020			
	Calls	Agency Responded	Agency Arrived	Pct. Arrived	Calls	Agency Responded	Agency Arrived	Pct. Arrived
RVFD	14	9	7	50.0	8	5	5	62.5
SCFD	43	36	32	74.4	46	40	36	78.3
TRFD	8	7	7	87.5	10	7	6	60.0
VCFD	23	11	4	17.4	26	16	12	69.2
Total	88	63	50	56.8	90	68	58	64.4

Note: For each fire agency, we count the number of calls within its fire district where at least one unit arrived. Next, we focus on units from the agency to see if any unit responded or arrived.

TABLE 5-29: Number of Runs by Agency, District, and Year

Agency	2019					2020				
	Fire District				Total	Fire District				Total
	RVFD	SCFD	TRFD	VCFD		RVFD	SCFD	TRFD	VCFD	
Rush Valley FD	13	11	1	12	37	9	11	0	13	33
Stockton FD	14	52	0	12	78	8	62	0	19	89
Terra FD	8	4	30	32	74	4	6	13	22	45
Vernon FD	4	2	3	16	25	0	0	0	28	28
Dugway FD	0	0	1	4	5	0	0	9	5	14
North Tooele FD	0	0	0	0	0	0	0	3	0	3
Tooele Army FD	8	31	0	2	41	5	38	1	14	58
Tooele FD	1	2	0	0	3	2	2	0	0	4
Wendover FD	0	0	0	0	0	0	0	1	0	1
Total	48	102	35	78	263	28	119	27	101	275

Note: The number of runs by each primary agency within its fire district is highlighted.

TABLE 5-30: Number of Arrivals by Agency, District, and Year

Agency	2019					2020				
	Fire District				Total	Fire District				Total
	RVFD	SCFD	TRFD	VCFD		RVFD	SCFD	TRFD	VCFD	
Rush Valley FD	8	2	1	7	18	6	9	0	7	22
Stockton FD	8	38	0	6	52	6	45	0	9	60
Terra FD	5	1	16	19	41	2	5	9	15	31
Vernon FD	1	0	3	5	9	0	0	0	14	14
Dugway FD	0	0	0	1	1	0	0	5	3	8
North Tooele FD	0	0	0	0	0	0	0	1	0	1
Tooele Army FD	6	22	0	2	30	5	26	1	8	40
Tooele FD	1	1	0	0	2	2	2	0	0	4
Total*	29	64	20	40	153	21	87	16	56	180

Note: The number of arrivals by each primary agency within its fire district is highlighted.

ATTACHMENT II: ADDITIONAL PERSONNEL

TABLE 5-31: Workload of Additional Personnel by Year

Agency	Unit ID	Unit Type	2019		2020	
			Annual Hours	Annual Runs	Annual Hours	Annual Runs
Dugway FD	FC1228	Fire Chief	0.0	0	0.9	1
	FC1203	Assist Chief	17.1	5	9.9	6
	FC1202	Deputy Chief	6.2	5	7.6	7
	FC2	Deputy Chief	0.0	1	0.0	0
Grantsville FD	FC303	Assist Chief	0.0	0	1.7	1
North Tooele FD	AUX61	Auxiliary	4.3	2	6.1	2
	CPT608	Captain B	0.0	0	4.0	1
	CPT609	Captain C	0.0	0	1.9	1
Rush Valley FD	FC901	Fire Chief	7.7	6	11.2	5
	FC 902	Assist Chief	36.4	20	18.0	7
	FC 903	Fire Chief	3.0	2	0.0	0
Stockton FD	FC 501	Fire Chief	52.9	34	51.3	36
	FC 502	Assist Chief	51.6	34	55.0	34
	CPT 501	Fire Captain	0.0	0	0.0	1
	CPT 503	Fire Captain	2.1	3	1.4	2
	CPT 504	Fire Captain	0.9	1	24.5	18
TEAD FD	CO113	Deputy Fire Control	2.0	1	0.1	1
	CPT118	Fire Captain	0.9	1	0.0	0
Terra FD	FC 801	Fire Chief	124.7	32	68.9	38
	FC 802	Assist Chief	9.1	8	23.0	14
	CPT803	Assist Chief	0.0	0	1.0	1
	CPT804	Assist Chief	2.7	2	18.8	13
Tooele City FD	FC 201	Fire Chief	0.1	1	4.3	2
	FC 202	Assist Chief	1.6	1	3.0	1
Tooele County Fire Warden	3A303	Fire Warden	140.9	31	99.7	36
	3A363	Fire Warden	100.4	30	79.8	31
Vernon FD	AUX71	Auxiliary	0.0	0	1.3	1
	AUX72	Auxiliary	0.0	0	0.4	1
	AUX73	Auxiliary	2.0	1	3.4	1
	FC 701	Fire Chief	9.9	7	38.5	11
	FC 702	Fire Chief	0.0	0	1.8	1
WFA FMO	3A300	FMO	6.4	4	0.1	1
Total			582.9	232	537.6	275

ATTACHMENT III: TOTAL UNITS ARRIVING AT CALLS

Tables 5-32 and 5-33 detail the number of calls with one to nine or more units arriving at a call in two years, broken down by call type. In this section, we included both primary and non-primary fire and rescue response apparatus. Out of 141 and 141 total calls in 2019 and 2020, 25 and 19 calls lacked an arriving unit, respectively. This left a total of 116 calls in Table 5-32 for 2019 and 122 calls in Table 5-33 for 2020, respectively.

TABLE 5-32: Calls by Call Type and Number of Arriving Unit in 2019

Call Type	Number of Units							Total Calls
	One	Two	Three	Four	Five & Six	Seven & Eight	Nine & More	
False alarm	0	1	2	0	0	0	0	3
Good intent	2	1	0	1	0	1	0	5
Hazard	3	1	0	0	0	1	0	5
Outside fire	4	5	1	4	7	1	3	25
Public service	2	2	0	0	0	0	0	4
Structure fire	2	2	0	1	0	1	0	6
Fire Total	13	12	3	6	7	4	3	48
EMS Total	31	24	10	3	0	0	0	68
Total	44	36	13	9	7	4	3	116
Percentage	37.9	31.0	11.2	7.8	6.0	3.5	2.6	100.0

TABLE 5-33: Calls by Call Type and Number of Arriving Unit in 2020

Call Type	Number of Units							Total Calls
	One	Two	Three	Four	Five & Six	Seven & Eight	Nine & More	
False alarm	0	1	2	0	0	0	0	3
Good intent	2	1	0	0	1	0	0	4
Hazard	0	1	0	0	0	0	0	1
Outside fire	8	7	4	8	7	5	3	42
Public service	2	1	3	0	0	0	0	6
Structure fire	1	0	0	0	0	0	1	2
Fire Total	13	11	9	8	8	5	4	58
EMS Total	20	26	9	7	2	0	0	64
Total	33	37	18	15	10	5	4	122
Percentage	27.0	30.3	14.8	12.3	8.2	4.1	3.3	100.0

ATTACHMENT IV: CALL TYPE IDENTIFICATION

When available, NFIRS data serves as our primary source for assigning call categories. In this work, for an MVA or fire call that had a matched NFIRS record, we used the NFIRS incident type to assign a call category. Otherwise, we used the CAD data's nature description to assign a call category. Table 5-34 specifies the call categories identified by the NFIRS type code and description. Table 5-35 specifies the call categories identified by CAD nature. The call count columns in both tables reflect the number of calls in 2019 and 2020, respectively.

TABLE 5-34: Call Type by NFIRS Code and Description

Call Type	NFIRS Code	NFIRS Type Description	Call Count	
			2019	2020
Good Intent	600	Good intent call, other	2	
	611	Dispatched and canceled en route	1	1
	631	Authorized controlled burning	2	
	651	Smoke scare, odor of smoke, not steam (652)	1	
Hazard	220	Overpressure rupture from air or gas, other	1	
	400	Hazardous condition (no fire), other	1	
MVA	322	Motor vehicle accident with injuries	13	6
	324	Motor vehicle accident with no injuries	7	5
Outside Fire	100	Fire, other	1	2
	131	Outside equipment fire	1	1
	137	Camper or recreational vehicle (RV) fire, not self-propelled		1
	140	Natural vegetation fire, other	3	10
	141	Forest, woods, or wildland fire	13	2
	142	Brush or brush-and-grass mixture fire	2	10
	150	Outside rubbish fire, other	1	
	152	Garbage dump or sanitary landfill fire	1	1
	160	Special outside fire, other	1	1
	162	Outside equipment fire	1	
Public Service	500	Service call, other		1
	552	Police matter		1
Structure Fire	111	Building fire	1	
	112	Fire in structure, other than in a building	1	
	114	Chimney or flue fire	1	
	118	Trash or rubbish fire in a structure	1	
NFIRS Identification Total			56	42
CAD Identification Total			85	99
Total			141	141

TABLE 5-35: Call Type by CAD Nature

Call Type	CAD Nature	Frequency	
		2019	2020
Breathing Difficulty	Breathing Prob	3	1
	Choking	1	
Cardiac and Stroke	Cardiac Arrest	3	2
	Chest Pain		1
	Stroke	1	1
Fall and Injury	Assault		1
	Falls	6	3
	Stab - Gunshot		1
	Traumatic Injury	2	2
False alarm	Alarm	3	3
Good intent	Smoke Investigation	4	3
Hazard	Electrical Haz		1
	Gas Leak	2	
	Hazmat	1	
Illness and Other	Accident-PI	4	2
	Allergies	1	
	Backcountry Res	1	
	Confined Space		1
	Diabetic Prob	3	
	Hemorrhage	1	2
	Pregnancy		1
	Sick Person	6	1
MVA	Accident-PD		2
	Traffic Collision	22	28
Outside Fire	Controlled Burn	1	
	Fire	2	4
	Fire-Outside	2	8
	Vegetation Wild	4	11
Overdose and Psychiatric	Overdose		3
	Psychiatric	3	2
	Suicide Threats		2

Call Type	CAD Nature	Frequency	
		2019	2020
Public Service	Agency Assist	2	
	Domestic in Pro	1	1
	Extrication		1
	Illegal Burning	1	
	Motorist Assist		1
	Overdue Party		1
	Runaway	1	
	Suspicious		1
	Traffic Stop		1
	Unknown Problem		2
Seizure and Unconsciousness	Convulsions		1
	Unconscious	2	2
Structure Fire	Fire-Structure	2	2
CAD Identification Total		85	99
NFIRS Identification Total		56	42
Total		141	141

ATTACHMENT V: TWO SPECIAL CALLS

Table 5-36 shows the response history of the primary fire and rescue response apparatus for two calls that were excluded from the response time analysis. The response times of these calls are significantly greater than that of other calls. Both are “good intent” calls. The first call was a “controlled burn” and the second a request for a “wrecker.” Table 5-37 shows the response time components for these two calls.

TABLE 5-36: Primary Fire and Rescue Response Apparatus Response to Special Calls

Call ID	Opened	Unit	Enroute	Arrive	Clear
847794	2019-05-03 06:44:48	BR81	2019-05-03 07:43:55	2019-05-03 09:23:37	2019-05-03 18:49:20
		BR82	2019-05-03 07:43:55	2019-05-03 09:23:37	2019-05-03 18:49:22
		BR85	2019-05-03 07:43:55	2019-05-03 09:23:37	2019-05-03 18:49:48
		BR51	NA	2019-05-03 10:08:40	2019-05-03 18:49:43
855590	2019-06-01 11:52:44	BR81	2019-06-01 14:31:46	NA	2019-06-01 20:23:17
		BR82	NA	2019-06-01 14:39:04	2019-06-01 20:23:17
		RE82	2019-06-01 14:43:15	NA	2019-06-01 20:23:17
		RE81	2019-06-01 16:17:04	NA	2019-06-01 20:23:17

TABLE 5-37: Special Call Response Times (Minutes)

Call ID	Turnout	Travel	Total
847794	59.1	99.7	158.8
855590	159.0	7.3	166.3

- END -