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Analysis of Fire Department Staffing, Facilities and Operations



York Area United Fire and Rescue, Pennsylvania

Draft

MODULE 1: INTRODUCTION; FIRE DEPARTMENT STAFFING ANALYSIS

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YORK AREA UNITED FIRE AND RESCUE, PENNSYLVANIA

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INTRODUCTION

In the second half of year 2022, William Kramer of the firm *Kramer and Associates* led a team of consultants in conducting a study regarding the state of fire protection in York Area United Fire and Rescue, (YAUFR), Pennsylvania. (Resumes of consulting team members are in **Appendix 1-A**). Particular emphasis was placed on an analysis of staffing needs. Throughout six modules which comprise this report, we highlight in light blue, as here, especially relevant passages related to staffing needs.

YAUFR is the first regional combination fire department in Pennsylvania, and delivers fire protection to three townships from five fire stations in a unified network. In addition, a mutual-aid network guarantees that YAUFR can give and receive assistance to and from its adjacent areas, most notably the City of York.

The consultants performed an analysis to determine the capability of York Area United Fire and Rescue to deliver necessary fire protection and first response for emergency medical calls, both now and into the future. This was primarily an analysis of staffing needs, but also an analysis of other factors that have an effect on staffing, including organizational structuring, types of apparatus units that are fielded, supervisory needs, fire station locations and similar factors.

A complete analysis is a complex undertaking where a change in one factor has a ripple effect changing all others. For example, the types of fire apparatus vehicles determine the size needs of a given station. The age and condition of an existing station are factors in considering whether or not the station needs replacing. If it needs replacing then maybe the property can be sold and a replacement facility can be relocated to a more advantageous location. As older stations are replaced with newer, there may be a need for enlarged living quarters and additional overnight bunkroom space.

The consultants have balanced all of these factors in presenting a blueprint for the future in York Area United Fire and Rescue.

York Area United Fire and Rescue deserves credit for seeking a neutral opinion regarding the fire department operations since these are among the most vital and expensive of township services. Lengthy interviews with a wide cross section of stakeholders indicated that there are differing opinions regarding the state of fire protection in York Area United Fire and Rescue. In discussions with governmental leaders, chief officers, line personnel, and ordinary citizens, however, the consultants found appreciation for the fine fire protection provided in York Area United Fire and Rescue.

Officers and members of York Area United Fire and Rescue participated actively in meetings with the consultants, consistently displaying a progressive spirit that can only be beneficial to the residents and corporate citizens of YAUFR.

A consultant is usually no more intelligent than the client being served, but can bring objectivity and non-bias to a jurisdiction that can be quite valuable. It is hoped that this study will provide information that can be used by York Area United Fire and Rescue officials to create a Fire and Rescue service commensurate with increasing demands, and quality service, which residents and businesses deserve in York Area United Fire and Rescue coverage area.

In its unique position as a unified district partially surrounding the city of York, York Area United Fire and Rescue has diverse corporate members and residential neighborhoods in all socio-economic classes.

Over time volunteer firefighters are becoming increasingly scarce. This is true nationally and locally in Pennsylvania. As York Area United Fire and Rescue introduces more on-duty staffing, an ever-larger share of fire department expenditures will go to staffing. Hence it is in the interest of rank-and-file personnel to cooperate in the gaining of new efficiencies so that their value to the community is enhanced and their longevity guaranteed. All who supported this study are credited with providing vision into the future.

Special thanks to all members in York Area United Fire and Rescue for their cooperation and support along the way. Fire Chief Daniel Hoff sets the tone for excellence and leads a dedicated group of firefighters.

On many occasions we had impromptu meetings or phone discussions with departmental members and gained much insight into the heart and spirit of York Area United Fire and Rescue's future at these meetings.

MONTHLY COMMISSIONERS MEETING:



August, 2022 -- From left to right: Sue Sipe; Walter Tilley, III (Filling in for Solicitor Steve Hovis); Charles Wurster; Thomas Gwilt; John Inch; George Dvoryak; David Detwiler (Filling in for Dan Rooney); Deb McCune; Austin Hunt; Chief Dan Hoff.

This study consists of six (6) modules. In these we address key factors deemed important as they relate directly or indirectly to staffing, as indicated. Module 1 is the heart of the study, addressing the staffing issue directly. The other modules support the staffing issue and collectively provide a blueprint for success going forward. It is envisioned that this study will allow the fire department to improve service to all three of its member townships. The six modules are:

**MODULE 1: INTRODUCTION; FIRE DEPARTMENT
STAFFING ANALYSIS**

**MODULE 2: FIRE STATION LOCATIONS, AND
APPARATUS CONFIGURATIONS**

MODULE 3: POPULATION, DEMOGRAPHICS AND ISO RATINGS

**MODULE 4: GENERAL ORDERS, OPERATIONS AND
PERSONNEL DEVELOPMENT**

**MODULE 5: SERVICE DEMAND ANALYSIS, BUDGETS,
FUNDING AND GRANTS**

**MODULE 6: FUTURE OUTLOOK, ORGANIZATIONAL
ENHANCEMENTS**



**Chief Dan Hoff strives for excellence
and rewards it in his personnel**

It is fitting to have a study of the vital services performed by York Area United Fire and Rescue, because the very makeup of the organization will need to adapt to changes and evolve with new developments within each of the three townships being served.

The American Fire Service is experiencing an evaporation of the volunteers who have so nobly served for decades. It is getting more difficult to recruit and retain paid members as well. This is true nationally and true in the York, PA. area. Future staffing in most departments will be toward the introduction or augmentation of full-time paid personnel. The safety of the citizenry and the firefighters themselves should make these expenditures a necessary high priority.

In **Appendix 1-B** we reproduce an article showing how EMT's in Pennsylvania, are having some employment restrictions removed. There will likely be similar initiatives dealing with firefighter/EMT's as well. The key issues faced by York Area United Fire and Rescue and addressed in our report are the same as those faced in many growing communities across the United States.

We follow in **Appendix 1-C** with an article showing how Fairfield, OH, a Kramer client, completed conversion from part-time firefighters to an all-full-time force. This article and others previously in the same publication document that the part-time model is no longer workable there or elsewhere in Butler County, OH. The same is getting to be the case in Pennsylvania and elsewhere in the USA.

While the consultants were conducting their study, active and retired firefighters and the community citizens all displayed a progressive spirit that will ultimately benefit York Area United Fire and Rescue.

All persons who are directly or indirectly involved in providing fire protection displayed a willingness to reach common ground as they work from different perspectives. It is evident that while interested parties may have differing opinions, they all want to see quality fire protection in the YAUFR service area. and are open to improvements.

A comprehensive analysis was performed to determine the capabilities of the five stations as they are currently organized in York Area United Fire and Rescue. The stations were reviewed, individually and collectively, to see how they can deliver necessary fire protection and other emergency services, both now and into the future.

The four-page synopsis below is an "Executive Summary" which gives a brief overview of the findings. The ever-increasing role of EMS in virtually all fire departments, and its application to YAUFR is emphasized.

EXECUTIVE SUMMARY

The consultants reviewed all aspects of York Area United Fire and Rescue in detail. During various multiple-day site visits, the consultants interviewed key personnel from the Townships, including board members, the Fire Department and other agencies that had a role in the operations of the fire department services. Statistical data items were reviewed, collated and reduced to summary tables in the six modules of this report. The Consultants, at all times, strove for detailed factual data and a wide range of viewpoints.

The consultants were impressed with the high degree of organization and professionalism in York Area United Fire and Rescue. Several members of the consulting team monitored field operations whenever possible. In short, they are pleased to report that the department is performing well, but will greatly improve service and safety with additional staffing. On Page 15 of this module we note “Currently York Area United Fire and Rescue can rarely meet OSHA and NFPA recommended numbers of firefighters needed for a working structure fire. Ten years ago, staffing in the Springettsbury-Spring Garden portion went from 32 to 30 persons and has remained stagnant, even as the community and command staff have grown.” We advocate immediate plans for phasing in three-member crews on all fire companies.

Mission:

The report analyzes services provided now and those in an expanded role to address any “gaps” in emergency services. To his credit, Chief Hoff is working with the York County Fire Chiefs to include YAUFR more broadly and more effectively in regional initiatives.

We examined the existing mission of York Area United Fire and Rescue during the analysis and found it is almost a full-service system, delivering all forms of expected emergency response except for medical transport. YAUFR is not meeting national standards for crew sizes per apparatus or for needed personnel on the scene in a timely fashion.

On Page 26 of this module, we note: “As York Area United Fire and Rescue develops its fire protection, it should find a way to add personnel....What can be more expensive is an underfunded fire department which can cause high insurance rates and departing businesses and industry.

New fire stations are being considered in two areas, and we will show how these plans coincide with gaps in timely response. Hopefully, several new fire stations will serve the community and also be a recruiting tool to attract and retain firefighters. All five stations in York Area United Fire and Rescue provide first response for Emergency Medical Service and are able to provide assistance to the third-party ambulance providers.

Community LifeTeam provides quality hospital transports in Springettsbury and Manchester Townships and First Capital EMS does the same in Spring Garden Township. For both, run volume is increasing as is that among the five YAUFR fire stations. YAUFR needs to remain aware that a private corporation has the right to go out of business. One private ambulance provider, “Medcorp” did cease serving communities in six states rather abruptly. Currently Youngstown, OH is facing the possibility of losing its only ambulance service, provided by AMR. We will suggest that York Area United Fire and Rescue have a “Plan B” for emergency ambulance transport service, if ever needed.

Staffing: York Area United Fire and Rescue

The consulting team found varying degrees of energy and enthusiasm among members of all ranks in York Area United Fire and Rescue. Overall, we saw a dedicated group of personnel who have done a nice job adapting to their current environment and circumstances. The many two-person companies do not meet national standards, which call for a minimum of four per apparatus. In a balance between safety and affordability, three per apparatus would make sense, and based on the budget data reviewed, would be achievable. Paid personnel on duty can respond immediately while volunteer personnel must respond from work or home, then board the apparatus and respond.

None of the five YAUFR stations are equipped for a volunteer live-in arrangement. Renovations to create such space would be costly and provide only a temporary fix since volunteers are vanishing. It would stand to reason that as volunteer and part-time personnel numbers continue to decline, there will be a need to pay for more personnel on duty. An increase in staffing could be phased in on an annual basis until three per apparatus are achieved.

Fire Apparatus and Equipment:

The rolling stock, or more commonly called fire apparatus units, now serving York Area United Fire and Rescue, were analyzed and found to be serviceable but, in some cases, aging. The plans for two new engines, new aerial ladder and new heavy rescue unit will sufficiently modernize the fleet. Then the fleet can be tweaked going forward to meet the needs of the district. Specifically, the consultants like the versatility of fire apparatus that combines engine and ladder capabilities into one vehicle. The aerial ladder equipment in YAUFR does include water, pump and hose capabilities but personnel limitations prevent their use for simultaneous engine and ladder capabilities.

Projected space needs for active and reserve equipment of the five stations were analyzed from both architectural and deployment perspectives. Impetus is given to the adapting of new technology in apparatus and to the removal of obsolete apparatus from fleet. From Module 2 “We believe that York Area United Fire and Rescue will improve its balance between personnel and equipment with minimum crew sizes of three (3).”

Territory Growth

York Area United Fire and Rescue is essentially a diversified community including residences and complex commercial establishments, and has the potential for hazardous material incidents from the many rail lines and trucking routes that traverse York County.

The six modules of this report will provide more specific and detailed information for targeted categories and will provide the logic and rationale behind the findings and suggestions. The report does not follow the same order as the executive summary above, since many of the subjects are interrelated, and are often cross-referenced in different modules.

On Page 5 of Module 2 we state: ***We do note an unusually high percentage of overlap calls in the district, 42.38%. This is another reason to try to accelerate additional staffing, a factor that will help units clear a scene more quickly.***

On Page3 of Module 3 we note:” The consultants feel that the emergency services lag behind this growth and additional funding will be necessary for personnel..... The on-duty complement of personnel on duty in the fire department should grow with the population served and the ever-increasing run volume.

We note throughout Module 4 “the ingredients of a fine supervisor, and YAUFR does have quality leadership. We do note, however that a single battalion commander covering the large district is spread thin. Fortunately, the 40-hour day battalion chiefs can fill in at times and help ease the supervisory demands. Far better would be to have two 24-hour battalion chiefs in the field. This would enhance timely response, bolster scene safety and free one of the company officers for more directed functions.at the scene of a fire or serious emergency.”

Fire stations:

The number and distribution of fire stations will be shown to be fairly good, with a need for a replacement station in Spring Garden and an additional new station in Manchester.. This will ensure blanket coverage for all residents. The current distribution is good but not perfect, with a heavier concentration in some parts of YAUFR, and a sparser distribution elsewhere. In **Module 2** of this report we will use computer time and distance provided by Michelle Harrell of the W5 Design Group to suggest better distribution in an affordable manner.

Specifically, we will show how the idea of separating the single station in Manchester Township into two will improve the response time footprint. Replacing fire stations seems to be an expensive proposition. However, the cost of the facility is a mere fraction of the investment in salaries for the personnel needed to staff the station over its lifetime. The importance of a quality location is shown to be an investment far beyond construction costs.

In Module 6 we note: “York Area United Fire and Rescue is facing an immediate need for improvements in staffing and personnel so as to remain viable as a service provider in vital life-saving operations.”



Training:

The report covers the importance of training in the fire department and provides suggestions both for basic firefighting operations, and leadership for officers. We advocate low-cost high-quality programs such as National Fire Academy courses. Additionally, the five stations can take advantage of the York County Fire School which is in the district for basic training.

Quality Training at the York County Fire School

Run Data, Fire Suppression, Risk Reduction and Balance in functions:

The report analyzes run data and response times and provides suggestions for improvement. Where service demand is greatest, response times are within recommended standards, but like most communities, there are a few areas of York Area United Fire and Rescue where average response times and distances are stretched to the limits of acceptability. The report addresses the changing nature of the fire department role in the community, looks at it from a regional perspective and notes the willingness of area fire departments to give and receive mutual aid.

On Page 26 of Module 3 we note: “Personnel are a major factor in the ISO rating and account for 85-90% of total expenditures per year. YAUFR should consider how many personnel the organization can reasonably afford and attempt to place the maximum affordable number on duty, as this is the largest category in the Fire Department Section of ISO. ***Unfortunately, YAUFR scored only 5.04 points out of a possible 15 for staffing. More Personnel are genuinely needed.*** “

In Module 5 we note: If each company had at least three personnel, proximate protection in the first due zone is improved directly and overall protection in YAUFR is improved. Due to the size of the district being covered, pulling extra stations to make these calls can create response times well in excess of 10 minutes, which is often viewed as unacceptable to citizens.

YAUFR can only grow with paid personnel, as this is the trend in Pennsylvania and throughout the United States. This growth should essentially be in fire department staffing commensurate with population growth and run volume in the community. The hard data shows that calls are frequent, cover a variety of incident types, and point to the need for adequate staffing to handle the load. There were 3817 calls in 2020, 4228 in 2021 and over 4300 projected for 2022.

Water Supply:

The consultants analyzed the private York Water company and found that there are adequate water mains with sufficient volume and pressure in virtually all of the populated portions of YAUFR. The five stations can usually provide adequate water from tanks on the pumpers that respond so that sufficient water is available to control a room and contents fire. Fire companies can tap into hydrants with sufficient volume for the larger fires.

Water tankers or “tenders” are available from surrounding departments if the occasional need arises. When new hydrants are installed, they should be specified to have “Storz” fittings on the primary or steamer outlet at little or no marginal cost.



LEFT: Fire Hydrants are well-maintained in YAUFR, and can be counted on for adequate pressure and volume for structure fires.

Topography and Demographics

The study provides an overview of York Area United Fire and Rescue as a community, including topography, demographics, special hazards, target zones, and other unique characteristics that impact upon fire and emergency response. The study analyzes the community in light of new demands placed on the modern fire service, including emergency management and homeland security.

Standards, Comparisons

In analyzing call volume and response times, the report references national standards for performance and staffing recommendations, such as National Fire Protection Association (NFPA) Standards 1710. The report also examines the present and future ability of York Area United Fire and Rescue to comply with the standards.

The report also provides present and future requirements necessary to maintain or improve district ratings by ISO (Insurance Services Office), which impact fire insurance costs, especially for businesses.

Regarding fire suppression activities at an incident, the report shows that York Area United Fire and Rescue can usually meet national standards for response time by the first arriving unit, even though individual fire companies are deficient in staffing.

Future Organizational Combinations:

When communities pay for full-time persons to staff fire stations, or even to guarantee that there will be a response, there is an efficiency gained if the persons can serve as both Firefighters and EMTs or paramedics, and give both fire protection and transporting ambulance service. Although this is not the model in York Area United Fire and Rescue, it has considerable success in other parts of the country. If on-duty persons are cross-trained, they can usually address the first emergency first--be it fire, EMS, rescue, HAZMAT, or other. Salaries of on-duty personnel can be paid for, in large part, with EMS transport fees paid by Medicare and other insurance.

Hence, a combination of Fire Department and EMS Transport operations in York Area United Fire and Rescue under a unified network should not be ruled out, especially in the longer term. We note that the existing third-party ambulance service does provide excellent transport services to York Area United Fire and Rescue community, even though the fire department arrives first in many cases.

Funding, Budgets:

Both the capital and operating budgets in York Area United Fire and Rescue are limited and the fire departments should be prepared to operate without significant increases. Nonetheless, we do recommend ways in which staffing increases can be funded. In light of the fact that paid personnel usually consume a major share of a fire department budget, any personnel additions would have to be off-set with new revenues.

HISTORICAL PERSPECTIVE

York Area United Fire and Rescue has provided fundamental service throughout their history. They continue to protect the three member townships with an economy of scale to gain efficiency across the broader district.

Over time, the fire stations have undergone various transitions and currently are positioned at a crossroad where their future should be plotted. The member departments have enough experience and enthusiasm among fire department members, including both veteran firefighters and younger personnel, to remain successful.

Fire protection, in general, presents an interesting history which is relevant to our study and which can be divided into three eras. The first era ("Era I") dates to the days of Benjamin Franklin, an early leader in the first American Volunteer Fire Service. Early in our history, the US citizenry depended upon fire protection in the form of vehicles such as hand-drawn hose carts and later, horse-drawn steamers brought to the incident location.

In a sense, this first form of fire protection has not changed much. Coast-to-coast across North America, fire departments both large and small back their apparatus into quarters, await the sound of a call, and rush to the scene when an alarm is sounded.

A second era of fire protection ("Era II") is represented by placement of fire suppression systems (sprinklers and alarms) inside of structures themselves. Commercial buildings, factories, hotels, schools, and any other buildings which present a potential for large loss, or which represent a life hazard in terms of occupancy can be protected with automatic sprinkler systems.

These will hold a fire at bay and often will summon fire suppression forces when the water flow in the piping system triggers an automatic alarm. Sprinklers are designed to permit occupant egress and not necessarily complete extinguishment. This type of fire protection is immediately deployed and is capable of operating independently of the external protection provided by the fire department. Fortunately, many high-value occupancies in York Area United Fire and Rescue have internal protection.

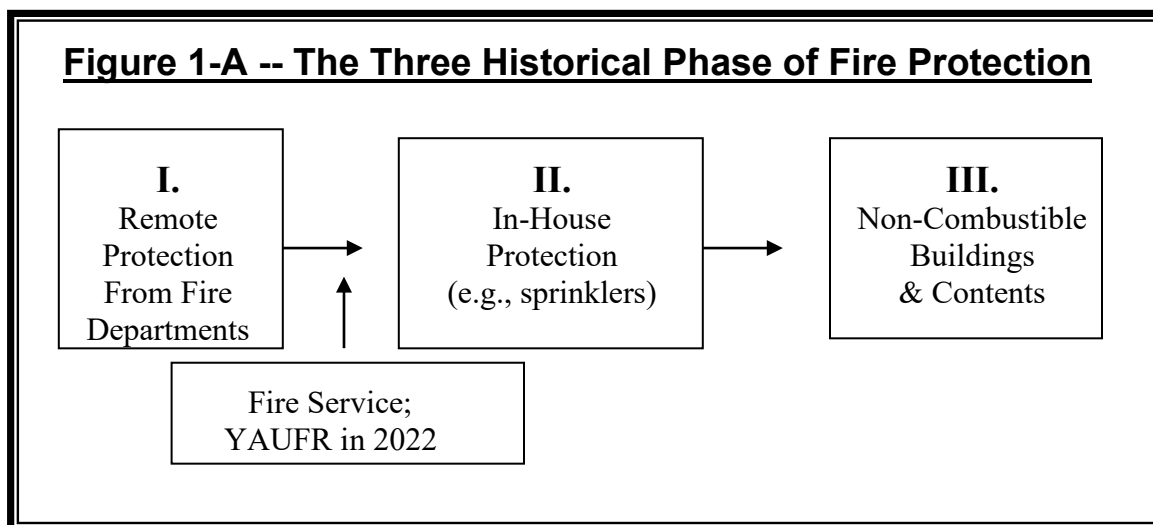
As part of Era II, smoke alarms, which are mandated in many commercial structures, have become popular in homes and have resulted in the early detection of many fires while in the incipient stage. This has allowed the occupants to take immediate action and is responsible for saving untold numbers of people and many homes from the ravages of fire.

The third generation of fire protection will consist of a “non-combustible society”. (“Era III”). Currently, the technology exists to construct fire-resistant buildings, and to outfit these buildings with non-combustible furnishings. Coupled with this is the ability to treat all fibrous products such as clothing, paper, decorations or anything else that could conceivably be brought into a structure with fire retardants. (One such product called “no char ®” has been used to treat all of the barns at the Ohio State Fairgrounds).

While fire suppression rightfully remains the primary mission of most departments most of them, including YAUFR, Fire Departments have taken on EMS, Haz-Mat, Technical Rescue, and other functions to increase the value of their personnel in the community.

In York County the technical rescue and haz-mat functions largely fall on County-wide volunteer teams, and are themselves suffering from the volunteer shortage crisis that is plaguing Pennsylvania and the entire country.

Figure 1-A, below, shows the three-step historical evolution, and the current positioning of the Fire Service, including York Area United Fire and Rescue.



YORK AREA UNITED FIRE AND RESCUE OVERVIEW

Like many developing communities, York Area United Fire and Rescue has grown somewhat irregularly in terms of geographical borders between fire districts. There has also been irregular growth and distribution of various occupancy types. New properties should be inherently safer than older due to better building codes and internal fire prevention systems such as sprinklers. Light-weight building materials and synthetic components tend to off-set these gains, replacing old challenges in firefighting with new.

Although the frequency and severity of structure fires are declining nationally, York Area United Fire and Rescue continues to have structure fires on a regular basis. Also, new demands such as Carbon Monoxide alarms, increasing hazardous material incidents, and vehicular accident assists all require the presence of a well-trained quick responding fire department.

There are two opposing arguments regarding the fire protection and emergency medical protection:

- **Argument No. 1:** Each and every citizen and business occupant within the boundaries of York Area United Fire and Rescue deserve response times for Fire and EMS protection that are within national standard guidelines. Therefore, regardless of how expensive and regardless of the infrequency of runs, enough fire stations will be constructed so that all residents and businesses have speedy response times.
- **Argument No. 2:** An opposing argument is that the location of fire and EMS units must logically include the frequency or the demand for the services from that facility. Locations should then favor frequent response zones.

In portions of York Area United Fire and Rescue some sort of balance must be struck between these two arguments. The consultant has balanced these factors on an approximately 50/50 basis which will be reflected in the recommended station layout. In short, we balance response time with service demand. In many parts of the U.S.A. the Fire and EMS services grew up together and are integrated into a single organization. Integration of Fire services with EMS are becoming an efficient model for some communities. In the York Area United Fire and Rescue District, medical transports remain in the hands of a private service which works well with the fire department.

The proper size of a fire department, including numbers of personnel and numbers of stations is open to subjective interpretation, but there are national standards and comparisons with other counties that will be used to help York Area United Fire and Rescue “right size” its force. Citizens are the ultimate decision-makers as they vote to accept or reject taxes to pay for their own protection. This study provides guidelines for growth, and a blueprint for the future.

Safety of citizens and safety of firefighters is a common theme throughout the six modules of this report. See **Appendix 1-D** about a bill introduced into the Pennsylvania legislature by Republican State Sen. Dan Laughlin. Senate Bill 563 was crafted in response to a fire that killed five children in Erie three years ago.

The rail lines are often used as an argument for ensuring quick response by having fire stations on both sides of the tracks even if they are close together. In some communities this is more emotional than factual. There are many reasons which can delay the response from the next closest unit, including the times they are busy with other calls. ***Ordinarily and probably*** fire units are available and ***ordinarily and probably*** the tracks are clear. For most of our clients, including YAUFR, this is the condition upon which fire department operations must depend, and upon which sound fiscal policy must be established.

WORKFORCE SPREAD THIN

York Area United Fire and Rescue currently is a single department with five stations and four volunteer companies. Although the footprint of the district is covered well, the variety in staffing levels means that the workforce in some areas is spread thin. We are familiar with similar districts which operate with fewer stations but have more on-duty personnel. Currently York Area United Fire and Rescue can rarely meet OSHA and NFPA recommended numbers of firefighters needed for a working structure fire. Ten years ago, staffing in the Springettsbury-Spring Garden portion went from 32 to 30 persons and has remained stagnant, even as the community and command staff have grown.

We will show how some new stations can help meet standards and provide an improved response pattern throughout all of the district. There is usually an angry outcry from the citizenry in any neighborhood if a municipality attempts to close a fire station. (And ironically there is often an outcry if a municipality wants to open a new station in a neighborhood.)

YAUFR board members note that improvement in Fire Protection is consistent with York Area United Fire and Rescue's pledge to its citizens to provide quality services and a safe environment. York Area United Fire and Rescue has long ago crossed the threshold where on-duty fire departments should be in place for the more populated communities.

The population is about 59,000 in the area covered, and all citizens are protected by multiple stations. Service is not equal, however, but this is consistent with fire protection throughout the United States. **Table 1-A** below shows a national breakdown of department types by community size.

Table 1-A
Coverage per population categories
by Career and Volunteer Fire Departments

Population Category	Number of Career Departments	Number of Volunteer Departments
1,000,000	36,100	100
500,000 to 999,000	35,900	4,150
250,000 to 499,999	24,750	2,800
100,000 to 249,999	47,100	3,000
50,000 to 99,999 (York Area United Fire and Rescue = 59,000)	47,050	5,650
25,000 to 49,999	46,650	23,950
10,000 to 24,999	45,200	79,200
5,000 to 9,999	17,000	109,000
2,500 to 4,999	5,500	165,950
under 2,500	8,050	429,550

BALANCING FIRE PROTECTION AND EMERGENCY MEDICAL ASSISTS

All across the country in communities large and small, there is an ever-growing affiliation between Fire and EMS services. Unlike in the York Area United Fire and Rescue, many integrated Fire/EMS Departments also do EMS Transports, under a fire-based system.

York Area United Fire and Rescue does provide immediate first response for EMS, so often personnel need to be shifted between Fire and EMS responsibilities depending upon the priorities of the moment. It is not unusual for York Area United Fire and Rescue to experience simultaneous emergency medical runs. When this occurs, firefighting resources become depleted in direct proportion to the escalating number of emergencies. Likewise, a serious fire would utilize any on-duty personnel and EMS assist runs would have to be handled by mutual aid units.

York Area United Fire and Rescue should ideally be staffed for its busiest days to prevent calls being stacked and prevent residents from facing either delays and/or undersized crews.

Life Team and First Capital are available to handle emergency ambulance service in the townships, via contracts. Both are on solid footing for now, but as private corporations, they have the right to go out of business, or to continue to raise prices since it is a “for profit” business. MEDCORP, a private ambulance company shut down operations suddenly in six states at once, all without warning. Currently Youngstown, OH is facing the possibility of losing its only ambulance service, provided by AMR. See **Appendix 1-E** regarding the recent news about Youngstown near the Pennsylvania border.

Often ambulance assists are provided by York Area United Fire and Rescue departments utilizing engine or ladder companies for response to medical emergencies, causing well-intentioned citizens to question whether this is a waste of resources. It is actually a cost savings measure. York Area United Fire and Rescue departments have adopted a sensible response policy sending adequate size crews to assist in handling medical emergencies, even when some of those crew members arrive on a fire fighting vehicle.

In York Area United Fire and Rescue, 86% of the total budget is personnel-related expenses, including workers’ comp, healthcare, personal protective equipment, uniforms, etc. The other 14% pays for the firefighting equipment, station maintenance, supplies, fuel and so forth. While at first blush it may seem extravagant to have a full-size pumper or aerial ladder truck on an emergency medical call, this must be taken in context. The crews on the fire vehicle remain mobile, versatile, and available for fire calls. The total fuel budget for the entire fire department fleet is a small fraction of yearly expenditures.

Hence if fire vehicles make four times as many emergency-medical runs as fire runs a 400% increase in the return on the huge salary investment is given to the community. The consultants advocate a broader EMS role for any on-duty paid personnel in a fire department.

EVOLVING FIRE DEPARTMENT MISSION

When assessing needs, we must look at what services are essential for fire departments to provide to their customers. The fire service should not only provide an emergency response role to its community, but also provide support functions that make the fire departments a valuable asset to their community's safety.

York Area United Fire and Rescue does not provide the EMS Transport Service but the separate system handles this function very well. While this arrangement might seem attractive to a few fire purists, it makes the departments less active. A number of York Area United Fire and Rescue personnel would welcome the opportunity to obtain more EMS training, even to the paramedic level,

We agree that *First Capital* and *Life Team* provides a workable system and a third-party county-wide unified EMS system is unlikely any time soon. Such systems have been successful elsewhere.

The Specialty Rescue teams in York County are jointly created by several departments, and are all-volunteer based. Although not often needed, they do provide a genuine extension of the life-saving mission of the fire service. York Area United Fire and Rescue does have members who volunteer with these teams when they are off-duty. Most personnel in YAUFR are trained at least to the operational level. There is an obligation for YAUFR personnel to be trained so as to respond effectively when these technical rescue calls occur in the YAUFR first-due area.

TECHNICAL RESCUE DISCIPLINES:

- Water Rescue
- Rope Rescue (High-angle and low-angle)
- Trench Rescue
- Confined Space
- Haz-Mat

VARIABLE STAFFING BY TIME OF DAY

Once a fire station is in place, the personnel who staff it become a much greater investment than the building itself. When volunteer fire departments add their first paid staff it is usually to staff weekday daytime hours, when volunteers are scarce. Where staffing is more affordable, one example of a creative venture that could be planned for is the concept of "Variable Staffing, based on Time of Day."

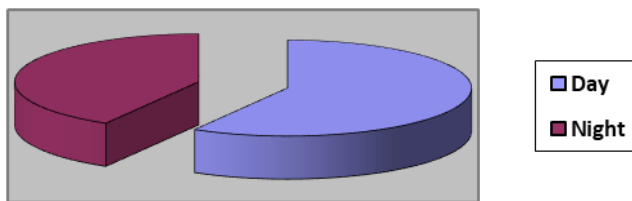
This methodology allows a well-staffed fire department to afford more staffing by putting additional people on duty when demand is greatest, and fewer when demand is slow. This could be considered at some point in the future for YAUFR, but for now, the priority should be to get three-person minimum crews for 24-coverage on all YAUFR companies. Someday a fourth person could possibly be added for peak demand times on busiest units.

With York Area United Fire and Rescue, if it ever wants to consider variable staffing using part-time personnel, it would have to be negotiated through the collective bargaining process. There are restrictions regarding the number of allowable part-time personnel

See **Appendix 1-F**, showing how Naperville, Illinois just enacted variable staffing to put a “power shift” in place to handle simultaneous runs when they are most likely to occur. Certainly, multiple simultaneous calls place a demand on the on-duty forces and this “power shifting” may prove to be an effective way to utilize part-time personnel, if any can be found.

All across York Area United Fire and Rescue, responses escalate as an active populace awakes and goes about the busy workday world and a significant workforce takes on the day. Calls for service are reduced as residents settle in for the evening and then retire for the night.

The Kramer group tracked responses for several clients, breaking them down into a 10-hour day (0800 to 1800 hrs. or 8 A.M. to 6 P.M.) and a 14-hour night shift (1800 Hours to 0800 Hours). The results for a typical department are shown graphically in the pie chart which follows. The 10-hour day shift is much busier even though it is 4 hours shorter.



In the Naperville example given in **Appendix 1-F**, Fire Chief Mark Puknaitis offers his full-time personnel the opportunity to work from 8:30 A.M. to 5 P.M. and is rather unequivocal in stating that the overall service to the citizens is improved by the availability of an extra Medic Unit when most needed. In YAUFR this would require labor negotiations.

There is an administrative challenge in managing two schedules but nothing that couldn't be handled. In Naperville where all personnel are full-time, the power-shift is offered on a voluntary basis. In York Area United Fire and Rescue a more likely scenario would be to offer this to part-timers who might indeed find an eight-hour or ten-hour shift desirable. We note, however, difficulties with finding part-time help.

As the YAUFR Board and Fire Chief deliberate on proper fire and EMS protection levels, they often want to find some *measurable* quantitative standard that can be applied in their communities. An example which could be applied in York Area United Fire and Rescue would be: *“We want 90% of all residences and business establishment inside the territories of York Area United Fire and Rescue to be within 6 minutes of a responding engine company with a cross-trained fire/EMS crew”*

Utilizing time distance analysis and geographic projections York Area United Fire and Rescue could determine where the fire stations would have to be located to produce such a result. These station locations could be coupled with desired strength levels on units to provide the “right-size” Department. Even in this case, however, the standard breaks down as soon as one company is already busy on one emergency when a second emergency occurs in the same area necessitating a lengthier response from another unit. Hence, the decision regarding quantity of fire companies and emergency medical service units remains fairly subjective despite the best efforts at quantifying it.

MUTUAL AND AUTOMATIC AID

Officers and personnel on all three shifts, from all five stations met with the consultants on three consecutive days, September 11, 12 and 13, 2022. There was unanimous agreement, to a person, that more staffing should be a priority in YAUFR. Nonetheless they expressed respect for adjacent units, and applauded the leadership role taken on by Chief Hoff as they have worked to improve mutual assistance agreements and interjurisdictional response with the City of York.

Even though in York Area United Fire and Rescue staffing is not plentiful, the fire stations in YAUFR and throughout the county have adequate quality apparatus units and overall good equipment.

It makes sense to have a partnership where each can assist the other with its unique strength. In parts of the country there is a reluctance for some fire departments to assist others to avoid what is sometimes called the "Robin Hood Syndrome" whereby the haves subsidize the have-nots. This has not been an issue in York Area United Fire and Rescue, since there is a broader sense of community and a willingness to assist less fortunate neighbors. There will inevitably come a time, when some vital piece of equipment or resource is needed by one party or the other.

The City of York is a reliable mutual-aid partner and has just improved staffing to three per apparatus through collective bargaining. Here is Station 9 from the City of York, well-positioned for back-up to YAUFR. A listing with photos of York city stations is found in **Appendix 1-G**.



York Fire Station No.9

Station 9 – Lincoln
800 Roosevelt Avenue.
Constructed in 1946.

NATIONAL STANDARDS

For fire operations sufficient personnel must be available in order to provide adequate fire protection to the community. As is the case in most areas, York Area United Fire and Rescue has difficulty in its ability to literally comply with two standards which, although not mandatory, are considered an "industry standard." These standards are often used to determine the number of firefighters required at emergency scenes. In most instances more than one firefighting unit must arrive before YAUFR is compliant:

- The National Fire Protection Association (NFPA) Standard 1500 recommends that a minimum of four persons be available on the fire scene before structural firefighting commences.
- The Federal Occupational Safety and Health Administration (OSHA) has determined that fire structures meet the definition of an IDLH (Immediately Dangerous to Life and Health) environment and therefore are subject to the "two in-two-out" rule, meaning there must be a minimum two-person rescue team besides the crews committed to structural firefighting. The International Association of Fire Chiefs (IAFC) have endorsed this standard.

When personnel are thin, this ability to adequately provide initial fire protection is compromised. We noted earlier a need to bolster rosters and minimize times when forces are stretched thin. Adding an additional member to all 2-person apparatus would be a positive step towards adequate staffing.

In May 2002, the NFPA adopted two new related standards, #1710 and #1720. The former relates to larger full-time fire departments such as York Area United Fire and Rescue, and the latter refers to primarily volunteer departments. Among other requirements, these standards list "four" (4) persons as the minimum crew size on apparatus.

See Figures 1-B and 1-C on the next page for a capsule summary of NFPA 1710 and 1720. We note that it is the more rigorous standard, 1710, that applies to YAUFR and not 1720. Nonetheless, it is good to see how much quicker units are expected, and how staffing is stronger with 1710. This lends appreciation for the excellent service already being delivered to residents and corporate entities within the YAUFR District.

Figure 1-B -- NFPA Standard 1710 Highlights*

- ✓ **Four (4) personnel per fire apparatus**
- ✓ **First fire unit arrives within 4 minutes 90% of time and the remainder of the assignment within 8 minutes 90% of the time**
- ✓ **Fifteen to seventeen personnel on first alarm within eight minutes**
- ✓ **Quality and safety parameters**

***In the 2010 Version of 1710 and 1720, hard numbers were replaced with tasks required. Based on the tasks required, the numbers above are still representative of the needed workforce at an incident.**

Figure 1-C -- NFPA Standard 1720 Highlights

- ✓ **Minimum six (6) personnel on the fire scene**
- ✓ **First fire unit arrives within 14 minutes 80% of time**
- ✓ **Fire department should determine the required number of personnel on scene to operate safely and efficiently**
- ✓ **The fire department should have a formal training program that trains personnel to deliver services provided by the fire department**
- ✓ **Minimum 2-person Rapid Intervention Team**

The International Association of Firefighters (IAFF) and the International Association of Fire Chiefs (IAFC) have collaborated to produce a *NFPA 1710 and 1720 Implementation Guide*. In this *Guide*, the presidents of the two sponsoring organizations signed an introductory letter, which describes the likely course ahead here: *"For many departments, the road to compliance will be a long one."*

Additional perspectives on ideal staffing can be found in the Fire Protection handbook published by the National Fire Protection Association (NFPA). **Figures 1-D and 1-E** on the next page summarize key safety standards.

Additional on-duty staffing will aid greatly in the ability of York Area United Fire and Rescue to meet national standards for fire operations. The numbers required by standard tend to get stricter over time. We next provide a listing of personnel recommended for a simple house fire, the most likely structure fire to occur. For a house fire, the total number was 14 just five years ago and has grown to 18 today. In York Area United Fire and Rescue, as in most communities the department is unable to comply totally with standards. See **Figure 1-F** two pages hence.

Figure 1-D -- “Ideal Staffing per NFPA”

The NFPA Fire Protection Handbook 20th Ed. Table 12.1.1 states that a single-family residential structure fire requires not less than fourteen (14) firefighters, one chief officer, a safety officer, and a rapid intervention team with two engines and one ladder, and other specialized apparatus. A commercial complex requires not less than five (24) firefighters, two chief officers, one or more safety officers, and rapid intervention team(s) with four engines and two ladders on the first alarm. In order to comply, York Area United Fire and Rescue has surrounding agencies to provide sufficient resources.¹ It must be reciprocal to be effective.

We note that few departments of any size are compliant with all standards. Below are the standards relative to staffing requirements.

FIGURE 1-E STAFFING-RELATED STANDARDS	
(NFPA) Standard 1500	Minimum four persons be available on the fire scene before firefighting can begin
(OSHA)	Two-person rescue team besides the crews committed to structural firefighting.
NFPA Standard 1710	Four (4) personnel per fire apparatus First fire unit arrives within 4 minutes 90% of time and the remainder of the assignment within 8 minutes 90% of the time. Fifteen to seventeen personnel on first alarm within eight minutes Quality and safety parameters
NFPA Standard 1720	Minimum six personnel on fire scene First fire unit arrives within 14 minutes 80% of time Formal training program
Single-family residential structure fire	Not less than fifteen (15) firefighters, one chief officer, a safety officer, and a rapid intervention team with two engines and one ladder
Commercial complex	Not less than five (24) firefighters, two chief officers, one or more safety officers, and rapid intervention team(s) with four engines and two ladders on the first alarm.

When personnel are thin, as is the case when there are overlapping calls, York Area United Fire and Rescue lacks the ability to adequately provide adequate initial fire protection. For fire operations sufficient personnel must be available in order to provide adequate fire protection to the community.

¹ National Fire Protection Association (2008) Fire Protection Handbook. Volume II, section 12, chapter 1, page 13. Table 12.1.1. National Fire Protection Association: Quincy, MA

Figure 1-F
SINGLE FAMILY RESIDENTIAL HOUSE FIRE

POSITION	ASSIGNMENT	STAFFING 2004	STAFFING 2022
Incident Commander	Coordinates all on scene operations (Company Officers run command until ranking officer arrives)	1	1
Safety Officer	Monitor and corrects fireground safety issues		1
Pump Operator	Maintains water flow to attack crews and radio communications	1	1
Ventilation	Removes heat, toxic gases and smoke improving victim survivability and safer environment for fire crews.	2	2
Ladder Operator	Operates ladder truck aerial device		1
Primary Search	Rapid discovery and removal from toxic environment ensures highest possible chance for victim survivability without brain damage.	2	2
Fire Attack	Two hand lines @ 150 gpm each for adequate water flow (125 GPM in 2004)	4	4
Fire Attack Support	Connects hydrants, manages supply and hand lines		2
EMS	Renders immediate medical care to rescued victims or injured firefighters	2	2
SUB TOTAL		12	16
Rapid Intervention Team	(Rescues trapped/injured/lost firefighters)	2	2
TOTAL		14	18

NOTE: It takes five engines and two ladder trucks for YAUFR and/or mutual aid units to assemble these crew sizes

ENSURING ADEQUATE RESOURCES

The elected officials on the Board for York Area United Fire and Rescue have been supportive of the Fire Department and have been willing to fund advancements to date. We anticipate continued support for additional resources commensurate with growth. Gradual increases or decreases in budgets over time seem to have been orderly and methodical, and are typically correlated with the economy and tax revenues as they rise or decline.

One York area resident speaking with the consultants one afternoon discussed taxation, and expressed a view likely held by the majority of the residents: “We don’t mind being taxed if it is fair to all and equitably distributed.”

Although there is a universal anti-tax dissatisfaction, many residents are willing to pay for quality emergency service improvements. Adequate funding will likely be available to provide additional services. Caution, however, is in order.

At times, community leaders will say, “Tell us what we should have for fire and rescue protection, and we will find a way to pay for it.” Unfortunately, there is no easy answer, since it is virtually impossible to separate what a community *should have* and what is affordable. It is not feasible to separate a decision regarding the level of fire and rescue protection from financial concerns, since the two are very much interrelated. Once a fundamental level of Fire protection is in place, (as is the case in York Area United Fire and Rescue) each additional fire company is of marginally less value than the previously added resource.

A key determinant of the amount of protection (Stations, apparatus and personnel) is the “affordability” factor. One example of the interrelationship between budgeting and fire protection can be found in Norwood, Ohio. When a Chevrolet Camaro Plant closed in the City of Norwood, it suddenly had one fire station, when once it had three. The citizens of Norwood saw an across-the-board reduction in all governmental services. At some point, fiscal responsibility imposes a level of Fire protection that should not be exceeded.

With fire protection, it is very easy to make decisions based on emotional arguments such as: “if the fire station saves one life, it will be worth it.” It may very well not be worth it if neglected streets (poor signaling, rough pavement, etc.) cause two or more traffic fatalities, or if an under-funded police agency leads to more deaths from violent crime. All governmental services must be kept in a balance by the three participating townships

Consider a community that has to choose between the purchase of a new salt truck or a new fire truck. The fire truck might indeed save one life but if a lack of treated streets leads to a multiple fatality accident, there is a net loss of life due to the purchase of the fire truck.

Even if one could guarantee that one *could* save a life by adding a fire unit, most members of society would still want to weight this option against a “quality of life” factor. People *want* aesthetic beauty (parks, for example), and conveniences such as transportation. People are, as a society, willing to incur some risks to have this quality of life. Limited tax dollars need to be balanced among safety services and other Community needs, especially in light of the fact that some public funds might be expended better elsewhere.

If York County were to introduce a plan that would eliminate 100% of all highway fatalities in the area, it would certainly be more than “saving one life”. Therefore, should it be adopted? The solution would be to have no vehicle travel more than 10 miles per hour on any road within its boundaries. Residents would likely find this unacceptable. Society members are generally daring and are willing to incur safety risks including occasional accidental fatalities in exchange for mobility in life and aesthetic beauty in our surroundings. Accordingly, citizens are usually willing to spend only limited dollars for fire and rescue protection.

If we were to put a fire station on every major road in the York area, would it save one life? No doubt it would, but the price would be unpaved roads, a complete lack of any other basic services, and a populace taxed into poverty. Ultimately, there comes a decision point where “*the right level of fire protection*” must logically include the cost, and the effect on other government services. There is no equation that will dictate the proper number of fire units and fire stations, unless leaders are also willing to factor in the monetary cost of providing these.

Since the quantity and quality of fire protection remains a subjective rather than an objective study, how does a jurisdiction determine what is best for its own citizens? That is, how much should be spent to maintain a balance between adequate fire protection, and adequate attention to other services provided by the community? One technique is to compare York Area United Fire and Rescue with similar communities nationwide, as we will demonstrate under National Staffing Trends, coming next in this study.

NATIONAL STAFFING TRENDS

As York Area United Fire and Rescue develops its fire protection, it should find a way to add personnel. Since staffing is by far the largest item in a paid fire department budget, personnel costs need to be calculated, both for the present, and projected into the future. Allowances must be made for inevitable pay raises and employment costs. Since full-time personnel require salaries, employer pension contributions and benefits and health care, their cost to the community is high.

What can be more expensive is an underfunded fire department which can cause high insurance rates and departing businesses and industry.

Occasionally, Fire Engineering, one of the most respected periodicals in the firefighting profession, assembles valuable statistical data on fire departments. Key excerpts from the most recent edition of this publication, entitled "**Fire Engineering – Directory of Municipal Fire Departments**," shows such statistics as trends in fire departments, members per 1000 population, full-time paid personnel, on-duty, minimum staffing requirements and minimum crew per apparatus.



According to the *Fire Engineering* Report, one statistic that has remained rather constant is the average number of fire department members per 1000 population in those areas protected by full-time fire departments. According to the *Fire Engineering* Report, the number of firefighters per 1000 has consistently remained at about 1.6 since 1984.

Using 59,000 as the base population for York Area United Fire and Rescue, the number of full-time firefighters would be 94.4 (**$1.6 \times 59,000/1000$**) This would provide an approximation of an on-duty force of about 23.6 (Calculated as $94.4/4$).

Nationally most departments today provide both fire protection and transporting emergency medical services, so this average would include personnel for both of these functions. YAUFR should have at least 85% of the above, without ambulance transport duties. This would equate to a complement of about 20 per day.

DEALING WITH A PANDEMIC

In recent consulting projects, we found that our clients had a pervasive background issue that hindered progress – COVID-19. Now, members in the Fire and Emergency Medical services are facing another menacing problem, Monkeypox.

Emergency responders are bravely carrying out their missions and serving the citizens during a difficult time when a pandemic has paralyzed our communities. There is a new challenge in disinfecting apparatus and equipment, but some Pennsylvania Departments are finding creative ways to do this efficiently. See one

Information regarding Monkeypox and the COVID-19 virus has been graciously shared by first responders through their professional associations and trade journals.

One Client sent us the following list of issues:

Unique problems posed by Monkeypox and COVID-19

- Due to limited understaffing, if one station goes out due to COVID-19 we lose half our paid staff.
- Fires are increasing throughout our county, both intentional and accidental, due to stay home orders.
- Medical and health problems are increasing with the relatively unknown aspects of monkeypox
- Our Dispatched units aren't being made aware of all positive COVID-19 or Monkeypox patients, which is endangering our first responders.
- Hard to come by PPE for first responders.

We endeavor throughout these six modules to include the latest research. These pandemics mean that YAUFR and all fire departments are having to adjust to a new normal, and in many cases having to improvise deployment, methodology, and in other ways radically change common practices since the year 2020.

Pandemics tend to cause an overall increase in fire department job complexity, additional duties, and usually an increase in medical call volume. These are just a few additional issues requiring adequate personnel.

MODULE 1 CONCLUSION

In this first of six modules the consultants painted an overview of fire protection in York Area United Fire and Rescue, projecting a theme of needed personnel.

York Area United Fire and Rescue is in a position to move boldly forward with implementation of new plans and objectives championed by many board members, and Fire Chief Dan Hoff. Items of importance for future planning are elaborated upon in this and future modules. ***The National Standards, if fully complied with, would create an unaffordable staffing pattern for YAUFR. A goal of three persons per unit, however is reasonable and achievable.***

As YAUFR continues to modernize its fire department, it should work to add personnel to ensure that there will be adequate staffing to keep up with the demands for emergency service. Since staffing is by far the largest budget item for full-time staffed departments, personnel costs need to be calculated, both for the present, and projected into the future. Increasing staffing annually until a desired goal is reached in five years would greatly enhance the effectiveness and safety of YAUFR.

Future modules will outline strategic plans that York Area United Fire and Rescue can follow as a “roadmap” for continuing to ensure their success into the future. The York area is a beautiful area, and careful planning is essential to maintaining the existing quality of life in the community. The Fire Departments are an integral part of a community’s culture.

York Area United Fire and Rescue can be proud of the fine fire and rescue personnel which have served the three townships for years, and should be thankful for the volunteer firefighters who preceded the full-timers now serving.

The Board members and Chief all deserve credit for seeking neutral outside input that will strengthen their ability to provide service in the future.

The consulting team agrees that York Area United Fire and Rescue is at an opportune time in its history when it will profit by planning and preparing for a different future. Limited budgets create new financial challenges at a time when increasing calls for service face the Emergency Services. York Area United Fire and Rescue will feel the effects of a more dangerous world, either directly or indirectly.

The firm of **Kramer and Associates** has been asked to review fire protection in communities of many different sizes and in many diverse geographical locations. It can be said that the fire and rescue protection in York Area United Fire and Rescue ranks highly and has great potential yet to be realized.



APPENDIX 1-A

Consultant Resumes



Resume -- WILLIAM M. KRAMER

9 Heritage Rd.
Cincinnati, OH 45241

Phone: (513) 678-2279
wmkramer@zoomtown.com

Daughters Cari and Jennifer
Pet Dogs Scooby and Sandy



Educational Background

B.S.I.M.	Industrial Management	University of Cincinnati, 1968
B.B.A.	Management	University of Cincinnati, 1968
M.B.A.	Personnel Administration	Xavier University, 1970
M.A.I.R.	Industrial Relations	University of Cincinnati, 1977
Ph.D.	Major: Management	University of Cincinnati, 1977
	Minors: Law & Indust.. Rel.	(Ph.D. GPA: 3.78)

Fire Service Background

Volunteer Fire Service: Volunteer Firefighter 1962 - 1969, Green Township; Vice President of FF Association 1967-1969.

Career Fire Service: Cincinnati Fire Division: Firefighter – 1973 to 1981; Lieutenant – 1981 to 1983; Captain – 1983 to 1987; District Chief – 1987 to 1993; 1994; Assistant Fire Chief - Feb. 1993; Acting Fire Chief April, 1993 (Chose Directorship at University)

Fire Chief: Indianapolis International Airport, April 1995 - 1998.

Fire Chief: Deerfield Township Fire Rescue Department, Warren County, OH October 1998 – January, 2006

Academic Background:

1971 - 1981	University of Cincinnati - Lecturer on Management
1975 - 1981	Xavier University - Assistant Professor of Management
1978 - Present	National Fire Academy: Open Learning Fire Service Program- Editor and Author
1981 - 1982	University of Minnesota - Adjunct Instructor - Open Learning Fire Service Program
1982 - 2008	University of Cincinnati - Associate Professor of Fire Science
2008 - 2009	University of Cincinnati - Professor of Fire Science
1982-1995, 2003-2009	University of Cincinnati Department Head, Director of Fire Science

Publications - Primary Author or Editor:

"A Managerial Analysis of Municipal Fire Departments
-- Ph.D. Dissertation – (Cincinnati: U. C. Press, 1977)
(N.Y. June 1977)

Article: "Management by Objectives in the Fire Service":

International Fire Chief, (Washington D.C., May, 1979)

Book: **Disaster & Fire Defense Planning**

Course Guide (Washington D.C.; Open Learning Fire Service Program, 1992)

Book: **Political and Legal Foundations of the Fire Threat**

Service, (Lexington, MA: Ginn Custom Publishing, 1992)

Book: **Advanced Fire Administration**
(Lexington, MA: Ginn Custom Publishing, 1992)

Book: **Fire Officer's Guide to Disaster Control**
(Fire Engineering, 1992)

Book: **Disaster Planning and Control** (Pennwell, 2009)

Co-Author

Article: "MBO Pays Dividends in Three Areas in Cincinnati": **Fire Engineering**

Book: **Managing Fire Services**
(Washington D.C.: ICMA, 1979 and 1999)

Book: **Personnel Management for the Fire Service**; (Washington D.C. Open Learning Fire Service Program, 1979)

Book: **Community and the Fire**
(Lexington, MA: Ginn Custom Publishing,

Book: **Fire Chief's Handbook**
Fire Engineering Books & Videos,
Saddle Brook, NJ, 1997

Article: **Fire Service Staffing**
Ohio Township Magazine, 2003

Educational Innovation:

1997- Present: Served as Educational Commentator for two video production companies, Developed program offering collegiate credit for evaluation of contemporary issues in the Fire Service. **American Heat**, **Working Fire**. 1988-2005

Military Background:

U. S. Marine Corps - Captain - Platoon Commander; Active Duty: 1965 - 66; 1969 - 70; Active Reserves: 1966 - 69; 1970 - 1974.

Hall of Fame: 2006: Highest State of Ohio Fire Service Award and Induction into Ohio Fire Service Hall Of Fame

Randall W. Hanifen, Ph.D.

6538 Red Pine Dr. Liberty Twp. Ohio 45044
513-266-6124 Randall@Hanifen.org

Objective

To provide clients personalized solutions to their emergency service needs

Certifications

- Fire Officer Designee, Firefighter, Paramedic, Instructor
- Institute of Fire Engineers-Fellow
- NIMS 100, 200, 300, 400, 700, 800b, EMI PDS-EM

Experience

West Chester Fire-Rescue
2/1998-Present

Assistant Fire Chief

- Administration Chief for 5-station career department
- Manage strategic planning, succession planning and other analytical projects

American Public University
System 1/2016-Present

Associate Professor

- Develop and teach graduate level courses in Emergency and Disaster Management Program. Supervise graduate research.

University of Cincinnati
1/2007-Present

Adjunct Professor

- Develop and teach fire science curriculum. Current classes include: Fire and Emergency Services Administration, Disaster Planning and Control, Managerial Issues in Hazardous Materials, and Fire Investigation

Butler County Technical
Rescue Team
5/2005-Present

Executive Chairman/Rescue Team Manager

- Act as agency chairperson. Oversee annual budget, strategic planning, hiring and promotion, as well as interagency interaction for an all volunteer agency
- Butler County ESF9 Coordinator and EOC Representative

Hanifen and Associates
9/2009-Present

Owner/Consultant/Planner

- Conduct strategic planning projects utilizing analytics with small companies
- Create disaster and emergency programs through a collaborative effort.
- Create Labor-Management solutions through collaborative studies

Education

Northcentral University

Ph.D. Homeland Security

- Homeland Security Policy and Analysis
- GPA 3.90

Grand Canyon University

M.S. Executive Fire Service Leadership

- GPA 3.87
- Degree based on National Fire Academy EFO Program

Volunteer Work

Ohio Task Force 1
FEMA US&R
5/2002-Present
Butler County IMAT Team

Task Force Leader

- Assist with Strategic Planning and US&R Management Subgroup
- Lead 80-member team during federally declared disasters

Planning Section Chief

- Lead IMAT through planning cycle
- Command groups and divisions under the planning section

Company Officer Section

- Primary author/editor of IAFC Succession Planning Document
- Vice-Chair of Section

Program (FRI) Planning Committee

- Responsible for selection of courses and updates to the Company/Chief Officer Leadership Program

Safety, Health, and Survival Liaison-SHS Section

Fire Officer Peer-Reviewer

- Review candidates for Fire Officer Designation

Fire Officer Professional Standards (NFPA 1021)

- Assigned to Technical Committee as Subject Matter Expert

Associate Author

- Penwell Publications.

Author

- Regional Collaboration; Higher Education in the Fire Service

International
Association of
Fire Chiefs

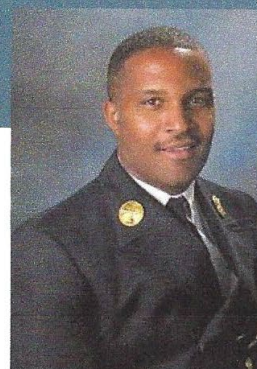
Center for
Public Safety
Excellence
National Fire Protection
Assoc.

Publications

Disaster Planning
and Control (2009)
IAFC On-Scene
(2010-Present)

Roy E. Winston

3826 Golden Way, Kissimmee, Fl. 34746
winstoro@icloud.com
(513) 236-6646



Professional Experience

Retired Fire Chief with the City of Cincinnati with 33 years of experience developing innovative organizational strategies, implementing new technologies, and managing mission critical systems. Recognized for positive community relations, project management skills and regional and local collaboration.

2017-2021

Fire Chief

Cincinnati Fire Department – Cincinnati, Ohio

2011-2017

Assistant Fire Chief – Human Resources & Operations

Cincinnati Fire Department – Cincinnati, Ohio

Managed 905 uniformed and non-uniformed employees within the Department. Responsible for Fire Training Bureau. Graduated 3 consecutive recruit classes, adding a total of 120 new firefighters to department. Personnel safety matters, transfers, discipline, recruiting, and both recruit and in service training. Provide executive leadership and oversee the daily operations and management of uniformed suppression personnel.

1999-2011

District Fire Chief – District One

Cincinnati Fire Department – Cincinnati, Ohio

Oversaw operations of the fire district in the cities central district, responsible for sixty firefighters on a daily basis.

District Fire Chief – Fire Communications

Cincinnati Fire Department – Cincinnati, Ohio

Led the Cincinnati Fire Department's (CFD) consolidation of 911 Dispatch with the Cincinnati Police Department. Implemented a Mobile data computer system. Managed operation for a new computer aided dispatch. Upgraded the medical dispatch system, advancing to a software based program. Collaborated with the Environmental Protection Agency to coordinate wireless EMS notebooks between agencies. Led a \$29M project to update Fire Communications to a 800 Mhz system. Implemented the Communications Center for the CFD's Dispatch Center and Emergency Operations Center (EOC).

1996-1999

Fire Captain

Cincinnati Fire Department – Cincinnati, Ohio

House Captain and Ladder Company Commander. Responsible for a firehouse, fire apparatus and fourteen firefighters.

1992-1996

Fire Lieutenant/EMT

Cincinnati Fire Department – Cincinnati, Ohio

Responsible for one unit of a fire company.

1988-1992

Firefighter/EMT

Cincinnati Fire Department – Cincinnati, Ohio

Leadership Activities and Awards

2012 – present

International Fire Chiefs Association Member

Ohio Fire Chief's Association Member

Hamilton County Fire Chiefs Trustee

Advisory Board Member Western Hills Law & Public Safety Program

Cincinnati Fire Museum Board Member

2006

Cincinnati Rotary Club – awarded one of three distinguished awards for leadership

Education

2013 – 2015

Columbia Southern University - Bachelors Degree in Human Resources Management

2006– 2008

Kaplan University – Associate Degree in Business Administration

Micki Harrell RN, MSN

- Time/Distance analysis for emergency response

- Dimensional mapping and fire station location analysis
- Equipment planning
- Operational planning
- Transition/Move planning

People

Micki's Bio

Prior to her design, equipment planning, and operational planning experience, Micki spent twenty years as a critical care nurse, head nurse and hospital administrator. No matter her role on a specific design project Micki blends concepts of efficiency and effectiveness; quality and value; current trends and organizational culture; and develops practical and implementable solutions for her clients.

Micki is also a trained group facilitator. She understands the time constraints of healthcare clients and users as they try to manage their everyday responsibilities while participating in facility projects. She keeps the team focused on the tasks at hand, making sure that the client's time is spent effectively. These skills as well as her strong communication skills, her organizational skills and her eye for detail enable Micki to build consensus within the various project groups.

EDUCATION

Master of Science in Nursing, University of Cincinnati
Bachelor of Science in Nursing, University of the State of New York
Diploma, Good Samaritan School of Nursing

CERTIFICATIONS

- Critical Care Nurse Certification, American Association of Critical Care Nurses
- Nursing Administration Certification, American Nurses Association

SKILL SET

• Programming • Medical planning	• Operational planning • Equipment planning	• Transition/Move planning • Trained group facilitator
---	--	---

SELECT PROJECTS

Specialty Care Unit - Richard L. Roudebush VAMC, Indianapolis, Indiana

- Medical equipment planning for this 26,000 square foot space. This new space included 15 exam rooms (all capable of TeleHealth), 2 private infusion rooms, 14 infusion bays, a pharmacy chemo prep area, and a multitude of support spaces.

Westfield Outpatient Care Center - Riverview Health, Westfield, Indiana

- Planning and medical equipment planning for a new Outpatient Care Center. This new 110,000 square foot, \$26 million facility includes Urgent Care, Radiology, Lab, Registration, Ambulatory Surgery, 23 hour beds, PT and medical office suites.

Health Innovation Center - Northern Kentucky University, Highland Heights, Kentucky

The visionary center will bring together experts from each of NKU's 6 colleges to create transdisciplinary teams to study health care from new perspectives. The approach will combine data analytics, psychology, preventative care, and holistic approaches to help address population health challenges such as addiction and chronic illness. Micki was hired to review multiple teaching lab spaces requiring fine tuning of the equipment previously planned, in order to be fully operational on the 1st day of class.

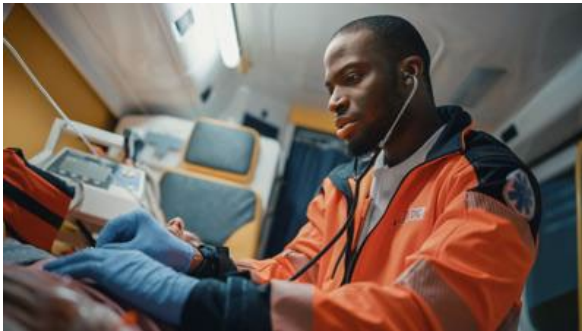
APPENDIX 1-B

Pennsylvania joins EMS Grouping; lessening Interstate Barriers



Pennsylvania poised to join EMS grouping, lessening barriers for workers

- By Anthony Hennen | The Center Square
- Jun 29, 2022



Shutterstock

(The Center Square) – Pending the signature of Gov. Tom Wolf, Pennsylvania will be the 22nd state to join an EMS compact making it easier for emergency workers to practice across state lines.

The agreement standardizes privilege to practice rules, validates licenses in a national registry, and grants emergency medical workers the ability to work across state lines on a short-term basis. By aligning rules and standards, Pennsylvania poses fewer barriers to out-of-state workers who may relocate to the commonwealth.

The legislation, **Senate Bill 861**, has been signed by both chambers of the General Assembly and was presented to Wolf on Wednesday.

“Simply put, the EMS Compact facilitates the day-to-day movement of EMS personnel across state boundaries in the performance of their duties as assigned by an appropriate authority without jeopardizing public safety,” Sen. Pat Stefano, R-Connellsville, wrote in a **legislative memo**.

Attracting more EMS workers is an explicit goal of the legislation.

“Pennsylvania is having an exceedingly difficult time in recruiting and retaining licensed EMS providers,” Stefano noted. “The EMS Compact would help address this issue by making Pennsylvania more attractive to out-of-state EMS personnel – help with staffing during emergencies – as well as making it easier for Pennsylvania residents to practice out-of-state.”

The compact also makes it easier to verify whether a worker has a suspended license if they come from a compact state.

Of states bordering Pennsylvania, only West Virginia and Delaware have joined the compact; most of the partner states are in the Midwest, Mountain West, and the South. **South Dakota** and **Louisiana** were the latest states to expand it, joining during the pandemic.

Emergency medical services across the commonwealth have had issues with staffing and funding, as The Center Square **previously reported**. In February, Wolf **approved** \$25 million for EMS support, and the General Assembly has also proposed bills to give ambulance crews **more flexibility** in staffing requirements and empower small townships to **levy higher ambulance taxes**. More EMS companies can also participate in the Emergency Services Loan Assistance Program, previously limited to volunteer companies.

Industry advocates have pushed for higher reimbursement rates from Medicaid to help cover the costs of services. A 2018 **legislative report** warned that “a public safety crisis is unfolding” as the commonwealth has lost EMS volunteers to help operate emergency response.

APPENDIX 1-C

Fairfield, OH Fire Department Expedites Conversion to an All Full-time Force.



Journal-News, Hamilton, Ohio

Fairfield to expedite conversion to all-career fire department

Michael D. Pitman, Journal-News, Hamilton, Ohio

September 29, 2022·4 min read

Sep. 29—Fairfield planned to convert its combination fire department into an all-career department in five years. But because of a federal staffing grant, that timeline has been significantly cut.

On Monday, Fairfield accepted a Staffing for Adequate Fire and Emergency Response, or SAFER, grant, which will pay for nine full-time firefighters/paramedics over the next three years.

Fairfield told voters it would convert the 36 part-time positions, which not all are filled, into 18 full-time jobs. The department's authorized strength would go to 57 full-time firefighters/paramedics. On Monday, six new firefighters/paramedics took oaths of office and the nine to be hired with SAFER grant money will give the city 15 new full-timers.

These new hires will expedite the transition into an all-career department, also called a professional department, which means there will be no part-timers. Fairfield has been a revolving door for part-time firefighters staying for a brief time before accepting a full-time job elsewhere.

Scores of part-timers have been hired and left the department for full-time jobs or other careers over the past several years. Since January 2019, the average experience level among the part-time staff had been less than six months. In 2015, though, the average experience level for a part-time firefighter in Fairfield was four years.

The city was one of the first in the region to start using part-time personnel, which allowed the city to go to 24-hour coverage by 1990.

While that model helped the department 30 years ago when full-time firefighting jobs were few and far between, that's not the case now as there are more full-time jobs available than people looking.

Fairfield voters agreed in May to eliminate the city's existing levies and replace them with a new containing levy. Nearly 66% of the voters agreed to support a new 9.25-mill continuing fire levy, according to official May primary election results.

"This is really exciting because we're getting way ahead of the ball game," said Council member Dale Paullus, council's public safety committee chair, of getting the SAFER grant.

It wasn't certain if the city would be awarded the grant after rejecting a federal grant award in 2019. Fairfield didn't receive a SAFER grant request in 2021 when it applied, and fire executives anticipated the same result for the 2022 application.

Acting Fairfield fire chief Randy McCreadie said he was waiting on Monday night's council vote on the legislation accepting the 2022 SAFER grant before calling potential candidates on Tuesday. He said the department has already interviewed and assessed potential candidates in anticipation of that vote.

Getting to this point, McCreadie said, "has been a hard road."

Fairfield had been in a difficult position for the past several years. The city couldn't retain part-time personnel because there were too many full-time jobs available in the region, and accepting the 2019 SAFER grant, which would have allowed the department to hire six full-time firefighters, would deplete the fire levy funds at the time without going back to the voters. Fairfield just had a new fire levy approved by voters in 2016.

But the three-year \$3.41 million reimbursement grant to pay for the nine firefighters will set the Fairfield Fire Department up for success as more firefighters will be on a shift, McCreadie said.

With the six firefighters hired on Monday and the nine from the grant, Fairfield will soon have 15 more full-time firefighters on staff. This will allow the city to have 18 firefighters per shift — one captain, three lieutenants, and 14 firefighters/paramedics — when they are on board. Each shift generally has 15 total firefighters now because of vacancies within the part-time ranks, McCreadie said.

The target of 18 new firefighters as a result of May's levy passage will be completed by the end of 2023.

Slashing the timeline to hire the 18 new firefighters is important because "there are numerous departments around us that have already posted job openings and hiring opportunities," McCreadie said. He said Cincinnati will start up more firefighter recruitment classes, and communities like Blue Ash, Evendale, Fairfield Twp., Union Twp. Clermont have posted openings for full-time jobs.

"You got all these departments around us posting jobs that are hiring, and we have to capture folks now while we can, because if we don't, we would have to start a new testing process and that generally takes months," McCreadie said.

Fairfield has nine candidates on the current list it can offer jobs and five of whom are currently part-time firefighters with Fairfield. Two others have previously worked for the city.

"So seven of the nine have institutional knowledge, which benefits us because it takes less time to orient them on board with this department," the acting chief said.

APPENDIX 1-D

Recruiting Scarce Full-time Firefighter Candidates in Northern Ohio



Northeast Ohio cities face shortages in firefighter candidates, prompting departments to boost recruiting

Published: Jun. 02, 2022



By [Kaylee Remington](#),
[cleveland.com](#)

For years, fire chiefs across Northeast Ohio have struggled to answer a daunting question: Why is it so hard to find people who want to be firefighters?

CLEVELAND, Ohio – For years, fire chiefs across Northeast Ohio have struggled to answer a daunting question: Why is it so hard to find people who want to be firefighters?

The number of candidates seeking jobs has dropped dramatically throughout the region, as it has across the country, officials say. The issue has prompted city officials to enhance their attempts to recruit, with some departments starting as early as high school to introduce students to the career.

But some chiefs cite what appears to be a shift away from public service. They believe the stress of the position, the chance of serious injury and the often-unpredictable hours have made the position less interesting to youths. The job is further complicated because many departments demand officers work as both emergency-medical technicians and firefighters, a dual role that requires two certifications.

“Our job involves a lot more than fighting fires,” Cleveland fire spokesman Lt. Michael Norman said.

But the departments across the region remain steadfast in maintaining high standards, despite the drop in numbers.

“We have seen a significant reduction,” said Dave Freeman, the chief of Cleveland Heights. “We used to have a cap on candidates at 100 [who applied for positions], even 10 years ago, and would have lines outside on the first day of the application [process]. For the past three tests, we had less than 50 applications each time.”

Mike Freeman, the assistant fire chief in Westlake, said his department also had to put caps on the number of applicants. That, however, has changed.

“We stopped taking applications at 200, and this was 10 years ago,” he said. “[Today] we have 36 candidates.”

Chiefs across Cuyahoga County said the issue has not hindered their abilities to fight fires. It has, however, worried them about a potential wave of future retirements. Such moves could limit staffing and require more dependence on mutual aid, where surrounding departments rush to fight emergencies.

In Middleburg Heights, the department is down a position because of a retirement. Briant Galgas, the fire chief, said he believes the drop in the numbers stems from the stress of a job that requires officers to work 48 hours at the station per week. Often, they are on call when they are away from the station.

In departments across the region, the stresses appear to have made an impact. Fewer candidates often mean fewer qualified job-seekers. Departments, however, say they refuse to lower their standards to boost candidates.

“We are not seeing anywhere [near] the number of candidates testing today that we have seen in the past; however, we are getting quality candidates to hire,” said Aaron Lenart, Rocky River’s chief.

“We have not lessened any of our requirements. We still require firefighter/paramedic certifications, still have police provide a stringent background process for each candidate and have the candidates clear a rigorous medical clearance.”

Recruiting tomorrow’s firefighters

The issue has prompted many departments to do something that was unheard of 20 years ago: recruiting young candidates with an emphasis on the benefits of serving a community.

“We need to better promote the satisfaction gained from serving others and the importance of those who make this a calling,” said Dave Freeman of Cleveland Heights.

“The hope is to recruit ‘homegrown’ talent at an early age,” said Christopher Haddock, the fire chief in Euclid.

In 2020, Euclid participated in a regional firefighter entrance examination, Haddock said. The civil service commissions of eight cities, including Euclid, joined and offered a written exam, he said.

That gave the cities an applicant pool of 143 men and women who passed the examination and became eligible for consideration.

Euclid and other cities have continued to work with students in high school, a move that offers an up-close view of a career. Euclid, for instance, initiated a fire academy several years ago in the city's high school.

Cleveland Heights has a similar program. Each is an attempt to draw candidates. Berea Fire Chief Terry Ledwell said he has even discussed dropping the application fee to draw recruits.

For cities, the push to start earlier has never been more important. Many fire departments view it as a way to fight a trend in city hiring.

"This is not just happening in Euclid or Northeast Ohio," he said. "It's occurring all throughout the United States."

APPENDIX 1-E

New Pennsylvania Fire Safety Initiative



PA General Assembly sends new bill designed to improve safety in state- regulated facilities to Gov. Tom Wolf's desk

Introduced by Republican State Sen. Dan Laughlin, Senate Bill 563 was crafted in response to a fire that killed five children in Erie three years ago.

Credit: FOX43

**Author: Keith Schweigert
(FOX43)**

Published June 29, 2022



HARRISBURG, Pa. — Pennsylvania lawmakers have sent a new bill designed to improve safety in state-regulated childcare facilities to Governor Tom Wolf's desk, the General Assembly announced Wednesday. Introduced by Republican State Sen. Dan Laughlin, [Senate Bill 563](#) was [crafted in response](#) to a fire that killed five children in Erie three years ago, [according to Senate Republicans](#).

"Many of the bills introduced in the General Assembly are in response to real life events that take place in our hometowns and local communities," said Laughlin, who represents Erie County. "Tragically, in this case, I introduced this legislation because of a Aug. 11, 2019 child-care facility fire that claimed the lives of La'Myhia Jones, 8; Luther Jones Jr., 6; Ava Jones, 4; Dalvin Pacley, 2; and Jaydan Augustyniak, age 9 months.

"What made this horrific incident even more tragic was the fact that these young lives may have been saved if the home had been properly equipped with smoke detectors. As it turned out, only one smoke detector was found in the home and it was in the attic."

To help avoid another such tragedy, SB 563 amends the state Fire and Panic Act to designate the locations where smoke alarms must be installed in child care facilities and require the alarms be interconnected so that if one is triggered, they all go off.

"This bill will not restore the lives that were tragically lost, nor will it ease the pain those grieving families endured," said Laughlin. "However, it is government's responsibility to learn from these tragic cases and to act to prevent them from ever occurring again in the future."

APPENDIX 1-F

Private Ambulance May Shut Down in Youngstown





AMR ambulance contract set to expire, could end service in Youngstown in 2023

"COVID-19 was very hard on the industry," Powers said. "Responses were up and transports were down. We looked at many different models, revenue sharing, staff sharing, that we could use to make the model sustainable in the city."

September 14th 2022

By Robert McFerren

Youngstown's only ambulance service informed the city it will no longer offer its service by the end of the year if they don't negotiate the current contract agreement.

A letter submitted to Mayor Tito Brown, City Council, Fire Chief Barry Finley and Law Director Jeff Limbian stated that American Medical Response (AMR) tenders its notice of non-renewal of our Agreement and notice that our Agreement will end December 31 at 11:59 p.m.

AMR, which is based out of Denver-suburb in Colorado, stated in the letter sent to the city that "AMR, and its predecessor companies have been proudly serving the citizens of Youngstown for over 30 years without any cost to the City of Youngstown or its taxpayers. Working together with the City and its other public safety entities, we have positively impacted thousands of lives with exceptional emergency medical care whenever it has been needed."

AMR cited the need for a \$750,000 subsidy as the reason for not renewing the agreement with the city, "an inadequate Medicaid reimbursement that makes up a significant portion of our services and which is below our costs." Regional Director Ed Powers told 21 News' Erin Simonek that they have been in contract negotiations with the city for 3 years and believe the city declined the subsidy because they view it as a "money grab."

"We've been in conversations with AMR long before COVID-19 and ARP funds even existed," Powers said.

"COVID-19 was very hard on the industry," Powers said. "Responses were up and transports were down. We looked at many different models, revenue sharing, staff sharing, that we could use to make the model sustainable in the city. None of them have been fruitful. We're just looking to create a sustainable model. We do not want to leave the city. We've been in this city 30+ years and we want to continue providing the same good service that we've provided all along."

AMR said the current Ohio Medicaid base rate for basic emergency transport is \$120 and has not been re-based by Ohio in years.

"When we treat and transport Medicaid patients, we are reimbursed far below the cost of providing service - approximately 42% of our cost. More than half our transports, or 54%, are Medicaid recipients," the letter stated.

"If you're trying to operate on FIFA service revenue, you don't get any FIFA service for those responses," Powers explained. "You only get FIFA service when you provide a service."

Councilwoman Lauren McNally told 21 News the city's administration hasn't gone out for RFP, a request for proposal to see if there are any other companies who are interested in the contract. Law Director Jeff Limbian said that's because Mayor Brown supported the contract proposals from AMR. McNally also spoke on her concerns with delayed response times and poor service by the company. She explained the extra funds AMR is requesting could be put to better use elsewhere.

She told 21 News she's interested in seeing what AMR is charging other cities.

"More recently, inflationary pressures and rising fuel costs have dramatically increased the costs to provide our life-sustaining services. Any incoming private provider will have the same pressures and any insourcing by the city with the fire department will likely increase citizen taxes and greatly exceed private industry costs," AMR Chief Operating Officer Edward Van Horne said in the letter.

21 News has reached out to the mayor and Fire Chief Finley for comment and to discuss what the city will do for the ambulance service in 2023 and have not heard back as of Wednesday at 10 p.m.

Since January of 2022, AMR Ambulance Services has been working with Youngstown City Council because the company is in need of money to help continue to operate.

Early this year, AMR told the city that responding to emergency calls had become too expensive and asked for over \$750,000 subsidy, but Youngstown City Council voted the ordinance down.

"It's definitely a challenging market to find another ambulance service," Powers added. "I'm sure you've seen many stories about EMS companies that have gone out of business. Any time you deal with public funds, city council wants to do their due diligence and make sure they're doing the right thing."

IAFF Local 312 President Jon Racco said in a written statement to 21 News that the "Youngstown Fire Fighters Local 312 urges the Brown Administration to sit with us and negotiate the future of pre-hospital care for our citizens. Now is the time to address the inequalities that have plagued Youngstown for years. We are witnessing firsthand the ramifications of putting profits over patients."

Racco's statement continued, "The citizens of Youngstown are entitled to and deserve access to basic infrastructure like public safety, which includes a sustainable, professional EMS system. The Youngstown Professional Fire Fighters urge city leaders to finally recognize our abilities to help our citizens and negotiate the implementation of a first-class pre-hospital care system.

"We will be in a world of hurt if we don't have an ambulance company ready willing and able to conduct the service in the City of Youngstown," Limbian said. "That's a dire circumstance that we hope and plan to never have to happen here."

Limbian expects to be back at the negotiating table with AMR if they don't get any proposals from other companies, reassuring Youngstown residents they will not go without ambulance services.

"It's just untenable and it's something we can not allow to have happen," Limian concluded.

Powers said AMR will bid on the FRP when it comes out and he hopes to work out the contract prior to the end of the year.

AMR said if the contract is not renewed with the City of Youngstown, they will look to service other areas and more hospitals, hoping their 50+ jobs are not affected.

AMR's current contract expires on December 31, 2022.

APPENDIX 1-G

“Power Shift” Staffing in Naperville



Why 4 Naperville firefighters switched off 24-hour shifts

Marie Wilson



Posted **10/24/2018 5:28 AM** **Naperville, IL**



Naperville Fire Chief Mark Puknaitis said the department's new "power shifting" program, which puts four firefighter/paramedics on an 8:30 a.m. to 5 p.m. schedule Monday through Friday, will allow the department to run more ambulances during the day when most calls come in. *Marie Wilson / Staff*

Four firefighter/paramedics in Naperville started working eight-hour shifts this week as part of a staffing plan designed to get more people on duty when they're needed most.

The typical firefighter's hours are 24 hours on the job, 48 hours off, and that's not changing at the large Naperville department, which operates 10 stations with a daily minimum of 42 firefighter/paramedics on the job.

But now four of the department's members are working 8:30 a.m. to 5 p.m. Monday through Friday in what Chief Mark Puknaitis calls a "power shifting" program. The shift transfers personnel into the daytime, when Naperville's population spikes with

workers, and when Puknaitis said the department fields 54 percent of its 14,600 annual calls.

With more than half of all calls coming during one eight-hour span, Puknaitis said it makes sense to increase the staff, while still keeping the union-negotiated minimum of 42 on hand during the other 16 hours of each day.

"This is a benefit. The department is not losing staffing," he said. "We're just putting them in those boxes that make sense for the city."

On Monday, the first day three senior firefighters and one new hire worked from 8:30 a.m. to 5 p.m., Puknaitis said the department fielded an unusually busy 50 calls. The new staffing allowed the department to run two additional ambulances, better spreading out emergency medical help throughout the sprawling city of 40 square miles and 147,800 residents.

On the first day the power shift was in place, Puknaitis said he got three voicemails from other departments looking to learn about the approach. Especially because he was named president of the Illinois Fire Chiefs Association, Puknaitis thinks the idea will have legs.

"This is going to be a very contagious issue for other fire departments," he said, "in a positive way."

President John Sergeant of the Naperville Professional Firefighters Local 4302 said members may want the 40-hour workweek to attend more kids' events or family holidays, or to take a break from the bodily demands of working 24 hours straight.

"I'm pretty assured we'll be able to keep these spots full," Sergeant said.

Those accepting the eight-hour shifts will make a one-year commitment. Those with most seniority will be given priority each year during a union bidding process for who will fill the spots.

The new staffing plan is not designed to cut costs but to keep them stable. The four firefighters switching to the shifted hours will continue to be paid their regular salaries.

"We know that having the same number of employees on the clock for 24 hours straight isn't optimal, and we also know service cuts or increasing overtime isn't right for our community," Puknaitis said. "By having four employees transition to this schedule, we meet our need for service when it is greatest without incurring additional costs."

APPENDIX 1-H

City of York Fire Stations





Station 1 – Rex/Laurel

49-51 South Duke Street.

Station 1 consists of two separate buildings. The Laurel Fire Company building, the southern building, was constructed in 1877-78 and is listed on the National Register Of Historic Places. It is one of the oldest continuously operating fire stations in the United States. The Rex Hook and Ladder Company building was constructed in 1888 and was designed to match the Laurel's architecture. Station 1 is adjacent to the Fire Headquarters Building.



Station 2 – Vigilant/Union

273 West Market Street, This station is our newest, constructed in 1973-74. It replaced the former Vigilant station which was demolished after flooding from hurricane Agnes in 1972.



Station 5 – Goodwill

833 East Market Street.

This station dates from 1903. The Goodwill Fire Company was originally located in Spring Garden Township until annexed by the City of York in 1900.



Station 9 – Lincoln

800 Roosevelt Avenue.

The station was constructed in 1946. The Lincoln is the youngest of the nine volunteer fire companies in York.

== END OF MODULE 1 ==



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Analysis of Fire Department Staffing, Facilities and Operations



York Area United Fire and Rescue, Pennsylvania

Draft

MODULE 2: FIRE STATION LOCATIONS AND APPARATUS CONFIGURATIONS

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INTRODUCTION

It is difficult to imagine any community without a fire station somewhere nearby to protect it from fire, one of mankind's oldest enemies. The fire station today represents a nerve center from which fire protection, emergency medical assistance and technical rescue capabilities of all forms are delivered.

Proper placement of fire stations is essential and many need to undergo transformation as volunteer firefighters give way to increasing numbers of on-duty personnel. Space needs for newer larger equipment and overnight accommodations for on-duty crews are just a few of the factors that need to be planned for in advance. Many times, the volunteer stations can get by with fewer apparatus, once staffing is in place, but need more living space for the on-duty personnel.

The information in this **Module** will address both the location of stations in planning for future station configurations. Good station location continues to increase in importance as new technology causes advances in fire station design. New stations are being built all across Pennsylvania.

The construction of new facilities should be planned for. A replacement for, or reactivation of the original, Alert Fire Company station in Manchester and a replacement in Spring Garden are both in order.

We note how LifeTeam is housed in YAUFR Stations, and in the future, an opportunity may present itself whereby a fire station and EMS station could be combined under one roof. With some of our clients, some shared facilities have been constructed to house separate fire and EMS agencies, with both entities sharing construction costs.

The charter townships that comprise YAUFR are responsible to find funds available for fire station construction. The existing stations work now, and with modest staff increases to replace dwindling volunteer rosters, the stations can grow as the area as a whole continues to grow.

Both ISO and NFPA use 4-minute and 8-minute benchmarks for various response parameter times. ISO also references the need for all properties to be within 5 miles to receive a decent Insurance rating, and within 6 miles to have any rating at all.

We follow with a series of maps prepared by Ms. Michelle Harrell of W5 Design, an affiliate of the Kramer group. Since most of the national standards would like to see an immediate arrival of a first fire unit within four minutes, and a full complement within 8 minutes, we will, for mapping purposes, utilize the median of these metrics, six (6) minutes. These computer-generated maps are designed to show the fire station configuration as it exists, and as it could be improved in the future.

The computer-generated maps in this section show station coverage in the three townships covered by YAUFR. The five stations are a bit different but all willing to work together for the betterment of the community.

In highly populated and quick-growth areas, average response times can become less favorable due to an increase in the number of simultaneous calls, (Usually EMS) necessitating a lengthier response from the next available unit. *We do note an unusually high percentage of overlap calls in the district, 42.38%. This is another reason to try to accelerate additional staffing, a factor that will help units clear a scene more quickly.*

Below are a few questions that we feel should be asked by **York Area United Fire and Rescue**, along with brief answers that will be expanded upon in this **Module**.

MODULE 2: Part 1: FIRE STATION LOCATIONS: Snapshot Issues:

1. Appropriate number of Fire stations for coverage within York Area United Fire and Rescue?

Consultants feel that there is nearly a sufficient number of stations to serve the YAUFR District, but does see merit in dividing the Manchester coverage into two locations. (The polygon mapping to follow will show coverage improvement if this plan is carried out.) When we consider the distance from any response point, *these distances are meaningful only if there are adequate personnel on duty.*

Future funding should be prioritized to add staff to stations, As noted we do endorse a need for at least one new station, based on the mapping and our field measurements. We elaborate on this issue within this module.

2. Considering district size and population are the Fire stations properly located for response and insurance rates?

All but one of the fire stations in York Area United Fire and Rescue predated YAUFR and when constructed were distributed well for population centers, as they existed. Growth patterns are changing because of highway configurations, and population growth especially in Manchester area and future replacements can be better located to serve more of the population.

Even though the outer reaches of the response areas are some distance from some of the stations, all York Area United Fire and Rescue residents have response times which could be considered “average to good.”

FIRE STATION OVERVIEW

The existing locations of fire stations in York Area United Fire and Rescue are for the most part reasonably placed but positioning can be improved with a new station in Manchester, in addition to the existing. A replacement station in Spring Garden is also recommended.

Because Fire Stations tend to be built in populated areas they are usually well located when initially constructed. As they are replaced more optimal locations can be sought.

The computerized polygon maps which will follow in this Module will show graphically how widespread York Area United Fire and Rescue really is, with most of the six-minute zones overlapping.

Below, and on the following two pages, are the existing five stations



STATION 891 - SPRINGETTS FIRE CO. NO. 1

50 Commons Drive
York, PA 17402
Phone: 717-755-3171



STATION 892 - GRANTLEY FIRE COMPANY

918 Virginia Avenue
York, PA 17403
Phone: 717-843-4112



STATION 893 - COMMONWEALTH FIRE CO. NO. 1

2045 North Sherman Street
York, PA 17402
Phone: 717-755-8378



STATION 894 - VICTORY FIRE CO. NO. 2

421 Wheaton Street
York, PA 17402
Phone: 717-846-4695



STATION 895 - ALERT FIRE COMPANY

3200 Farmtrail Road
York, PA 17406-5699
Phone: 717-767-1954

FIRE STATION LOCATIONS

The existing locations of fire stations in York Area United Fire and Rescue are for the most part reasonably placed but positioning can be improved with an additional station in Manchester. A replacement station in Spring Garden is also recommended.

Because Fire Stations tend to be built in populated areas they are usually well located when initially constructed. As they are replaced more optimal locations can be sought.

The computerized polygon maps in this section will show graphically how well positioned the stations in York Area United Fire and Rescue really are. Virtually all of the district is within the six-minute zones, with several zones overlapping.

We provide a detailed analysis of time and distance for all response categories to optimize insurance rates and provide best service options to residents, businesses, and public institutions

POLYGON MAPPING

We are fortunate to have the excellent mapping produced for this study thanks to the fine work by cartographer Micki Harrell of W-5 Design, an affiliate of the Kramer Group.

. These show the response time coverage from the five existing stations, and a sixth in a two-station Manchester configuration. We chose a six-minute polygon for response times.

Four maps follow

Map A -- Service Area of the York Area United Fire and Rescue District

Map B -- Primary Response zones of the five stations

Map C -- Response polygons showing 6-minute or less coverage from five existing stations

Map D -- Response polygons showing 6-minute or less coverage from five existing stations plus a sixth location (89-6) at Cousler Park in Manchester Township.

The reason for the selection of a six-minute polygon is that this represents the median between a four-minute response and an eight-minute response, the two parameters identified in NFPA Standard 1710, as seen below: Using these maps, it is relatively easy to visually interpolate or extrapolate 4-minute and 8-minute zones from these median measures. When we do plot both 4-minute and 8-minute zones on the same map, even with multiple colors, the result is a busy and complex color collage, hard to interpret.



NFPA 1710 Times

- **5.2.4.1 Initial Arriving Company.**

5.2.4.1.1 The fire department's fire suppression resources shall be deployed to provide for the arrival of an engine company within a **4-minute response time** and/or the initial full alarm assignment within an **8-minute response time** to 90 percent of the incidents as established in Chapter 4.

- **5.2.4.2 Initial Full Alarm Assignment Capability.**

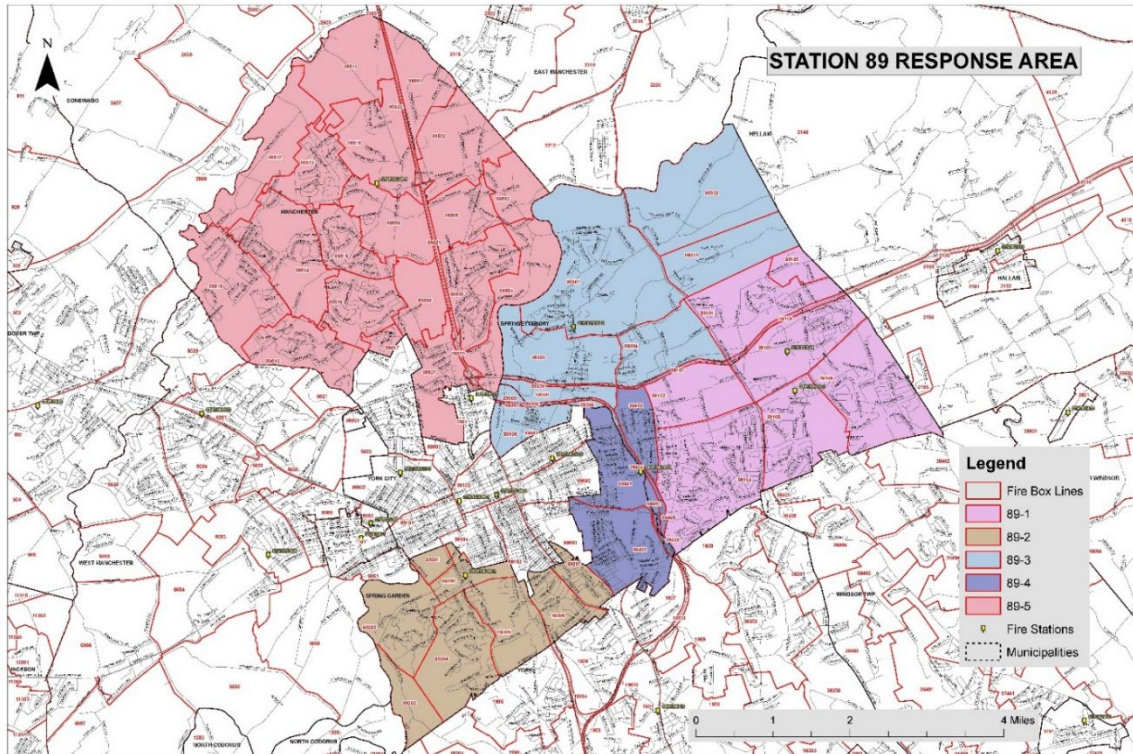
5.2.4.2.1 The fire department shall have the capability to deploy an Initial full alarm assignment within an **8-minute response time to 90 percent** of the incidents as established in Chapter 4.



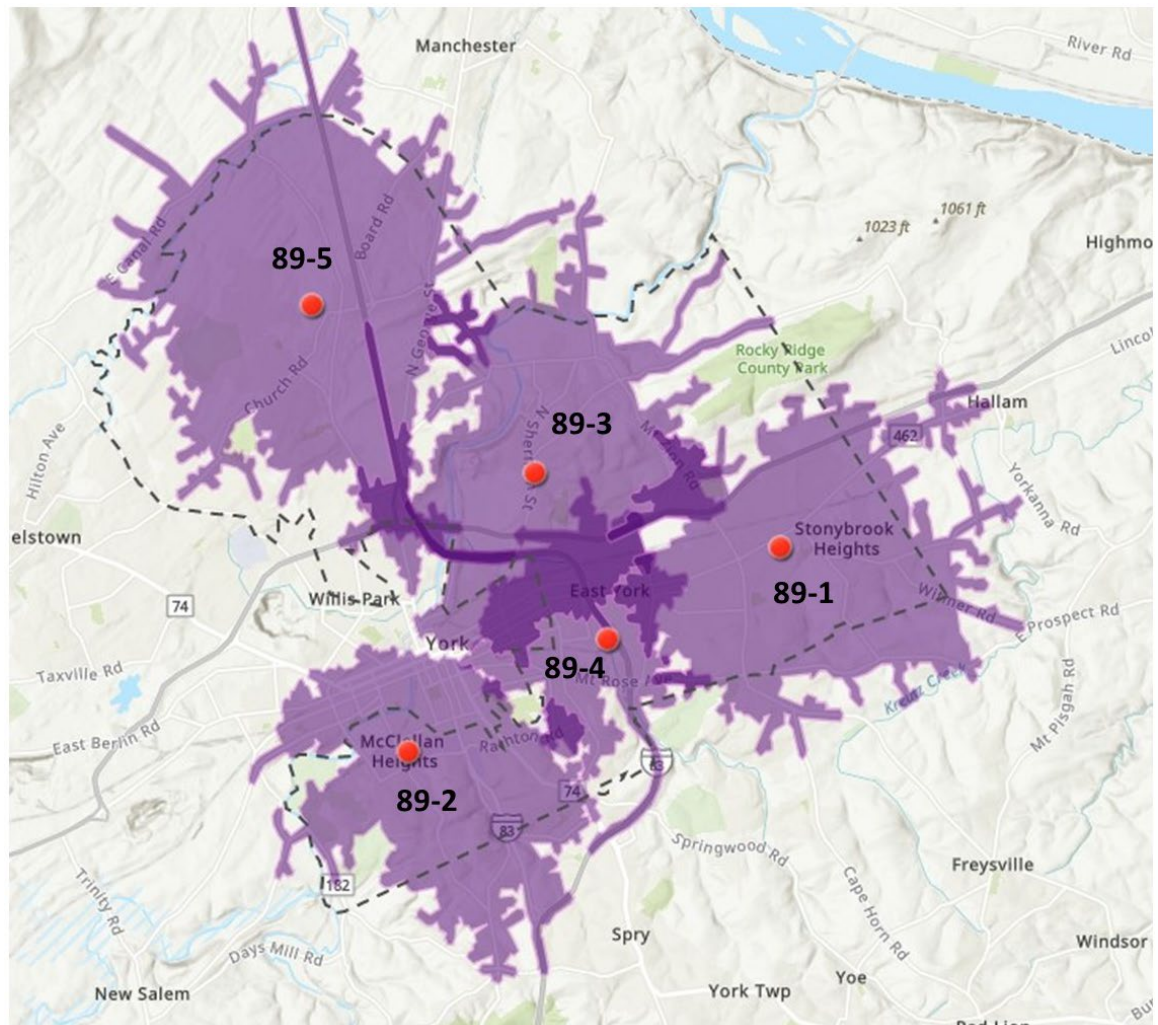
Map A – Service Area



Map B Primary Response zones of the five stations



Map C -- Response polygons showing 6-minute or less coverage from five existing stations



YORK AREA UNITED FIRE RESCUE

6 -Minute Response Zone

August 27, 2022

LEGEND



- 89-1. 50 Commons Drive, York, PA 17402
- 89-2. 918 Virginia Avenue, York, PA 17403
- 89-3. 2045 N. Sherman Street, York, PA 17402
- 89-4. 421 Wheaton Street, York, PA 17402
- 89-5. 3200 Farmtrail Road, York, PA 17406

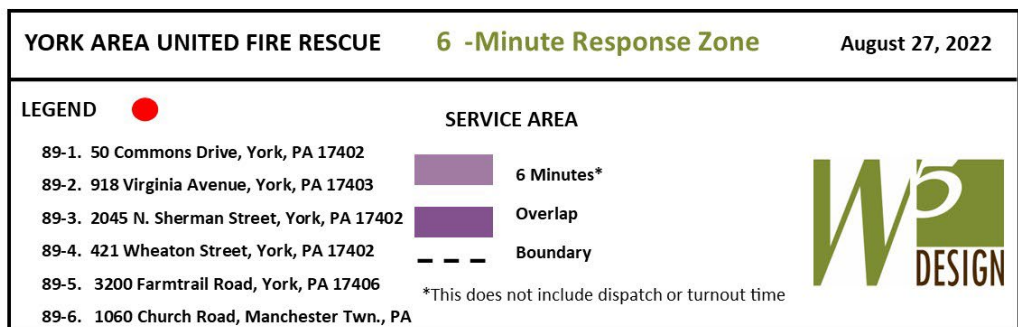
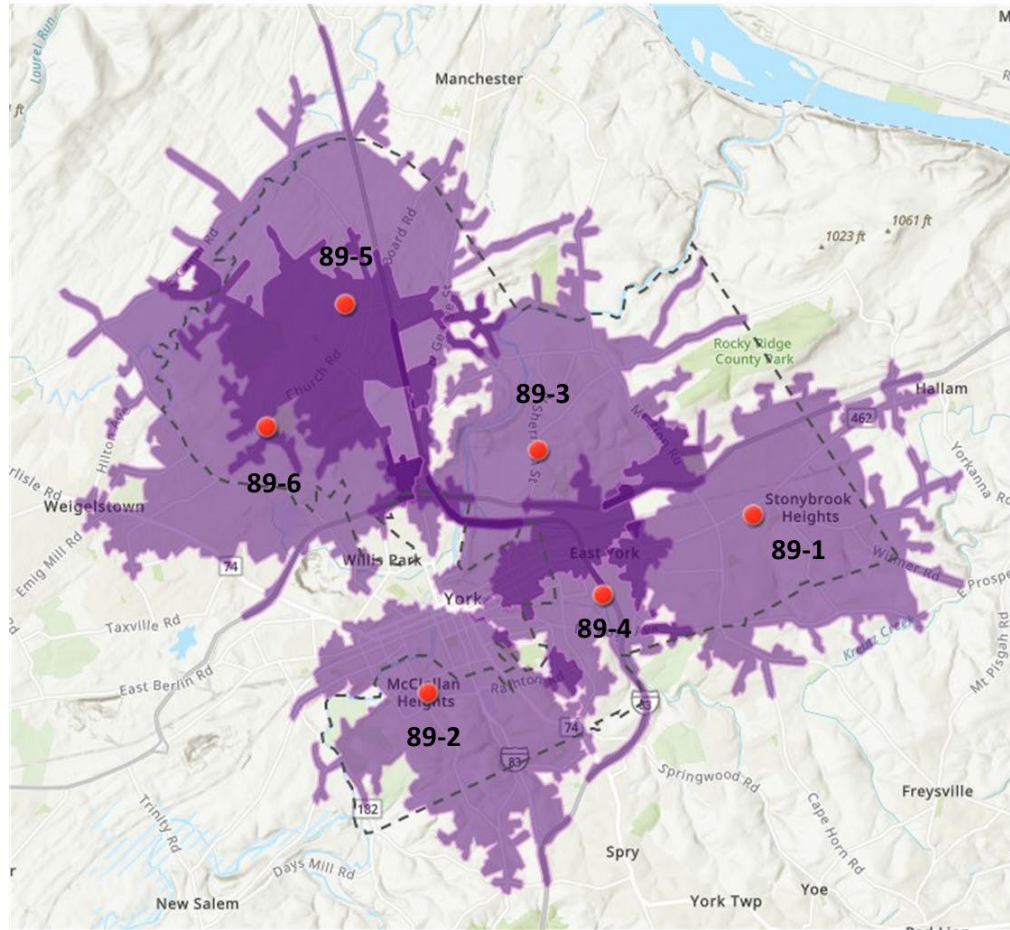
SERVICE AREA

- 6 Minutes*
- Overlap
- Boundary

*This does not include dispatch or turnout time



Map D -- Response polygons showing 6-minute or less coverage from five existing stations plus a sixth location (89-6) at Cousler Park in Manchester Township.



REPLACING FIRE STATIONS

Stations grow old and need to be replaced. In growing communities, additional stations can be needed but in York Area United Fire and Rescue, the need is more in the form of replacement with only a few new facilities recommended. Once paid career or part-time personnel are on duty, the facilities are not as expensive, over a lifetime, as compared to the personnel on duty.

If the facilities are conducive to training, provide comfortable living standards, and improve morale, then a better trained, more highly motivated employee or volunteer makes the emergency responses. This dimension of quality can then be multiplied across all members using the improved facilities.

When new fire stations are constructed, they must be done so with the thought that they will be occupied by full-time career firefighters, and that the number of on-duty personnel is likely to rise over the lifetime of the facility. When the cost of a station is plotted next to the cost of the personnel who will staff that station over its lifetime, the investment of the building becomes less significant. We could estimate that a new top-of-the-line fire station is likely to cost about \$6 million. While this may seem to be a major investment, if the building will last 50 years, the cost per year on a simplified straight-line basis is figured as follows:

Building: $6 \text{ million} \div 50 = \$120,000 \text{ per year}$

Let's say this building will conservatively house an average crew of five persons, for 24 hours a day, earning an average of \$55,000 per year. Three shifts plus earned days off, sick time, vacation leave and an overtime factor create a multiple of four. Hence the following calculation:

Salaries: $5 \times 4 \times \$55,000 = \$1,100,000 \text{ per year}$

These are simplified calculations. In actuality the station could have more or fewer personnel, the wages will certainly rise over fifty years, etc. but there is no mistaking the high cost of personnel vs. facilities. As this station continues its life cycle over 50 years, its cost is dwarfed by personnel costs that would continue to accelerate. Hence, it makes no sense to cut corners on construction, or accept a substandard location for a new station.

Because site selection represents an investment far greater than the real estate and building, selecting a site is an important investment, especially if a non-optimal location results in higher response times. York Area United Fire and Rescue is fortunate to have suitable property available where new stations will be needed.

The overall layout and orientation of the facility is important to facilitate the rapid egress of emergency equipment. Drive-through bays are becoming increasingly more important for egress, reduced wear and tear on vehicles, improved visibility, and reducing the hazard of stopping traffic and backing apparatus with personnel present.

In **Appendix 2-A** we have two articles from Phoenixville, Pennsylvania. The first shows how the community members were invited to the groundbreaking for their new fire station. The second article shows the actual event.

In **Appendix 2-B** we show recent new fire station construction for two separate Pennsylvania communities, Manheim Township and Boswell.

SQUARE FOOTAGE REQUIREMENTS

Real estate and facilities are always a good community investment. When a new facility needs to be planned the Kramer Group can provide a working form to York Area United Fire and Rescue Command Staff similar to that provided by MSA Architects and shown in **Appendix 2-C**. Similar worksheets should be available from Pennsylvania Architectural and Construction firms.

Although square footage requirements vary with the type of department and personnel needs, adequate space is critical to minimizing the need to expand unnecessarily in the future. Pennsylvania Architects can work closely with fire departments as part of construction planning.

This allows both an idea of the needed facility components, as well as a starting point for cost estimation. The consultants recognize that site preparation and other site related costs could vary based on the chosen site, however, for the purposes of a preliminary design, the cost estimation section will show an estimation for the purposes of planning and budgeting.

PRIORITY STATIONS NEEDED

The task of adding any new station requires a matching of the station needs, square footage calculation based on the needs, site suitability, and budget available to provide the station construction and site development. In this section, we will show the various factors related to replacing the station and how the decisions related to use and needs translate to an overall cost related to the new station.

SITE FIT BASED ON PROPOSED NEEDS

The calculated overall size can be fitted onto proposed sites to show how the property may be utilized to accommodate a fire station. While this is not a guarantee of the configuration of the newly constructed station, it does allow a visual understanding of how much space the given properties can accommodate and how the layout of the station may have to occur.

It is recognized that certain movement and design of the station is possible, but certain factors, such as bays entering and exiting and the ability to drive large fire apparatus on and off the property have specific limitations and these are represented in the site fits below.

Once selected, an architectural firm can identify various site configurations such as those below provided by MSA Architects for Lebanon, OH, another Kramer client. This might prove helpful both in Spring Garden and Manchester as new sites are sought for fire stations.

Diagrams 2-1, 2-2 and 2-3, show how a fire station footprint might be configured on a given site.

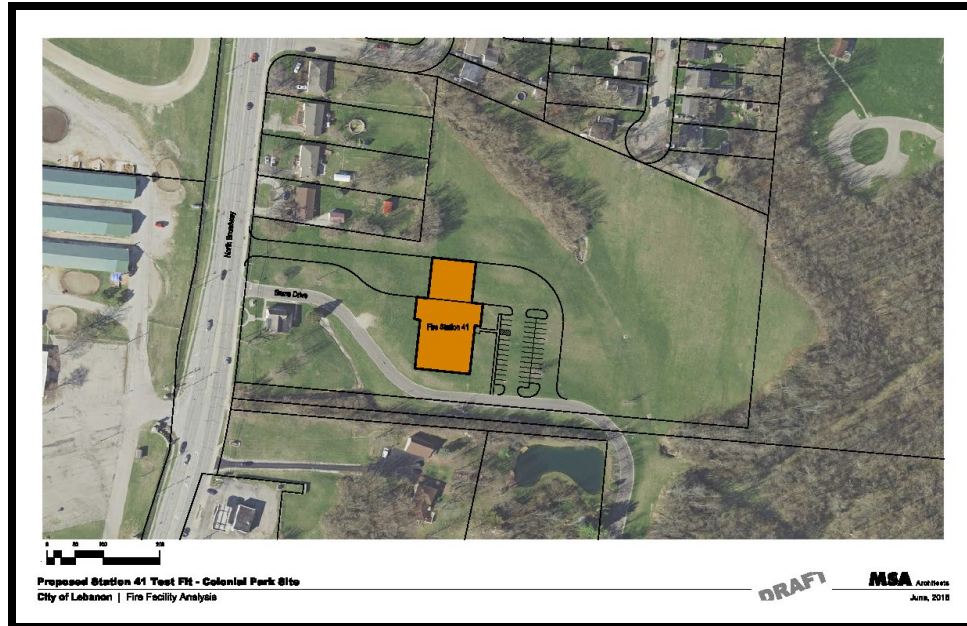


Diagram 2-1: Site Fit with deference to neighborhood aesthetics

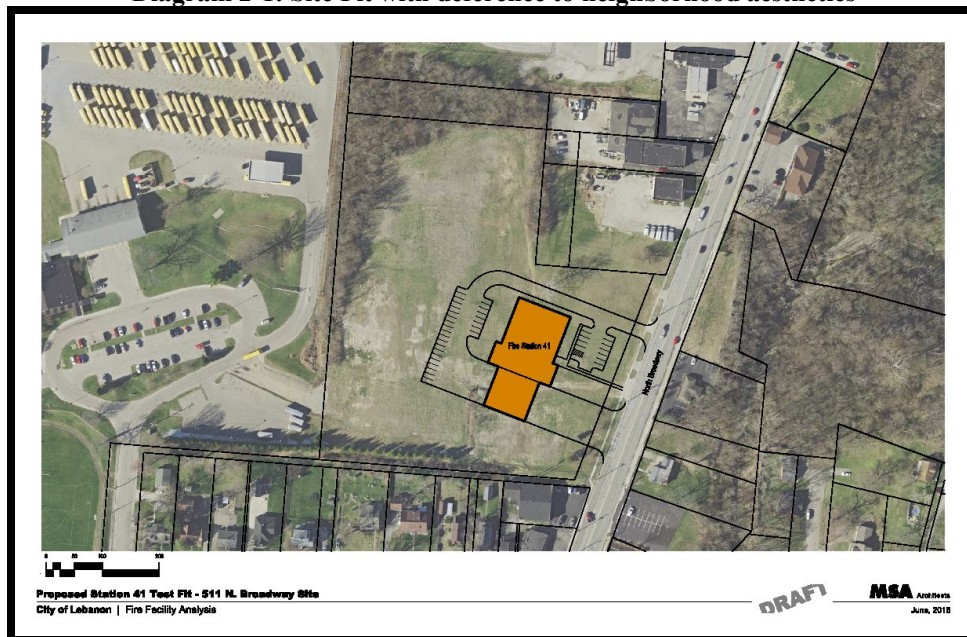


Diagram 2-2: Option 1 favoring immediate road access

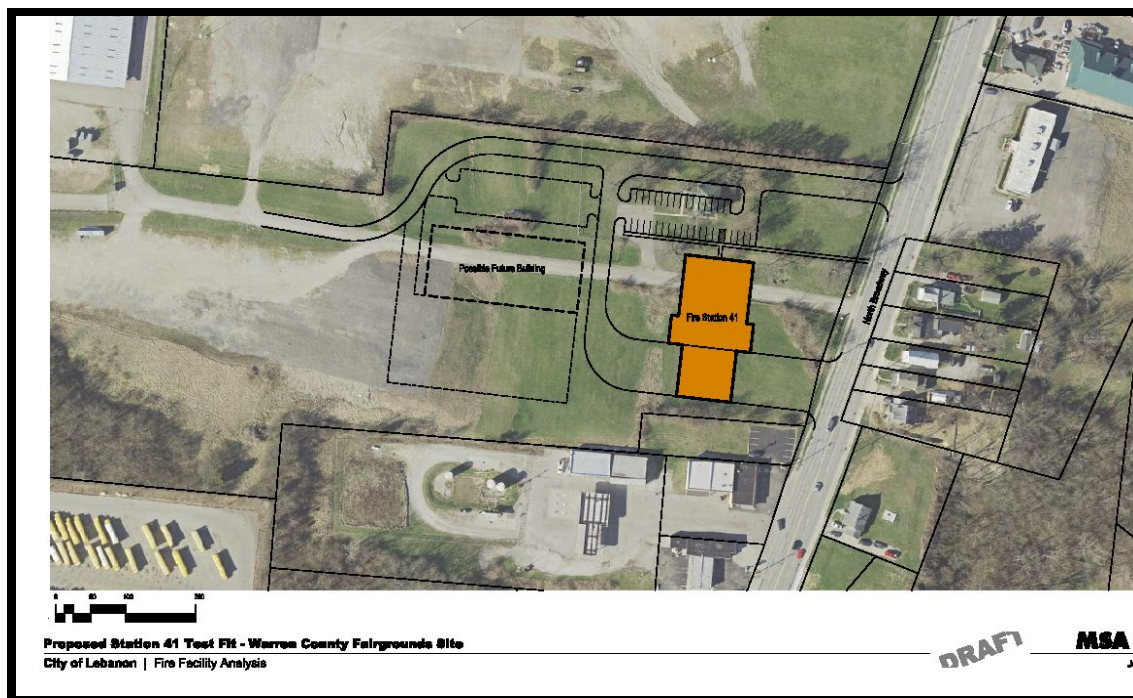


Diagram 2-3: Site Fit with Training Facility Expansion Option

Physical facilities are a good investment for any governmental entity, especially those that contribute directly to the welfare of the citizenry. A Capital Investment Plan should be in place and updated annually to refurbish or replace existing fire facilities when needed.

When replacements are needed, YAUFR should work with the charter townships to find suitable lands for future construction. Parcels may be difficult to find in developed areas so it is good to seek land long before construction is anticipated. If land is already available at Cousler Park, in Manchester Township, this will facilitate commencement of a station there.

Where existing stations work well, but the stations need replacement, the sites can be re-used with tents and trailers on a temporary basis. While the current staffing models are somewhat limited in numbers of on-duty personnel, all new or remodeled stations should be designed for increases in staffing up to national standard recommendations. Such fire station improvements will allow for facilities and an environment that will take into account increased diversity within the fire service.

Space needs have only increased over time with the broadening scope of the Fire and Emergency Services. The consultants feel strongly that stations include a community room to give a real YAUFR presence and an added dimension of functionality to this investment.

ESTIMATED COSTS & COMPARABLE STATIONS

Fire station facilities are typically in the \$375-400 per square foot range based on local public contract laws. For a larger building such as a headquarters station, there can be a need for up to 15,000 square feet of space. Based on the current square footage requirements the current cost estimate for a newly constructed Station, along with a training facility, could be as high as \$6,000,000 hard costs of construction. A more reasonable building such as a satellite station might need about 8500 square feet with a cost of \$3,400,000.

For accuracy you really should add another 20% for soft costs (fees, permits, furniture, contingency, If property is owned by a township, or donated by a developer for a fire station, at no cost, this will provide a savings, and there are other ways to cut costs, if such is necessary, to advance a needed project. It should be noted that these are estimates and further selection of specifics in the station can adjust final costs.



Left: Diesel Exhaust system a modern health and safety requirement.

Right: A commercial extractor for cleaning turnout gear is now required in addition to the traditional washer.



Here are a few photos which show different designs for new fire stations

Affordable Station Designed by MSA for Fairfax, OH



Inexpensive Butler Building

The Madeira and Indian Hill Joint Fire District recently constructed 2 fire stations in suburban Cincinnati. According to a Cincinnati Enquirer Article, the stations cost an average of 5.1 million each, with the Indian Hill location costing more due to housing the district's administrative offices and training facility. The Indian Hill Fire Station contains six sleeping rooms, a kitchen/day room, fitness room, a hose tower that doubles as a training facility, the district's administrative offices, a training room, and four apparatus bays that primarily hold fire apparatus.

In the construction of the Madeira-Indian Hill stations, the original estimates were around the high 2-million-dollar range, ending in the low and middle 5 million range.

All of the consultants agree that underestimating costs can cause many issues as the fire station construction progresses, such as public dissatisfaction and potential funding shortfalls that can cause the waste of design and feasibility costs that are often expended to determine the additional costs, See **Appendix 2-D** for a story on a \$3 Million cost overrun after voters approved four new stations in Middletown, OH.

The station shown below represents absolute minimums for a substation to house on-duty personnel and provide garage space for 2 apparatus. Pre-fabricated facilities such as Morton and Butler buildings can cost less, as seen next in the photo.



Built in 2001 this station serves the residents of the northeastern corner of Hamilton Township, northeast of Cincinnati.

The building was constructed by Morton Buildings at an approximate cost of \$1.85 Million. Today's construction costs would push the station

well past \$ 2.5 million

Hamilton Township, Station 77 Warren County, OH
Location: 2000 East U.S. 22 & State Rte. 3
Hamilton Township, Ohio 45152

York Area United Fire and Rescue is ahead of the curve in anticipating new stations. Keeping costs down is always important, especially when an economy has suffered from a world-wide pandemic. Below is a more reasonable cost break-down for a basic 8500 square foot station. An affordable estimate:

Table 2-A: Estimated Construction Costs for 8500 Sq. ft. Station

Sq. Ft.	Cost per Sq. Ft.	Const. Costs	Soft Costs	Total Costs
8500	\$375	\$3,187,500	\$637,500	\$3,825,000
8500	\$400	\$3,400,000	\$680,000	\$4,080,000

ECO-FRIENDLY AMMENITIES

Pennsylvania Architects are familiar with new energy-saving initiatives and other eco-friendly amenities that should be a part of future fire stations in York Area United Fire and Rescue. See **Appendix 2-E** regarding eco-friendly fire station construction in Asheville.

YORK AREA UNITED FIRE AND RESCUE APPARATUS AND EQUIPMENT

We have just described how fire stations must be planned for, and identified specific immediate needs in Manchester and Spring Garden.

Key factors affecting the size needs of a new station are the types and sizes of fire apparatus units, and the strategic deployment of ladder equipment and specific specialty units throughout the district.

We see no need to alter the configuration of equipment, as they're now housed and positioned, but will now look at apparatus considerations as new ones are ordered. The second half of this Module provides an overview of the fleet vehicles.

The planned acquisition of two new pumpers, a new aerial ladder, and a new heavy rescue apparatus will modernize the fleet considerably and there will be no need to alter existing stations.



Left: Engine 89-1

Consultants William Kramer and Roy Winston reviewed the fleet of the York Area United Fire and Rescue Stations, as they exist, and found a serviceable inventory of front-line fire apparatus, matched well to community needs. There is no need to revisit station sizes due to any needed fleet adjustments.

On the following page are key “snapshot” issues that will be elaborated upon in this **Module**.

Module 2; Part 2: APPARATUS CONFIGURATIONS: Snapshot Issues:

- 1. In observing the York Area United Fire and Rescue Fire stations, we found there is enough equipment to meet the needs of citizens and is fairly well located.**

There is plenty of equipment. There are enough apparatus units, and overall locations of stations are good. There are two reserve pumpers that are available for any of the five stations.

- 2. The fire departments could use additional EMS equipment in light of their ever-increasing role as co-responders with EMS.**

The additional equipment that would be recommended would be items such as the “Lucas” chest compression devices that would be effective in preserving life when the department arrives first and there is a delay when units are not readily available. (See **Appendix 2-F** for a description of this innovative device)

- 3. Departmental replacement standards or plans have been standardized for Fire equipment / apparatus.**

Chief Hoff shared the apparatus plans for the current configuration and the consultant concludes that there are sensible formal apparatus replacement plans. Proper attention is being paid to a balance between escalating maintenance costs and the need for replacement. The goal of replacing apparatus units at the 12-to-13-year age is sound.

- 4. Locations of equipment on units are essentially standardized.**

To the credit of YAUFR, the individual engines have achieved standardization in equipment placement. For example, other than occasional variations in front bumper loads, all YAUFR pumpers have the same layout of hose.

If fleet apparatus vehicles become more than 25 years old, they are functionally obsolete. This makes it difficult to find replacement parts for the vehicle, not to mention old and outdated technologies. All revenue from sold equipment and apparatus units is placed in the capital reserve fund to offset future capital purchases.

When we studied a previous client, Harnett County, Consultant Michael A. Washington researched in detail National Fire Protection Association (NFPA) 1901, the apparatus standard, and we include it as **Appendix 2-G** in this module.

In **Appendix 2-H** we include an annex which is not a part of the requirements of the NFPA document but is included for informational purposes only

The five fire stations of York Area United Fire and Rescue, due to the economy of scale, do share a pool of “reserve” or spare vehicles. This pool of reserve vehicles does effectively fill the gap when a primary pumper or service vehicle must go out of service for repairs or preventative maintenance.

Below are the two types of power-house vehicles needed for effective firefighting, the engine or pumper, and the aerial ladder

**Right:
Engine 89-5**



**Left:
Ladder 89-1**



Life Team Ambulance stationed at the Springettsbury Station 1



First Capital EMS

As mission-driven organizations, focused on the well-being of our neighbors, we will continue to be community-centric with our primary focus on our patients.



Most manufacturers of emergency vehicles will give as much as five percent reduction in cost of a duplicate new vehicle because they only develop specifications and computer aided drawings on the vehicle once.

The manufacturer also has more purchasing power, when purchasing parts for building the apparatus from original equipment manufacturer (OEM). This is an example of how the York Area United Fire and Rescue could save money.

CLEAN CAB:

We have information from Winston-Salem that shows one of the latest features, i.e., separation of riding cab from contaminated gear. The full story is in **Appendix 2-I**. According to the article, “The City of Winston-Salem is trying to keep the men and women who fight fires safe.” Chief Hoff points out, however, that in cold-weather zones, such as winter in Pennsylvania, personnel may be reluctant to store gear in an unheated space.

The article, nonetheless, goes on to explain the modern idea of moving the carcinogens that may still be on air packs or turn-out gear to an area where firefighters aren’t breathing it. After a fire, the crew rides in the clean cab, and any gear covered with toxic, cancer-causing chemicals, is stowed in a safe area in the back of the truck.

A fourth element is now one of the factors involved in the evaluation of the fleets. The consultants reviewed all four:

1. Reliability
2. Liability
3. Serviceability
4. Crew Health and Safety

NFPA 1901 addresses the design features of fire apparatuses, including fully enclosed cabs for all riding positions for any apparatus designed after 1991. YAUFR is now compliant across the board.

BLENDED FLEET

York Area United Fire and Rescue does have a properly “blended fleet” for the protection zone it covers. (Engines, Ladders, and Light-weight Utility vehicles. The consultants feel that apparatus planning and purchasing have been quite good.

While improvements are possible as new apparatus is introduced into the departments, the existing equipment remains functional for the fire personnel, allowing them to fulfill their mission and address the job-related hazards found within the community.

Already York Area United Fire and Rescue is expanding its role in specialty functions such as technical rescue and haz-mat mitigation. Hence, apparatus specifications should allow for adequate compartment space and other design configurations that will facilitate this broader role.

The consultant also recommends the adoption of Class “A” Foam systems, for example, which nearly triple the firefighting capability of water carried on pumpers.

APPARATUS FIELD INSPECTIONS

In viewing the photos which portray examples of York Area United Fire and Rescue Apparatus, they appear to be of high quality and give the appearance of good maintenance. This visual is backed up with a more in-depth field examination.

The records show how each of the five stations maintain this equipment in excellent condition. The shining exteriors however, are also representative of their road-worthiness as well. Maintenance records show attention to mechanical issues as well, so that they are reliable and ready to roll.

- Pump tests throughout YAUFR are current
- Ladder tests for aerials are current
- Mechanical Records are fairly good everywhere

This message comes from the rear of a Ladder Truck in North Carolina.

“Stay Back 500 feet” can be confusing when an unwary civilian comes up behind a fire vehicle and wonders why they need to be nearly two football fields away. Maybe we need to add “During Emergency”



The YAUFR fleet is well maintained. The exterior paint on most vehicles appears to be in good condition considering the punishing winter weather in Pennsylvania. The tires utilized on the frontline fleet also appear to be replaced regularly, maintaining good tread for serviceability and safety

Tracking of the hours and mileage on all York Area United Fire and Rescue Fire Vehicles is important. The above dates and costs can vary and serve as guidelines. They provide a means of planning approximate replacement dates. Specific circumstances must be weighed prior to any significant investment in rolling stock.

When maintenance costs for any one vehicle exceed what would be a lease payment for a new replacement, it is time to remove it from the fleet. There is always a balancing act between the ever-increasing maintenance costs of an aging vehicle and the large capital cost of a new one. York Area United Fire and Rescue units have balanced these off-setting factors well.

We agree that the aerial ladder should have water, pump and hose capabilities in addition to the aerial and ground ladder functions, as is the case in YAUFR. This ‘five function’ vehicle or “Quint” makes sense when staffing is limited.

The continued development and infrastructure upgrades (larger water main installation) expected in the future with land development, many the pumping capacity of the existing fleet will be adequate.

As aerial ladders are added in York Area United Fire and Rescue, the consultants think they should continue to be quints. In **Appendix 2-J** is an article by Robert Avsec giving a description and more information on quint apparatus.

While the apparatus fleets are important, they offer nothing without the personnel who arrive with and operate them. We noted earlier that a large beautiful fleet is useless if there are few personnel available to get them on the road

When we consider the cost of fire apparatus units and watch its continual rise, we are reminded of the value of training for driver/operators. Protecting vehicles on the road can be accomplished with visibility striping and lighting. In light of the fact that YAUFR apparatus is exposed to potential danger on Interstate 83 and other busy thoroughfares, we are pleased that steps have been taken for reflective safety markings on vehicles

Some Chiefs brag about their array of equipment but if they have only enough staffing on duty for one vehicle, their true measure of life-saving and property saving is the first vehicle rather than their large fleet. It is better to have a staffed used fire truck than one that is in mint condition and new, but sitting idle for lack of staffing.

Once adequate staffing is in place, the next priority is the apparatus fleet. **Appendix 2-K** we show how Ashville used funding combinations to purchase a ladder truck with a price tag of \$1.5 million.

We believe that York Area United Fire and Rescue will improve its balance between personnel and equipment with minimum crew sizes of three (3).

Part of the protection equation, however, involves mutual aid which is reliable from the City of York but varies in its effectiveness from other adjacent jurisdictions.

MODULE 2 CONCLUSION

This Second Module of six covers several key topics, but all related. First, consultants examined locations of all York Area United Fire and Rescue stations and found overall good coverage. We showed how the addition of a new station in the Manchester area improves greatly the response times there.

The polygon mapping from the W5 Design Organization does show good 6-minute coverage throughout the district, with overlap in key areas.

We addressed the potential for new member communities being added to the YAUFR network but agree with Chief Hoff who made it clear that both the fire department leadership and the Governmental officials in any jurisdiction must both be on board before any merger is entertained.

The analysis was a complex undertaking where a change in one factor has a ripple effect changing all others. For example, the types of fire apparatus and other emergency response vehicles determine the size needs of a given station. The age and condition of an existing station determines whether it is viable or needs replacing. As diversity and size among on-duty staffing increases, many stations will need improved overnight accommodations and less bay space since a quickly arriving department will need fewer apparatus pieces.

We noted that York Area United Fire and Rescue, as a whole, maintains a serviceable inventory of front-line fire apparatus, matched well to community needs.

We noted also that the York Area United Fire and Rescue network continues to purchase apparatus in a similar fashion as years past and, whether they have been staffed full-time, combination or volunteer, they continue to maintain a fleet of multiple vehicles of similar type. There is usually a “primary” or first-out pumper (usually the newest), a second-out pumper, in some instances a third out pumper in reserve. The ladder coverage is adequate

One key admonition by the consultants to York Area United Fire and Rescue, was that they not sacrifice personnel for new equipment, since the latter is not as important when personnel are scarce.

Pumpers should be replaced every five to eight years, service vehicles every ten to twelve years, and aerial apparatus every 18 years. YAUFR is aware of these guidelines and the apparatus replacement plans are all within the guidance of the NFPA 1901 standards.

Maintenance records show attention to mechanical issues as well so that they are reliable and ready to roll.

- Pump tests are current
- Ladder tests for aerials are current
- Mechanical Records are fairly good everywhere



Professionals serving with distinction

In conclusion the fire department's stations are serviceable and the apparatus fleet is overall in good condition and are serviceable in the districts they protect.

The consultants have balanced all of these factors in presenting a blueprint for the future in York Area United Fire and Rescue.

We continued a theme from Module 1, giving an overview of fire protection which projects the themes of declining volunteerism in YAUFR necessitating additional paid personnel. In turn, plans for fire stations and apparatus configurations must adjust as personnel deal with an ever-increasing role in rescue and first response for Emergency Medical Service. (EMS).

APPENDIX 2-A

New Station in Phoenixville, PA with Community Involvement



Patch News

New Phoenixville Fire Station Dedication Set for Aug. 20



The public is invited to a parade and other festivities at 1 p.m. outside the new station.

Holly Herman, Patch Staff Posted Thu, Jul 28, 2022

PHOENIXVILLE, PA — The Phoenixville Fire Department invites the public to a dedication of its new fire station at 1 p.m. Saturday, Aug. 20.

The festivities will begin with a parade starting at the current station on Church Street, marching to the new station on Paradise Street.

The festivities will include housing of the emergency vehicles in the new building and more.

The station was funded with a \$1.75 million state grant and a \$15 million bond that borough obtained in 2020 for the station and to replace the civic center, 123 Main St.

The new station has an office and support space, six-bay drive-thru apparatus room, and an indoor and outdoor training capabilities.

Find out what's happening in Phoenixville with free, real-time updates from Patch.

Let's go!

More information on the dedication is available [here](#).

Get more local news delivered straight to your inbox. [Sign up for free Patch newsletters and alerts.](#)

The Times Herald

Phoenixville, PA dedicates new fire station



Members of the Phoenixville Fire Department push the fire trucks into the bays of the new firehouse during the fire station dedication and housing ceremony on Paradise Street. (Barry Taglieber – For MediaNews Group)

By [MEDIANEWS GROUP](#) August 23, 2022.

PHOENIXVILLE — The Phoenixville Fire Department held a building dedication and housing ceremony for its new fire station on Paradise Street.

A parade from the current station on Church Street to the new station kicked off the day's festivities, followed by the building dedication and housing of fire trucks and emergency vehicles at the new station.

A “housing” is a traditional ceremony in the fire service in which new apparatus is pushed into the station three times — once for God, once for country, and once for the fire service.

APPENDIX 2-B

New Stations for Manheim Township, PA and Boswell, PA



Manheim Township (PA) Dedicates New Fire Station

By Fireapparatus Magazine Review Content Directors -
7.28.2022



Firefighters with Manheim Township (PA) Fire Rescue held a dedication and open house of their new facility, Station 202 on Wednesday night, according to the department's [Facebook event page](#).

The department said the event was attended by the Manheim Township Board of Commissioners and Sparky the Fire Dog as well as fire and township officials. Tours of the station were conducted and free ice cream was served to those who attended the event.

Boswell (PA) Breaks Ground for New Fire Station

By **Ed Ballam** - 10.8.2021



Boswell (PA) Volunteer Fire Department/Facebook Image

Using public and private funds, firefighters in Boswell (PA) hope to have a new fire station by early 2022, according to a report published by [The Tribune-Democrat](#).

Groundbreaking for Boswell Volunteer Fire Department's new home was held on Wednesday (Oct. 6) afternoon, the newspaper reported, adding the new facility will have a high-bay garage for apparatus, gear stalls, sleeping quarters and a lounge, as well as storage areas and offices for the fire and the ambulance services.

Construction on the new building on Hower Avenue, the site of the department's social hall and grove, will take about four months, according to the report.

Funding for the project will partly come from a \$500,000 grant from the Pennsylvania Redevelopment Assistance Capital program as well as donations from a person outside of the region who learned of the department's need for more space and decided to help, the newspaper reported, adding that the anonymous donor will cover the different between the grant and the final cost of the project.

APPENDIX 2-C

Square Footage Work-up Form for New Fire Station Planning



City of Lebanon New Fire Station 41			DRAFT 06/20/18		Space Analysis	
Fire & EMS						
Component		Exist	Station Program			Remarks
			No. of Units	Area of Units	Net Sq. Ft.	
1	ADMINISTRATION					
1.01	Vestibule		1	100	100	
1.02	Lobby / Historical Display		1	350	350	
1.03	Public Restroom		1	60	60	
1.04	Interview / Treatment Room		1	100	100	
1.05	Administrative Assistant		1	120	120	
1.06	Chief		1	200	200	
1.07	Shift Commander		1	200	200	shared office
1.08	On-Duty Lieutenant		1	200	200	shared office
1.09	Small Conference Room		1	135	135	
1.10	File/Copy/Work Room		1	120	120	
1.11	Training Room / E.C.C.		1	800	800	
1.12	Table / Chair Storage		1	80	80	
1.13	ECC Storage		1	100	100	
1.14	Fire Prevention Bureau		1	100	100	
1.15	Women's Restroom		1	160	160	
1.16	Men's Restroom		1	160	160	
1.17	Radio/Report Room		1	150	150	
	Subtotal				3,135	
2	LIVING/SUPPORT AREAS					
2.01	Day Room		1	600	600	
2.02	Dining Room		1	400	400	
2.03	Kitchen		1	300	300	
2.04	Pantry (shift + common)		4	40	160	
2.05	Officer Bunk Room		2	75	150	
2.06	Staff Bunk Room		1	600	600	(8) bunks within common area
2.07	Shower/Restrooms		4	90	360	
2.08	Laundry Room		1	80	80	
2.09	Fitness Room		1	800	800	
2.10	Personnel Lockers		1	200	200	
	Subtotal				3,650	

City of Lebanon New Fire Station 41			DRAFT 06/20/19		Space Analysis	
Fire & EMS						
Component		Exist	Station Program			Remarks
			No. of Units	Area of Units	Net Sq. Ft.	
3 APPARATUS						
3.01	Apparatus Bay		3	1,350	4,050	14'x14' doors, 18' wide x75' deep
3.02	EMS Storage		1	120	120	
3.03	SCBA Fill		1	160	160	
3.04	SCBA Maintenance		1	80	80	
3.05	Turnout Gear Room		1	600	600	40 TOG lockers
3.06	TOG Laundry		1	120	120	
3.07	Clean/Decon Room		1	120	120	
3.08	Central Supply		1	300	300	
3.09	Training Mezzanine		1	1,400	1,400	
3.10	Shop/Work Room		1	120	120	
	Subtotal				6,970	
4 Building Services						
4.01	Electrical		1	160	160	
4.02	Server		1	60	60	
4.03	Janitor's Closet		1	20	20	
4.04	Mechanical		1	100	100	
4.05	Fire Suppression/Domestic Water		1	80	80	
	Subtotal				430	
SUBTOTAL					14,188	
FIRE/ EMS - SUMMARY						
	Net Square Feet				14,188	
	Construction Factor				1.30	
	Department Gross Square Feet Subtotal	0			15,441	
	Building Footprint				15,431	omits mezzanine

APPENDIX 2-D

\$3 Million Cost Overruns in Middletown, OH Fire Stations



Cost to build four fire stations in Middletown jumps \$3 million



Caption

NEWS

By [Rick McCrabb](#) 8-25-2022

Voters approved levy that will generate \$16.8 million; city leaders looking for ways to fill gap.

The cost to build four fire stations in Middletown has increased to \$19.8 million, or 18% higher than Middletown voters approved when they overwhelmingly passed a 1-mill property tax levy in May 2022.

The cost was expected to be \$16.8 million, but the estimate has increased due to inflation, according to projections from App Architecture, the Englewood firm hired to perform the designs.

City Manager Paul Lolli, during a special City Council meeting Wednesday morning, reviewed what he called “worse case scenarios” with council members. The \$19.8 million doesn’t include \$2.6 million for the “soft cost” and \$1.98 million for the 10% “contingency costs,” bringing the total to \$24.4 million, he said. He reminded council that voters only approved the cost of building the fire stations, based on late 2020 estimates.

The gap in funding may come out of the city's American Rescue Plan Act funds or the city's \$10 million general fund surplus, he said. As a way to reduce the cost, Lolli said the city could build "a lot cheaper" stations, but instead of them lasting 40 years, they would need to be replaced in 20-25 years.

Mayor Nicole Condrey asked if there was an opportunity to build three stations and possibly delay the fourth station.

That, Lolli said, would "crush morale" in the fire department.

Acting Fire Chief Thomas Snively said the city needs to plan for growth, especially in the East End. He said the current station on Dixie Highway has three firefighters and the new station by Atrium Medical Center will have five firefighters on duty.

The new fire stations also will provide the firefighters more space and that will reduce response times, he said. Firefighters "live and die" by response times and seconds matter, Snively said.

Fire officials have said the aging fire stations do not meet the codes for fire alarm systems, suppression systems and Americans with Disabilities Act compliance, among others.

The stations also lack accommodations for female firefighters creating "an obstacle in being a diverse and inclusive department," officials said.

Vice Mayor Monica Nenni asked about the city's plans for the four old stations once the new ones are built. Lolli said the stations and properties are valued at \$2 million and there has been discussions about moving the city's health department out of the City Building and into Station 81, just across the street.

MIDDLETOWN'S FOUR FIRE STATIONS ESTIMATES BEFORE RECENT COST INCREASES

- New fire headquarters location replacing the 1.38-acre site on Roosevelt Boulevard: A 3.6-acre site at Yankee Road and Cherry Street owned by the city as acquired from the Middletown City Schools and former site of Garfield school. Size: 24,300 square feet. Cost: \$7,168,500.
- Station No. 81 location replacing 0.28-acre site on Clinton Street: A 2.85-acre site at Henry Avenue and Charles Street owned by the city as acquired from the Middletown City Schools and former site of the Jefferson school. Size: 10,200 square feet. Cost: \$3,009,000
- Station No. 85 location replacing 0.86-acre site at Central Avenue and Breiel Boulevard: A 2-acre parcel at Sophie Avenue and Stolz Drive encompassing the undeveloped, southern portion of Dowling Park owned by the city. Size: 10,200 square feet. Cost: \$3,009,000.
- No. 82 location replacing 0.88-acre site on Dixie Highway: A 2.7-acre site at Ohio 122 and Atrium Boulevard acquired from Premier Health/Atrium Medical Center. Size: 11,800 square feet. Cost: \$3,481,000.

SOURCE: City of Middletown

UPDATED COST OF BUILDING THE FOUR FIRE STATIONS

Construction: \$19.8 million

APPENDIX 2-E

Eco-Friendly Fire Station Construction



Fire Station 10 becomes second facility to 'flip the switch' on solar energy in Asheville

by Brittany Whitehead

Thursday, October 21st 2021



OCT. 6, 2021 - Buncombe County commissioners have voted to approve four more solar panel projects in the county, including at the UNC Asheville Reuter Center and the Carver Community Center in Black Mountain. (Photo credit: WLOS Staff

ASHEVILLE, N.C. (WLOS) — Continuing an initiative to install solar panels on buildings in Asheville and Buncombe County, the City of Asheville recently "flipped the switch" on solar panels just installed at Fire Station 10.

Located on Old Haywood Road, Fire Station 10 became the second facility to include renewable energy production. The photovoltaic array, or solar panels, will now provide about 40% of the energy consumed by the fire station.

This installation, along with [the first at the Transit Station on Coxe Avenue](#), support the Asheville City Council's 100% Renewable Energy Initiative and the council's goal of A Clean and Healthy Environment.

The larger initiative includes installing solar panels on Buncombe County government, Asheville City and Buncombe County schools and AB-Tech facilities.

Installation of the solar panels supports Council's strategic goal of A Clean and Healthy Environment and the 100% Renewable Energy Initiative.

The Fire Station 10 system will produce approximately 42,600 of kilowatt hours per year, which is enough electricity to power 3.6 homes.

BUNCOMBE COUNTY COMMISSION EYES SOLAR ENERGY SYSTEM EXPANSION

The electricity generated from Fire Station 10's panels will be utilized onsite. When the solar panels produce more electricity than the building needs, that energy will be sent back to the grid in exchange for credits. At night, or at times when the solar panels are under-producing, the City will pull energy from the grid and use these credits to offset the costs of that energy. This is known as a “net-metered” system.

Check out the [City's real-time monitoring web page HERE](#) to follow along and see how much energy the fire station's and the rest of the City's solar panels are producing.

APPENDIX 2-F

Lucas Life-savers



LUCAS® 3 Chest Compression System

Part #: 99576-000063

Latest version of the LUCAS Chest Compression Systems

[Write a Review](#)

Your Price: \$16,190.00

[Hover to zoom](#)



LUCAS® 3.1 Chest Compression System by Physio-Control

LUCAS chest compression systems have been assisting lifesaving efforts around the world, delivering high-quality, guidelines-consistent compressions in the field, during transport, and in the hospital.

With over 12 years of clinical experience, we proudly present the third generation LUCAS device, built on the LUCAS legacy. The LUCAS 3 chest compression system has improved features to facilitate maintenance and handling and allows for new insights through easy, wireless access to device data.

Effective chest compressions are essential when performing CPR. Uninterrupted compressions and complete chest rebound are the keys to improving the flow of oxygenated blood to vital organs, thus improving the chances for survival.

However, as any rescuer can attest, performing manual CPR can be difficult and exhausting. Often, compressions become shallower and the pace may slow as the rescuer begins to fatigue. It is often necessary to switch rescuers performing compressions.

During a rescue, there are many tasks to perform in addition to CPR. Resources are pushed to the limit, and seconds are precious.

The LUCAS 3.1 Chest Compression System has been designed to deliver uninterrupted chest compressions at a consistent rate and depth, whether in the field, during transport, and throughout the hospital. It also frees up the rescuers from chest compressions, allowing them to attend to other critical issues.

LUCAS 3.1 is lightweight, portable, easy-to-use, and will deliver guidelines-consistent chest compressions at a rate of 100 compressions per minute at a depth of at least 2 inches. It will also allow for complete chest wall recoil after each compression. LUCAS ensures rescuer safety during patient transport, as there is no need to have an unsecured person performing CPR in the vehicle.

LUCAS 3.1 can operate for up to 45 minutes on its rechargeable battery, which can recharge in under 4 hours. There is also a power option for 120V A/C.

LUCAS 3.1 ships with one rechargeable lithium polymer battery, patient straps, back plate, two suction cups, hard-shell carrying case, and instructions for use.

Please note: LUCAS 3.1 accessories are available at AED Superstore.

Alternate Part Number(s): 99576-000043, 99576-000063

APPENDIX 2-G

NFPA Apparatus Standards



Chapter 6 Initial Attack Fire Apparatus

6.1 General. If the apparatus is to function as an initial attack fire apparatus, it shall meet the requirements of this chapter.

6.2 Fire Pump. The apparatus shall be equipped with a fire pump that meets the requirements of Chapter 16 and that has a minimum rated capacity of 250 GPM (1000 L/min).

6.3 Water Tank. Initial attack apparatus shall be equipped with a water tank(s) that meets the requirements of Chapter 18 and that has a minimum certified capacity (combined, if applicable) of 200 gal (750 L).

6.4* Equipment Storage. A minimum of 22 ft³ (0.62 m³) of enclosed weather-resistant compartmentation that meets the requirements of Section 15.1 shall be provided for the storage of equipment.

6.5* Hose Storage. Hose bed area (s), compartments, or reels that meet the requirements of Section 15.10 shall be provided to accommodate the following:

- (1) Aluminum hose storage area of 10 ft³ (0.3 m³) for 2-1/2 in. (65 mm) or larger fire hose
- (2) Two areas, each a minimum of 3.5 ft³ (0.1m³), to accommodate 1 1/2 in. (38 mm) or larger preconnected fire hose lines

6.6* Equipment Supplied by the Contractor. The contractor shall supply the equipment listed in 6.6.1 and 6.6.2 and shall provide and install such brackets or compartments as are necessary to mount the equipment.

6.6.1 Ground Ladders.

6.6.1.1 A 12 ft (3.7 m) or longer combination or extension type fire department ground ladder shall be carried on the apparatus.

6.6.1.2 All fire department ground ladders on the apparatus shall meet the requirements of NFPA 1931, *Standard for Manufacturer's Design of Fire Department Ground Ladders*, except as permitted by 6.6.1.3.

6.6.1.3 Stepladders and other types of multipurpose ladders shall be permitted to be carried in addition to the minimum fire department ground ladders specified in 6.6.1.1 provided they meet either ANSI A14.2 or ANSI A14.5 with duty ratings of Type 1 A or 1 AA.

6.6.2 Suction Hose or Supply Hose.

6.6.2.1 A minimum of 20 ft (6 m) of suction hose or 15 ft (4.5 m) of supply hose shall be carried.

6.6.2.1.1 Where suction hose is provided, a suction strainer shall be furnished.

6.6.2.1.2 Where suction hose is provided, the friction and entrance loss of the combination suction hose and strainer shall not exceed the losses listed in Table 16.2.4.1(b) or Table 16.2.4.1(c).

6.6.2.1.3 Where supply hose is provided, it shall have couplings compatible with the local hydrant outlet connection on one end and the pump intake connection on the other end.

6.6.2.2 Suction hose and supply hose shall meet the requirements of NFPA 1961, *Standard on Fire Hose*.

6.6.2.3* The purchaser shall specify whether suction hose or supply hose is to be provided, the length and size of the hose, the type and size of the couplings, the manner in which the hose is to be carried on the apparatus, and the style of brackets desired.

6.7* Minor Equipment.

6.7.1 General. The equipment listed in 6.7.2 and 6.7.3 shall be available on the initial attack fire apparatus before the apparatus is placed in service.

6.7.1.1 Brackets or compartments shall be furnished so as to organize and mount the specified equipment.

6.7.1.2 A detailed list of who is to furnish the items and the method for organizing and mounting these items shall be supplied by the purchasing authority.

6.7.2 Fire Hose and Nozzles. The following fire hose and nozzles shall be carried on the apparatus: (1) 300 ft (90 m) of 2-1/2 in. (65 mm) or larger fire hose (2) 400 ft (120 m) of 1 1/2 in. (38 mm), 1 3/4 in. (45 mm), or 2 in. (52 mm) fire hose (3) Two handline nozzles, 95 GPM (360 L/min) minimum

6.7.3* Miscellaneous Equipment. The following additional equipment shall be carried on the apparatus:

- (1) One 6 lb. (2.7 kg) pick head axe mounted in a bracket fastened to the apparatus
- (2) One 6 ft (2 m) pike pole or plaster hook mounted in a bracket fastened to the apparatus
- (3) Two portable hand lights mounted in brackets fastened to the apparatus
- (4) One approved dry chemical portable fire extinguisher with a minimum 80-B: C rating mounted in a bracket fastened to the apparatus (5) One 2-1/2 gal (9.5 L) or larger water extinguisher mounted in a bracket fastened to the apparatus

(6) One SCBA complying with NFPA 1981, *Standard on Open- Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*, for each assigned seating position, but not fewer than two, mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer (7) One spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s) (8) One first aid kit

- (9) Two combination spanner wrenches mounted in a bracket(s) fastened to the apparatus
- (10) One hydrant wrench mounted in a bracket fastened to the apparatus
- (11) One double female adapter, sized to fit 2-1/2 in. (65 mm) or larger fire hose, mounted in a bracket fastened to the apparatus
- (12) One double male adapter, sized to fit 2-1/2 in. (65 mm) or larger fire hose, mounted in a bracket fastened to the apparatus
- (13) One rubber mallet, for use on suction hose connections, mounted in a bracket fastened to the apparatus

- (14) Two or more-wheel chocks, mounted in readily accessible locations, that together will hold the apparatus, when loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released
- (15) One traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High-Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front
- (16) Five fluorescent orange traffic cones not less than 28 in. (711 mm) in height, each equipped with a 6 in. (152 mm) retroreflective white band no more than 4 in. (102 mm) from the top of the cone, and an additional 4 in. (102 mm) retroreflective white band 2 in. (51 mm) below the 6 in. (152 mm) band
- (17) Five illuminated warning devices such as highway flares, unless the five fluorescent orange traffic cones have illuminating capabilities
- (18) One automatic external defibrillator (AED)

6.7.3.1 If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3 in. (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.

6.7.3.2 If the apparatus does not have a 2-1/2 in. intake with NH threads, an adapter from 2-1/2 in. NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.

6.7.3.3 If the supply hose carried has other than 2-1/2 in. NH threads, adapters shall be carried to allow feeding the supply hose from a 2-1/2 in. NH thread male discharge and to allow the hose to connect to a 2-1/2 in. NH female intake mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

Chapter 7 Mobile Water Supply Fire Apparatus (Tanker)

7.1 General. If the apparatus is to function as a mobile water supply apparatus, it shall meet the requirements of this chapter.

7.2 Fire Pump. If the apparatus is equipped with a fire pump, the pump shall meet the requirements of Chapter 16.

7.3 Aerial Device. (Reserved)

7.4 Foam Proportioning System. If the apparatus is equipped with a foam proportioning system, it shall meet the requirements of Chapter 20.

7.5 Water Tank. The mobile water supply apparatus shall be equipped with a water tank(s) that meets the requirements of Chapter 18 and that has a minimum certified capacity (combined, if applicable) of 1000 gal (4000 L).

7.6* Equipment Storage. A minimum of 10 ft³ (0.03 m³) of enclosed weather-resistant compartmentation meeting the requirements of Section 15.1 shall be provided for the storage of equipment.

7.7* Hose Storage.

7.7.1 Hose bed area(s), compartments, or reels that comply with Section 15.10 shall be provided to accommodate a minimum hose storage area of 6 ft³ (0.8 m³) for 2 1/2 in. (65 mm) or larger fire hose.

7.7.2 If the apparatus is equipped with a pump, storage for a minimum of 100 ft (30 m) of 1 1/2 in. (38 mm) or larger fire hose for a protection line shall be provided.

7.8* Equipment Supplied by the Contractor. The contractor shall supply the equipment listed in 7.8.1 and 7.8.2 and shall provide and install such brackets or compartments as are necessary to mount the equipment.

7.8.1 Ground Ladders. Not required unless specified by the purchaser. **7.8.2** Suction Hose or Supply Hose. If the mobile water supply fire apparatus is equipped with a pump, the requirements in 7.9.1 through 7.9.3 shall apply.

7.8.2.1 A minimum of 20 ft (6 m) of suction hose or 15 ft (4.5 m) of supply hose shall be carried.

7.8.2.1.1 Where suction hose is provided, a suction strainer shall be furnished.

7.8.2.1.2 Where suction hose is provided, the friction and entrance loss of the combination suction hose and strainer shall not exceed the losses listed in Table 16.2.4.1(b) or Table 16.2.4.1(c).

7.8.2.1.3 Where supply hose is provided, it shall have couplings compatible with the local hydrant outlet connection on one end and the pump intake connection on the other end.

7.8.2.2 Suction hose and supply hose shall meet the requirements of NFPA 1961.

7.8.2.3* The purchaser shall specify whether suction hose or supply hose is to be provided, the length and size of the hose, the type and size of the couplings, the manner in which the hose is to be carried on the apparatus, and the style of brackets desired.

7.9* Minor Equipment.

7.9.1 General. The equipment listed in 7.9.3 and 7.9.4 shall be available on the mobile water supply apparatus before the apparatus is placed in service.

7.9.2 A detailed list of who is to furnish the items and the method for organizing and mounting these items shall be supplied by the purchasing authority. **7.9.3** Fire Hose and Nozzles.

7.9.3.1 The mobile water supply apparatus shall be equipped with at least 200 ft (60 m) of 2 1/2 in. (65 mm) or larger fire hose.

7.9.3.2* If the mobile water supply apparatus is equipped with a fire pump, the following shall be provided:

(1) 100 ft (30 m) of 1 1/2 in. (38 mm), 1 3/4 in. (45 mm), or 2 in. (52 mm) fire hose (2) One handline nozzle, 95 GPM (360 L/min) minimum

7.9.4* Miscellaneous Equipment. Mobile water supply fire apparatus shall be equipped with at least the following equipment:

(1) Two portable hand lights

(2) One approved dry chemical portable fire extinguisher with a minimum 3A-40B:C rating

(3) One first aid kit

(4) Two combination spanner wrenches

(5) One hydrant wrench

(6) One double female adapter sized to fit 2-1/2 in. (65 mm) or larger fire hose

(7) One double male adapter sized to fit 2-1/2 in. (65 mm) or larger fire hose

(8) Two or more-wheel chocks, mounted in readily accessible locations, that together will hold the apparatus, when loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released

(9) One traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, Standard for High-Visibility Public Safety Vests, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front

(10) Five fluorescent orange traffic cones not less than 28 in. (711 mm) in height, each equipped with a 6 in. (152 mm) retroreflective white band no more than 4 in. (102 mm)

from the top of the cone, and an additional 4 in. (102 mm) retroreflective white band 2 in. (51 mm) below the 6 in. (152 mm) band

(11) Five illuminated warning devices such as highway flares, unless the five fluorescent orange traffic cones have illuminating capabilities

(12) One automatic external defibrillator (AED)

7.9.4.1 Reserved.

7.9.4.2 If the mobile water supply apparatus is equipped with a fire pump and none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3 in. (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.

7.9.4.3 If the mobile water supply apparatus is equipped with a fire pump, a rubber mallet for use on suction hose connections shall be carried.

7.9.4.4 If the apparatus does not have a 2-1/2 in. intake with NH threads, an adapter from 2 1/2 in. NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.

7.9.4.5 If the supply hose carried has other than 2-1/2 in. NH threads, adapters shall be carried to allow feeding the supply hose from a 2-1/2 in. NH thread male discharge and to allow the hose to connect to a 2-1/2 in. NH female intake mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

Chapter 8 Aerial Fire Apparatus

8.1 General.

8.1.1 If the apparatus is to function as an aerial fire apparatus, it shall meet the requirements of this chapter.

8.1.2 If the apparatus is to function as a pumper with an aerial device, it shall meet all the requirements of Chapter 5 instead of Chapter 8.

8.2 Aerial Device. The apparatus shall be equipped with an aerial ladder, elevating platform, or water tower that meets the requirements of Chapter 19.

8.3* Fire Pump. If the apparatus is equipped with a fire pump, the pump shall meet the requirements of Chapter 16.

8.3.1 Provisions shall be made to ensure that the pump operator is not in contact with the ground.

8.3.2 Signs shall be placed to warn the pump operator of electrocution hazards.

8.3.3 If the aerial fire apparatus is equipped with a fire pump that is intended to supply water to a permanently mounted waterway, the fire pump shall be capable of supplying the flow requirements of 19.6.1, 19.12.1, or 19.16.1 with a maximum intake gauge pressure of 20 psi (138 kPa).

8.4 Water Tank. If the aerial fire apparatus is equipped with a water tank, it shall meet the requirements of Chapter 18.

8.5* Equipment Storage. A minimum of 40 ft³ (1.1 m³) of enclosed weather-resistant compartmentation meeting the requirements of Section 15.1 shall be provided for the storage of equipment.

8.6 Hose Storage.

8.6.1* Any space on the aerial fire apparatus designed to carry fire hose shall meet the requirements of Section 15.10.

8.6.2 If the apparatus is equipped with a fire pump and a water tank, two areas, each a minimum of 3.5 ft³ (0.1 m³), to accommodate 1 1/2 in. (38 mm) or larger preconnected fire hose lines shall be provided.

8.7* Ground Ladders.

8.7.1* A minimum of 115 ft (35 m) of fire department ground ladders shall be supplied and installed by the contractor.

8.7.2* As a minimum, the following types of ladders shall be provided:

- (1) One folding ladder
- (2) Two straight ladders (with folding roof hooks)
- (3) Two extension ladders

8.7.3 The contractor shall provide such brackets or compartments as are necessary to mount the equipment.

8.7.4 The fire department ground ladders shall meet the requirements of NFPA 1931, *Standard for Manufacturer's Design of Fire Department Ground Ladders*, except as permitted by 8.7.5 and 8.7.6.

8.7.5 Stepladders and other types of multipurpose ladders meeting ANSI A14.2, *Ladders — Portable Metal — Safety Requirements*, or ANSI A14.5, *Ladders—Portable Reinforced Plastic—Safety Requirements*, with duty ratings of Type 1A or 1AA shall be permitted to be substituted for the folding ladder required in 8.7.2(1).

8.7.6 Stepladders and other types of multipurpose ladders shall be permitted to be carried in addition to the minimum fire department ground ladders specified in 8.7.2 provided they meet either ANSI A14.2 or ANSI A14.5 with duty ratings of Type 1A or 1AA.

8.8* Minor Equipment.

8.8.1 The equipment listed in 8.8.2 and 8.8.3 shall be available on the aerial fire apparatus before the apparatus is placed in service.

8.8.1.1 Brackets or compartments shall be furnished so as to organize and mount the specified equipment.

8.8.1.2 A detailed list of who is to furnish the items and the method for organizing and mounting these items shall be supplied by the purchasing authority.

8.8.2* Aerial fire apparatus shall be equipped with at least the following equipment:

- (1) Two 6 lb (2.7 kg) flathead axes mounted in brackets fastened to the apparatus
- (2) Three 6 lb. (2.7 kg) pick head axes mounted in brackets fastened to the apparatus
- (3) Four pike poles mounted in brackets fastened to the apparatus
- (4) Two 3 ft to 4 ft (1 m to 1.2 m) plaster hooks with D-handles mounted in brackets fastened to the apparatus
- (5) Two crowbars mounted in brackets fastened to the apparatus
- (6) Two claw tools mounted in brackets fastened to the apparatus
- (7) Two 12 lb (5 kg) sledgehammers mounted in brackets fastened to the apparatus
- (8) Four portable hand lights mounted in brackets fastened to the apparatus
- (9) One approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus
- (10) One 2-1/2 gal (9.5 L) or larger water extinguisher mounted in a bracket fastened to the apparatus
- (11) One SCBA complying with NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*, for each assigned seating position, but not fewer than four, mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer
- (12) One spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s)
- (13) One first aid kit
- (14) Six salvage covers, each a minimum size of 12 ft × 18 ft (3.6 m × 5.5 m)
- (15) Four combination spanner wrenches mounted in brackets fastened to the apparatus
- (16) Two scoop shovels mounted in brackets fastened to the apparatus
- (17) One pair of bolt cutters, 24 in. (0.6 m) minimum, mounted in a bracket fastened to the apparatus
- (18) Four ladder belts meeting the requirements of NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*
- (19) One 150 ft (45 m) light-use life safety rope meeting the requirements of NFPA 1983
- (20) One 150 ft (45 m) general-use life safety rope meeting the requirements of NFPA 1983
- (21) Two 150 ft (45 m) utility ropes having a breaking strength of at least 5000 lb (2300 kg)
- (22) One box of tools to include the following:
 - (a) One hacksaw with three blades
 - (b) One keyhole saw
 - (c) One 12 in. (0.3 m) pipe wrench
 - (d) One 24 in. (0.6 m) pipe wrench
 - (e) One ballpeen hammer
 - (f) One pair of tin snips
 - (g) One pair of pliers
 - (h) One pair of lineman's pliers
 - (i) Assorted types and sizes of screwdrivers
 - (j) Assorted adjustable wrenches
 - (k) Assorted combination wrenches
- (23) Two or more wheel chocks, mounted in readily accessible locations, that together will hold the apparatus, when loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released
- (24) One traffic vest

for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High-Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front (25) Five fluorescent orange traffic cones not less than 28 in. (711 mm) in height, each equipped with a 6 in. (152 mm) retroreflective white band no more than 4 in. (102 mm) from the top of the cone, and an additional 4 in. (102 mm) retroreflective white band 2 in. (51 mm) below the 6 in. (152 mm) band (26) Five illuminated warning devices such as highway flares, unless the five fluorescent orange traffic cones have illuminating capabilities (27) One automatic external defibrillator (AED).

8.8.3 If the aerial fire apparatus is equipped with a fire pump, the requirements of 8.8.3.1 through 8.8.3.3 shall apply.

8.8.3.1 The following equipment shall be provided: (1) One double female 2-1/2 in. (65 mm) adapter with National Hose (NH) threads, mounted in a bracket fastened to the Apparatus (2) One double male 2-1/2 in. (65 mm) adapter with NH threads, mounted in a bracket fastened to the apparatus (3) One rubber mallet, for use on suction hose connections, mounted in a bracket fastened to the apparatus (4) Two hydrant wrenches mounted in brackets fastened to the apparatus.

8.8.3.2 If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, shall be carried mounted in brackets fastened to the apparatus.

8.8.3.3 If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3 in. (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.

8.8.3.4 If the apparatus does not have a 2-1/2 in. intake with NH threads, an adapter from 2-1/2 in. NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.

8.8.3.5 If the supply hose carried has other than 2-1/2 in. NH threads, adapters shall be carried to allow feeding the supply hose from a 2-1/2 in. NH thread male discharge and to allow the hose to connect to a 2-1/2 in. NH female intake mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

8.8.4* If the aerial fire apparatus does not have a pre-piped waterway provided, the following equipment shall be furnished:

(1) Manual ladder pipe with 1 1/4 in. (32 mm), 1 3/8 in. (35 mm), and 1 1/2 in. (38 mm) tips or electric ladder pipe with automatic nozzle that can be attached to the aerial ladder (2) Sufficient length(s) of 3 in. (75 mm) or larger attack hose complying with the requirements of NFPA 1961, *Standard on Fire Hose*, to reach between the installed ladder pipe and the ground with at least 10 ft (3 m) of hose available on the ground with the ladder at full extension (3) One hose strap for each ladder section (4) Halyards to control the ladder pipe from ground level (for manual ladder pipe only)

8.8.4.1 A bracket for carrying the detachable ladder pipe shall be provided on the apparatus and shall be designed so that the ladder pipe clamps will not have to be readjusted to secure the pipe to the aerial ladder.

8.8.4.2 The horizontal traverse of the detachable ladder pipe shall not exceed the aerial ladder manufacturer's recommendations.

8.8.4.3 The ladder pipe shall be capable of swiveling 135 degrees from a line parallel to the ladder and down.

Left: Straight Aerial Ladder as used in Cincinnati (NO water pump or hose) There, personnel are plentiful, but this is not recommended in YAUFR where personnel are scarce



Chapter 9 Quint Fire Apparatus

9.1 General. If the apparatus is to function as a quint, it shall meet the requirements of this chapter.

9.2 Fire Pump.

9.2.1 The apparatus shall be equipped with a fire pump that meets the requirements of Chapter 16 and has a minimum rated capacity of 1000 GPM (4000 L/min).

9.2.2 The fire pump shall be capable of supplying the flow requirements of 19.6.1 or 19.12.1 with a maximum intake gauge pressure of 20 psi (138 kPa).

9.2.3 Provisions shall be made to ensure that the pump operator is not in contact with the ground.

9.2.4 Signs shall be placed to warn the pump operator of electrocution hazards.

9.3 Aerial Device. The apparatus shall be equipped with an aerial ladder or an elevating platform with a permanently installed waterway that meets the requirements of Chapter 19.

9.4 Water Tank. The apparatus shall be equipped with a water tank(s) that meets the requirements of Chapter 18 and that has a minimum certified capacity (combined, if applicable) of 300 gal (1100 L).

9.5* Equipment Storage. A minimum of 40 ft³ (1.1 m³) of enclosed weather-resistant compartmentation that meets the requirements of Section 15.1 shall be provided for the storage of equipment.

9.6* Hose Storage. Hose bed area(s), compartments, or reels that comply with Section 15.10 shall be provided to accommodate the following:

- (1) Aluminum hose storage area of 30 ft³ (0.8 m³) for 2-1/2 in. (65 mm) or larger fire hose
- (2) Two areas, each a minimum of 3.5 ft³ (0.1 m³), to accommodate 1 1/2 in. (38 mm) or larger preconnected fire hose lines

9.7* Equipment Supplied by the Contractor. The contractor shall supply the equipment listed in 9.7.1 and 9.7.2 and shall provide and install such brackets or compartments as are necessary to mount the equipment.

9.7.1 Ground Ladders.

9.7.1.1 The quint shall carry a minimum of 85 ft (26 m) of fire department ground ladders to include at least one extension ladder, one straight ladder equipped with roof hooks, and one folding ladder.

9.7.1.2 All ground ladders carried on the apparatus shall meet the requirements of NFPA 1931, *Standard for Manufacturer's Design of Fire Department Ground Ladders*, except as permitted by 9.7.1.3 and 9.7.1.4.

9.7.1.3 Stepladders and other types of multipurpose ladders meeting ANSI A14.2, *Ladders — Portable Metal — Safety Requirements*, or ANSI A14.5, *Ladders—Portable Reinforced Plastic—Safety Requirements*, with duty ratings of Type 1A or 1AA shall be permitted to be substituted for the folding ladder required in 9.7.1.1.

9.7.1.4 Stepladders and other types of multipurpose ladders shall be permitted to be carried in addition to the minimum fire department ground ladders specified in 9.7.1.1 provided they meet either ANSI A14.2 or ANSI A14.5 with duty ratings of Type 1A or 1AA.

9.7.2 Suction Hose or Supply Hose.

9.7.2.1 A minimum of 20 ft (6 m) of suction hose or 15 ft (4.5 m) of supply hose shall be carried.

9.7.2.1.1 Where suction hose is provided, a suction strainer shall be furnished.

9.7.2.1.2 Where suction hose is provided, the friction and entrance loss of the combination suction hose and strainer shall not exceed the losses listed in Table 16.2.4.1(b) or Table 16.2.4.1(c).

9.7.2.1.3 Where supply hose is provided, it shall have couplings compatible with the local hydrant outlet connection on one end and the pump intake connection on the other end.

9.7.2.2 Suction hose and supply hose shall meet the requirements of NFPA 1961, *Standard on Fire Hose*.

9.7.2.3* The purchaser shall specify whether suction hose or supply hose is to be provided, the length and size of the hose, the type and size of the couplings, the manner in which the hose is to be carried on the apparatus, and the style of brackets desired.

9.8* Minor Equipment.

9.8.1 The equipment listed in 9.8.2 and 9.8.3 shall be available on the quint fire apparatus before the apparatus is placed in service.

9.8.1.1 Brackets or compartments shall be furnished so as to organize and mount the specified equipment.

9.8.1.2 A detailed list of who is to furnish the items and the method for organizing and mounting these items shall be supplied by the purchasing authority.

9.8.2* Fire Hose and Nozzles. The following fire hose and nozzles shall be carried on the apparatus:

- (1) 800 ft (240 m) of 2-1/2 in. (65 mm) or larger fire hose, in any combination
- (2) 400 ft (120 m) of 1 1/2 in. (38 mm), 1 3/4 in. (45 mm), or 2 in. (52 mm) fire hose, in any combination
- (3) One handline nozzle, 200 GPM (750 L/min) minimum

(4) Two handline nozzles, 95 GPM (360 L/min) minimum
(5) One playpipe with shutoff and 1 in. (25 mm), 1 1/8 in. (29 mm), and 1 1/4 in. (32 mm) tips equipment shall be carried on the apparatus:

- (1) One 6 lb (2.7 kg) flathead axe mounted in a bracket fastened to the apparatus
- (2) One 6 lb. (2.7 kg) pick head axe mounted in a bracket fastened to the apparatus
- (3) One 6 ft (2 m) pike pole or plaster hook mounted in a bracket fastened to the apparatus
- (4) One 8 ft (2.4 m) or longer pike pole mounted in a bracket fastened to the apparatus
- (5) Two portable hand lights mounted in brackets fastened to the apparatus
- (6) One approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus
- (7) One 2-1/2 gal (9.5 L) or larger water extinguisher mounted in a bracket fastened to the apparatus
- (8) One SCBA complying with NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*, for each assigned seating position, but not fewer than four, mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer
- (9) One spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s)
- (10) One spare SCBA cylinder for each SCBA carried
- (11) One first aid kit
- (12) Four combination spanner wrenches mounted in brackets fastened to the apparatus
- (13) Two hydrant wrenches mounted in brackets fastened to the apparatus
- (14) One double female 2-1/2 in. (65 mm) adapter with National Hose (NH) threads, mounted in a bracket fastened to the apparatus
- (15) One double male 2-1/2 in. (65 mm) adapter with NH threads, mounted in a bracket fastened to the apparatus
- (16) One rubber mallet, for use on suction hose connections, mounted in a bracket fastened to the apparatus
- (17) Four salvage covers, each a minimum size of 12 ft × 14 ft (3.7 m × 4.3 m)
- (18) Four ladder belts meeting the requirements of NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*
- (19) One 150 ft (45 m) light-use life safety rope meeting the requirements of NFPA 1983
- (20) One 150 ft (45 m) general-use life safety rope meeting the requirements of NFPA 1983
- (21) Two or more wheel chocks, mounted in readily accessible locations, that together will hold the apparatus, when loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released
- (22) One traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High-Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front
- (23) Five fluorescent orange traffic cones not less than 28 in. (711 mm) in height, each equipped with a 6 in. (152 mm) retroreflective white band no more than 4 in. (102 mm) from the top of the cone, and an additional 4 in. (102 mm) retroreflective white band 2 in. (51 mm) below the 6 in. (152 mm) band
- (24) Five illuminated warning devices such as highway flares, unless the five fluorescent orange traffic cones have illuminating capabilities
- (25) One automatic external defibrillator (AED)

9.8.3.1 If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, shall be carried mounted in brackets fastened to the apparatus.

9.8.3.2 If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3 in. (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.

9.8.3.3 If the apparatus does not have a 2-1/2 in. intake with NH threads, an adapter from 2-1/2 in. NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.

9.8.3.4 If the supply hose carried has other than 2-1/2 in. NH threads, adapters shall be carried to allow feeding the supply hose from a 2-1/2 in. NH thread male discharge and to allow the hose to connect to a 2-1/2 in. NH female intake mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

Chapter 10 Service Vehicle Fire Apparatus

10.1 General. If the apparatus is to function as a special service fire apparatus, it shall meet the requirements of this chapter.

10.2 Fire Pump. If the apparatus is equipped with a fire pump, the pump shall meet the requirements of Chapter 16.

10.3 Reserved.

10.4 Reserved.

10.5 Reserved.

10.6* Equipment Storage. A minimum of 120 ft³ (3.4 m³) of enclosed weather-resistant compartmentation meeting the requirements of Section 15.1 shall be provided for the storage of equipment.

10.7 Reserved.

10.8* Equipment Supplied by the Contractor. If the apparatus is designed to carry ground ladders or has a pump, the contractor shall supply the equipment listed in 10.8.1 and 10.8.2 and shall provide and install such brackets or compartments as are necessary to mount the equipment.

10.8.1 Ground Ladders.

10.8.1.1 If fire department ground ladders are carried on the apparatus, they shall meet the requirements of NFPA 1931 except as permitted by 10.8.1.2.

10.8.1.2 Stepladders and other types of multipurpose ladders shall be permitted to be carried provided they meet either ANSI A14.2, Ladders — Portable Metal — Safety Requirements, or ANSI A14.5, Ladders — Portable Reinforced Plastic — Safety Requirements, with duty ratings of Type 1A or 1AA.

10.8.2 Suction Hose or Supply Hose. If the special service fire apparatus is equipped with a pump, the requirements in 10.8.2.1 through 10.8.2.3 shall apply.

10.8.2.1 A minimum of 20 ft (6 m) of suction hose or 15 ft (4.5 m) of supply hose shall be carried.

10.8.2.1.1 Where suction hose is provided, a suction strainer shall be furnished.

10.8.2.1.2 Where suction hose is provided, the friction and entrance loss of the combination suction hose and strainer shall not exceed the losses listed in Table 16.2.4.1(b) or Table 16.2.4.1(c).

10.8.2.1.3 Where supply hose is provided, it shall have couplings compatible with the local hydrant outlet connection on one end and the pump intake connection on the other end.

10.8.2.2 Suction and supply hose shall meet the requirements 10.8.2.3* The purchaser shall specify whether suction hose or supply hose is to be provided, the length and size of the hose, the type and size of the couplings, the manner in which the hose is to be carried on the apparatus, and the style of brackets desired. 10.9*

Minor Equipment. 10.9.1 General.

The equipment listed in 10.9.3 shall be available on the special service fire apparatus before the apparatus is placed in service.

10.9.2 A detailed list of who is to furnish the items and the method for organizing and mounting these items shall be supplied by the purchasing authority.

10.9.3* The following equipment shall be carried on the apparatus:

- (1) Two portable hand lights
- (2) One approved dry chemical portable fire extinguisher with a minimum 80-B:C rating
- (3) One 2-1/2 gal (9.5 L) or larger water extinguisher
- (4) One SCBA complying with NFPA 1981 for each assigned seating position, but not fewer than two, mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer
- (5) One spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s)
- (6) One first aid kit
- (7) Two or more-wheel chocks, mounted in readily accessible locations, that together will hold the apparatus, when loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released
- (8) One traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, Standard for High-Visibility Public Safety Vests, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front
- (9) Five fluorescent orange traffic cones not less than 28 in. (711 mm) in height, each equipped with a 6 in. (152 mm) retroreflective white band no more than 4 in. (102 mm) from the top of the cone, and an additional 4 in. (102 mm) retroreflective white band 2 in. (51 mm) below the 6 in. (152 mm) band

(10) Five illuminated warning devices such as highway flares, unless the five fluorescent orange traffic cones have illuminating capabilities

(11) One automatic external defibrillator (AED)

Medical Response Ambulances

Johnston County Fire and EMS departments operate an assortment of ambulance that all meet the KKK-1822 Specification for manufacture of mobile medical ambulance in the United States. Most of the Fire and EMS agencies within the county are operating the Type III style ambulances which is customary for EMS delivery systems in an Urban-Suburban setting.

There are currently 26 medical response ambulances in the Johnston County, some of these ambulances are operated in a non-emergency transport, most are utilized for 911 emergency response, while others are used as spare or reserve ambulances. The average age of the ambulance fleet in Johnston County is 5.8 years old which is slightly above the 5-year life cycle age that many fire and EMS agency retire or trade-in on a newer vehicle.

The consultant recommends continuing to analyze the medical response fleet, there might be an opportunity again to share these units depending on strategically positioning the ambulances throughout the county, fire departments that are staffed around the clock could provide a paramedic-engine company response platform, this concept would allow the closest fire or EMS Unit to respond to medical emergencies.

APPENDIX 2-H

Annex with guidelines (Not required) Apparatus Standards



Annex D Guidelines for First-Line and Reserve Fire Apparatus

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

D.1 General. To maximize fire fighter capabilities and minimize risk of injuries, it is important that fire apparatus be equipped with the latest safety features and operating capabilities. In the last 10 to 15 years, much progress has been made in upgrading functional capabilities and improving the safety features of fire apparatus. Apparatus more than 15 years old might include only a few of the safety upgrades required by the recent editions of the NFPA fire department apparatus standards or the equivalent Underwriters Laboratories of Canada (ULC) standards.

Because the changes, upgrades, and fine tuning to NFPA 1901 have been truly significant, especially in the area of safety, fire departments should seriously consider the value (or risk) to fire fighters of keeping fire apparatus more than 15 years old in first-line service. It is recommended that apparatus more than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status; be upgraded in accordance with NFPA 1912; and incorporate as many features as possible of the current fire apparatus standard (see Section D.3).

This will ensure that, while the apparatus might not totally comply with the current editions of the automotive fire apparatus standards, many of the improvements and upgrades required by the current editions of the standards are available to the fire fighters who use the apparatus.

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

D.2 Evaluating Fire Apparatus. It is a generally accepted fact that fire apparatus, like all types of mechanical devices, have a finite life. The length of that life depends on many factors, including vehicle mileage and engine hours, quality of the preventative maintenance program, quality of the driver training program, whether the fire apparatus was used within the design parameters, whether the apparatus was manufactured on a custom or commercial chassis, quality of workmanship by the original manufacturer, quality of the components used, and availability of replacement parts, to name a few.

In the fire service, there are fire apparatus with 8 to 10 years of service that are simply worn out. There is also fire apparatus that were manufactured with quality components, that have had excellent maintenance, and that have responded to a minimum number of incidents that are still in serviceable condition after 20 years. Most would agree that the care of fire apparatus while being used and the quality and timeliness of maintenance are perhaps the most significant factors in determining how well a fire apparatus ages.

Critical enhancements in design, safety, and technology should also play a key role in the evaluation of an apparatus' life cycle. Previous editions of the fire department apparatus standards featured many requirements advancing the level of automotive fire apparatus safety and user friendliness. Contained within the 2009 edition were requirements for rollover stability; tire pressure indicators; seat belt warning systems requiring all occupants be properly seated and belted; extended seat belt length requirements resulting from an in-depth anthropometric study evaluating the average size of today's fully dressed firefighter; road ability, including minimum accelerations and top speed limitations; enhanced step and work surface lighting; cab integrity testing; increased use of retroreflective striping in the rear of apparatus, providing a consistent identifiable set of markings for all automotive fire apparatus; and enhanced aerial control technologies, enabling short jacking and envelope controls.

D.3 Upgrading Fire Apparatus. Any apparatus, whether in first-line or reserve service, should be upgraded in accordance with NFPA 1912, as necessary, to ensure that the following features are included as a minimum:

- (1) Seat belts with seat belt warning systems are available for every seat and are new or in serviceable condition.
- (2) Warning lights meet or exceed the current standard.
- (3) Reflective striping meets or exceeds the current standard.
- (4) Slip resistance of walking surfaces and handrails meets the current standard.
- (5) A low-voltage electrical system load manager is installed if the total connected load exceeds the alternator output.
- (6) The alternator output can meet the total continuous load on the low voltage electrical system.
- (7) Where the gross vehicle weight rating (GVWR) is 36,000 lb. (16,000 kg) or more, an auxiliary braking system is installed and operating correctly.
- (8) Ground and step lighting meet or exceed the current standard.
- (9) Noise levels in the driving and crew compartment(s) meet the current standard, or appropriate hearing protection is provided.
- (10) All horns and sirens are relocated to a position as low and as far forward as possible.
- (11) Signs are present stating that no riding is allowed on open areas.
- (12) A pump shift indicator system is present and working properly for vehicles equipped with an automatic chassis transmission.
- (13) For vehicles equipped with electronic or electric engine throttle controls, an interlock system is present and working properly to prevent engine speed advancement at the operator's panel, unless either the chassis transmission is in neutral with the parking brake engaged, or the parking brake is engaged, the fire pump is engaged, and the chassis transmission is in pumping gear.
- (14) All loose equipment in the driving and crew areas is securely mounted in accordance with the current standard.

APPENDIX 2-I

Winston-Salem Fire Department debuts 'Clean Cab' truck



Winston-Salem Fire Department debuts 'Clean Cab' truck with hopes to keep firefighters from being exposed to carcinogens

PIEDMONT TRIAD NEWS Updated: Aug 11, 2021
by: Madison Forsey

WINSTON-SALEM, N.C. (WGHP) — The City of Winston-Salem is trying to keep the men and women who fight fires safe. Fire department leaders announced the rollout of the “Clean Cab” truck at a public safety meeting Wednesday

“The idea is to move the carcinogens that may still be on our air packs to an area where we aren’t breathing it in,” said Chase Swaim, a captain with the Winston-Salem Fire Department.

After a fire, the crew rides in the clean cab, any gear covered with toxic, cancer-causing chemicals, is stowed in a safe area in the back of the truck.

This keeps them from breathing in dangerous chemicals on the way back to the station. “What’s in those toxins is hydrogen cyanide, hydrogen sulfide, carbon monoxide, anything that can be absorbed in that gear is a hazardous chemical,” Swaim said. According to a national survey, from 2002 until 2019, cancer caused 66 percent of firefighter line-of-duty deaths.

“It doesn’t take too long here to meet or hear about someone who’s had adverse effects and reactions to smoke and whatnot,” said Christopher Marso, a firefighter with the WSFD.

It took some practice to get used to putting on certain gear outside the truck. Crews can put on their air packs in as little as 15 seconds.

The front of the truck is also made of material that’s easier to clean. The crew using the clean cab truck says they’ll do anything to keep themselves and their fellow firefighters healthy.

“It’s comforting to know they’re taking an initiative to make a difference,” Swaim said. “This clean cab concept is still new, it’s early, it’s still evolving.”

Leaders at the fire department say they’re budgeting to buy two more trucks in the future.

APPENDIX 2-J

"Quints" by Robert Avsec





Product News

by Robert Avsec

The Quint: a unique and still misunderstood fire truck

Neither a jack of all trades nor a master of none, the quint will fill specific needs

By Robert Avsec

It's probably safe to say that there are many firefighters and officers who consider the quintuple combination pumper, or the quint, to be the "centaur" of fire apparatus: part engine and part truck.

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Since the German-based fire and rescue apparatus manufacturer, Metz Aerials, obtained the first patent for a quintuple combination pumper in 1912 — American LaFrance and Seagrave began to produce quints in the 1930s and 40s respectively — the idea of a "five-tool" piece of fire apparatus has been a controversial subject.

So where does the controversy originate?

Back in 2009, Robert Rielage, Chief of the Wyoming (Ohio) Fire-EMS department, a 78-member combination fire department bordering Cincinnati, wrote, "The modern quint ... has been described by some as a fire truck designed by a city manager who thought four firefighters could do all the work of both an engine and ladder crew from a single apparatus."

Fire chiefs who share Chief Rielage's sentiments point out that if you have only three or four people on the quint that you have the function of either a truck crew or an engine crew at a fire, but not both.

A leading proponent for the use of the quint is Neil Svetanics, the former chief of the St. Louis Fire Department. In 1987, Svetanics standardized all the apparatus in the city as quints and in 1999 ordered 34 new quints, replacing the city's fleet.

Svetanics' rationale for his unconventional thinking was really pretty simple: he needed a vehicle that would provide the most services at a time of reduced budgets.

Quint by definition

Before this discussion goes any further, let's make sure that we're talking about the same animal. Today's quint is designed to provide five tools for firefighters to carry out these tactical firefighting functions:

- Supply fire streams (pump and hoses);
- Provide initial and continuing water supply (pump, water tank, and hoses)
- Provide personnel with access to elevated areas (ground ladder complements and aerial device)
- Provide elevated master fire stream (pump, hose, and aerial device)

The National Fire Protection Association outlines the requirements for a piece of apparatus necessary to function as a quint in NFPA Standard 1901, The Standard for Automotive Fire Apparatus. Here is a summary of the quint requirements as detailed in Chapter 9 of the standard:

- Fire pump with a minimum capacity of 1,000 gallons per minute
- Water tank with a minimum capacity of 300 gallons
- Aerial ladder or elevating platform with a permanently installed waterway
- Hose storage area with a minimum of 30 cubic feet of storage area capable of accommodating 2.5 inch or larger fire hose; two hose storage areas, each with a minimum of 3.5 cubic feet or 1.5 inch or pre-connected hose lines.
- Enclosed compartments with a minimum of 40 cubic feet for equipment storage
- Complement of ground ladders containing a minimum of 85 feet of ground ladders, including at least: two extension ladders, one roof ladder and one attic ladder
- Suction hose of a minimum of 15 feet of soft suction hose or 20 feet of hard suction hose for drafting water.

Though the quint has now been around for 100 years, like all types of fire apparatus it has evolved along with new technologies. Today's quints are in many ways smaller, lighter and more agile than their predecessors. This is due to many influences, such as diesel engines, single-stage pumps, all-wheel steering, improved hydraulic systems (aerial device) and improved braking systems.

Yesterday's large, tandem-axle quints, are now more maneuverable on the road and fireground because of shorter wheelbases made possible by eliminating the second axle.

What it can do

So why would a department's leadership consider adding a quint to their department's capabilities? There are many needs that a quint can address.

Staff shortages. Rather than under-staffing both a truck and an engine with a crew of less than four personnel — the optimal number for safe, efficient and effective firefighting operations — staff a quint with a four-person crew.

- Funding cuts. The cost of a quint is less than the combined cost of an engine and truck. A quint has the tactical capabilities of both apparatus available, but through the purchase of one vehicle. (Point of emphasis: The tactical capabilities are available, but even with a four-person complement of staffing, the quint and its crew can perform either engine company or truck company functions, but not simultaneously).
- Need for some aerial capabilities. The quint with a 75-foot elevating device is the most popular model in the United States today because its reach can meet the operational needs for a wide variety of departments.
- Need for a smaller vehicle with an elevated master streams. Older cities and towns have narrow streets with tight turning radiuses; newer cities and suburban areas are experiencing growth of the neo-classic community, that is, new construction that seeks to emulate the most positive features of older cities and towns. Quints come in a variety of sizes and configurations; all-wheel steering and other mechanical innovations provide more maneuverability for today's quints as well. For example, by positioning a quint on Side C of a structure with a narrow alley, the incident commander would have both engine and truck tactical capabilities available in that area.
- The need for lighter vehicles. Once again, the variety of sizes and configurations and weight can provide fire service leaders with an apparatus option for areas with infrastructural constraints, such as old bridges. Quints can also reduce the overall number of apparatus necessary to cross residential bridges or traverse long access roads to reach more remote homes and property.

About the author

Battalion Chief Robert Avsec (Ret.) served with the Chesterfield (Va.) Fire & EMS Department for 26 years. He was an active instructor for fire, EMS, and hazardous materials courses at the local, state, and federal levels, which included more than 10 years with the National Fire Academy. Chief Avsec earned his Bachelor of Science degree from the University of Cincinnati and his Master of Science degree in executive fire service leadership from Grand Canyon University. He is a 2001 graduate of the National Fire Academy's Executive Fire Officer Program. Since his retirement in 2007, he has continued to be a life-long learner working in both the private and public sectors to further develop his "management sciences mechanic" credentials. He makes his home near Charleston, W.Va. Contact Robert at Robert.Avsec@FireRescue1.com

APPENDIX 2-K

Ashland to Purchase New \$1.5 million truck



City Council purchases \$1.5 million ladder truck

• By Dillon Carr, Staff Reporter

Sept. 21, 2022



An Ashland Fire Division staffer climbs up a ladder truck during a community event in 2016.

Ashland Source File Art

ASHLAND — Ashland City Council on Tuesday agreed to purchase a new, \$1.5 million ladder truck to replace the fire division’s existing apparatus that has lasted more than 25 years.

Mayor Matt Miller said the 100-foot ladder truck currently used is a 1996 model that, most recently, struggled to extend the ladder at an event at Brookside Golf Course.

“Unfortunately, that is happening more and more,” Miller said. “It’ll work sometimes and won’t work other times. But the problem is, we have to make sure it works at the time it’s needed.”

He said the fire division has spent around \$150,000 on repairs to the truck “over the last several years.” And since the truck is the only 100-foot ladder owned by the fire division, it is out of commission when it gets serviced.

The city contracts with Mansfield and Wooster fire departments for those times when the ladder truck is out of service.

Ashland Finance Director Larry Paxton said most of the purchase will be financed, drawing on the city's fire equipment fund.

But part of the purchase, \$500,000 worth, will be financed with the city's allocation of American Rescue Plan dollars, Miller said. The city received \$2.1 million in the federal stimulus money passed to curb the economic effects of the COVID-19 pandemic.

When the mayor presented the ordinance to council, he said the ladder truck needs to be purchased now because of the wait time associated with the transaction. He said the dealer has stated there are more than 400 trucks ahead of Ashland's and that it could take up to two years to receive it.

== END OF MODULE 2 ==



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Analysis of Fire Department Staffing, Facilities and Operations



York Area United Fire and Rescue, Pennsylvania

Draft

MODULE 3: POPULATION, DEMOGRAPHICS and ISO RATINGS

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INTRODUCTION TO MODULE 3

The Consultants have been impressed with persons who are part of York Area United Fire and Rescue. We have interacted with quality board members, fire officials and line personnel and note that personnel who provide Emergency Services are dedicated public servants who deliver protection to the community. In our analysis of the demographics, we used as a resource, the statistical data available from York County, and the websites of the three townships.

The study shows that the three townships within York Area United Fire and Rescue have experienced growth over the past four decades, and will continue to grow in population, especially in Manchester.

. The total population served is now 59,000 and the total footprint of the entire coverage area is 39 square miles'

The consultants feel that the emergency services lag behind this growth and additional funding will be necessary for personnel. See **Appendix 3-A** for the demographics from York County. These were used as a backdrop for this module.

Local leaders need to recognize that the YAUFR Response District has moved beyond the rural volunteer days, and when people dial 911 now, they expect expeditious service. Our study shows that several of the Board members want to address the following factors:

- How growth will shape YAUFRs identity
- How to provide adequate coverage for new residents joining the community
- How YAUFR can contribute to strong and safe neighborhoods and thriving businesses in all three townships
- What it takes to position YAUFR for continued success

The consultants feel that as the component members of the district continue to plan for the future, and new economic information is released, there should be attention given to the emergency service component. The on-duty complement of personnel on duty in the fire department should grow with the population served and the ever-increasing run volume. New homes pose greater fire dangers than older homes according to the National Fire Protection Association, adding urgency for YAUFR to provide fire protection as new subdivisions arise. See **Appendix 3-B** for a story from the NFPA about the dangers of new home construction.

In this module, we will show a direct connection between quality fire services and lower fire insurance premiums, especially for businesses. The last evaluation of YAUFR by the Insurance Services Office (ISO) improved the rating from 4 to 3, and further improvement is unlikely without additional staffing.

In anticipating fire protection needs, an initial step in the planning process is an examination and assessment of the existing conditions. This module summarizes information which shows a need to plan for increased fire protection.

AREA GROWTH

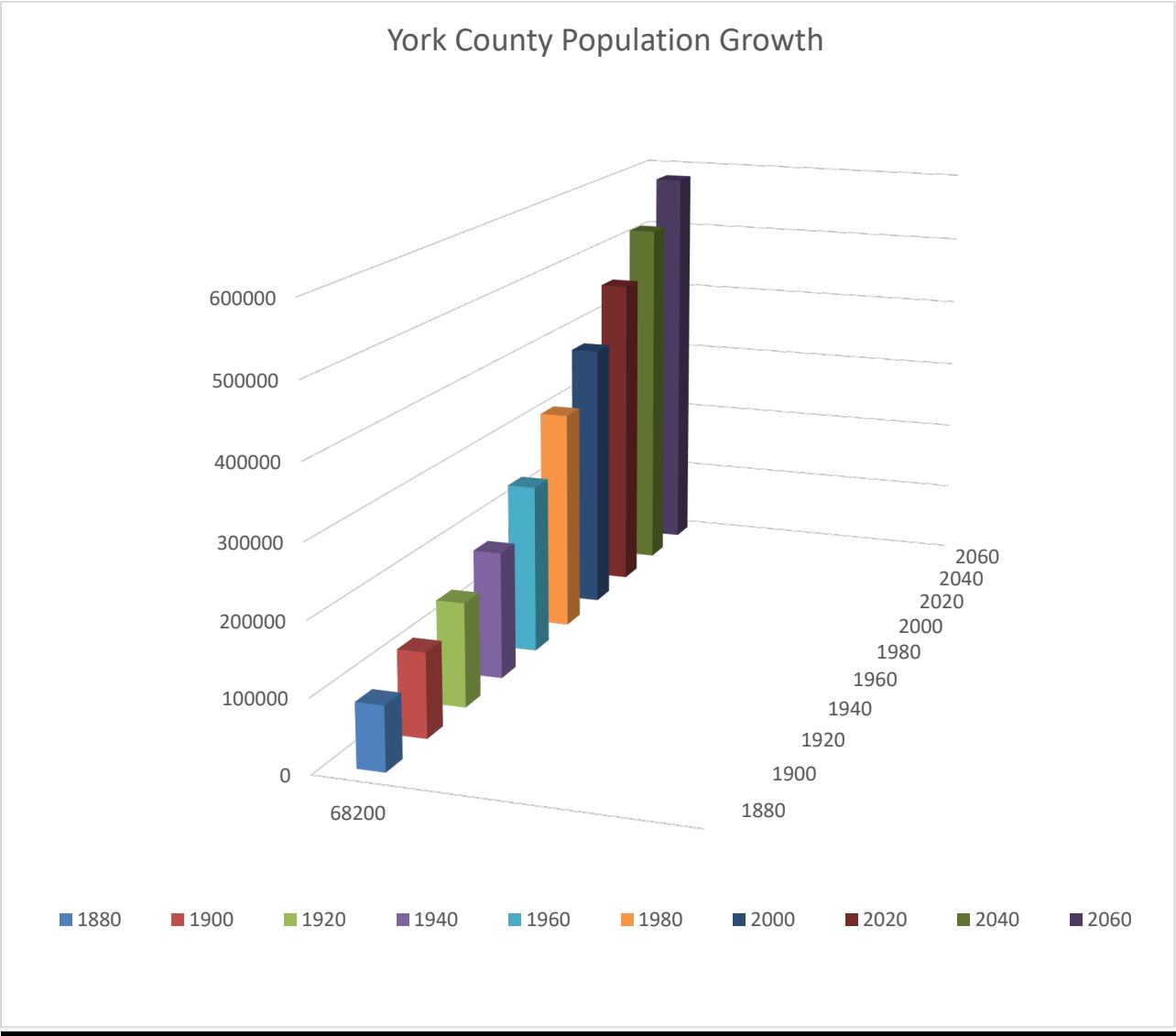
We rely primarily on census data for past data figures on population, and project along trend lines published by the state of Pennsylvania. They show that there has been steady growth in the York area and can predict, with reasonable certainty, continued steady growth.

This should be viewed as a positive for the three townships and for the emergency services. Essentially there is an “economy of scale” where taxation rates at any level draw new revenue in direct proportion to growth. This allows areas which have been under-protected due to budget limitations to begin meeting minimum standards. Here is the historical population record:

York County			1900	116,413	17.0%
Historical population			1910	136,405	17.2%
Census	Pop.	%±	1920	144,521	5.9%
		—	1930	167,135	15.6%
1800	25,643	−31.7%	1940	178,022	6.5%
1810	31,958	24.6%	1950	202,737	13.9%
1820	38,759	21.3%	1960	238,336	17.6%
1830	42,859	10.6%	1970	272,603	14.4%
1840	47,010	9.7%	1980	312,963	14.8%
1850	57,450	22.2%	1990	339,574	8.5%
1860	68,200	18.7%	2000	381,751	12.4%
1870	76,134	11.6%	2010	434,972	13.9%
1880	87,841	15.4%	2020	456,438	4.9%
1890	99,489	13.3%	U.S. Decennial Census ^[12] 1790–1960 ^[13] 1900–1990 ^[14] 1990–2000 ^[15] 2010–2019 ^[1]		
1900	116,413	17.0%			

Below we project and plot the growth to date in the county, and the anticipated growth going forward. When we compare the three townships in the York Area United Fire and Rescue District to the County as a whole, based on the demographics shown in **Appendix 3-A**, we can confidently predict that the growth in the YAUFR District will mirror this county trend.

This is good news for the area as additional population equals additional residences and businesses and tax revenues that will fund additional emergency services.



1860	1880	1900	1920	1940	1960	1980	2000	2020	2040	2060
68,200	87,841	116413	144521	178022	238336	312963	381751	456438	520339	582779
----- Actual Census Figures -----									Projected	

POPULATION GROWTH BY TOWNSHIP

Although the /County growth has been steady, and overall growth in YAUFR has always been on the increase, it has varied by Township. The figures below show the statistics from the recent two decades.

Springettsbury Township:			Spring Garden Township			Manchester Township		
Historical population			Historical population			Historical population		
Census	Pop.	%±	Census	Pop.	%±	Census	Pop.	%±
2000	23,883	10.8%	2000	11,974	—	2000	12,700	—
2010	26,668	11.7%	2010	12,578	5.0%	2010	18,161	43.0%
2020	27,058	1.5%	2020	13,683	8.8%	2020	19,511	2.2%
U.S. Decennial Census ^[2]			U.S. Decennial Census ^[2]			U.S. Decennial Census ^[2]		

FIRE -- ALWAYS A THREAT

It has been said that the three leading causes of fire are men, women and children, so as the population grows so will be the frequency of unwanted or hostile fires. As we were going to print, the following fire occurred in nearby Springfield Township.

FOX 43 REPORTS: Emergency crews respond to scene of house fire in York Count

Author: Cale Ahearn (FOX43)

Published: August 25, 2022

YORK COUNTY, Pa. — Crews are on scene of a house fire in York County. According to officials, crews responded to the 9600 block of Ashwood Dr. in Springfield Township around 11:55 a.m. on Aug. 25 for a reported fire. Officials say that the fire started in the rear of the home before extending to the garage and roof.

Authorities say that all residents are out of the home and uninjured, but a cat may be trapped inside. There is no word on the extent of any damage at this time.

INSURANCE SERVICES OFFICE (ISO)

Nationally the frequency of fires is declining. Although fire suppression services are, in terms of total responses, becoming less frequent, they remain the most important services delivered by the fire Department when fires do occur. The Insurance Services Office provides a Public Fire Protection Rating Scale that provides a fire department a numerical score and a classification to indicate their ability to deliver fire protection services.

The ISO conducts a thorough site visit to the community and analyzes fire stations, staffing levels, fire apparatus, equipment carried on apparatus, training records, water supply, and all the other component parts that affect fire service delivery. A ratings schedule has been prepared evaluating fire Departments on a scale of 1, the very best to 10, the most deficient.

This agency, which is administered under a coalition of the large insurance carriers throughout North America, performs audits of fire service delivery capabilities in communities on a regular basis. Although *State Farm* and some other large insurance companies have discontinued using ISO ratings in favor of a “zip code based” rating system, the ISO rating scale remains a widely accepted objective measure of fire protection.

In southern Ohio, it is a Township and not the City of Cincinnati, that has achieved a “Class 1” ranking. See **Appendix 3-C** for the story about Colerain Township. We note that this is a measure of firefighting capabilities and does not address EMS or other fire department functions. ISO occasionally releases improvements to their rating schedule and update outdated rating elements. Below are the factors in the current rating schedule:

- 1. Alarm and Communication**
 - Emergency Reporting
 - Telecommunicators
 - Dispatch Circuits
- 2. Fire Department:**
 - Engine, Ladder, and Service Companies
 - Reserve Pumpers
 - Deployment Analysis/Station Location
 - Staffing
 - Training
 - Pumper Capacity
- 3. Water Supply:**
 - Water Quantity
 - Hydrant Size, Maintenance, etc.
- 4. Operational Considerations**
 - Standard Operating Procedures
 - Incident Management System
- 5. Community Risk Reduction**
 - Fire Prevention & Code Enforcement
 - Fire Safety Education
 - Fire Investigation

PPC = Public Protection Classification
FSRS = Fire Suppression Rating System

The new rating schedule continues to use some of the same previous sections and has added new sections for Operational Considerations and Community Risk Reduction. This more balanced approach takes into consideration the best fire fought is the one that never occurs.

Mr. Mike Rundell former Field Representative for ISO visited Oldham County, KY several years ago while the Kramer group was serving as a consultant there. This county is similar to YAUFR in many ways. Mr. Rundell provided helpful insight into the grading schedule and its effect on insurance rates, both commercial and residential.

Mr. Rundell pointed out that split classifications, such as YAUFR's 3/3X are due to variations in water supply. The lower (better) classifications apply to properties within 1000' of a water supply, and this does cover most of the population and all commercial properties in the YAUFR response area.



Throughout all of York County, almost all properties are within 5 miles of a fire station, avoiding the worst 10 rating. The mapping in Module 2 shows how virtually all of the York Area United Fire and Rescue territory does fall within the five-mile zone.

The Task Force inquired about the effect on homeowners' fire insurance rates and were informed by Mr. Rundell that some carriers "band" the higher categories for residential rates. Consultant William Kramer pointed out that usually differences in residential rates are minimal once a fire district has reached a level of 6 or better.

See **Appendix 3-D** regarding the effect of improved ISO ratings on homeowner insurance premiums in Center Township, Michigan. This community went from a Class 9 to a Class 5, even in non-hydrant areas by incorporating resources from other departments. A more analytical analysis about ISO and homeowner insurance is found in **Appendix 3-E**.

***In this shaded area is the actual most recent rating for
York Area United Fire & Rescue.***

Public Protection Classification (PPC™)

Summary Report York Area United FPSA

PENNSYLVANIA

Prepared by ISO, Inc..
1000 Bishops Gate Blvd., Ste.300
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1-800-444-4554

Report Created September 2017

Effective January 1,2018

Introduction

ISO collects and evaluates information from communities in the United States on their structure fire suppression capabilities. The data is analyzed using our Fire Suppression Rating Schedule (FSRS) and then a Public Protection Classification (PPG™) grade is assigned to the community. The surveys are conducted whenever it appears that there is a possibility of a PPG change. As such, the PPG program provides important, up-to-date information about fire protection services.

The FSRS recognizes fire protection features only as they relate to suppression of first alarm structure fires. In many communities, fire suppression may be only a small part of the fire department's overall responsibility. ISO recognizes the dynamic and comprehensive duties of a community's fire service, and understands the complex decisions a community must make in planning and delivering emergency services. However, in developing a community's PPC grade, only features related to reducing property losses from structural fires are evaluated. Multiple alarms, simultaneous incidents and life safety are not considered in this evaluation. The PPC program evaluates the fire protection for small to average size buildings. Specific properties with a Needed Fire Flow in excess of 3,500 gpm are evaluated separately and assigned an individual PPC grade.

A community's investment in fire mitigation is a proven and reliable predictor of fire losses. Statistical data on insurance losses bears out the relationship between excellent fire protection - as measured by the PPC program - and low fire losses. So, insurance companies use PPC information for marketing, underwriting, and to help establish fair premiums for homeowners and commercial fire insurance. In general, the price of fire insurance in a community with a good PPC grade is substantially lower than in a community with a poor PPC grade, assuming all other factors are equal.

ISO is an independent company that serves insurance companies, communities, fire departments, insurance regulators, and others by providing information about risk. ISO's expert staff collects information about municipal fire suppression efforts in communities throughout the United States. In each of those communities, ISO analyzes the relevant data and assigns a PPC grade - a number from 1 to 10. Class 1 represents an exemplary fire suppression program, and Class 10 indicates that the area's fire suppression program does not meet ISO's minimum criteria.

ISO's PPC program evaluates communities according to a uniform set of criteria, incorporating nationally recognized standards developed by the National Fire Protection Association and the American Water Works Association. A community's PPC grade depends on:

- ▶ **Needed Fire Flows**, which are representative building locations used to determine the theoretical amount of water necessary for fire suppression purposes.
- ▶ **Emergency Communications**, including emergency reporting, telecommunicators, and dispatching systems.
- ▶ **Fire Department**, including equipment, staffing, training, geographic distribution of fire companies, operational considerations, and community risk reduction.
- ▶ **Water Supply**, including inspection and flow testing of hydrants, alternative water supply operations, and a careful evaluation of the amount of available water compared with the amount needed to suppress fires up to 3,500 gpm.

Data Collection and Analysis

ISO has evaluated and classified over 46,000 fire protection areas across the United States using its FSRS. A combination of meetings between trained ISO field representatives and the dispatch center coordinator, community fire official, and water superintendent is used in conjunction with a comprehensive questionnaire to collect the data necessary to determine the PPC grade. In order for a community to obtain a grade better than a Class 9, three elements of fire suppression features are reviewed. These three elements are Emergency Communications, Fire Department, and Water Supply.

A review of the **Emergency Communications** accounts for 10% of the total classification. This section is weighted at **10 points**, as follows:

- | | |
|-----------------------|----------|
| • Emergency Reporting | 3 points |
| • Telecommunicators | 4 points |
| • Dispatch Circuits | 3 points |

A review of the **Fire Department** accounts for 50% of the total classification. ISO focuses on a fire department's first alarm response and initial attack to minimize potential loss. The fire department section is weighted at 50 points, as follows:

- | | |
|---------------------------------|-------------|
| • Engine Companies | 6 points |
| • Pump Capacity | 3 points |
| • Ladder/Service Companies | 4 points |
| • Reserve Ladder/Service Trucks | 0.5. points |
| • Deployment Analysis | 10 points |

- | | |
|------------------------------|---|
| • Company Personnel | 15 points |
| • Training | 9 points |
| • Operational considerations | 2 points |
| • Community Risk Reduction | 5.5 points (in addition to the 50 points above) |

A review of the **Water Supply** system accounts for 40% of the total classification. ISO reviews the water supply a community uses to determine the adequacy for fire suppression purposes. The water supply system is weighted at **40 points**, as follows:

- Credit for Supply System 30 points
- Hydrant Size, Type & Installation 3 points
- Inspection & Flow Testing of Hydrants 7 points
-

There is one additional factor considered in calculating the final score - **Divergence**.

Even the best fire department will be less than fully effective if it has an inadequate water supply. Similarly, even a superior water supply will be less than fully effective if the fire department lacks the equipment or personnel to use the water. The FSR score is subject to modification by a divergence factor, which recognizes disparity between the effectiveness of the fire department and the water supply.

The Divergence factor mathematically reduces the score based upon the relative difference between the fire department and water supply scores. The factor is introduced in the final equation.

PPC Grade

The PPC grade assigned to the community will depend on the community's score on a 100-point scale:

PPC	Points
1	90.00 or more
2	80.00 to 89.99
3	70.00 to 79.99
4	60.00 to 69.99
5	50.00 to 59.99
6	40.00 to 49.99
7	30.00 to 39.99
8	20.00 to 29.99
9	10.00 to 19.99
10	0.00 to 9.99

The classification numbers are interpreted as follows:

- Class 1 through (and including) Class 8 represents a fire suppression system that includes an FSRS creditable dispatch center, fire department, and water supply.
- Class 88 is a special classification that recognizes a superior level of fire protection in otherwise Class 9 areas. It is designed to represent a fire protection delivery system that is superior except for a lack of a water supply system capable of the minimum FSRS fire flow criteria of 250 gpm for 2 hours.
- Class 9 is a fire suppression system that includes a creditable dispatch center, fire department but no FSRS creditable water supply.
- Class 10 does not meet minimum FSRS criteria for recognition, including areas that are beyond five road miles of a recognized fire station.

New PPC program changes effective July 1, 2014

We have revised the PPC program to capture the effects of enhanced fire protection capabilities that reduce fire loss and fire severity in Split Class 9 and Split Class 88 areas (as outlined below). This new structure benefits the fire service, community, and property owner.

New classifications

Through ongoing research and loss experience analysis, we identified additional differentiation in fire loss experience within our PPC program, which resulted in the revised classifications. We based the differing fire loss experience on the fire suppression capabilities of each community. The new PPC classes will improve the predictive value for insurers while benefiting both commercial and residential property owners. Here are the new classifications and what they mean.

Split classifications

When we develop a split classification for a community- for example 5/9 - the first number is the class that applies to properties within 5 road miles of the responding fire station and 1,000 feet of a creditable water supply, such as a fire hydrant, suction point, or dry hydrant. The second number is the class that applies to properties within 5 road miles of a fire station but beyond 1,000 feet of a creditable water supply. We have revised the classification to reflect more precisely the risk of loss in a community,

replacing Class 9 and 88 in the second part of a split classification with revised designations.

What's changed with the new classifications?

We've published the new classifications as "X" and "Y" - formerly the "9" and "88" portion of the split classification, respectively. For example:

- A community currently displayed as a split 6/9 classification will now be a split 6/6X classification; with the "6X" denoting what was formerly classified as "9".
- Similarly, a community currently graded as a split 6/88 classification will now be a split 6/6Y classification, the "6Y" denoting what was formerly classified as "88".
- Communities graded with single "9" or "88" classifications will remain intact.

Prior Classification	New Classification
1/9	1/1()
2/9	2/2()
3/9	3/3X
4/9	4/4()
5/9	5/SX
6/9	6/6X
7/9	7/7X
8/9	8/BX
9	9

Prior Classification	New Classification
1/8B	1/1V
2/8B	2/2Y
3/8B	3/3V
4/8B	4/4Y
5/8B	5/SV
6/8B	6/6V
7/8B	7/7Y
8/8B	8/SY
8B	8B

What's changed?

As you can see, we're still maintaining split classes, but it's how we represent them to insurers that's changed. The new designations reflect a reduction in fire severity and loss and have the potential to reduce property insurance premiums.

Benefits of the revised split class designations

- To the fire service, the revised designations identify enhanced fire suppression capabilities used throughout the fire protection area
- To the community, the new classes reward a community's fire suppression efforts by showing a more reflective designation
- To the individual property owner, the revisions offer the potential for decreased property insurance premiums

New water class

Our data also shows that risks located more than 5 but less than 7 road miles from a responding fire station with a creditable water source within 1,000 feet had better loss experience than those farther than 5 road miles from a responding fire station with no creditable water source. We've introduced a new classification-1 OW- to recognize the reduced loss potential of such properties.

What's changed with Class 10W?

Class 10W is property-specific. Not all properties in the 3-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. Creditable water supplies include fire protection systems using hauled water in any of the split classification areas.

What's the benefit of Class 10W?

10W gives credit to risks within 5 to 7 road miles of the responding fire station and within 1,000 feet of a creditable water supply. That's reflective of the potential for reduced property insurance premiums.

What does the fire chief have to do?

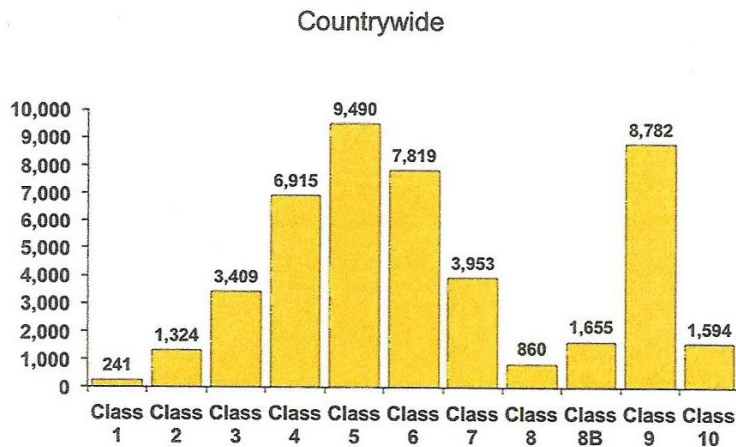
Fire chiefs don't have to do anything at all. The revised classifications went in place automatically effective July 1, 2014 (July 1, 2015 for Texas).

What if I have additional questions?

Feel free to contact ISO at 800.444.4554 or email us at PPC-Cust-Serv@iso.com.

Distribution of PPC Grades

The 2017 published countrywide distribution of communities by the PPC grade is as follows:



Assistance

The PPC program offers help to communities, fire departments, and other public officials as they plan for, budget, and justify improvements. ISO is also available to assist in the understanding of the details of this evaluation.

The PPC program representatives can be reached by telephone at (800) 444-4554. The technical specialists at this telephone number have access to the details of this evaluation and can effectively speak with you about your questions regarding the PPC program. What's more, we can be reached via the internet at www.isomitigation.com/talk/.

We also have a website dedicated to our Community Hazard Mitigation Classification programs at www.isomitigation.com. Here, fire chiefs, building code officials, community leaders and other interested citizens can access a wealth of data describing the criteria used in evaluating how cities and towns are protecting residents from fire and other natural hazards. This website will allow you to learn more about the PPC program. The website provides important background information, insights about the PPC grading processes and technical documents. ISO is also pleased to offer Fire Chiefs Online - a special, secured website with information and features that can help improve your PPC grade, including a list of the Needed Fire Flows for all the commercial occupancies ISO has on file for your community. Visitors to the site can download information, see statistical results and also contact ISO for assistance.

In addition, on-line access to the FSRS and its commentaries is available to registered customers for a fee. However, fire chiefs and community chief administrative officials are given access privileges to this information without charge.

To become a registered fire chief or community chief administrative official, register at www.isomitigation.com.

PPC Review: ISO concluded its review of the fire suppression features being provided for York Area United FPSA. The resulting community classification is Class 03/3X.

If the classification is a single class, the classification applies to properties with a Needed Fire Flow of 3,500 gpm or less in the community. If the classification is a split class (e.g., 6/XX):

- ▶ The first class (e.g., "6" in a 6/XX) applies to properties within 5 road miles of a recognized fire station and within 1,000 feet of a fire hydrant or water supply.
- ▶ The second class (XX or XY) applies to properties beyond 1,000 feet of a fire hydrant but within 5 road miles of a recognized fire station.
- ▶ Alternative Water Supply: The first class (e.g., "6" in a 6/10) applies to properties within 5 road miles of a recognized fire station with no hydrant distance requirement.
- ▶ Class 10 applies to properties over 5 road miles of a recognized fire station.
- ▶ Class 10W applies to properties within 5 to 7 road miles of a recognized fire station with a recognized water supply within 1,000 feet.
- ▶ Specific properties with a Needed Fire Flow in excess of 3,500 gpm are evaluated separately and assigned an individual classification.

FIRS Feature	Earned Credit	Credit Available
Emergency Communications		
414. Credit for Emergency Reporting	3.00	3
422. Credit for Telecommunicators	2.90	4
432. Credit for Dispatch Circuits	1.88	3
440. Credit for Emergency Communications	7.78	10
Fire Department		
513. Credit for Engine Companies	5.82	6
523. Credit for Reserve Pumpers	0.50	0.50
532. Credit for Pump Capacity	3.00	3
549. Credit for Ladder Service	3.95	4
553. Credit for Reserve Ladder and Service Trucks	0.20	0.50
561. Credit for Deployment Analysis	4.81	10
571. Credit for Company Personnel	5.04	15
581. Credit for Training	5.11	9
730. Credit for Operational Considerations	2.00	2
590. Credit for Fire Department	30A3	50
Water Supply		
616. Credit for Supply System	25A3	30
621. Credit for Hydrants	3.00	3
631. Credit for Inspection and Flow Testing	6.40	7
640. Credit for Water Supply	34.83	40
Divergence	-5.24	-
1050. Community Risk Reduction	3.02	5.50
Total Credit	70.82	105.50

Emergency Communications

Ten percent of a community's overall score is based on how well the communications center receives and dispatches fire alarms. Our field representative evaluated:

- Communications facilities provided for the general public to report structure fires
- Enhanced 9-1-1 Telephone Service including wireless
- Computer-aided dispatch (CAD) facilities
- Alarm receipt and processing at the communication center
- Training and certification of telecommunicators
- Facilities used to dispatch fire department companies to reported structure fires

	Earned Credit	Credit Available
414. Credit Emergency Reporting	3.00	3
422. Credit for Telecommunicators	2.90	4
432. Credit for Dispatch Circuits	1.88	3
Item 440. Credit for Emergency Communications:	7.78	10

Item 414 - Credit for Emergency Reporting (3 points)

The first item reviewed is Item 414 "Credit for Emergency Reporting (CER)". This item reviews the emergency communication center facilities provided for the public to report fires including 911 systems (Basic or Enhanced), Wireless Phase I and Phase II, Voice over Internet Protocol, Computer Aided Dispatch and Geographic Information Systems for automatic vehicle location. ISO uses National Fire Protection Association (NFPA) 1221, *standard for the Installation, Maintenance and Use of Emergency Services Communications Systems* as the reference for this section.

Item 410. Emergency Reporting (CER)	Earned Credit	Credit Available
AJB. Basic 9-1-1, Enhanced 9-1-1 or No 9-1-1 For maximum credit, there should be an Enhanced 9-1-1 system, Basic 9-1-1 and No 9-1-1 will receive partial credit.	20.00	20
1. E9-1-1 Wireless Wireless Phase I using Static ALI (automatic location identification) Functionality (10 points); Wireless Phase II using Dynamic ALI Functionality (15 points); Both available will be 25 points	25.00	25
2. E9-1-1 Voice over Internet Protocol (VoIP) Static VoIP using Static ALI Functionality (10 points); Nomadic VoIP using Dynamic ALI Functionality (15 points); Both available will be 25 points	25.00	25
3. Computer Aided Dispatch Basic CAD (5 points); CAD with Management Information System (5 points); CAD with Interoperability (5 points)	15.00	15
4. Geographic Information System (GIS/ VL) The PSAP uses a fully integrated CAD/GIS management system with automatic vehicle location (AVL) integrated with a CAD system providing dispatch assignments. The individual fire departments being dispatched <u>do not</u> need GIS/AVL capability to obtain this credit.	15.00	15
Review of Emergency Reporting total:	100.00	100

Item 422- Credit for Telecommunicators (4 points)

The second item reviewed is Item 422 "Credit for Telecommunicators (TC)". This item reviews the number of Telecommunicators on duty at the center to handle fire calls and other emergencies. All emergency calls including those calls that do not require fire department action are reviewed to determine the proper staffing to answer emergency calls and dispatch the appropriate emergency response. The 2013 Edition of NFPA 1221, *standard for the Installation, Maintenance and Use of Emergency Services Communications Systems*, recommends that ninety-five percent of emergency calls shall be answered within 15 seconds and ninety-nine percent of emergency calls shall be answered within 40 seconds. In addition, NFPA recommends that eighty percent of emergency alarm processing shall be completed within 60 seconds and ninety-five percent of alarm processing shall be completed within 106 seconds of answering the call.

To receive full credit for operators on duty, ISO must review documentation to show that the communication center meets NFPA 1221 call answering and dispatch time performance measurement standards. This documentation may be in the form of performance statistics or other performance measurements compiled by the 9-1-1 software or other software programs that are currently in use such as Computer Aided Dispatch (CAD) or Management Information System (MIS).

Item 420. Telecommunicators (CTC)	Earned Credit	Credit Available
A1. Alarm Receipt (AR) Receipt of alarms shall meet the requirements in accordance with the criteria of NFPA 1221	20.00	20
A2. Alarm Processing (AP) Processing of alarms shall meet the requirements in accordance with the criteria of NFPA 1221	12.53	20
B. Emergency Dispatch Protocols (EDP) Telecommunicators have emergency dispatch protocols (EDP) containing questions and a decision-support process to facilitate correct call categorization and prioritization.	0.00	20
C. Telecommunicator Training and Certification (TTC) Telecommunicators meet the qualification requirements referenced in NFPA 1061, <i>Standard for Professional Qualifications for Public Safety Telecommunicator</i> , and/or the Association of Public-Safety Communications Officials - International (APCO) <i>Project 33</i> . Telecommunicators are certified in the knowledge, skills, and abilities corresponding to their job functions.	20.00	20
D. Telecommunicator Continuing Education and Quality Assurance (TQA) Telecommunicators participate in continuing education and/or in-service training and quality-assurance programs as appropriate for their positions	20.00	20
Review of Telecommunicators total:	72.53	100

Item 432 - Credit for Dispatch Circuits (3 points)

The third item reviewed is Item 432 "Credit for Dispatch Circuits (CDC)". This item reviews the dispatch circuit facilities used to transmit alarms to fire department members. A "Dispatch Circuit" is defined in NFPA 1221 as "A circuit over which an alarm is transmitted from the communications center to an emergency response facility (ERF) or emergency response units (ERUs) to notify ERUs to respond to an emergency". All fire departments (except single fire station departments with full-time firefighter personnel receiving alarms directly at the fire station) need adequate means of notifying all firefighter personnel of the location of reported structure fires. The dispatch circuit facilities should be in accordance with the general criteria of NFPA 1221. "Alarms" are defined in this Standard as "A signal or message from a person or device indicating the existence of an emergency or other situation that requires action by an emergency response agency".

There are two different levels of dispatch circuit facilities provided for in the Standard - a primary dispatch circuit and a secondary dispatch circuit. In jurisdictions that receive 730 alarms or more per year (average of two alarms per 24-hour period), two separate and dedicated dispatch circuits, a primary and a secondary, are needed. In jurisdictions receiving fewer than 730 alarms per year, a second dedicated dispatch circuit is not needed. Dispatch circuit facilities installed but not used or tested (in accordance with the NFPA Standard) receive no credit.

The score for Credit for Dispatch Circuits (CDC) is influenced by monitoring for integrity of the primary dispatch circuit. There are up to 0.90 points available for this Item. Monitoring for integrity involves installing automatic systems that will detect faults and failures and send visual and audible indications to appropriate communications center (or dispatch center) personnel. ISO uses NFPA 1221 to guide the evaluation of this item. ISO's evaluation also includes a review of the communication system's emergency power supplies.

Item 432 "Credit for Dispatch Circuits (CDC)" = 1.88 points

Fire Department

Fifty percent of a community's overall score is based upon the fire department's structure fire suppression system. ISO's field representative evaluated:

Engine and ladder/service vehicles including reserve apparatus
Equipment carried

Response to reported structure
fires Deployment analysis of
companies Available and/or
responding firefighters Training

	Earned Credit	Credit Available
513. Credit for Engine Companies	5.82	6
523. Credit for Reserve Pumpers	0.50	0.5
532. Credit for Pumper Capacity	3.00	3
549. Credit for Ladder Service	3.95	4
553. Credit for Reserve Ladder and Service Trucks	0.20	0.5
561. Credit for Deployment Analysis	4.81	10
571. Credit for Company Personnel	5.04	15
581. Credit for Training	5.11	9
730. Credit for Operational Considerations	2.00	2
Item 590. Credit for Fire Department:	30.43	50

Basic Fire Flow

The Basic Fire Flow for the community is determined by the review of the Needed Fire Flows for selected buildings in the community. The fifth largest Needed Fire Flow is determined to be the Basic Fire Flow. The Basic Fire Flow has been determined to be 3500 gpm.

Item 513 - Credit for Engine Companies (6 points)

The first item reviewed is Item 513 "Credit for Engine Companies (CEC)". This item reviews the number of engine companies, their pump capacity, hose testing, pump testing and the equipment carried on the in-service pumpers. To be recognized, pumper apparatus must meet the general criteria of NFPA 1901, *standard for Automotive Fire Apparatus* which include a minimum 250 gpm pump, an emergency warning system, a 300 gallon water tank, and hose. At least 1 apparatus must have a permanently mounted pump rated at 750 gpm or more at 150 psi.

The review of the number of needed pumpers considers the response distance to built-upon areas; the Basic Fire Flow; and the method of operation. Multiple alarms, simultaneous incidents, and life safety are not considered.

The greatest value of A, 8, or C below is needed in the fire district to suppress fires in structures with a Needed Fire Flow of 3,500 gpm or less: **5 engine companies**

- a) **5 engine companies** to provide fire suppression services to areas to meet NFPA 1710 criteria or within 1½ miles.
- b) **3 engine companies** to support a Basic Fire Flow of 3500 gpm.
- c) **3 engine companies** based upon the fire department's method of operation to provide a minimum two engine response to all first alarm structure fires.

The FSRS recognizes that there are **5 engine companies** in service.

The FSRS also reviews Automatic Aid. Automatic Aid is considered in the review as assistance dispatched automatically by contractual agreement between two communities or fire districts. That differs from mutual aid or assistance arranged case by case. ISO will recognize an Automatic Aid plan under the following conditions:

- It must be prearranged for first alarm response according to a definite plan. It is preferable to have a written agreement, but ISO may recognize demonstrated performance.
- The aid must be dispatched to all reported structure fires on the initial alarm.
- The aid must be provided 24 hours a day, 365 days a year.

FSRS Item 512.D "Automatic Aid Engine Companies" responding on first alarm and meeting the needs of the city for basic fire flow and/or distribution of companies are factored based upon the value of the Automatic Aid plan (up to 1.00 can be used as the factor). The Automatic Aid factor is determined by a review of the Automatic Aid provider's communication facilities, how they receive alarms from the graded area, inter-department training between fire departments, and the fire ground communications capability between departments.

For each engine company, the credited Pump Capacity (PC), the Hose Carried (HC), the Equipment Carried (EC) all contribute to the calculation for the percent of credit the FSRS provides to that engine company.

Item 513 "Credit for Engine Companies (CEC)" = 5.82-point Item 523 - Credit for Reserve Pumpers (0.50 points)

The item is Item 523 "Credit for Reserve Pumpers (CRP)". This item reviews the number and adequacy of the pumpers and their equipment. The number of needed reserve pumpers is 1 for each 8 needed engine companies determined in Item 513, or any fraction thereof.

Item 523 "Credit for Reserve Pumpers (CRP)" = 0.50 points

Item 532 - Credit for Pumper Capacity (3 points)

The next item reviewed is Item 532 "Credit for Pumper Capacity (CPC)". The total pump capacity available should be sufficient for the Basic Fire Flow of 3500 gpm. The maximum needed pump capacity credited is the Basic Fire Flow of the community.

Item 532 "Credit for Pumper Capacity (CPC)" = 3.00 points

Item 549 - Credit for Ladder Service (4 points)

The next item reviewed is Item 549 "Credit for Ladder Service (CLS)". This item reviews the number of response areas within the city with 5 buildings that are 3 or more stories or 35 feet or more in height, or with 5 buildings that have a Needed Fire Flow greater than 3,500 gpm, or any combination of these criteria. The height of all buildings in the city, including those protected by automatic sprinklers, is considered when determining the number of needed ladder companies. Response areas not needing a ladder company should have a service company. Ladders, tools and equipment normally carried on ladder trucks are needed not only for ladder operations but also for forcible entry, ventilation, salvage, overhaul, lighting and utility control.

The number of ladder or service companies, the height of the aerial ladder, aerial ladder testing and the equipment carried on the in-service ladder trucks and service trucks is compared with the number of needed ladder trucks and service trucks and an FSRS equipment list. Ladder trucks must meet the general criteria of NFPA 1901, *Standard for Automotive Fire Apparatus* to be recognized.

The number of needed ladder-service trucks is dependent upon the number of buildings 3 stories or 35 feet or more in height, buildings with a Needed Fire Flow greater than 3,500 gpm, and the method of operation.

The FSRS recognizes that there are **2 ladder companies** in service. These companies are needed to provide fire suppression services to areas to meet NFPA 1710 criteria or within 2½ miles and the number of buildings with a Needed Fire Flow over 3,500 gpm or 3 stories or more in height, or the method of operation.

The FSRS recognizes that there are **0 service companies** in service.

Item 549 "Credit for Ladder Service (CLS)" = 3.95 points

Item 553 - Credit for Reserve Ladder and Service Trucks (0.50 points)

The next item reviewed is Item 553 "Credit for Reserve Ladder and Service Trucks (CRLS)". This item considers the adequacy of ladder and service apparatus when one (or more in larger communities) of these apparatus are out of service. The number of needed reserve ladder and service trucks is 1 for each 8 needed ladder and service companies that were determined to be needed in Item 540, or any fraction thereof.

Item 553 "Credit for Reserve Ladder and Service Trucks (CRLS)" = 0.20 points

Item 561-DeploymentAnalysis (10 points)

Next, Item 561 "Deployment Analysis (DA)" is reviewed. This Item examines the number and adequacy of existing engine and ladder-service companies to cover built-upon areas of the city.

To determine the Credit for Distribution, first the Existing Engine Company (EC) points and the Existing Engine Companies (EE) determined in Item 513 are considered along with Ladder Company Equipment (LCE) points, Service Company Equipment (SCE) points, Engine-Ladder Company Equipment (ELCE) points, and Engine-Service Company Equipment (ESCE) points determined in Item 549.

Secondly, as an alternative to determining the number of needed engine and ladder/service companies through the road-mile analysis, a fire protection area may use the results of a systematic performance evaluation. This type of evaluation analyzes computer-aided dispatch (CAD) history to demonstrate that, with its current deployment of companies, the fire department meets the time constraints for initial arriving engine and initial full alarm assignment in accordance with the general criteria of in NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*.

A determination is made of the percentage of built upon area within 1½ miles of a first-due engine company and within 2½ miles of a first-due ladder-service company.

Item 571 - Credit for Company Personnel (15 points)

Item 571 "Credit for Company Personnel (CCPt reviews the average number of existing firefighters and company officers available to respond to reported first alarm structure fires in the city.

The on-duty strength is determined by the yearly average of total firefighters and company officers on-duty considering vacations, sick leave, holidays, "Kelley" days and other absences. When a fire department operates under a minimum staffing policy, this may be used in lieu of determining the yearly average of on-duty company personnel.

Firefighters on apparatus not credited under Items 513 and 549 that regularly respond to reported first alarms to aid engine, ladder, and service companies are included in this item as increasing the total company strength.

Firefighters staffing ambulances or other units serving the general public are credited if they participate in fire-fighting operations, the number depending upon the extent to which they are available and are used for response to first alarms of fire.

On-Call members are credited on the basis of the average number staffing apparatus on first alarms. Off-shift career firefighters and company officers responding on first alarms are considered on the same basis as on-call personnel. For personnel not normally at the fire station, the number of responding firefighters and company officers is divided by 3 to reflect the time needed to assemble at the fire scene and the reduced ability to act as a team due to the various arrival times at the fire location when compared to the personnel on-duty at the fire station during the receipt of an alarm.

The number of Public Safety Officers who are positioned in emergency vehicles within the jurisdiction boundaries may be credited based on availability to respond to first alarm structure fires. In recognition of this increased response capability the number of responding Public Safety Officers is divided by 2.

The average number of firefighters and company officers responding with those companies credited as Automatic Aid under Items 513 and 549 are considered for either on-duty or on call company personnel as is appropriate. The actual number is calculated as the average number of company personnel responding multiplied by the value of AA Plan determined in Item 512.D.

The maximum creditable response of on-duty and on-call firefighters is 12, including company officers, for each existing engine and ladder company and 6 for each existing service company.

Chief Officers are not creditable except when more than one chief officer responds to alarms; then extra chief officers may be credited as firefighters if they perform company duties.

The FSRS recognizes **13.00 on-duty personnel** and an average of **3.30 on-call personnel** responding on first alarm structure fires.

Item 571 "Credit for Company Personnel (CCP)" = 5.04 points

Item 581 - Credit for Training (9 points) Item 580 "Credit for Training (CT)" = 5.11 points

Training	Earned Credit	Credit Available
A. Facilities, and Use For maximum credit, each firefighter should receive 18 hours per year in structure fire related subjects as outlined in NFPA 1001.	16.41	35
B. Company Training For maximum credit, each firefighter should receive 16 hours per month in structure fire related subjects as outlined in NFPA 1001.	10.42	25
C. Classes for Officers For maximum credit, each officer should be certified in accordance with the general criteria of NFPA 1021. Additionally, each officer should receive 12 hours of continuing education on or off site.	12.00	12
D. New Driver and Operator Training For maximum credit, each new driver and operator should receive 60 hours of driver/operator training per year in accordance with NFPA 1002 and NFPA 1451.	2.67	5
E. Existing Driver and Operator Training For maximum credit, each existing driver and operator should receive 12 hours of driver/operator training per year in accordance with NFPA 1002 and NFPA 1451.	4.96	5
F. Training on Hazardous Materials For maximum credit, each firefighter should receive 6 hours of training for incidents involving hazardous materials in accordance with NFPA 472.	0.55	1
G. Recruit Training For maximum credit, each firefighter should receive 240 hours of structure fire related training in accordance with NFPA 1001 within the first year of employment or tenure.	4.58	5
H. Pre-Fire Planning Inspections For maximum credit, pre-fire planning inspections of each commercial, industrial, institutional, and other similar type building (all buildings except 1-4 family dwellings) should be made annually by company members. Records of inspections should include up-to date notes and sketches.	5.16	12

Item 730 - Operational Considerations (2 points)

Item 730 "Credit for Operational Considerations (COC)" evaluates fire department standard operating procedures and incident management systems for emergency operations involving structure fires.

Operational Considerations	Earned Credit	Credit Available
Standard Operating Procedures The department should have established SOPs for fire department general emergency operations	50	50
Incident Management Systems The department should use an established incident management system (IMS)	50	50
Operational Considerations total:	100	100

Item 730 "Credit for Operational Considerations (COC)" = 2.00 points

Water Supply

Forty percent of a community's overall score is based on the adequacy of the water supply system. The ISO field representative evaluated:

the capability of the water distribution system to meet the Needed Fire Flows at selected locations up to 3,500 gpm.

size, type and installation of fire hydrants.

inspection and flow testing of fire hydrants.

	Earned Credit	Credit Available
616. Credit for Supply System	25.43	30
621. Credit for Hydrants	3.00	3
631. Credit for Inspection and Flow Testing	6.40	7
Item 640. Credit for Water Supply:	34.83	40

Item 616 - Credit for Supply System (30 points)

The first item reviewed is Item 616 "Credit for Supply System (CSS)". This item reviews the rate of flow that can be credited at each of the Needed Fire Flow test locations considering the supply works capacity, the main capacity and the hydrant distribution. The lowest flow rate of these items is credited for each representative location. A water system capable of delivering 250 gpm or more for a period of two hours plus consumption at the maximum daily rate at the fire location is considered minimum in the ISO review.

Where there are 2 or more systems or services distributing water at the same location, credit is given on the basis of the joint protection provided by all systems and services available.

The supply works capacity is calculated for each representative Needed Fire Flow test location, considering a variety of water supply sources. These include public water supplies, emergency supplies (usually accessed from neighboring water systems), suction supplies (usually evidenced by dry hydrant installations near a river, lake or other body of water), and supplies developed by a fire department using large diameter hose or vehicles to shuttle water from a source of supply to a fire site. The result is expressed in gallons per minute (gpm).

The normal ability of the distribution system to deliver Needed Fire Flows at the selected building locations is reviewed. The results of a flow test at a representative test location will indicate the ability of the water mains (or fire department in the case of fire department supplies) to carry water to that location.

The hydrant distribution is reviewed within 1,000 feet of representative test locations measured as hose can be laid by apparatus.

For maximum credit, the Needed Fire Flows should be available at each location in the district. Needed Fire Flows of 2,500 gpm or less should be available for 2 hours; and Needed Fire Flows of 3,000 and 3,500 gpm should be obtainable for 3 hours.

Item 616 "Credit for Supply System (CSS)" = 25.43 points

Item 621 - Credit for Hydrants (3 points)

The second item reviewed is Item 621 "Credit for Hydrants (CH)". This item reviews the number of fire hydrants of each type compared with the total number of hydrants.

There are a total of 1090 hydrants in the graded area.

620. Hydrants, - Size, Type and Installation	Number of Hydrants
A. With a 6 -inch or larger branch and a pumper outlet with or without 2½ - inch outlets	1090
B. With a 6 -inch or larger branch and no pumper outlet but two or more 2½ -inch outlets, or with a small foot valve, or with a small barrel	0
CJD. With only a 2½ -inch outlet or with less than a 6 -inch branch	0
EJF. Flush Type, Cistern, or Suction Point	0

Item 621 "Credit for Hydrants (CH)" = 3.00 points**Item 630 - Credit for Inspection and Flow Testing (7 points)**

The third item reviewed is Item 630 "Credit for Inspection and Flow Testing (CIT)". This item reviews the fire hydrant inspection frequency, and the completeness of the inspections. Inspection of hydrants should be in accordance with AWWA M-17, *Installation, Field Testing and Maintenance of Fire Hydrants*.

Frequency of Inspection (FI): Average interval between the 3 most recent inspections.

Frequency	Points.....
1 year	
2 years	
3 years	
4 years	
5 years or more	No Credit

Note: The points for inspection frequency are reduced by 10 points if the inspections are incomplete or do not include a flushing program. An additional reduction of 10 points are made if hydrants are not subjected to full system pressure during inspections. If the inspection of cisterns or suction points does not include actual drafting with a pumper, or back-flushing for dry hydrants, 20 points are deducted.

Total points for Inspections = 4.00 points

Frequency of Fire Flow Testing (FF): Average interval between the 3 most recent inspections.

Frequency	Points
5 yrs	40
6 yrs	30
7 yrs	20
8 yrs	10
9 yrs	5
10 yrs or more	No Credit

Total points for Fire Flow Testing = 2.40 points

Item 631 "Credit for Inspection and Fire Flow Testing (CIT)" = 6.40 points

Divergence = -5.24

The Divergence factor mathematically reduces the score based upon the relative difference between the fire department and water supply scores. The factor is introduced in the final equation.

Community Risk Reduction

	Earned Credit	Credit Available
1025. Credit for Fire Prevention and Code Enforcement (CPCE)	1.03	2.2
1033. Credit for Public Fire Safety Education (CFSE)	1.05	2.2
1044. Credit for Fire Investigation Programs (CIP)	0.94	1.1
Item 1050. Credit for Community Risk Reduction	3.02	5.50

Item 1025 - Credit for Fire Prevention Code Adoption and Enforcement (2.2 points)	Earned Credit	Credit Available
Fire Prevention Code Regulations (PCR) Evaluation of fire prevention code regulations in effect.	2.76	10
Fire Prevention Staffing (PS) Evaluation of staffing for fire prevention activities.	2.67	8
Fire Prevention Certification and Training (PCT) Evaluation of the certification and training of fire prevention code enforcement personnel.	0.61	6
Fire Prevention Programs (PCP) Evaluation of fire prevention programs.	12.61	16
Review of Fire Prevention Code and Enforcement (CPCE) subtotal:	18.65	40

Item 1033 - Credit for Public Fire Safety Education (2.2 points)	Earned Credit	Credit Available
Public Fire Safety Educators Qualifications and Training (FSQT) Evaluation of public fire safety education personnel training and qualification as specified by the authority having jurisdiction.	5.00	10
Public Fire Safety Education Programs (FSP) Evaluation of programs for public fire safety education.	14.00	30
Review of Public Safety Education Programs (CFSE) subtotal:	19.00	40

Item 1044-Credit for Fire Investigation Programs (1.1 points)	Earned Credit	Credit Available
Fire Investigation Organization and Staffing (IOS) Evaluation of organization and staffing for fire investigations.	8.00	8
Fire Investigator Certification and Training (IQT) Evaluation of fire investigator certification and training.	3.00	6
Use of National Fire Incident Reporting System (IRS) Evaluation of the use of the National Fire Incident Reporting System (NFIRS) for the 3 years before the evaluation.	6.00	6
Review of Fire Investigation Programs (CIP) subtotal:	17.00	20

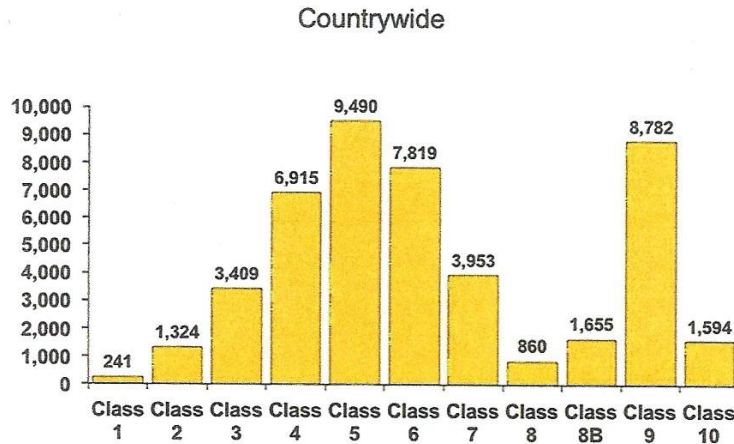
FSRSItem	Earned Credit	Credit Available
Emergency Communications		
414. Credit for Emergency Reporting	3.00	3
422. Credit for Telecommunicators	2.90	4
432. Credit for Dispatch Circuits	1.88	3
440. Credit for Emergency Communications	7.78	10
Fire Department		
513. Credit for Engine Companies	5.82	6
523. Credit for Reserve Pumpers	0.50	0.5
532. Credit for Pumper Capacity	3.00	3
549. Credit for Ladder Service	3.95	4
553. Credit for Reserve Ladder and Service Trucks	0.20	0.5
561. Credit for Deployment Analysis	4.81	10
571. Credit for Company Personnel	5.04	15
581. Credit for Training	5.11	9
730. Credit for Operational Considerations	2.00	2
590. Credit for Fire Department	30.43	50
Water Supply		
616. Credit for Supply System	25.43	30
621. Credit for Hydrants	3.00	3
631. Credit for Inspection and Flow Testing	6.40	7
640. Credit for Water Supply	34.83	40
Divergence	-5.24	-
1050. Community Risk Reduction	3.02	5.50
Total Credit	70.82	105.5

Final Community Classification = 03/3X

On the next page is a breakdown of the PPC ratings nation-wide. It can be seen that a rating of 3/3X is quite favorable, putting YAUFR in an elite upper percentage of the fire departments in the USA.

Distribution of PPC Grades

The 2017 published countrywide distribution of communities by the PPC grade is as follows:



Assistance

The PPC program offers help to communities, fire departments, and other public officials as they plan for, budget, and justify improvements. ISO is also available to assist in the understanding of the details of this evaluation.

The PPC program representatives can be reached by telephone at (800) 444-4554. The technical specialists at this telephone number have access to the details of this evaluation and can effectively speak with you about your questions regarding the PPC program. What's more, we can be reached via the internet at www.isomitigation.com/talk/.

We also have a website dedicated to our Community Hazard Mitigation Classification programs at www.isomitigation.com. Here, fire chiefs, building code officials, community leaders and other interested citizens can access a wealth of data describing the criteria used in evaluating how cities and towns are protecting residents from fire and other natural hazards. This website will allow you to learn more about the PPC program. The website provides important background information, insights about the PPC grading processes and technical documents. ISO is also pleased to offer Fire Chiefs Online — a special, secured website with information and features that can help improve your PPC grade, including a list of the Needed Fire Flows for all the commercial occupancies ISO has on file for your community. Visitors to the site can download information, see statistical results and also contact ISO for assistance.

In addition, on-line access to the FSRs and its commentaries is available to registered customers for a fee. However, fire chiefs and community chief administrative officials are given access privileges to this information without charge.

To become a registered fire chief or community chief administrative official, register at www.isomitigation.com.

Meaning of this last ISO rating

YAUFR already has an above average ability to control fire as indicated by its favorable rating of a class 3/3X from the Insurance Services Office (ISO). As one can note, ISO rating is a collaboration of the dispatch center, water department, and the fire department.

YAUFR has already earned nearly full credit for engine companies, pumper capacity and operational considerations and has respectful credit in other categories. (E.g. 5.82 out of 6 for Engines).

In the dispatch section, there are areas for improvement. (It earned 7.78 out of a possible 10 points) Even though it is an Independent Dispatch Center that controls this part of the equation, there may some cooperation between the dispatch center and fire officials that would help ratings throughout the County.

These are referred to as Alarm Receipt and Alarm Processing in the ISO Rating Schedule. NFPA 1221 assigns a time of 15 seconds for 95% and 40 seconds for 99% of calls to the Alarm Receipt category. NFPA 1221 assigns 64 seconds for 90% and 106 seconds for 95% for Alarm Processing. Additionally, credit is awarded for Emergency Dispatch Protocols, Telecommunicator Training and Certification, and Telecommunicator Continuing Education and Quality Assurance.

The current system allows two methods to determine compliance with distribution. The first is to have an engine company within 1.5 road miles of each area of fire protection and for a ladder company within 2.5 road miles. The second is for a Computer-aided Dispatch (CAD) analysis of compliance with NFPA 1710 time constraints and full alarm analysis. This is typically 4 minute arrival of the first arriving engine company. In other sections of the report, the consultants show how this aligns with current stations through the use of time/distance polygons.

ISO recognizes three categories of personnel for which credit is awarded. The categories are On-Duty Firefighters at Fire Stations (ODF), Public Safety Officers (PSO), and On-call Off-duty Firefighters (OCF). Full credit is given to on-duty firefighters and one-third credit is given for on call firefighters, as they need to respond to either the station for apparatus or assemble at the scene. The use of automatic aid does factor into the equation of personnel provided they are within 5 miles of the district boarder and automatically respond to every reported structure fire. YAUFR is in good stead with mostly career personnel.

In regards to Fire Department training (5.11 out of a possible 9) the rating did show only 57% of available credit. For most of our clients, one area that is a key factor in the deduction from full credit, is company level training.

The Water Supply section is related to the findings of the ISO inspector and through test records of the fire flow tests of hydrants throughout the community. The York private water system scored well at 34.83 out of 40 points, and additional credit is still possible in the future based on water main extensions underway and planned.

Because the fire flow is so critical to success of extinguishing a fire, this area receives much emphasis. This fire flow is in relation to the needed fire flow, as determined by the fifth largest fire flow in the community, as calculated through the size, construction type, and fire protection features of the buildings within the fire district

MAINTAINING THE YAUFR ISO RATING

The Consultants are confident that some personnel, training and water supply enhancements will allow YAUFR Fire Department to hold onto a Class 3 rating. It is unlikely that YAUFR could gain an improvement to “Class 2.” Without additional staffing. Chief Hoff does feel that YAUFR is up to the challenge. The existing “Class 3” rating does make YAUFR attractive to commercial properties due to potential insurance savings.

Dispatch Section of ISO

YAUFR is only one of the many York County agencies that are centrally dispatched by the 911 Center. They can work through the Chiefs’ Association to make improvements that benefit all users, including YAUFR. One area for improvement in the dispatch center, for example, involves the need to monitor for the integrity of circuits. As is the case with any electronics, failure can occur and a monitoring system will alert the dispatch personnel to its failure and the need to implement secondary systems. This is a one-time purchase of a monitoring system will increase the credit in the category Dispatch Circuits.

Fire Department Section of ISO

Within the Fire Department section, there are a few areas of improvement that will increase the overall score. Some of the improvements are costly such as increased personnel. They will become increasingly affordable as YAUFR continues to develop and grow. All persons paying the same tax levy deserve quality and timely service.

The Credit for Distribution is a measure of the needed fire stations (locations of Engine Companies and Ladder Companies). For full credit, an Engine company is needed within 1.5 miles of all structures within the fire district and a ladder company within 2.5 miles of all structures.

Personnel are a major factor and account for 85-90% of total expenditures per year. YAUFR should consider how many personnel the organization can reasonably afford and attempt to place the maximum affordable number on duty, as this is the largest category in the Fire Department Section of ISO. ***Unfortunately, YAUFR scored only 5.04 points out of a possible 15 for staffing. More Personnel are genuinely needed.***

Regarding training, the development of a solid training program that stipulates at least 1 hour of training each day will ensure that the minimum needed hours are achieved and allow some room for cancelled training due to calls or other unscheduled detail. Documentation is crucial.

Preparing for the next ISO Evaluation

ISO went through a very significant change in 2013 that placed an emphasis on personnel and the distribution of fire companies (15% and 4% respectively). This realignment placed the rating scale more in line with NFPA 1710's requirements, which focus on staffing of 4 per company and a travel time to an incident in less than 4 minutes 90% of the time.

The weighting of the various segments and a brief synopsis of what each segment examines is found at <https://firechief.iso.com/FCWeb/mitigation/ppc/2000/ppc2007.jsp>

The use of automatic aid does factor into the equation of personnel provided they are within 5 miles of the district boarder and automatically respond to every reported structure fire. YAUFR is in good stead with all career personnel.

QUICK ARRIVAL EXPECTED

As the population grows, many new residents are moving from more populated areas to York Area United Fire and Rescue where there is less congestion and in general, a higher comfort level. Many are enjoying lower taxation rates and take for granted the fact that paid firefighters are on duty and ready to respond immediately.

Many people often assume that when they call 911, help is on the way immediately, even when this isn't the case, as in some nearby areas which are still using volunteer departments.

One factor working in favor of all residents is the presence of a county-wide coordinated dispatch center. The consultants visited this center and monitored their activities in July, 2022, and report that their equipment and procedures are both first-class.

There are five components of Overall Response time, all of which should be subject to scrutiny for continuous improvement. These are shown in **Figure 3-A** on the next page, and elaborated upon in **Appendix 3-F**.

The Dispatch Center is responsible for the first two of the five components of overall response time. The fire departments throughout the county are responsible for the last three.

When anyone in York County dials 911 for fire or medical assistance, the clock begins for the fire departments. Many elements result in the final response time of the fire department to the call for help. These begin in the dispatch center. Time can be saved with efficient dispatch just as with efficient vehicle response.

Figure 3-A -- Response Time Equation:

Call Processing Time	+	Alerting Time	+	Turnout Time	+	Travel Time	+	Setup Time	=	OVERALL RESPONSE TIME
-------------------------------------	----------	--------------------------	----------	-------------------------	----------	------------------------	----------	-----------------------	----------	--------------------------------------

- **Fire Department Call Processing Time:** The time interval that starts when the call is created in CAD by a Fire Dispatcher until the initial Fire or EMS unit is dispatched.
- **Alerting Time:** Dispatch of the emergency call.
- **Turnout Time:** The time interval between the activation of station alerting devices to when first responders put on their PPE and are aboard apparatus and enroute (wheels rolling).
- **Travel Time:** The time interval that begins when the first unit is enroute to the incident and ends upon arrival of any of the units first on scene.
- **Setup Time (Reaction):** The time needed at the scene (E.g. stretching hose lines) before mitigation actually begins.

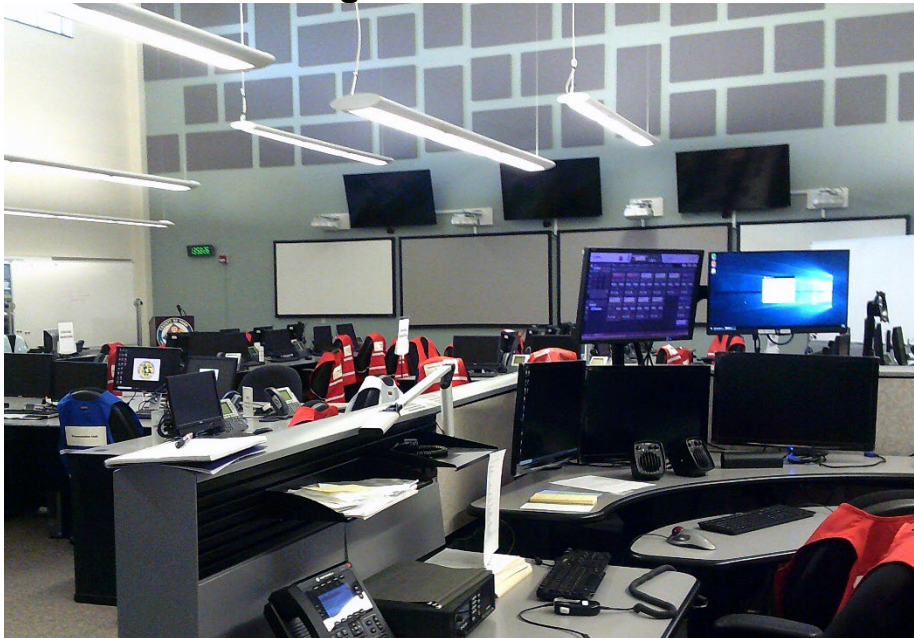
The consultants believe that the York County 911 Dispatchers have been diligent in knowing the importance of minimizing call taking and dispatch times.

Departments can only do so much to shorten or improve their three components but may want to consider the addition of another leg that can be improved. “Time to fire or patient.” This “Time to action” factor is largely ignored in statistical reports but yet is calculated now in Williamsburg, VA. and in other communities served by the Kramer group. It will be part of the RMS system for YAUFR.

This new factor is site-dependent and can be improved through pre-planning. The Fire Units can, for example, carry elevator keys and commandeer the elevators in multi-story buildings. Take the example of a patient on a third floor or down a long hallway that might require 4 to 6 minutes more to be reached after the first emergency vehicle is “on scene.”



911 Center handling YAUFR Calls



ADDING NEW DEPARTMENTS TO THE DISTRICT

So far in this Module we have projected continued growth and opined that the fire and EMS services have not kept up a commensurate pace. This is usually the case in developing areas. One concept that is often helpful is a merger between adjacent communities to gain an economy of scale. This has occurred in YAUFR where the three townships have merged their fire department services.

RANGE OF PARTNERSHIPS

Consultant William Kramer has assisted with mergers and been involved in separations and in both cases, there are advantages and disadvantages. Looking only at overall service to the community, mergers make sense and the creation of new districts that encompass several adjacent political subdivisions makes sense. Economies of scale can be realized.

Where separations occurred, such as the segmentation of fire units in the Sycamore Township and the City of Montgomery Departments in Hamilton County, Ohio, and the separation of Deerfield Township and Mason from a joint district in Warren County, Ohio, the identity factors and the local quality control were more important than the economies of a joint operation. In York County both the Fire Departments and the Municipal leaders must both want to merge, or join a district, or it need not be pursued.

Even where separations have occurred, the resulting separate entities often continue to co-respond and offer mutual assistance. The consultants have studied Campbell County, in Northern Kentucky, which presented many of the same factors found in York Area United Fire and Rescue. There, the effective merger of Highland Heights and Cold Spring and the joining of dispatch operations for all of Campbell County occurred with a visible degree of success. In general, joint districts serve member communities well and result in a stronger organization than separate predecessors.

York Area United Fire and Rescue should remain open to new members from adjacent communities as long as the Fire Departments and the Municipal leaders both want to join the district. Other steps, short of new members joining YAUFR, are possible as listed below:

A. Cooperation and mutual support: The department has already achieved the first level of merger through the York County Chiefs' Association. By sharing county-wide specialty teams, and responding into adjacent territories, have softened borders among themselves. The fact that chiefs from the departments continue to meet regularly indicates that this first level of "merger" has already been achieved. The fire chiefs and other officers in leadership positions talk across district lines and work together already both administratively and on the emergency scene.

B. Joint purchasing and training: York County departments have already shared training resources and ideas, and conducted joint training exercises at times. In addition departments could discuss equipment and apparatus needs and work together to write specifications that meet the needs of various fire department response areas when major purchases are needed.

This should result in common SOP's and common protocols for EMS assists and fire ground operations. Each district should adopt the best practices of each other and when called upon to operate jointly on major incidents, they are able to perform in more cohesive way. YAUFR does share policies and procedures if asked.

C. Automatic joint response: Communities in and around York Area United Fire and Rescue provide mutual aid when called upon and ask for help in return. York City and YAUFR could investigate expanding these procedures and agreements even more, including new automatic aid agreements. There are, however contractual issues since the City of York cannot use mutual aid on the first alarm. Every community should participate in mutual aid, as many departments all across the USA already do, so that larger events within one community can be managed with its own crews and support from other agencies. Even if the service is not fully reciprocal, the benefit of sharing the resource in a significant time of need should be considered.

Automatic aid is a logical extension of “mutual aid” and is already used in York Area United Fire and Rescue where additional resources for larger reported events or for high-hazard border locations are anticipated in advance. This program could be expanded, especially as departments introduce their first entry into staffing stations with on-duty personnel. These are then programmed into response tables at the common Communications Center. As opposed to “Mutual Aid” which must be requested, automatic aid units are dispatched immediately upon the report of a fire or other major incident, eliminating unnecessary delay.

In **Module 6** we will show how Technical Rescue Teams have been formed among members of different York County departments, with participation by YAUFR members. This is somewhat analogous to the Automatic Aid concept and has been successful in tapping the expertise in specialty areas held by some members of each agency while containing costs associated with these specialized areas.

D. Phased merger: Since the department has already achieved much of what is possible in **A, B and C** above, they are left with the next step – merger, or adding new members to YAUFR.

The consultants have worked with other clients that have achieved various mergers: For example, when Cold Spring and Highland Heights, KY merged, (Former client of Kramer) a surplus aerial ladder and a surplus pumper were examples of efficiency gains. Although these were cities, they had adjacent territories similar to those in York Area United Fire and Rescue. Personnel needs and overlapping leadership positions were consolidated. Similar gains could be realized by adding new communities to York Area United Fire and Rescue.

E. Complete County merger: This is only theoretical since there is no intention by York Officials at this time who are advocating a county-wide fire service. It is true that in many places the creation of a complete county-wide EMS system has been achieved and proven to be beneficial, but fire department mergers are more complicated. There is no indication that the county is ready for such a move in the fire services.

See Appendix 3-G for a guide that can assist with the process of adding new members to enlarge YAUFR, if the opportunity arises.

THEORETICAL DISTRICT ENLARGEMENT

In all parts of the country fire departments are prepared more than ever to respond automatically into one another's jurisdictions. This has led to the creation of various alliances and mergers, including the creation of fire districts such as YAUFR where a complete merger makes sense. Local officials are justifiably trying to address the immediate needs of response areas where resources are often stretched thin, and where alone, individual departments are unable to meet recommended standards.

Quite often Fire Districts are formed across numerous jurisdictions, none of which alone could afford on-duty staffing. In Ohio two adjacent small cities, Deer Park and Silverton, had relied on volunteers for years but as the ranks got dangerously low, they created a joint district with a new fire station on their border. Together they were able to then provide 24-hour fire and paramedic services with on-duty crews.

A "joint fire district" is independent of the political subdivisions. YAUFR was formed in 2008 with the agreement among the participating townships. The larger fire district becomes its own entity protecting all political subdivisions or parts thereof which have entered the partnership.

Political subdivisions can pass an ordinance or resolution approved by a majority of the members of each of the legislative boards to create a joint fire district. A joint fire district so created is usually given a name different from the name of any participating township or municipality but can include names of all participants.

The governing body of the joint fire district becomes a board of fire district trustees, which includes an equal number of representatives from each municipal corporation in the district. (In YAUFR, it is two members from each township) Financial, Planning or Legal professionals from the community can round out board membership, thus making it a viable policy setting body.

Two primary reasons often cited for the creation for a fire district are:

- Enhance service delivery *(Usually Does)*
- Reduce costs *(Usually Doesn't)*

See the Inset on the next page for a story about a real-life proposed merger with differing opinions by the Fire Chief and Elected Officials. (Full Story in Appendix 3-H)

PAYSON ROUNDUP



Payson balks at approving fire merger

by Michele Nelson roundup staff reporter

mnelson@payson.com

Jan 29, 2019

The Payson Town Council refused to commit to a merger between the Payson, Hellsgate and Houston-Mesa fire departments Thursday, saying they need more time.

The council directed town staff to organize town halls to get community input and to gather more data. The council asked staff to explore a different model for the merger, conduct further financial analysis and look into how much control Payson would have if the merger went forward. Most of the council members said they simply needed more time and information.

Mayor Tom Morrissey feared a loss of control. "I feel there are inequities — you (Payson) could be better staffed. I can't do anything about that if this is turned over to another body," he said.

Full Story is found in **Appendix 3-H**

When Fire Chief David Schmaltz of Defiance, Ohio investigated the formation of a Fire District that would include the City of Defiance and several surrounding townships, he identified the following positive characteristics:

- Enhanced service delivery
- Revenue and expenses are distributed over a larger area
- Increased flexibility in staffing
- Broader Fire and EMS coverage
- Better response times
- Elimination of redundant resources like apparatus, record keeping, and equipment
- Standardized training along with policies and procedures
- Improved Fire Code enforcement and public education
- Insurance savings through ISO
- Increased opportunities for participation (rope, water, HazMat.)

While the benefits are real for an entire new District, it usually means the "Haves" are subsidizing the "Have-nots." In our current consideration, any one of the townships might be a heavier contributor but, together, they all enjoy enhanced fire and EMS service.

For example, let's use the ISO (Insurance Services Office) rating in the following HYPOTHETICAL example:

Four adjacent communities form a district; Here are the before and after ISO ratings:
(Lower ratings are better on a 1-to-10 scale)

Prior to a district:		After District:	
Village A:	4	Village A:	5
Village B:	8	Village B:	5
Community C:	6	Community C:	5
Community <u>D</u> :	<u>6</u>	Community <u>D</u> :	<u>5</u>
AVERAGE	6	AVERAGE	5

In the above hypothetical example, the overall fire protection is improved with the creation of a district while it suffers a one-point degradation in Village A. This isn't necessarily a deal breaker, however. City of Defiance City Manager Jeff Leonard, when evaluating the formation of a Fire District with Defiance Township, Richland Township and Noble Township stated:

“We have a sense of Community here. I don’t necessarily mind subsidizing our neighbors. I would hope that if Defiance residents are seriously injured in an accident outside the city limits, they would still get quality care.”

Some drawbacks to a Fire District are:

- Not much savings up front, costs might actually increase
- Who is going to be in charge?
- Loss of identity by individual departments
- Possible loss of volunteer membership in those communities still using volunteers
- Inability to recruit enough part-time / auxiliary personnel
- Overcoming cultural differences

Note in **Appendix 3-J** a story about the “**Central Ohio Joint Fire District,**” an example of a successful joint venture. Districts work well in many areas, as can be seen from the example above. This District covers about 70 square miles. In considering the merits of merging, a key factor is the number of households or “rooftops” that not only need protecting in an area but which determine, by their number, how much of a district they can afford.

MODULE 3 CONCLUSION

In this module, the consultants examined the population and makeup of the citizenry that is being served by the five fire stations throughout York Area United Fire and Rescue District. The study noted that York County has had steady growth. From 37,535 in 1790 to 456,438 in 2020.

In looking at population growth, and in projecting these figures over the next 40 years, it appears obvious that the emergency services are perpetually in “catch-up” mode trying to keep pace with the ever-increasing demands for service. The consultants feel that the emergency services lag behind county growth and additional funding will be necessary

The county fire departments have become allies willing to assist one another. We note how automatic aid is used to some degree already in the area. York City and YAUFR assist each other regularly.

This program is facilitated by a common dispatch center and could be expanded, especially as some volunteer fire departments on the outer perimeter introduce their first entry into staffing stations with on-duty personnel. We note how these could then be programmed into response tables at the Communications Center.

For reported structure fires, the consultants advocate automatic aid as opposed to “Mutual Aid” which must be requested. Automatic aid units are dispatched immediately upon the report of a fire or other major incident, eliminating unnecessary delay.

The future potential for expanding the YAUFR District could become a reality, but we note that this needs support upfront from both the fire departments and the governmental leadership. A complete county-wide fire department is only theoretical since there is no intention by any leaders in the fire service or other governmental entities to move in this direction.

In York Area United Fire and Rescue, 65% of all households have at least one family pet. These are to be considered members of the family. In day-to-day fire department operations animal rescues occur often, and it is often pets that need to be rescued from house fires.

In winding down this module, we show a story about older combustible homes, close together as in some areas of YAUFR. Three homes burned but the people and pets were safe. **Appendix 3-K** has this Pennsylvania story.

The consultants do believe in the value of pet-oxygen masks and provide them to clients who do not already have them. See **Appendix 3-L** for a recent story showing how pet masks saved three dogs.

The York Area United Fire and Rescue Emergency Services are ahead of the curve in studying the existing fire department network, and in planning for the growing number of citizens that will have to be served in the future.

APPENDIX 3-A

Demographics for York County, Pennsylvania



York County, Pennsylvania

From Wikipedia, the free encyclopedia

Not to be confused with [York, Pennsylvania](#).



This article uses **bare URLs**, which may be threatened by **link rot**. Please consider converting them to **full citations** to ensure the article remains **verifiable** and maintains a consistent citation style. [Several templates](#) and tools are available to assist in formatting, such as [reFill \(documentation\)](#). *(August 2022)* ([Learn how and when to remove this template message](#))

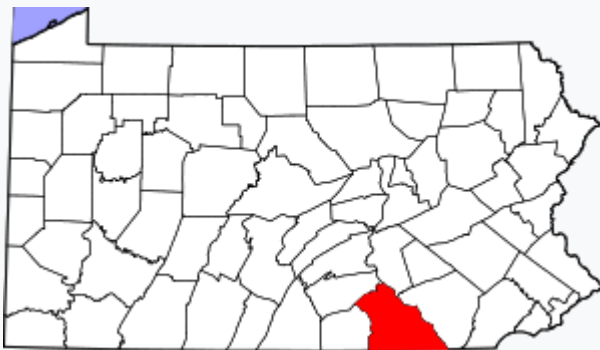
York County

[U.S. county](#)

York County Administrative Center



Seal



Location within the U.S. state of [Pennsylvania](#)

Pennsylvania's location within the [U.S.](#)

Coordinates:  39°55′N 76°44′W	
Country	 United States
State	 Pennsylvania
Founded	August 19, 1749
Named for	Duke of York
Seat	York
Largest city	York
Area	
• Total	911 sq mi (2,360 km ²)
• Land	904 sq mi (2,340 km ²)
• Water	6.5 sq mi (17 km ²) 0.7%%
Population	
(2020)	
• Total	456,438
• Density	481.1/sq mi (185.8/km ²)
Time zone	UTC−5 (Eastern)
• Summer (DST)	UTC−4 (EDT)
Congressional districts	10th , 11th
Website	yorkcountypa.gov

York County ([Pennsylvania Dutch](#): Yarrick Kaundi) is a [county](#) in the [U.S. state](#) of [Pennsylvania](#). As of the [2020 census](#), the population was 456,438.^[1] Its [county seat](#) is [York](#).^[2] The county was created on August 19, 1749, from part of [Lancaster](#)

[County](#) and named either after the [Duke of York](#), an early patron of the [Penn](#) family, or for the [city](#) and [county](#) of York in England.

York County comprises the York-[Hanover](#), Pennsylvania [Metropolitan Statistical Area](#), which is also included in the [Harrisburg](#)-York-[Lebanon](#), Pennsylvania [Combined Statistical Area](#). It is in the [Susquehanna Valley](#), a large fertile agricultural region in [South Central Pennsylvania](#).

Based on the [Articles of Confederation](#) having been adopted in York by the [Second Continental Congress](#) on November 15, 1777, the local government and business community began referring to York in the 1960s as the first capital of the United States of America. The designation has been debated by historians ever since.^[3] Congress considered York and the borough of [Wrightsville](#) on the eastern side of York County along the [Susquehanna River](#) as the nation's permanent capital before [Washington, D.C.](#) was selected.^[4]



Geography

An Oakland Run waterfall near the [Mason-Dixon Trail](#) in SE York County

According to the [U.S. Census Bureau](#), the county has a total area of 911 square miles (2,360 km²), of which 904 square miles (2,340 km²) is land and 6.5 square miles (17 km²) (0.7%) is water.^[5] The county is bound to its eastern border by the [Susquehanna River](#). Its southern border is the [Mason–Dixon line](#), which separates Pennsylvania and [Maryland](#). Within the [U.S. piedmont region](#), York County is generally hilly and rises to the [Blue Ridge Mountains](#) in the northwest, where it is bordered by [Yellow Breeches Creek](#). Interior waterways include [Codorus](#) and [Conewago Creeks](#), and Lakes Lehman,^[6] Kiwanis, [Marburg](#), Pahagaco, Pinchot, Redman, and Williams.^[7]

Adjacent counties

- [Cumberland County](#) (north)
- [Dauphin County](#) (northeast)
- [Lancaster County](#) (east)
- [Harford County, Maryland](#) (southeast)
- [Baltimore County, Maryland](#) (south)
- [Carroll County, Maryland](#) (southwest)
- [Adams County](#) (west)

Major roads and highways

 I-76 / Penna Turnpike  I-83  I-83 BL  US 15  US 30  PA 24  PA 74	 PA 94  PA 114  PA 116  PA 124  PA 177  PA 181  PA 182	 PA 194  PA 214  PA 216  PA 234  PA 238  PA 262  PA 297  PA 372
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Climate

Most of York County has a hot-summer [humid continental climate](#) (*Dfa*) and the [hardiness zones](#) are 6b and 7a. The latest temperature averages show some low-lying eastern areas of the county to have a [humid subtropical climate](#) (*Cfa*.)

hClimate data for York Airport , Pennsylvania (1981–2010 normals, extremes 1997–present)													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °F (°C)	72 (22)	75 (24)	86 (30)	91 (33)	93 (34)	96 (36)	100 (38)	99 (37)	95 (35)	90 (32)	84 (29)	78 (26)	100 (38)
Average high °F (°C)	38.6 (3.7)	41.7 (5.4)	51.5 (10.8)	63.0 (17.2)	72.5 (22.5)	81.1 (27.3)	84.8 (29.3)	83.5 (28.6)	75.9 (24.4)	65.7 (18.7)	54.4 (12.4)	42.3 (5.7)	63.0 (17.2)
Average low °F (°C)	20.6 (−6.3)	22.3 (−5.4)	29.3 (−1.5)	39.0 (3.9)	48.9 (9.4)	58.7 (14.8)	62.8 (17.1)	60.7 (15.9)	52.8 (11.6)	41.4 (5.2)	33.9 (1.1)	24.6 (−4.1)	41.3 (5.2)

Record low °F (°C)	-12 (-24)	-12 (-24)	-12 (-24)	17 (-8)	28 (-2)	39 (4)	44 (7)	42 (6)	32 (0)	22 (-6)	12 (-11)	-10 (-23)	-12 (-24)
	2.93 (74)	2.73 (69)	3.51 (89)	3.44 (87)	3.98 (101)	3.34 (85)	3.69 (94)	3.57 (91)	4.26 (108)	3.26 (83)	3.46 (88)	2.97 (75)	41.14 (1,045)
	8.9 (23)	8.1 (21)	3.5 (8.9)	0.5 (1.3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0.8 (2.0)	3.2 (8.1)	25.0 (64)
	10.0	9.8	11.1	12.1	12.8	11.7	10.9	10.0	9.5	8.4	10.3	10.0	126.6
	3.8	2.7	1.5	0.3	0	0	0	0	0	0	0.5	1.7	10.5

Demographics

As of the [census^{\[16\]}](#) of 2000, there were 381,751 people, 148,219 households, and 105,531 families residing in the county. The [population density](#) was 422 people per square mile (163/km²). There were 156,720 housing units at an average density of 173 per square mile (67/km²). The racial makeup of the county was 92.76% [White](#), 3.69% [African American](#), 0.18% [Native American](#), 0.86% [Asian](#), 0.03% [Pacific Islander](#), 1.39% from [other races](#), and 1.10% from two or more races. [Hispanic](#) or [Latino](#) of any race were 2.96% of the population. 42.0% were of [German](#), 12.6% [American](#), 7.7% [Irish](#), 6.4% [English](#) and 5.1% [Italian](#) ancestry. 94.8% spoke [English](#) and 2.9% [Spanish](#) as their first language.

There were 148,219 households, out of which 32.50% had children under the age of 18 living with them, 58.30% were [married couples](#) living together, 9.00% had a female householder with no husband present, and 28.80% were non-families. 23.30% of all households were made up of individuals, and 9.20% had someone living alone who was 65 years of age or older. The average household size was 2.52 and the average family size was 2.98.

In the county, the population was spread out, with 24.60% under the age of 18, 7.50% from 18 to 24, 30.30% from 25 to 44, 24.00% from 45 to 64, and 13.50% who were 65 years of age or older. The median age was 38 years. For every 100 females there were 96.70 males. For every 100 females age 18 and over, there were 93.80 males.

As of 2006, the York-Hanover Metropolitan Statistical Area was the fastest-growing metro area in the Northeast region, and was ranked among the fastest-growing in the nation, according to the "2006 Population Estimates for Metropolitan and Micropolitan Statistical Areas" (U.S. Census Bureau). The estimates listed York-Hanover as the 95th fastest-growing metro area in the nation, increasing 9.1 percent between 2000 and 2006.

York city had a 77.3 percent increase in the number of residents of Hispanic or Latino origin, based on a comparison of the 2000 and 2010 U.S. census results.^[17] The city's 30.9 percent Hispanic population (as of December 2017) is more than that of other places in the area.^[18]

York County is home to [Martin's Potato Chips](#) in [Thomasville](#), [Utz Quality Foods, Inc.](#) in [Hanover](#), [Snyder's of Hanover](#) in [Hanover](#), Hanover Foods in Hanover, Gibble's Potato Chips in [York](#), Wolfgang Candy in [York](#), [The Bon-Ton](#) in [York](#), Dentsply in [York](#), and a major manufacturing branch of [Harley-Davidson Motor Company](#).

Dialect^[edit]

The [Central Pennsylvania accent](#) and the Susquehanna [dialect](#) are the two most commonly heard speech patterns in the county, however there are numerous Mennonites and other persons of [Pennsylvania Dutch](#) descent that inhabit the county, who tend to speak with dialects similar to [Pennsylvania Dutch English](#).^[citation needed]

Metropolitan Statistical Area^[edit]

The [U.S. Office of Management and Budget](#) has designated York County as the York–Hanover, PA Metropolitan Statistical Area.^[19] The [United States Census Bureau](#) ranked the York–Hanover, PA Metropolitan Statistical Area as the 9th most populous in the state of Pennsylvania, and [115th most populous Metropolitan Statistical Area \(MSA\)](#) in the United States as of July 1, 2012.^[20]

The Office of Management and Budget has further designated the York–Hanover MSA as a component of the more extensive [Harrisburg–York–Lebanon, PA Combined Statistical Area](#),^[19] the [43rd most populous Combined Statistical Area \(CSA\)](#) and the [49th most populous primary statistical area](#) of the United States as of July 1, 2012.^{[20][21]} As of the 2017 estimates, the CSA's [1.26 million people](#) ranks 5th in the state of Pennsylvania.^[citation needed]

Politics and government^{Type equation here.}

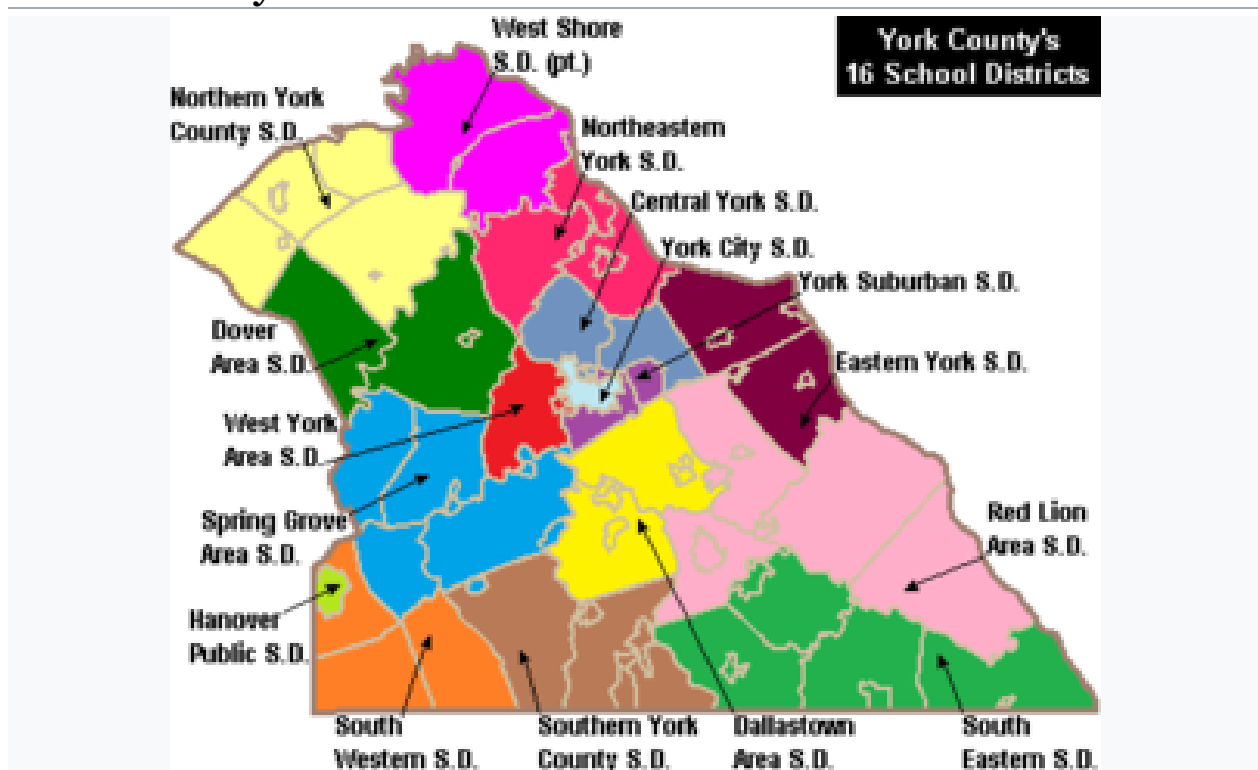
Prior to 1952, York County was a [Democratic](#) stronghold in presidential elections, voting majority [Republican](#) only four times before then. Between the founding of the party in [1828](#) and [1900](#), the county voted Democratic every time, one of only a handful of counties in Pennsylvania to do so.^[22] Starting with the 1952 election, it has become a

Republican stronghold with [Lyndon Johnson](#) being the lone Democrat to win the county since. Since then, [Jimmy Carter](#) in 1976 and [Barack Obama](#) in 2008 are the only Democratic presidential candidates who have received over 40% of the county's vote, and [George H. W. Bush](#) in 1992 is the only Republican not to win a majority. The only real pockets of Democratic support are in the city of York, which has long sent Democrats to the state house.

United States presidential election results for York County, Pennsylvania^[23] show

Education

York County's 16 School Districts



Boroughs	Townships
• Cross Roads • Dallastown • Delta • Dillsburg • Dover • East Prospect • Fawn Grove • Felton • Franklinton • Glen Rock • Goldsboro • Hallam • Hanover • Jacobus • Jefferson • Lewisberry • Loganville • Manchester • Mount Wolf • New Freedom • New Salem • North York • Railroad • Red Lion • Seven Valleys • Shrewsbury • Spring Grove • Stewartstown • Wellsville • West York • Windsor • Winterstown • Wrightsville • Yoe • York Haven • Yorkana	• Carroll • Chanceford • Codorus • Conewago • Dover • East Hopewell • East Manchester • Fairview • Fawn • Franklin • Heidelberg • Hellam • Hopewell • Jackson • Lower Chanceford • Lower Windsor • Manchester • Manheim • Monaghan • Newberry • North Codorus • North Hopewell • Paradise • Peach Bottom • Penn • Shrewsbury • Spring Garden • Springettsbury • Springfield • Warrington • Washington • West Manchester • West Manheim • Windsor • York

APPENDIX 3-B

NFPA: “New homes not as fire safe as old”





NATIONAL FIRE PROTECTION ASSOCIATION

The leading information and knowledge resource on fire, electrical and related hazards

Latest NFPA statistics show home fire death rate higher than in 1980

Fire Prevention Week, October 7-13, works to educate public about ways to stay safe
[Fire Prevention week in 2019 is October 3-12]

September 26, 2018

According to the National Fire Protection Association (NFPA), if you have a reported home fire today, you are more likely to die than you were in 1980. This startling fact is attributed to several factors, including the way homes are built and the contents in them. “Open floor plans and a prevalence of modern synthetic furnishings make homes burn faster and the fires produce deadly smoke and gases within moments,” said Lorraine Carli, NFPA vice president of Outreach and Advocacy. According to Carli, you can have as little as two to three minutes to escape a home fire today as compared to eight to ten minutes years ago.

These concerns prompted NFPA to create “*Look. Listen. Learn. Be aware. Fire can happen anywhere*” as the theme for [Fire Prevention Week](#), October 7-13, 2018. It emphasizes three basic but critical messages:

- **Look** for places fire can start
- **Listen** for the sound of the smoke alarm
- **Learn** two ways out of each room

This year’s Fire Prevention Week messages point to the essentials of home fire safety,” said Carli. “Looking for potential fire hazards in the home, making sure your smoke alarms are working properly, and having a home escape plan that everyone has practiced – these actions can dramatically reduce the loss from home fires.”

Motivating the public to take these steps can prove challenging, notes Carli, because people don’t think they could have a fire, despite the fact that home is the place they’re at greatest risk. Four out of five U.S. fire deaths occur in homes.

“Because we have reduced the overall number of fires, there is a general complacency and a lack of action around home fire preparedness and planning,” said Carli. “Our goal for Fire Prevention Week is to make sure people recognize that fire remains a very real risk, and that everyone needs to take action to protect themselves and their families.”

For more information about Fire Prevention Week, October 7-13, and this year's theme, *"Look. Listen. Learn. Be aware. Fire can happen anywhere,"* visit www.firepreventionweek.org.

For this release and other announcements about NFPA initiatives, research and resources, please visit the NFPA [press room](#).

About the National Fire Protection Association (NFPA)

Founded in 1896, NFPA is a global, nonprofit organization devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards. The association delivers information and knowledge through more than 300 consensus codes and standards, research, training, education, outreach and advocacy; and by partnering with others who share an interest in furthering the NFPA mission. For more information, visit www.nfpa.org. All NFPA codes and standards can be viewed online for free at www.nfpa.org/freeaccess.

About Fire Prevention Week

NFPA has been the official sponsor of Fire Prevention Week since 1922. According to the National Archives and Records Administration's Library Information Center, Fire Prevention Week is the longest running public health and safety observance on record. The President of the United States has signed a proclamation declaring a national observance during that week every year since 1925. Visit www.firepreventionweek.org for more safety information.

APPENDIX 3-C

Colerain Township is First ISO Class 1 Fire Department



Colerain fire department gets Class 1 Insurance rating

Jennie Key, jkey@communitypress.com Published 10:23 p.m. ET April 5, 2016



The Colerain Township Department of Fire and Emergency Medical Services has earned a Class 1 Public Protection Classification rating by the Insurance Services Office, an organization that independently evaluates fire services across the country.

The Class 1 rating is the highest possible score. To date, Colerain is one of only three fire agencies in Ohio, and 178 nationally to receive this ranking. Insurance companies use ISO information combined with other factors to establish local commercial business and residential property insurance rates – generally offering lower premiums in communities with better protection. Before its most recent assessment, the Colerain department was among a handful holding a Class 2 rating by the ISO.

Fire Chief Frank Cook says the improved ranking has been a goal of the department for more than 40 years.

“Nationally, there are over 48,000 fire departments or fire districts, and we are now among 179 departments across the country that have reached the Class 1 rating,” he said. He praised work by former Colerain fire chiefs Cloyce “Corky” Snyder and Bruce Smith for their work in building the department over four decades.

“What this means for our citizens and businesses is that they will now hopefully have the benefit of the lowest fire insurance rates in the country,” Cook said, “And we hope this will attract future residential, commercial and business development to Colerain.”

Jeff Ritter, president of the Colerain Township Board of Trustees, said achieving an ISO of 1 is a milestone for the township’s fire service and said the new rating will hopefully be a benefit to residents through reduced insurance rates and validate excellent level of service they receive from the fire department every day.

Frank Birkenhauer, assistant administrator and economic development director for Colerain Township, said earning a Class 1 ranking can be a selling point for new businesses, and provides residents and businesses in the township with excellent fire service.

“It’s an elite group and we are amongst them,” he said. “Hopefully, it will reflect in insurance rates. When businesses are looking at their operating costs, if you can save even 50 cents per square foot in insurance costs, that’s going to be attractive. Businesses investing millions of dollars in equipment, inventory and staff want to locate in communities that provide premiere services in the area of fire protection.”

According to the ISO’s website, the ratings process involves a periodic, detailed analysis of all fire department equipment and operations, training, the township’s water system, and emergency communications system. The program provides an objective nationwide standard for fire service.

APPENDIX 3-D

Center Township moves from ISO Class 9 to ISO Class 5



Center Township fire rating could save residents' cash

December 22, 2014

By Phil Wieland phil.wieland@nwi.com, (219) 662-5324

CROWN POINT | Center Township residents are getting a Christmas present courtesy of the Crown Point Fire Department and the Insurance Service Office, but they can't open it until March.

The ISO rates fire departments on their ability to fight fires, and the rating is used by many insurance companies to determine the cost to homeowners in premiums. Crown Point Fire Chief Greg DeLor said at Monday's Board of Public Works and Safety meeting that a review earlier this year lowered the rating for the unincorporated portion of Center Township from a nine to a five.

DeLor said the ISO reviews the Township's firefighting status about every 10 years looking at the dispatch capability, the water supply, the equipment, training and other things. The Township's rating remained at four, which DeLor said is about as good as it can get for a Township the size of Crown Point. The drop to a five for the Township area could save residents hundreds of dollars a year on insurance.

DeLor said the rating is very low for an area without fire hydrants but, "with the equipment provided by the Township and the additional manpower, we were able to demonstrate that we could produce a sufficient water flow for two hours." The water supply was possible with the help of other departments.

The Fire Department is a member of the Mutual Aid Box Alarm System, involving fire departments throughout the area in Indiana and Illinois, who are able to

respond with tankers for emergencies. Although the rating is done, Center Township Trustee Paul Bremer said it doesn't take effect until March 1 and isn't used by all insurance companies in setting premiums.

Bremer said, "We have good cooperation between the Township and the Fire Department, and we thank all their hard work in getting the rating down. "Mayor David Uran said, "We all benefit from the one common goal of protecting the residents."

The Township and the Township recently approved a five-year extension of the fire service contract at \$375,000 a year, the same amount as the current three-year contract that expires at the end of this year. DeLor said the contract allows the department to use all its equipment anywhere in the Township or Township. Equipment purchased by the Township in the past could only be used in the unincorporated areas. "We never know where the next call will be, and changing trucks didn't make much sense," he said. "It's much more economical to use whatever equipment we are in. So, one of the first things we discussed when Paul Bremer took office was to amend that out of the contract."

DeLor said, when he started on the department more than 20 years ago, each shift had three people on duty. The department now has at least eight and as many as 12 during the day as it expands to keep up with the Township's growth. The next step could be a new station to help handle the expected growth around the Interstate 65/109th Avenue interchange, he said.

APPENDIX 3-E

ISO and Home Insurance Bill



Insure.com

How your fire department's rating affects your home insurance bill

Jeffrey Steele - Last updated: July 19, 2021

You know that your community's fire department can prevent your home from burning down, but do you realize that its overall quality and performance can affect the cost of your home insurance?

Fire departments are monitored and rated closely, and for good reason, says Peter Moraga, a spokesperson for the Insurance Information Network of California (IINC). According to the Insurance Information Institute (III), about one in 265 insured homes has a property damage claim related to fire and lightning.

Often, losses go beyond direct damage from the fire. Your home may have smoke damage or mold that results from the water used to douse the fire. Insurers also have to pay temporary housing costs for their customers while their homes are being repaired, says Moraga.

The Insurance Services Office (ISO) provides a [Public Protection Classification](#) (PPC) fire department rating for more than 45,000 fire districts nationwide (but they are not available to the general public).

"They examine considerations like fire department's call times, how long it takes them to reach areas, coverage area size, water pressure, extent of hydrants and fire training," says Moraga.

The ISO evaluation

The PPC helps home insurance companies measure and evaluate major elements of a community's fire suppression system, says Joseph Masington, an assistant vice president in ISO's Risk Decision Services unit.

Masington says 10 percent of the rating reflects the community's emergency communications capabilities, including 911 telephone systems, adequacy of

telephone lines, operator supervision and staffing, and dispatching systems. Fifty percent of the rating reflects the quality of the fire department, including adequacy of equipment, sufficiency of staffing, level of training and the geographic distribution of fire companies.

Evaluation of the water supply comprises the remaining 40 percent of the ISO rating. This looks at the condition and maintenance of hydrants, existence of alternative water sources, and the amount of available water, both in terms of volume and pressure, compared with the amount needed to suppress fires.

The ISO evaluates this information and assigns an advisory number from 1 to 10, Masington says. "Class 1 generally represents exemplary fire protection, and Class 10 indicates that the community's fire suppression program does not meet ISO's minimum criteria," he says.

"ISO provides detailed grading results to the highest-ranking community officials at the conclusion of a PPC grading," adds Masington. "The resulting advisory PPC classification is also provided to participating insurance carriers."

Home insurance companies weigh results

For insurance companies, ISO ratings are important in the formulation of insurance quotes, Moraga says. However, their weight can vary from company to company.

At Allstate Insurance, quality of fire protection, including distance to the fire department, is only one factor used when calculating risk for a customer's property.

Allstate also considers such things as home construction features, age, roof type, whether the home is a primary or secondary residence, the presence of fire extinguishers and smoke detectors, and previous claims, says Allstate spokesperson Stephanie Sheppard.

"In addition, Allstate offers homeowners discount opportunities to lower their rate by taking actions to reduce risks, including fire prevention," she says.

"Taking safety precautions, such as installing smoke detectors and an automatic sprinkler system on each floor, owning fire extinguishers and even knowing what fire-resistant construction material to look for in a new house, [all] can go a long way in protecting your home and saving you money."

Deal Directly With One of the Best Home Insurance Companies

Company	Score	Customer Who Recommend	AM Best Rating	Learn More
<u>Progressive</u>	87/100	84.11%	A+	<u>Get Quotes</u>
<u>Liberty Mutual</u>	86/100	86.50%	A	<u>Get Quotes</u>
<u>Travelers</u>	82/100	80.65%	A++	<u>Get Quotes</u>
<u>Farmers</u>	85/100	84.91%	A+	<u>Get Quotes</u>

[Sponsored More Best Insurance Companies & Methodology](#)

Your home insurance premium

The ISO advises you to consult insurance company representatives about how PPC ratings may affect your homeowner insurance premiums. What should you do if you feel your insurer has overstated your home's fire risk? Keep in mind that insurers want happy consumers, says Moraga. If you feel your insurance carrier is overstating your risk, talk to a company supervisor and be specific about where you feel the carrier has gone wrong.

"Be aware the insurance company will have very specific and even scientific information to support their conclusions," he says. "Understand what you're challenging and why. If you've changed a wood shingle roof to a fire-resistant roof, you may have a claim on a lower premium.

"A wood rear deck is the kindling that may light your house on fire," he adds. "If you've fireproofed that deck, or turned it into a [cement] patio instead of a deck, you may have a claim on a lower premium."

APPENDIX 3-F

Response Time Segments



Five Steps in Overall Response time
(Condensed into 3 in the following article)

(Plus, an additional factor now measured in some of Kramer's clients **)

- 1. Fire Department Call Processing Time¹:** The time interval that starts when the call is created in CAD by a Dispatcher until the initial Fire or EMS² unit is dispatched.
- 2 Alerting Time:** There is some efficiency and accuracy gained in Hamilton County as the same person who takes the call then, as a separate segment of time, alerts proper units to respond.
- 3 Turnout Time:** The time interval between the activation of station alerting devices to when first responders don proper gear and are aboard apparatus and en-route (wheels rolling).
- 4 Travel Time:** The time interval that begins when the first unit is enroute to the incident and ends upon arrival of any of the units first on scene.

**** 4.5 Time to Fire or Time to Patient:** *In some of Kramer's clients there is an additional component being calculated after help is on scene, "Time to Fire or patient."*

- 5 Setup Time:** The time needed at the scene (E.g. stretching hose lines; setting up oxygen or other Medical equipment) before mitigation actually begins

Fire Rescue International *Reducing Response Times*

Now more than ever, fire departments are being held accountable for their response time performance and effectiveness. Can your fire department answer the following questions accurately?

1. How fast do your dispatchers answer and process emergency calls?
2. What safeguards or job aides are in place to help dispatchers send the most appropriate units?
3. How long does it take for firefighters to react and respond to an emergency incident?
4. Are apparatus properly equipped for an efficient and safe response?

Our industry constantly attempts to improve response time, but rarely do we look at all aspects of the equation. Technology can play an important role in improving response times. Remember that total response time is made up of three distinct components:

1. Dispatch time: Time elapsed from when a call is received at the 9-1-1 center until units are notified.
2. Turnout time: Time elapsed from when units are notified until they are responding.
3. Travel time: Time elapsed from when units respond until they arrive on the incident scene.

Most fire departments have a habit of focusing solely on improving their travel time, because it's traditionally accepted that little can be done to improve the other two components. Firefighters falsely believe that improving response time is made easy by driving faster. This solution rarely has a positive impact; in fact, it can lead to disastrous outcomes. But using technology as an alternative to improve response times can change all that. Let's take a close look at each of the three components that make up response time.

Dispatch Time One of the most critical areas in which to decrease response times comes before firefighters ever realize there's an emergency. When dispatchers receive a call for an emergency, it's critical that they identify the nature of the incident and be able to dispatch the most appropriate resources. It isn't uncommon to see technical rescue and hazmat situations downplayed during initial dispatch because dispatchers aren't comfortable with the incident type.

Computer-aided dispatch (CAD) and response interrogation software can help dispatchers recognize those rare, high-risk incidents and send the correct resources the first time. Sending the correct type and amount of resources initially is an excellent example of using technology to be more effective.

Additional technological improvements at the dispatch center can further help improve our performance. Can you imagine a dispatcher who always speaks at the same rate, tone and volume? Today, that is possible with computer-generated voice technology. By establishing a pre-recorded audio database, fire departments can ensure the correct pronunciation of all street names in a response jurisdiction. Even the format of a radio dispatch can be customized based on the incident type, geographic location or other

variables. Although the use of “robot voices” for dispatching may sound unappealing or unnatural, it eliminates common errors that can have disastrous consequences.

The use of this technology can shave seconds off the dispatch time. In addition to this tangible benefit, dispatchers are able to handle higher call volume since the radio dispatch becomes “hands free.” The process is simple: A dispatcher processes a call for service, inputs all of the information required into a CAD system and simply presses a button to initiate the dispatch process. Since the “voice” is transmitting the information to emergency response units, the human dispatcher is free to gather additional information from the caller or to perform other duties.

Turnout Time It’s impossible to improve things that aren’t measured and communicated. If we desire quick responses, we need to explore other ways to help our firefighters respond quicker. Taking an idea from the sports arena, why not place a clock on the wall to indicate how many seconds are left until an established goal is met? Firefighters are more likely to improve performance when they can see, in real time, how they’re doing.

In Photo 1, a simple countdown clock is tied to the fire station alerting system. Once an alert is received, the same circuit that opens doors and turns on lights initiates a countdown from 60 to 0 seconds on this clock. The clock should be mounted in a conspicuous location in the apparatus bay. When only 10 seconds remain, a chime is activated on the clock to remind companies to quickly place themselves “responding” with the dispatch center. We have installed these clocks in two stations as prototypes to see if results improve enough to expand the practice to the other five fire stations. Anecdotal evidence demonstrates that the visibility of this device causes positive behavioral change (i.e., quicker turnout time).

Travel Time Installing computers in fire apparatus is more common today than it has ever been. Departments have a wide variety of options, from adapting laptops to fit in the cab to purchasing customized, in-vehicle computers. Regardless of the hardware chosen, departments should consider using these computers for apparatus status changes. Using mobile dispatch software, firefighters can be responsible for changing their statuses, thus making them accountable for their performance. This frees up the airwaves for additional information that companies may receive while responding. Computers with touch-screens or easy-access buttons are the best for shaving seconds off of travel times. It will also be important for departments to closely examine the software that will be used to make sure it is “friendly” with a touch-screen environment. Some software programs use icons that are too small and detailed for any measure of accuracy on a touch-screen.

In-cab computers can also contain automatic vehicle location (AVL) devices to track fire department apparatus in real time using GPS. This can provide valuable information and allow dispatchers to notify units that are closest to a received call for an emergency,

thus reducing travel times.

Embrace Change ... But Use Caution

These technologies can all have a positive impact on improving total response time. Their cost varies—from several hundred dollars for an electronic clock to hundreds of thousands of dollars for automated voice dispatching and mobile computers—but in the grand scheme of customer service, it may be well worth the investment for the improved outcome.

Note: These solutions for public safety problems should ONLY be implemented when they improve and simplify operations—not complicate them. Some equipment vendors have a poor understanding of the environment and culture of the fire service, leading them to think their solutions are more user-friendly than they really are. Be sure to explore what solutions other fire departments have implemented and the lessons they learned to avoid repeating mistakes. Today's economic conditions demand that we work smarter and are mindful of our budgetary footprint for complex projects. Ideally, your investment in technological solutions should demonstrate to your taxpayers that your department is working harder for their tax dollars.

The bottom line: Technological improvements for our business have only just begun. Embrace the change and look for ways to keep your fire department on the cutting edge of improvement.

JAKE RHOADES MS, EFO, CFO, CMO, CTO, MIFireE, is the fire chief for the Edmond (Okla.) Fire Department and a 21-year veteran of the fire service. Rhoades holds a master's degree in executive fire service leadership. He serves as an elected member on the board of directors for the IAFC Safety, Health and Survival Section and as a principle member of the NFPA technical committee for firefighter qualifications. He is an adjunct instructor for Columbia Southern University.

TOM JENKINS MS, EFO, CFO, CMO, MIFireE, is the fire chief of the Rogers (Ark.) Fire Department and a 14-year member of the fire service. He has a bachelor's degree in fire protection and safety engineering from Oklahoma State University and a master's degree in public administration from the University of Oklahoma. He also serves as an adjunct professor for Oklahoma State University and Northwest Arkansas Community College.

APPENDIX 3-G

York Area United Fire and Rescue

Guide to Expansion



YORK AREA UNITED FIRE AND RESCUE

GUIDE TO ACCEPTING ADDITIONAL MEMBERS:

The planning steps and procedures outlined here will be especially helpful if a new member genuinely wants to join. Here are the steps involved, all of which could be pre-plotted on a tracking grid or “Gantt Chart.”

Step1: Votes to Enlarge YAUFR

- A. Vote by York Area United Fire and Rescue Department board to proceed with a merger:**
- B. Vote by potential new member’s governmental board to proceed with joining YAUFR:**
- C. Vote by potential new member’s fire officials to proceed with joining YAUFR:**

Step 2: Engage membership:

- A. Officially Inform members of York Area United Fire and Rescue Department of plans and create a feedback mechanism**
- B. Officially Inform members of fire service in potential new member’s community of plans and create a feedback mechanism**

Step 3: Joint conference of both districts to establish steering committee to lead the process forward

Step 4: inform the Governmental Officials and Fire Officials on both sides, officially, of Decision and provide a method for liaison between YAUFR and community or communities included in the enlargement of the district

Step 5: KEY: Engage the services of Attorney to ensure legal compliance. Decide on methodology for district to collect millage and allocate fees

Step 6: (Optional and likely not necessary)

Engage the Services of a Fire Service Consultant to assist with Facilities, Managerial and Operational Concerns

Step 7: Set a schedule of Public Hearings, at least once in each of the predecessor component townships to explain the proposal and garner public support

Step 8: Ensure Member and Employee Security

A. Gain legal assurance that existing full-time personnel of joining entity will be retained.

B. Standardize and improve perks such as stipends, Insurance, and training opportunities between YAUFR and the new entity.

Step 9: Establish a meeting among boards and all included governmental Officials to ensure that the make-up of the new board will have representation for a new member equal to predecessor component members

Step 10: Work with the attorney to ensure that all employees, rolling stock, and assets will be properly deeded or titled based on the agreement

Step 11: Work with the attorney to properly draw up deed transfers so all assets are properly assigned ownership

Step 12: Decide on suitability of existing fire station locations, or new relocations and/or combined sites. Finalize the number and location of stations from which service is to be delivered in the newly enlarged district.

Step 13: Depending on station decision decide on allocation and deployment of Fire Apparatus location and Response Policies and deployment of Apparatus and Fire/EMS Response Policies

Step 14: Decide on modifications and or additions needed, if any, to existing stations which will be part of the new District.

Step 15: Ensure the Heritage of any new member is preserved, perhaps with a new Museum Room

Step 16: Initiate Construction for any added stations or replacement stations

A. Architectural Design/Redesign

B. Construction Bidding Process

C. Authorization to Proceed with Building(s)

D. Actual Construction

Step 17: (Likely not in this order) Finalize personnel and equipment assignments in new district configuration

Step 18: Clearly define backup resources/procedures for secondary FIRE and EMS response in a new district. (Mutual Aid and Automatic Aid updates)

Step 19: Review Fire apparatus fleet and determine needs for the enlarged District

Step 20: Dispose of unneeded vehicles, using funds to augment staffing

Step 21: Compare Buy vs. Lease arrangements for Fire Equipment needed in the future.

APPENDIX 3-H

Merger?

Differing Opinions



PAYSON ROUNDUP

Payson balks at approving fire merger



by Michele Nelson roundup staff reporter

Contact the reporter at mnelson@payson.com

Jan 29, 2019

The Payson Town Council refused to commit to a merger between the Payson, Hellsgate and Houston-Mesa fire departments Thursday, saying they need more time.

The council directed town staff to organize town halls to get community input and to gather more data. The council asked staff to explore a different model for the merger, conduct further financial analysis and look into how much control Payson would have if the merger went forward. Most of the council members said they simply needed more time and information.

Mayor Tom Morrissey feared a loss of control. "I feel there are inequities — you (Payson) could be better staffed. I can't do anything about that if this is turned over to another body," he said.

The Hellsgate and Payson Fire chiefs both strongly support the proposal to merge the three fire departments and worked more than a year on the agreement.

In their plan, the new fire district would fall under the direction of an elected board composed of three Payson council members, two Hellsgate Fire District board members and one board member from Houston-Mesa. The board members from each fire department could veto changes that directly impact that department if needed.

The overwhelming majority of firefighters voted to support the merger.

An outside consulting firm concluded the fire authority would have enough money for at least five years even if it raised salaries and benefits and bought needed equipment. This could all be done without raising taxes in any of the jurisdictions.

Left: Hellsgate Fire Chief John Wisner spoke in favor of the fire merger during the public comment period

The Hellsgate and Houston-Mesa fire boards recently voted to support the merger. However, the Payson council remained unconvinced. “I have been on town council for a little over one month. So it is not that I would say I am absolutely against it, I need more time,” said Councilor Suzy Tubbs-Avakian.



Vice Mayor Janell Sterner wanted to hear more from residents.

“I don’t want to rush it — not saying that a year is long enough ... we do need to hold a few more town hall meetings to hear from the citizens,” said Sterner.

She asked staff to schedule a town hall. Councilor Steve Smith replied, “My concern is that this has been going on for two years. What do you do to make sure everybody understands? Is it going to be the same voices you heard today — or those in the grocery line that don’t know?”

Smith’s comment referred to the public comments made at the beginning of the meeting. Several firefighters spoke in favor of the merger while several residents urged the council to squash the merger.

However, he also had problems with the proposal. “I still believe there are things in this framework I do not believe in ... I would like to understand how human resources (will work).” he said. “Where are we going to be stationing the firemen and firewomen? How are we going to handle the capital improvement issues? Until I see that and know that, I don’t feel confident this agreement is ready for prime time.”

Councilor Barbara Underwood said she didn’t feel comfortable until everyone, including town staff, was on board.

“The best thing is let (the fire chiefs) work out more details,” she said. She also supported the idea of town hall meetings. “You also have to sell this to the community,” Underwood said.

Councilor Jim Ferris said he needed more information on the budget. “A lot of the numbers are nebulous and in flux,” he said.

Of particular concern to Ferris, the numbers didn’t add up. He said, “they will have better benefits, they will have higher wages, (and) they are taking on more expenses,” but sales taxes could plummet.

“We could have a substantial decrease,” he said.

Councilor Chris Higgins said he supported the firefighters.

“I feel if there are potential losers in this situation, the individuals who run the highest risk are our firefighters,” he said. “I feel that we are in a position and that it would be good to move forward with the (joint powers agreement). And have town staff bringing us more information.”

The Town Council had a crowd to listen in at its Jan. 24 meeting.



APPENDIX 3-J

Example of Joint Fire District





About Us

Central Ohio Joint Fire District (COJFD) was established in March 2000. Serving Centerburg Village, Hilliard Township and Milford Township in Southwestern Knox County Ohio and South Bloomfield Township and Sparta Village in Southeastern Morrow County. COJFD provides fire prevention and suppression services as well as Paramedic Emergency Medical Services to approximately 7700 residents.

Typical daily staffing consists of 3 full time and 1 part time Firefighters 24/7, a part time Fire Prevention Officer and a full time Fire Chief.

In 2017 COJFD purchased the fire station at 5138 Columbus Road and we are now in the process of expanding and renovating the building.

APPENDIX 3-K

Old Pennsylvania Homes Lost to Fire People and Pets Safe



2 homes destroyed in New Eagle fire: “We lost everything.”

JENNIFER BORRASSO

SEPTEMBER 14, 2022

BY Jennifer Borrasso

NEW EAGLE, Pa. (KDKA) — A fire broke out and destroyed two homes in New Eagle after police said a man was burning weeds with a propane torch in his yard and went back inside.

A neighbor who saw the fire on First Avenue alerted homeowner Randy Leach, who tried to put the fire out with a garden hose.

One of the homes, which is used for storage and recreation and was unoccupied, burned to the ground. The fire spread to their other house next door.



Three homes caught on fire on First Avenue in New Eagle, Washington County on Sept. 14, 2022. (PHOTO: KDKA'S JENNIFER BORRASSO/FACEBOOK)

"The homeowner was burning weeds with a torch and went inside," New Eagle Fire Chief Paul Pro said. "And the next thing you know, the structure next to his house that he lives was on fire."

Both homes were destroyed, though no one was hurt. Randy and Carole got out safely with their dogs. "We lost everything," Carole said. "Thankful that me and my husband got out with our dog and my dad's dog got out too."

"It just spread so quickly," she added. "The flames were so bad. These houses are old and they are all wood, so it went up quickly." Multiple units from both Allegheny and Washington counties helped put out the fire.

Two other homes nearby also suffered some damage. The Red Cross was at the scene to help.

"We lost everything but we're going to stay together," Carole said. "We have no house insurance or nothing, and we're going to have to start over from day one again."

The state police fire marshal ruled the fire accidental.

Jennifer Borrasso



Jennifer Borrasso joined the KDKA News team as a reporter in August 2019. Jennifer has over 20 years of broadcast experience. Her news philosophy is simple: tell good stories.

APPENDIX 3-L

Three Dogs Saved from Mouse Fire Using Pet Oxygen Masks



3 dogs saved using special oxygen masks in Concord housefire

by: Jesse Ullmann Oct. 17, 2022

CONCORD, N.C. (QUEEN CITY NEWS) – Three dogs were rescued using specially designed oxygen masks from a housefire this weekend, the Concord Fire Department said Sunday.

Fire crews responded to calls regarding the incident around 4:30 p.m. Saturday at a home on Watercrest Drive. Firefighters were able to gain control of the fire within five minutes of arriving on the scene, officials said. Five adults and two children were displaced.

During the incident, one of the adults suffered lacerations and smoke inhalation while attempting to save family pets. firefighters treated the occupant and then saved three dogs and used specially designed oxygen masks.

The dogs were then taken by the owners to an emergency veterinarian.

The cause of the fire remains under investigation.

== END OF MODULE 3 ==



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Analysis of Fire Department Staffing, Facilities and Operations



York Area United Fire and Rescue, Pennsylvania

Draft

MODULE 4: GENERAL ORDERS, OPERATIONS, and PERSONNEL DEVELOPMENT

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York Area United Fire and Rescue, PA

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MODULE 4: GENERAL ORDERS, OPERATIONS, and PERSONNEL DEVELOPMENT

In this module we cover a variety of topics that are somewhat of an “Infrastructure” for the daily life-saving services delivered in York Area United Fire and Rescue. We will show the district is in reasonably good shape in many of these areas but can use tweaking in some, and should review all of them periodically.

Chief Hoff shared the three-inch thick volume of General Orders that provide the operating procedures to cover all aspects of YAUFR operations, The Chief made it clear that the general orders regarding fireground procedures were considered to be an integral set of directives with which all personnel must become familiar.

YAUFR GENERAL ORDERS

Below is a brief synopsis of the topics covered in the General Orders.

Table 4-1 --YORK AREA UNITED FIRE & RESCUE Categories of General Orders				
		TOPICS	NUMMER OF REVISIONS	PERCENTAGE OF REVISIONS
1	Administration	37	21	56.8 %
2	Health and Safety	24	8	33.3 %
3	Emergency Operations	16	11	68.8 %
4	Apparatus/Equipment	11	4	36.4 %
5	Communications	5	4	80.0 %
6	Special Operations	6	5	83.3 %
7	Emergency Medical Services	26	2	07.7 %
8	Volunteer Services	6	2	33.3 %
9	Emergency Management	4	0	00.0 %
	TOTAL	135	57	42.2 %

The consultants were favorably impressed with the detail and thoroughness of the topics covered in the general orders. Also, they are revised to account for changing conditions and opportunities to make improvements. It can be seen that there have been 57 revisions in the 135 topics and the document remains a continuing bible for proper actions and a fluid document open to ongoing improvements. **Appendix 4-A** contains a listing of these 135 topics contained in the 3-inch thick “bible.”

“ORDERS” OR “GENERAL”

As opposed to the term “General Orders,” most of our clients have either SOP’s (Standard Operating Procedures) or SOG’s (Standard Operating Guidelines). Often these clients inquire about the difference between “Standard Operating Procedures (SOP’s) as compared to Standard Operating Guidelines (SOG’s).

This is a legitimate topic and could be analogous to “Orders” vs. “General” in YAUFR. Hence, we will briefly discuss the opposing concepts. The original term used quite commonly in business and industry was SOP. Fire Departments adopted this terminology early on but gradually switched to SOG because of perceived legal problems if there is a failure to follow procedure leading to a negative outcome on a medical run or structure fire.

It was felt that an opposing attorney could make a stronger case against a fire department if they could show that written procedures weren’t followed. Hence the switch to SOG’s with more flexibility or “wiggle room” when it came time to defend actions taken or not taken. After all, it can be said that “These are only guidelines, not mandatory procedures” that were not followed.

The reality is that it is a two-edged sword. For legal purposes there may be an advantage to “Guidelines,” but for a department that wants to run a tight ship and do things properly, “Procedures” are more likely to be followed by officers and members, than are guidelines. “General Orders” are a great fit here.

In **Appendix 4-B** we provide a **FIREHOUSE** Forum where the distinction between SOP and SOG is debated by a few opinionated bloggers, adding a bit more insight into the distinction between SOP and SOG. Here is one comment from the blog posts:

My understanding is that just like it says in the name, a SOG is a guideline on how you "can or should" operate, opposed to a SOP, which states "this is how you will" do it.

The attorney who works with the Kramer Group on legal matters, Lawrence T. Bennett, Esq. agrees with the comments in this appendix, but still favors SOG’s. The YAUFR use of General Orders seems to be an excellent term to direct correct behavior.

In **Appendix 4-C** we list an article about “**Writing General Orders**” which should lend encouragement to York Area United Fire and Rescue since suggestions provided in this article have largely been followed in the construction of the departmental General Orders. It has a few pointers that may prove helpful in future revisions.

We discovered from some of the personnel that if there is a problem with a General Order, it is not the composition of the General Orders, which we found to be well written and inclusive of key areas. The problem is more along the lines of lack of knowledge of the details therein, or lack of adherence to them

The YAUFR General Order 1-27 deals with LODD. (Line-of-duty-death) and it is truly commendable that this is covered before such a tragedy could strike. Below we introduce the message from the Pennsylvania Governor's Office relative to this subject. The complete announcement is in **Appendix 4- D**.



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The Office of the State Fire Commissioner (OSFC)/PA State Fire Academy (PSFA) staff offers its services and/or resources during a line of duty death (LODD). The team is headed by the local level field supervisors, who serve as the liaison to the National Fallen Firefighters Foundation with support from the fire commissioner, full- and part-time staff, or county and local emergency management agencies as the situation necessitates.

The support and resources are available to all fire departments in Pennsylvania. These are not automatic but must be officially requested by the organization that sustained the loss.

Detailed Information on this topic is in **Appendix 4-D**

We feel that the LODD topic is particularly relevant. Below we introduce a story from North Carolina that shows how one LODD (Line of Duty Death) did change procedures.

Citizen Times (*Asheville, NC*)

Asheville firefighter's death in the line of duty 10 years ago changed the department

Joel Burgess Asheville Citizen Times July 28, 2021

.....On July 28, 2011, the day a four-alarm blaze ripped through a medical building at 445 Biltmore Ave., Laurel Bowen and other family members came to the scene.

Jeff Bowen, who had gone twice into the building searching for people trapped, had collapsed inside. The 37-year-old, 16-year AFD veteran was pronounced dead at Mission Hospital of cardiac arrest and extreme heat and smoke exposure.

"Jeff's truck was still sitting there on the road," Laurel Bowen said. "And, and I pulled a U-turn and I went and I sat on the side of the truck. And I said, 'There's nobody here to take you home.'".....

For full story See Appendix 4-E

THE SOUTH PORTLAND COMPARATIVE

The consultants searched for an up-to-date comprehensive listing of procedures or guidelines that we could compare with the General Orders of York Area United Fire Rescue. Once we saw the complete and inclusive nature the YAUFR General Order Document, that quest became a challenge. Most of the files stored from our clients fell short.

Then we found a winner in New England. It turned out to be South Portland, ME that was particularly comparable because of its newness and comprehensiveness.

The South Portland Standard Operating Guidelines incorporate the "Red-Yellow-Green" color coding system listed on the Firefighters Close Calls Website. Here is the announcement from South Portland about their willingness to share, an open invitation. **Appendix 4-F** has a complete description of their breakdown of the South Portland SOG document, and a listing of the subjects covered. It mirrors YAUFR rather closely.

South Portland Fire Department Standard Operating Guidelines



© 2019 City of South Portland.

Listed in **Appendix 4-F** are South Portland's Rules, Policies, and Standard Operating Guidelines. South Portland's SOG "book" is divided into 7 Sections.

South Portland States; "We feel that it is important that the fire service share with and learn from other departments. Please feel free to browse our information in order to help your department. Note: In order to view these files, you will need to have a PDF Reader such as Adobe Reader."



PERSONNEL DEVELOPMENT

It is great that YAUFR personnel have general orders to guide them through their administrative duties and emergency procedures in the field. We now turn to the professional development for personnel and note how the fire department nurtures and encourages professional development. Below are a few “snapshot issues.”

Module 4: Part 2: PERSONNEL DEVELOPMENT Snapshot Issues

1. Personnel in York Area United Fire and Rescue hold multiple certifications and training levels. The department is well attuned to the training requirements and performance abilities that accompany the following certification levels:

Probationary Firefighter	Fire Fighter
Driver Operator	Fire Officer
Emergency Medical Technician	
Paramedic	

For all of the above, the minimum training requirements required by the State of Pennsylvania are being met. The knowledge and training abilities of the instructors vary and some of the training has lost some luster during pandemic restrictions. Nonetheless, in YAUFR there is leadership and peer encouragement that drives professional development.

2. YAUFR is using new technology that has helped standardization efforts needed to maintain training consistency. (i.e., good spectrum of training conducted)

The consultants applaud new technology which is used to connect the five stations and improve training consistency. Webcams and phones allow intercommunications and can be used both for shared training, and for information exchange. For example, where there are on-duty crews, a morning briefing of planned activities can be conducted, and issues such as personnel adjustments, special events, training opportunities and back-up requirements, can be coordinated.

3. Due to expected growth in York Area United Fire and Rescue, staffing issues are of concern now as well as in the future. Training and capabilities need to keep pace.

Although the accredited training endeavor involving Bucks County Community College wasn't successful, additional similar opportunities may arise if the county fire departments work together and remain open for new ideas.

Much training and certification now can be done “virtually.” and some would say it lacks the quality and intensity of similar in-person training. Not really. In **Appendix 4-G** we show two articles detailing this issue.

LEADERSHIP INITIATIVES

Strong leadership is a hallmark principle of an effective fire organization. York Area United Fire and Rescue may want to plan and prepare future leaders through various programs that are available often at little cost. Good leadership will install professionalism at all ranks. Chief Hoff has set the example and command staff members have followed suit in continuing to gain higher education.

York Area United Fire and Rescue is encouraged to develop quality promotional criteria. A competency-based selection process is recommended for all officers, as long as the process remains in accord with the bylaws and existing processes that have proven to be workable and effective. Selection in this fashion presents a proactive approach to the increased activity that York Area United Fire and Rescue will see and will feel many years into the future.

Specific recommendations for the organization include targeted improvements in training at every level of the departments, including operational, managerial, and leadership preparation. As new chiefs are promoted within the department, preference should be candidates with a bent toward training and professional development, both for themselves and for their organizations.

YAUFR will be well-served if the newly-created lieutenants have been trained in operational courses like Introduction to Fire and EMS Supervision and Management or Leadership in Supervision offered at the National Fire Academy or in an outreach program. The department is fortunate to be near both the National Fire Academy and the acclaimed Maryland Fire Rescue Institute's Staff and Command School.

All Chief-level Officers can continue to expand their skills in a leadership development course at the National Fire Academy, such as the Executive Fire Officer Program. Additionally, courses at a community college such as Business Management or Fire Science can build the skill set that most municipal administrators are seeking. Ideally, the fire chief candidates of the future, in paid departments, should be familiar with all of the materials covered in these courses. Volunteer Chiefs with limited time may have to be selective in finding formal courses. Their experience often carries them as a viable substitute for formal courses. See **Appendix 4-H** regarding website information for the National Fire Academy.

Attention to available developmental courses and training will help build the departments' foundation of knowledge, as well as create a healthy, competitive environment for the organizations. Current officers must have an opportunity to compete in the fire chief process, for both an appreciation of their contributions in the past, as well as to ensure that local knowledge and support are shown to be important.

Below are some of the latest programs available for officer development:

1. IAFC Company officer leadership symposium
<http://www.iafc.org/micrositeFRIconf/Education/Content.cfm?ItemNumber=6593&navItemNumber=6465>
2. IAFC Company Officer Mentoring Program
<http://www.iafc.org/CompanyOfficers/CompanyOfficerMentoring.cfm>
3. National Fire Academy Managing Fire Officer Program
http://www.usfa.fema.gov/training/nfa/programs/mo_program.html
4. National Fire Academy Executive Fire Officer Program
<https://www.usfa.fema.gov/training/nfa/programs/efop.html>
5. Center for Public Safety Fire Officer Designation
<http://publicsafetyexcellence.org/professional-credentialing/fire-officer.aspx>

While the current configuration in York Area United Fire and Rescue is separate Fire and EMS agencies, the fire department makes many first responses to EMS calls. EMS has training, regulation, and logistical support needed to deliver the first response.

Due to the highly technical and regulated nature of EMS, it is important that supervisors of all levels are well-versed in EMS leadership and management topics. This crossover was so prevalent that the National Fire Academy started bringing EMS management courses on-line to their offerings in the last 10 years. Some of the courses offered include:

- Emergency Medical Services: Quality Management (R0158)
- Emergency Medical Services: Incident Operations (N0147)
- Management of Emergency Medical Services (R0150)
- Supervising Emergency Medical Services (P0146)

We showed the overlap between Fire and EMS and the need for coordinated training. Now we need to introduce a third component, law enforcement. Cross-training between law enforcement, EMS, and fire departments was once a novelty and is now a necessity.

Cross-training with Police is becoming quite valuable in the wake of active-shooter incidents that involve heavy police and emergency medical involvement along with intricate needs for cooperation between the two groups.

In **Appendix 4-J** we see how Police Training is overlapping in another way: “The historic rise of calls for service from first responders across the country has opened the door for deeper training for law enforcement, fire departments and EMS providers. This appendix shows an “Active shooter” drill, planning for an all-too-common occurrence in this country.

PENNSYLVANIA CERTIFICATIONS

Next, we will examine the latest information from the State website. The basic mandated state training standards and criteria currently being successfully met by York Area United Fire and Rescue, but which can be improved upon. The following four pages provide the firefighter training and certification baseline for Pennsylvania.

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PLEASE NOTE: The State is in the process of uploading new and updated certification documents to the website. To make sure you are using the correct form, please call the State Fire Academy at 717-248-1115, or email [Michael McBride](#) or [David Smyth](#).

In accordance with Act 61, the Office of the State Fire Commissioner is responsible for the implementation of firefighter training and certification developed in accordance with and consistent to established standards. The Office of the State Fire Commissioner (OSFC) is the certifying agency within the Commonwealth of Pennsylvania and the State Fire Academy (PSFA) is the administering agency.

This program was established in 1983 when a committee known as the Fire Service Certification Advisory Committee (FSCAC) was formed to explore the implementation of a voluntary certification program for firefighters. The FSCAC provides the OSFC with program guidance and peer review. In October 1985, the National Pro-Board on Fire Service Professional Qualifications (NBFSPQ) approved the certification processes and procedures established by the OSFC and accredited Pennsylvania to offer Fire Fighter I certification. Today all certifications are nationally accredited by the National Board on Fire Service Professional Qualifications (NBFSPQ) and the International Fire Service Accreditation Congress (IFSAC).

The OSFC Volunteer Fire Service Certification Program has received its five-year reaccreditation each time since 1985 and currently offers thirty-four (34) levels of certification. To make the program easily accessible to emergency services providers there are thirty-one (31) PSFA approved test sites geographically dispersed throughout the Commonwealth at which certification testing is conducted.

The purpose of this program is to identify and recognize emergency service personnel whose accomplishments in training and education meets or exceeds nationally recognized standards. The NFPA standards for Fire Service Professional Qualifications identify the minimum requirements for a person at a particular level of progression. A person certified to one of the Fire Service Professional levels will have demonstrated competency in the knowledge and skills required to perform at a particular level. The service that can be offered to the citizens, visitors, and communities of the commonwealth will be enhanced by the professional competency attained through this certification process.

Additional Information about Certification

[Certification Levels Presently Offered](#)

- Obtain information for certification such as applications, skill sheets and candidate handbooks.

[Certification Exams Schedule](#)

- View the annual commonwealth wide certification test schedule as well as Test Site locations and contact information.

[Evaluator Workshop Schedule](#)

- View the annual commonwealth wide evaluator workshop schedule.

Certification Policies – *This document is currently being updated. Check back for the revised information.*

- Select listing of certification policies from the Administrative Policy Manual that will assist applicants and support, promote, and encourage voluntarily certification within the commonwealth.

Participating Departments

- A program that recognizes those organizations that have voluntarily certified within the commonwealth's Certification Program .
- You can now order and pay for participating department decals [on line](#).

Reciprocity

- A process by which reciprocity will be granted for national certification levels attained outside the commonwealth's Certification Program .
- You can download, print, and mail in your [Request for Reciprocity Application](#) (PDF), or simply [fill out the form and pay online](#).

Patch Order Forms

- Order additional certification patches and level bars.
- You can now [fill out the Patch Order Form and pay online](#).

Voluntary Rescue Service Recognition Program

- The Voluntary Rescue Recognition Program is a joint program between the Office of the State Fire Commissioner and the Department of Health Bureau of EMS. This purpose of this program is to recognize those emergency services that can safely and efficiently perform rescue operations and that have met all the standards as established by the two agencies.

Duplicate Certificates

- Information on ordering duplicate professional certification certificates.
- You can now [request and pay for duplicate certification certificates online](#).

STAYING PROFICIENT

In the introduction to this Module, we noted that the minimum training requirements required by the State of Pennsylvania are being met. In an excellent article reproduced in **Appendix 4-K** Rom Duckworth shares excellent tips regarding Safety Procedures.

**Here is one of YAUFR's newest lieutenants;
Celeste Jones, well trained and well qualified.**



CENTRALIZED TRAINING FACILITY

We believe there is much to be gained with the York County training facility located inside the YAUFR District. After all, members of the Fire Department do not have to leave the district to attend meaningful training at this facility. The amenities are plentiful, including the opportunity for live fire training

**York County
Fire
Training
Academy**



**York County
Fire
Training
Academy;
Multi-unit
training with
new Doctors
and Interns
regarding
Field Medicine**



Rescue 89 – a Centerpiece at the York County Training Facility during the training for medical professionals

The York County training facility provides not only live training but also many other primary firefighting skills, including the following:

- Hose advancement
- Fire attack
- Ventilation
- Search and rescue
- Laddering and rappelling
- Roof penetration
- Confined space exercises
- High-angle rescue operations
- Other specialized training simulations such as helicopter deployment

Advantage of Having the County Training Center

During our meetings with the line officers, the fact of having a fire training facility centrally located in the district was considered valuable. There is no need for driving great distances since the county's multi-faceted facility is close by.

For other departments, many smaller and many volunteer, there is a problem is the removal of most of the firefighting forces from their response area if they must travel to a regional training site.

Meaningful training is always a challenge, and it is refreshing to see YAUFR taking advantage of the County facility.

Training Facilities Built into Fire Stations

Another option that negates the need to maintain separate training facilities involves building the training facilities into the fire stations as they are constructed. Here is a picture of West Chester (OH) Fire Station and Headquarters.



This facility has a built-in training tower, a mezzanine that allows for a search and rescue, bays that allow construction of rope rescue systems, and windows to the mezzanine that allow ladder drills in the winter.

Below: Fire Station 57 designed by KZF



Firefighter works a bailout training exercise from the stair tower training prop in Deerfield Township's Station 57 in Warren County, OH.

(Training props built into station design by the KZF Architectural Firm)

ON-LINE/VIRTUAL TRAINING

The COVID-19 pandemic had some positive outcomes and the ability for people to switch to virtual learning and meetings was one of the benefits. The proliferation of virtual platforms, such as Zoom allowed connection of people without leaving their homes. Due to the varied locations in which people live and needed to connect, the platforms became enhanced to allow those in rural areas with slower internet connections to be able to have the same experience as people who lived in urban and suburban areas. The following inset is from the zoom platform.

About Zoom

Zoom is for you. We help you express ideas, connect to others, and build toward a future limited only by your imagination. Our frictionless communications platform is the only one that started with video as its foundation, and we have set the standard for innovation ever since. That is why we are an intuitive, scalable, and secure choice for large enterprises, small businesses, and individuals alike. Founded in 2011, Zoom is publicly traded (NASDAQ:ZM) and headquartered in San Jose, California

The fire service has followed the business practice of on-line learning and companies such as ***Fire Rescue 1*** offer a variety of training on-line. This platform allows departments to film trainings and upload the video, track personnel who complete the training, and issue certificates. While manipulative skills cannot be accomplished via virtual training, much of the cognitive skills can be completed this way.

TRAINING FOR THE FUTURE

Training can take the same individuals and convert them from mediocre firefighters to reliable proficient public servants on which a community can depend. The consultants applaud the attention given to improving training opportunities in York Area United Fire and Rescue.

In this module we showed where to go to get the knowledge and how to measure it. The future will certainly add new training requirements, including the need for fire departments to become familiar with new technology. The day is near when robots, drones, and other quasi-intelligent devices will accompany fire departments to the scene. See **Appendix 4-L** for an excellent article about the future of these devices applied to the Fire Service.

Training can be contagious in a healthy way. Knowledge generates the desire for more knowledge and peer pressure among stations regarding proficiency and capabilities raises the talent in all.

This Module covered a variety of topics that were interrelated and all relevant to efforts by York Area United Fire and Rescue to provide quality service. In the previous Module we saw how training is one of the metrics that affect the ISO rating.

The Module addressed value of the detailed and consistent General Orders. The exhaustive listing of topics covered by YAUFR General Orders ensures that all contingencies, administrative and operational, are covered in advance.

Holding York Area United Fire and Rescue to a higher standard requires doing some delicate work throughout an entire organization to change time-honored but outdated culture and mentality. Grass-roots involvement is the best formula for success.

FIELD SUPERVISION

We noted throughout this module the ingredients of a fine supervisor, and YAUFR does have quality leadership. We do note, however that a single battalion commander covering the large district is spread thin. Fortunately, the 40-hour day battalion chiefs can fill in at times and help ease the supervisory demands. Far better would be to have two 24-hour battalion chiefs in the field. This would enhance timely response, bolster scene safety and free one of the company officers for more directed functions at the scene of a fire or serious emergency.

MODULE 4 CONCLUSION

York Area United Fire and Rescue should be proud of many individuals within the organization who show dedication and provide a valuable resource to the community. They show a high level of dedication to their fire departments. The greatest single strength in York Area United Fire and Rescue is the quality of its personnel.

The consultants compared the professional qualifications of personnel serving in the emergency forces throughout York Area United Fire and Rescue and can say with confidence that they rank extremely well when compared with similar-sized departments serving similar-sized populations around the country.

Qualified individuals who are serving at all levels in these departments may have obtained various levels of formal education and technical training, or obtained valuable knowledge and skill through experience and the so called “school of hard knocks.” The consultants believe that both formal and informal education are essential in a quality operation, and feel there is a healthy balance of both throughout York Area United Fire and Rescue.

Appendix 4-A

York Area United

Fire and Rescue

General Order Listing





YORK AREA UNITED FIRE AND RESCUE GENERAL ORDER INDEX

#	TITLE	EFFECTIVE
1-17	Vacation and Personal Leave	November 26, 2010
	<i>Revised</i>	<i>April 21, 2022</i>
1-18	Overtime	June 15, 2010
	<i>Revised</i>	<i>March 16, 2018</i>
1-19	Privacy Policy	September 28, 2011
	<i>Revised</i>	<i>September 26, 2013</i>
1-20	Security Policy	October 27, 2011
1-21	Social Media	August 16, 2012
	<i>Revised</i>	<i>April 29, 2021</i>
1-22	Information Technology	December 8, 2013
	<i>Revised</i>	<i>April 29, 2021</i>
1-23	Incident Reporting	January 29, 2014
	<i>Revised</i>	<i>February 5, 2021</i>
1-24	Video Recording Devices	May 6, 2015
	<i>Revised</i>	<i>November 17, 2021</i>
1-25	Requests for Station Supplies and Facilities Equipment	December 9, 2015
	<i>Revised</i>	<i>April 21, 2022</i>
1-26	Background Investigations	February 24, 2017
	<i>Revised</i>	<i>April 21, 2022</i>
1-27	LODD	March 20, 2017
1-28	Fire Service Funeral/Memorial Protocol	March 20, 2017
1-29	Commendation Program	November 7, 2018
	<i>Revised</i>	<i>April 21, 2022</i>
1-30	Asset Inventory Control	September 30, 2019
	<i>Revised</i>	<i>April 21, 2022</i>
1-31	Employment References	October 24, 2019
1-32	Discipline	January 10, 2020
1-33	Light Duty/Return to Work	January 10, 2020
1-34	Incident Billing	August 14, 2020
	<i>Revised</i>	<i>April 9, 2021</i>

#	TITLE	EFFECTIVE
1-17	Vacation and Personal Leave	November 26, 2010
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1-33	Light Duty/Return to Work	January 10, 2020
1-34	Incident Billing	August 14, 2020
	<i>Revised</i>	<i>April 9, 2021</i>

<u>#</u>	<u>TITLE</u>	<u>EFFECTIVE</u>
1-35	Personnel Recall	February 23, 2022
1-36	Department Training	January 1, 2022
1-37	Promotional Processes	May 5, 2022



YORK AREA UNITED FIRE AND RESCUE GENERAL ORDER INDEX

SECTION 2 HEALTH AND SAFETY

<u>#</u>	<u>TITLE</u>	<u>EFFECTIVE</u>
2-1	Accident Reporting	March 25, 2015
	<i>Revised</i>	<i>September 2, 2021</i>
2-2	Injury Reporting	
2-3	Driving Regulations	August 22, 2008
	<i>Revised</i>	<i>November 18, 2019</i>
2-4	Employee Assistance Program	March 23, 2011
2-5	Safety Vests	September 22, 2008
2-6	Incident Safety	April 14, 2010
2-7	Personal Protective Equipment	July 22, 2010
	<i>Revised</i>	<i>April 21, 2022</i>
2-8	Respiratory Protection	
2-9	SCBA Face Pieces	May 22, 2013
2-10	Personnel Accountability System	June 3, 2011
	<i>Revised</i>	<i>March 10, 2022</i>
2-11	Operation of Hydraulic Tools	July 21, 2008
2-12	Emergency Identifier Activation	January 11, 2011
2-13	Preventing Violence in the Workplace	December 20, 2010
	<i>Revised</i>	<i>December 21, 2015</i>
2-14	Tobacco Policy	March 21, 2012
2-15	Exposure Control Plan	June 1, 2012
	<i>Revised</i>	<i>March 13, 2020</i>
2-16	Occupational Safety and Health	January 31, 2013
	<i>Revised</i>	<i>April 25, 2015</i>
2-17	Response to Violent Incidents	March 27, 2013



YORK AREA UNITED FIRE AND RESCUE GENERAL ORDER INDEX

SECTION 2 HEALTH AND SAFETY

[Continued]

Revised

October 13, 2020

<u>#</u>	<u>TITLE</u>	<u>EFFECTIVE</u>
2-18	Personal Protective Equipment Maintenance	April 23, 2013
	<i>Revised</i>	<i>April 21, 2022</i>
2-19	Air Monitoring	April 1, 2015
2-20	Electrical Safety	April 1, 2015
2-21	FD Operations on Roadways	January 3, 2017
2-22	Near Miss Reporting	April 16, 2017
2-23	Extreme Weather Activity	July 9, 2018
2-24	Vacant Building Evaluations	August 22, 2022



YORK AREA UNITED FIRE AND RESCUE GENERAL ORDER INDEX

SECTION 3 EMERGENCY OPERATIONS

#	TITLE	EFFECTIVE
3-1	Incident Management System <i>Revised</i>	July 21, 2008 <i>October 5, 2021</i>
3-2	Structural Fires <i>Revised</i>	June 1, 2010 <i>October 5, 2021</i>
3-3	Motor Vehicle Accidents <i>Revised</i>	July 21, 2008 <i>April 29, 2021</i>
3-4	Incidents Involving Flammable Gases <i>Revised</i>	June 1, 2010 <i>May 22, 2015</i>
3-5	Sprinkler/Standpipe Operations <i>Revised</i>	July 21, 2008 <i>November 7, 2019</i>
3-6	Mayday Procedure	
3-7	Fire Fighter Classification <i>Revised</i>	January 1, 2009 <i>April 21, 2022</i>
3-8	Knox Box <i>Revised</i>	December 3, 2009 <i>November 10, 2014</i>
3-9	Searching for Victims <i>Revised</i>	June 1, 2010 <i>September 11, 2015</i>
3-10	2 In / 2 Out	
3-11	Operational Reports <i>Revised</i>	February 9, 2009 <i>November 1, 2021</i>
3-12	Basement Fires <i>Revised</i>	June 1, 2010 <i>October 5, 2021</i>
3-13	Medical Assist Incidents <i>Revised</i>	July 27, 2009 <i>June 7, 2017</i>

<u>#</u>	<u>TITLE</u>	<u>EFFECTIVE</u>
3-14	Confined Space Rescue	September 17, 2018
3-15	Trench Rescue	September 17, 2018
3-16	Water Rescue	September 17, 2018



YORK AREA UNITED FIRE AND RESCUE GENERAL ORDER INDEX

SECTION 4 APPARATUS/EQUIPMENT

<u>#</u>	<u>TITLE</u>	<u>EFFECTIVE</u>
4-1	Self Contained Breathing Apparatus (SCBA)	August 3, 2009
	<i>Revised</i>	<i>July 3, 2021</i>
4-2	Nozzle and Hose Appliance Maintenance	August 3, 2009
	<i>Revised</i>	<i>July 17, 2020</i>
4-3	Apparatus Maintenance	June 3, 2010
	<i>Revised</i>	<i>March 4, 2019</i>
4-4	Requests for Maintenance - Apparatus	December 3, 2009
	<i>Revised</i>	<i>March 4, 2019</i>
4-5	Ground Ladders	February 26, 2010
4-6	Preparation of Apparatus for Shop Repairs	November 29, 2010
4-7	Refilling SCBA Cylinders	February 7, 2013
4-8	Aerial Device and Ground Ladder Testing	March 26, 2013
4-9	Hose Testing and Replacement	May 22, 2019
4-10	Gas Detector Maintenance	July 1, 2020
4-11	Life Safety Rope and Equipment	September 1, 2020



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SECTION 5 COMMUNICATIONS

#	TITLE	EFFECTIVE
5-1	Audio Recording Requests	December 28, 2009
5-2	Emergency Conditions	January 20, 2011
	<i>Revised</i>	<i>May 17, 2021</i>
5-3	Fire Unit Responses and On Scene Reports	April 3, 2013
	<i>Revised</i>	<i>April 4, 2019</i>
5-4	EMS Designations	May 23, 2013
	<i>Revised</i>	<i>January 5, 2018</i>
5-5	Radio Communications Terms	February 11, 2014
	<i>Revised</i>	<i>March 12, 2021</i>

SECTION 6 SPECIAL OPERATIONS

#	TITLE	EFFECTIVE
6-1	Pre-Plans	October 19, 2010
	<i>Revised</i>	<i>February 14, 2013</i>
	<i>Revised</i>	<i>January 20, 2018</i>
	<i>Revised</i>	<i>April 26, 2018</i>
6-2	Public Education Trailer	August 3, 2011
	<i>Revised</i>	<i>June 17, 2013</i>
6-3	Assistant to the Fire Marshal Unit	July 10, 2012
6-4	Fire Safety Surveys	February 1, 2013
	<i>Revised</i>	<i>April 26, 2018</i>
6-5	Turnout Gear Extractor Operations	March 14, 2019
6-6	Acquired Structures	October 24, 2019



YORK AREA UNITED FIRE AND RESCUE GENERAL ORDER INDEX

SECTION 7 EMERGENCY MEDICAL SERVICES

#	TITLE	EFFECTIVE
7-1	EMS Documentation and Paperwork	September 28, 2010
7-2	EMS Station Duties	July 24, 2009
7-3	Quality Assurance	April 23, 2015
7-4	Refusals	February 6, 2014
	<i>Revised</i>	<i>February 28, 2014</i>
7-5	Back Injury Prevention/Lifting	May 11, 2009
7-6	Ebola Response	November 6, 2014
7-7	Hospital Destinations	
7-8	Placing Equipment Out of Service	
7-9	EMS Staffing	September 28, 2010
	<i>Revised</i>	<i>December 9, 2014</i>
7-10	Advanced Life Support (ALS) Services	
7-11	Requesting Additional Resources	
7-12	CPR Protocols	
7-13	Outside Agency Notifications	
7-14	Nursing Homes	
7-15	EMS Unit Response	September 28, 2010
7-16	EMS Involvement on Fire Scenes	
7-17	Class IV Patients	September 28, 2010
7-18	Notifications for EMS Service Delivery	May 25, 2009
7-19	Automatic External Defibrillation	June 16, 2010
7-20	Statewide BLS Protocols	September 28, 2010
7-21	Fall Prevention Program	August 22, 2011
7-22	Ambulance Transport Mileage Recording	October 27, 2011

7-23	Daily EMS Uniforms	February 10, 2012
7-24	EMS Overtime	August 9, 2012
7-25	Priority Incident Diversion	
7-26	Response to Opiate Overdoses	July 1, 2017



YORK AREA UNITED FIRE AND RESCUE GENERAL ORDER INDEX

SECTION 8 VOLUNTEER SERVICES

#	TITLE	EFFECTIVE
8-1	Volunteer Fire/Rescue Membership	October 2, 2012
	<i>Revised</i>	<i>October 18, 2019</i>
8-2	Volunteer Separation	
8-3	Leadership Information	March 9, 2010
8-4	Volunteer Response to Scenes	November 6, 2015
	<i>Revised</i>	<i>February 4, 2022</i>
8-5	Junior Firefighter Membership	November 1, 2017
8-6	Fire Police	July 3, 2018

SECTION 9 EMERGENCY MANAGEMENT

#	TITLE	EFFECTIVE
9-1	Emergency Management	April 4, 2016
9-2	Regional Assets	April 4, 2016
9-3	Emergency Operations Center Activation	April 4, 2016
9-4	Post-Disaster Response Actions	April 4, 2016

APPENDIX 4-B

FIREHOUSE Forum

SOP's vs. SOG's





- Originally posted by **BP Firemedic**

We have been discussing legal aspects of the SOP's vs SOG's. I need some input on "a rose by any other name" in court- how does changing the name of SOP to SOG, cover you in court. I have heard and read that the SOG gives you some ability to deviate if the circumstances allow, but ultimately you are still responsible in court. Any comments are appreciated.

It doesn't matter what you call it.
Anyone can sue, for any reason, anytime.

The Best bet is to develop realistic policies/guidelines based on good solid firefighting knowledge, common practices and any standards you can latch on to, and then follow them.

I am now a past chief and the views, opinions, and comments are mine and mine alone. I do not speak for any department or in any official capacity. Although, they would be smart to listen to me.

14-27-2010, 03:21 PM

A guideline is defined as an indication or outline of policy and a procedure is a tradition way of doing things. Neither one really states anything that I would think would change the legality of it. I would say if you stated specific NFPA regulations in it that may help you but I am not that involved with the legal aspect of it all.

I agree with the anyone can sue for any reason at any time, it is all in documentation and records and some evidence of how you have done whatever is in question.

My understanding is that just like it says in the name, a SOG is a guideline on how you "can or should" operate. Opposed to a SOP, which states "this is how you will" do it.

SOGs appear to be more flexible... However, if your Department says that your SOGs are your Policies then it is "six in one, half dozen in another."

As far as legally, any action is going to be compared in Court to what is standard in that region, state, the National Standard (NFPA and such) and what is prudent and what would be done in the situation based on professional training/experience and if another

person would perform in a similar way.

[Deputy Marshal](#)

14-27-2010, 06:21 PM

Originally posted by **BP Firemedic** [View Post](#)

We have been discussing legal aspects of the SOP's vs SOG's.

There are none.

What matters is what they say; not what you call them.

Any SOP/SOG/Doesn't Make Any Difference should be constructed to make it clear if it is a mandatory or suggested policy statement.

If a particular SOP/SOG says that you SHALL do something (i.e. all passengers shall be seat belted with seatbelts fastened at any time while the apparatus is in motion) then you'd darned well better be sure that it always happens that way.

If a particular SOP/SOG says that you SHOULD do something (i.e. the first arriving engine should establish a water supply if smoke or fire is visible from a structure or water flow is evident from a sprinkler system) then you'd better document why the first arriving chose a different tactic during the incident debriefing.

Calling your collection of standing orders "SOPs" versus "SOGs" makes no difference by itself whatsoever.

Originally posted by **mikeyboy** [View Post](#)

My understanding is that just like it says in the name, a SOG is a guideline on how you "can or should" operate. Opposed to a SOP, which states "this is how you will" do it.

SOGs appear to be more flexible... However, if your Department says that your SOGs are your Policies then it is "six in one, half dozen in another."

As far as legally, any action is going to be compared in Court to what is standard in that region, state, the National Standard (NFPA and such) and what is prudent and what would be done in the situation based on professional training/experience and if another person would perform in a similar way.

There's a technical terms for the last part of my above paragraph but I can't recall it.....

I believe the technical term is *standard of care*, to which the *trier of fact* will determine if the person who had a *duty to care* proceeded with such reasonable caution that another prudent man would have exercised under the same circumstances. In the situation of a specific profession, the control subject (the person to whom the person under scrutiny is being compared) would be a reasonable and prudent man of the same profession, which would be defined by the standards/regulations/policies/guidelines/etc. that govern how that person should act.

It is understood that not all guidelines, procedures, policies, etc. can be followed absolutely all the time; deviations are sometimes necessary. But when a person deviates from a guideline, procedure, or policy, it is up to the trier of fact to determine if another reasonable and prudent person in the same profession would also have made the same deviation under the same circumstances.

12-04-2010, 09:51 PM Originally posted by **mikeyboy** [View Post](#)

My understanding is that just like it says in the name, a SOG is a guideline on how you "can or should" operate. Opposed to a SOP, which states "this is how you will" do it.

SOGs appear to be more flexible... However, if your Department says that your SOGs are your Policies then it is "six in one, half dozen in another."

As far as legally, any action is going to be compared in Court to what is standard in that region, state, the National Standard (NFPA and such) and what is prudent and what would be done in the situation based on professional training/experience and if another person would perform in a similar way.

There's a technical terms for the last part of my above paragraph but I can't recall it.....

In terms of department-level operations, including management issues, it's called the *industry standard*.

Basically it looks at the training, operational and managerial policies of a department and compares them to departments of similar size and composition, as well as any applicable standards or regulations.

Train to fight the fires you fight. Correct...

Yeah, that's what they are called... Standard of Care for medical issues and the Industry Standard is what we are compared to on the rest of our Job.

Base your SOP/SOGs on these; what the Feds are training, what the State is training, the Standard of Care established by your Medical Authority and the Industry Standard. By doing this, you should get some pretty solid Policies/Guidelines.

APPENDIX 4-C

Writing General Orders



How to Write a General Order

Co-authored by [Wikihow Staff](#) – [Reader Approved](#)

Adapted for emergency services by Kramer Consulting Group

This article was co-authored by our trained team of editors and researchers who validated it for accuracy and comprehensiveness. [Wikihow's Content Management Team](#) carefully monitors the work from our editorial staff to ensure that each article meets our high standards.

Wikihow marks an article as reader-approved once it receives enough positive feedback. This article has over 1,285,629 views, and 87% of readers who voted found it helpful. It also received 73 testimonials from readers, earning it our reader-approved status.

A compilation of General Orders provides a document consisting of step-by-step information on how to execute a task. An existing General Order (G.O.) may need to just be modified and updated, or you may be in a scenario where you have to write one from scratch. It sounds daunting, but it's really just a checklist. See Step 1 to get the ball rolling.

Steps

Part 1 Formatting Your G.O.'s.

1 Choose your format. There is no right or wrong way to write a G.O. However, your fire department probably has a number of G.O. s you can refer to for formatting Procedures, outlining how they prefer it done. If that's the case, use the pre-existing G.O. s as a template. If not, you have a few options:

Borrow a G.O. document or an SOG Document from a neighboring fire department who is known for doing things right and who has a workable established set of documented procedures

We suggest a simple steps format. This is for routine procedures that are short, have few possible outcomes, and are fairly to the point. Apart from the necessary documentation and safety procedures, it's really just a bullet list of simple sentences telling the reader what to do. **(What works best)**

A hierarchical step format. This is usually for long procedures -- ones with more than ten steps, involving a few decisions to make, clarification and terminology. This is usually a list of main steps all with sub steps in a very particular order. This could be, for example to list steps in a hiring or promotional testing process. **(Probably needed in most fire departments.)**

A flowchart format. If the procedure is more like a map with an almost infinite number of possible outcomes, a flowchart may be your best bet. This is the format you should opt for when results aren't always predictable. **(Not recommended for emergency operations by the Consultants)**

2. Consider your fire department. There are three main factors to take into account before writing your G.O.:

How familiar are personnel familiar your fire department and its procedures? Do they know the terminology? Your language needs to match the knowledge and investment of the reader. Rank-and-file firefighters are intelligent generally but appreciate simplicity. Your fire department's language abilities. Is there any chance people who don't speak your language will be "reading" your G.O.? If this is an issue, it's a good idea to include lots of annotated pictures and diagrams.

Consider the size of your fire department. If multiple people at once are reading your G.O. (those in different roles, and viewing from different rank levels), you should format the document more like a conversation in a play: "User 1 completes an action, followed by user 2, and so on and so forth". That way, each reader can see how he or she is an integral cog in the well-oiled machine.

3 Consider your knowledge. What it boils down to is this: Are you the best person to be writing this? Do you know what the process entails? How it could go wrong? How to make it safe? If not, you may be better off handing it over to someone else. A poorly-written -- or, what's more, inaccurate -- G.O. will not only reduce productivity and lead to fire departmental failures, but it can also be unsafe and have adverse impacts on anything from your team to the life-saving environment. In short, it's not a risk you should take.

If this is a project you've been assigned that you feel compelled (or obligated) to complete, don't shy away from asking those who complete the Procedure on a daily basis for help. Conducting interviews with those who must carry out an order is a normal part of any G.O. -creating process.

4. Decide between a short or long-form G.O. If you're writing or updating an G.O. for a group of individuals that are familiar with protocol, terminology, etc., and just would benefit from a short and snappy G.O. that's more like a checklist, you could just write it in short-form. Apart from basic purpose and relevant information (date, author, ID#, etc.), it's really just a short list of steps. When no details or clarification are needed, this is the way to go.

5. Keep your G.O. purpose in mind. What's obvious is that you have a Procedure within your fire department that keeps on getting repeated over and over and over. But is there a specific reason why this G.O. is particularly useful? Does it need to stress safety? Compliance measures? Is it used for training or on a day-to-day basis? Here are a few reasons why your G.O. is necessary to the success of your team:
To ensure compliance standards are met

To maximize adherence to safety measures
To ensure the Procedure has no adverse impact on environment
To ensure everything goes according to schedule, or in proper order
(In a fire department, salvage, for example should begin on arrival and often commences too late)
To prevent failures in manufacturing
To be used as training document
If you know what your G.O. should emphasize, it'll be easier to structure your writing around those points. It's also easier to see just how important your G.O. is.

Part 2 Writing Your G.O.

1. Cover the necessary material. In general, technical G.O. s will consist of four elements apart from the Procedure itself:

Title page. This includes 1) the title of the Procedure, 2) an G.O. identification number, 3) date of issue or revision, 4) the name of the agency/division/branch the G.O. applies to, and 5) the signatures of those who prepared and approved of the G.O. This can be formatted however you like, as long as the information is clear.

Table of Contents. This is only necessary if your G.O. is quite long, allowing for ease of reference. A simple standard outline is what you'd find here.

Quality Assurance/Quality Control. A Procedure is not a good Procedure if it cannot be checked. Have the necessary materials and details provided so the reader can make sure they've obtained the desired results. This may or may not include other documents, like performance evaluation samples.

Reference. Be sure to list all cited or significant references. If you reference other G.O. s, be sure to attach the necessary information in the appendix.

Your fire department may have different protocol than this. If there are already preexisting G.O. s you can refer to, abandon this structure and adhere to what's already in place.

2. For the Procedure itself, make sure you cover the following:

Scope and applicability. In other words, describe the purpose of the process, its limits, and how it's used. Include standards, regulatory requirements, roles and responsibilities, and inputs and outputs. Methodology and Procedures. The meat of the issue -- list all the steps with necessary details, including what equipment needed. Cover sequential Procedures and decision factors. Address the "what ifs" and the possible interferences or safety considerations.

Clarification of terminology. Identify acronyms, abbreviations, and all phrases that aren't in common parlance.

Health and safety warnings. To be listed in its own section and alongside the steps where it is an issue. Do not gloss over this section.

Equipment and special-call units: Complete list of what is needed and when, where to find equipment, (E.g., foam bank or other seldom needed items)

Cautions and interferences. Basically, a troubleshooting section. Cover what could go wrong, what to look out for, and what may interfere with the final, ideal operation.

Give each of these topics their own section (usually denoted by numbers or letters) to keep your G.O. from being wordy and confusing and to allow for easy reference. This is by no means an exhaustive list; this is just the tip of the procedural iceberg. Your fire department may specify other aspects that require attention.

3. Make your writing concise and easy to read. Odds are your fire department isn't choosing to read this for fun. You want to keep it short and clear -- otherwise their attention will stray or they'll find the document formidable and hard to grasp. In general, keep your sentences as short as possible.

Here's a bad example from firehouse routine maintenance: Make sure that you clean out all of the dust from the air shafts before you begin using them. Here's a good example: Vacuum all dust from air shafts before use. In general, don't use "you." It should be implied. Speak in the active voice and start your sentences with command verbs.

4. If necessary, interview the personnel involved in the process on how they execute the task.

The last thing you want to do is write an G.O. that is just plain inaccurate. You're compromising the safety of your fire department team members, their efficacy, their time, and you're taking an established process and not paying it any mind -- something your teammates may find a little offensive. If you need to, ask questions! You want to get this right.

Of course, if you don't know, ask multiple sources, covering all roles and responsibilities. One team member may not follow General Order or another may only be involved in a portion of the deed.

5. Break up large chunks of text with diagrams and flowcharts. If you have a step or two that are particularly intimidating, make it easy on your readers with some sort of chart or diagram. It makes it easier to read and gives the mind a brief hiatus from trying to make sense of it all. And it'll be appear more complete and well-written for you. Don't include these just to bulk up your G.O.; only do this if necessary or if trying to bridge a language gap.

6. Make sure each page has control document notation. Your G.O. is probably one of many G.O. S -- because of this, hopefully your fire department has some type of larger database cataloging everything within a certain reference system. Your G.O. is part of this reference system, and therefore needs some type of code in order to be found. That's where the notation comes in.

Each page should have a short title or ID #, a revision number, date, and "page # of #" in the upper right-hand corner (for most formats). You may or may not need a footnote (or have these in the footnote), depending on your fire department's preferences.

Part 3 Ensuring Success and Accuracy

1. Test the Procedure. If you don't want to test your Procedure, you probably haven't written it well enough. Have someone with a limited knowledge of the process (or a person representative of the normal reader) use your G.O. to guide them. What issues did they run across? If any, address them and make the necessary improvements. It's best to have a handful of people test your G.O. Different individuals will have different issues, allowing for a wide variety of (hopefully useful) responses. Be sure to test the Procedure on someone who's never done it before. Anyone with prior knowledge will be relying on their knowledge to get them through and not your work, thus defeating the purpose.

2. Have the G.O. reviewed by those who actually do the Procedure. At the end of the day, it doesn't really matter what your bosses think of the G.O. It's those who actually do the work that it matters to. So, before you submit your work to the higher ups, show your stuff to those that'll be doing (or that do) the job. What do they think? Allowing them to get involved and feel like they're part of the process will make them more likely to accept this G.O. you're working on. And they'll inevitably have some great ideas!

3. Have the G.O. reviewed by your advisors and the Quality Assurance team. Once the team gives you the go ahead, send it to your advisors. They'll probably have less input on the actual content itself, but they'll let you know if it meets formatting requirements, if there's anything you missed, and the protocol for making it all official and input into the system.

Route the G.O. for approvals using document management systems to ensure audit trails of the approvals. This will vary from fire department to fire department. Basically, you want everything to meet Procedures and regulations.

Signatures will be necessary and most fire departments nowadays have no problem accepting electronic signatures.

4. Once approved, start implementing your G.O.. This may involve executing a formal training for the affected personnel (e.g. classroom training, computer-based training, etc.) or it may mean your paper is hung up in the bathroom. Whatever it is, get your work out there! You worked for it. Time for recognition!

Be sure your G.O. remains current. If it ever gets outdated, update it, get the updates re-approved and documented, and redistribute the G.O. as necessary. Your team's safety, productivity, and success matter on it.

APPENDIX 4-D

Line of Duty Death (LODD)

State of Pennsylvania





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The Office of the State Fire Commissioner (OSFC)/PA State Fire Academy (PSFA) staff offers its services and/or resources during a line of duty death (LODD). The team is headed by the local level field supervisors, who serve as the liaison to the National Fallen Firefighters Foundation with support from the fire commissioner, full- and part-time staff, or county and local emergency management agencies as the situation necessitates.

The support and resources are available to all fire departments in Pennsylvania. These are not automatic but must be officially requested by the organization that sustained the loss.

OSFC/PSFA does not have the authority to determine if the tragic event is a LODD, but does provide requested aid during this difficult time.

The team's top priority is to assist the family of the deceased with providing the proper honors. It is not the responsibility of the staff to take over or lead this process. The team will assist the family, fire department, and municipality to assure that the family's requests are addressed for the services.

After the ceremony, our LODD team leader(s), who are trained in filing procedures and benefit claims, on both the state and federal level, will provide information for the application of qualifying benefits.

Death Benefit Resources

Pennsylvania Benefits:

[Emergency and Law Enforcement Personnel Line of Duty Death Benefits](#)

Federal Benefits:

APPENDIX 4-E

Line of Duty Death Changes Procedures in North Carolina



Citizen Times

Asheville firefighter's death in the line of duty 10 years ago changed the department

Joel Burgess

Asheville Citizen Times July 28, 2021

ASHEVILLE - When Jeff Bowen was growing up in Southern California he would walk home from school by a fire station.

One day, after the 6-year-old did not come home, his mother, Laurel Bowen, said she went looking for him at the station where she knew some of the firefighters. A captain pointed her inside.

"He said, 'You know he stops every day to talk to us.'"

The boy was sitting in the driver's seat of a fire engine. After his mother expressed her concern, he said to her, "Mom, I want you to know something. I'm going to drive one of these one day," his mother recalled.



He did. After putting out wildfires in California, Jeff Bowen moved to Asheville where he was promoted to fire department engineer and later captain.

On July 28, 2011, the day a four-alarm blaze ripped through a medical building at 445 Biltmore Ave., Laurel Bowen and other family members came to the scene. Jeff Bowen, who had gone twice into the building searching for people trapped, had collapsed inside. The 37-year-old, 16-year AFD veteran

was pronounced dead at Mission Hospital of cardiac arrest and extreme heat and smoke exposure.

"Jeff's truck was still sitting there on the road," Laurel Bowen said. "And, and I pulled a U-turn and I went and I sat on the side of the truck. And I said, 'There's nobody here to take you home.'"

A joint investigation between city police, the U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives and the State Bureau of Investigation determined the fire that caused \$20 million in damage was deliberately set. Fuel was poured in four places, and the arsonist used a pass key along with forcible entry, investigators said.



Asheville Fire Department spokeswoman Kelley Klope said the investigation is still open with police looking for leads. Because the fire destroys most evidence, arsons commonly go unsolved.

Tips can be given anonymously by texting TIP2APD to 847411. There is also a TIP2APD smartphone app. Or information can be given over the phone at 828-252-1110.

Laurel Bowen told the story after a ceremony July 28, 2021 marking the 10th anniversary of her son's death. She stood outside Station 3, where he last worked in a part of West Asheville joined to downtown by the bridge bearing his name. When she turned to a group of firefighters they huddled close to listen.

"As my son used to say, it's the best job you can have —that he didn't have to work at, because he loved it," she said.



Prior to Bowen, the last firefighter to die during duty was Raymond J. Flowers in 1982. In recent years, the department has registered two line-of-duty deaths when Will Willis' fatal cancer in 2018 was ruled to have been caused by his work, as well as Karen Shuart, who died of cancer in 2019.

Bowen's death marked a day the world changed for the AFD, Chief Scott Burnette told ceremony attendees, including Bowen's family. Reeling from the tragedy that left one firefighter dead and nine injured—including burns to Jay Bettencourt who attempted to save the captain—the department set out to overhaul practices.

Factors contributing to the injuries and Bowen's death, ranged from mistakes in how self-contained air systems were used to lack of supervisors and support staff, according to external and internal reports.

APPENDIX 4-F

Standard Operating Guidelines from South Portland, ME



South Portland Fire Department Standard Operating Guidelines

© 2019 City of South Portland.



Listed below are our Department's Rules, Policies, and Standard Operating Guidelines. Our SOG "book" is divided into 7 Sections.

We feel that it is important that the fire service share with and learn from other departments. Please feel free to browse our information in order to help your department.

Note: In order to view these files you will need to have a PDF Reader such as Adobe Reader.

The South Portland Fire Department has adopted the "Red-Yellow-Green" color coding system listed on the Firefighters Close Calls Website.

Department policies and SOG's are coded using the red-yellow-green color-coding system. The color code is at the top right portion of the document. Examples of what would be in each category include:

Red – includes emergency operations, emergency vehicle operations, civilian evacuation, roadway safety, MAYDAY, SCBA, RIT and related topics. Essentially anything that during an emergency could get a firefighter or a civilian injured or killed.

Yellow - these are the tasks that are done a lot (high risk and high frequency) and the ones that are high risk and low frequency but give us time to think. Personnel policies including drug testing, sexual harassment.

Green - these are the tasks that create a low opportunity for any of the above areas of concerns or exposure. Examples include the uniform or grooming policy, shift scheduling, or daily station duties.

Section 1: Introduction 1.100 Authority 1.200 Preface 1.300 Purpose 1.400 Structure 1.400 <u>Standard Operating Guidelines</u> 3/16/2015 1.500 Severability 1.600 Mission	Section 2: Rules and Regulations 2.100 <u>Department Rules and Regulations</u> 8/1/2012 2.200 Station Rules
	Section 3 Job Descriptions 3.110 <u>Job Description: Fire Chief</u> 1/19/2010 3.120 <u>Job Description: Deputy Chief of Fire Prevention-Code Enforcement DRAFT</u>

3.130 <u>Job Description: Deputy Chief of EMS-Personnel</u> 8/10/2012 3.140 <u>Job Description: Deputy Chief of Training-Hazmat-EMA</u> 2/1/2012 3.210 Job Description: Fire Captain (FT) 3.220 Job Description: Fire Lieutenant (FT) 3.230 Job Description: Firefighter/EMT Paramedic (FT) DRAFT 3.240 Job Description: EMS Coordinator (FT) 3.250 Job Description: Administrative Assistant 3.310 <u>Job Description: Call Company Fire Captain</u> 3/16/2015 3.320 <u>Job Description: Call Company Lieutenant</u> 3/16/2015 3.330 <u>Job Description: Call Company Firefighter</u> 3/16/2015 3.340 Job Description: Student Call Company Firefighter 3.410 Job Description: Public Information Officer 3.420 Job Description: Infection Control Officer 3.430 Job Description: Safety Officer 3.440 Job Description: Medical Director 3.450 Job Description: SCBA Officer 3.460 Job Description: Public Education Officer 3.470 Job Description: Fire Investigator	Section 5 Policies 5.1 Administration 5.101 Department Organizational Chart 5.103 <u>Building Security</u> 10/18/2011 5.105 <u>Safety</u> 3/16/2015 5.107 <u>Hearing Protection</u> 3/16/2015 5.109 <u>Use of Station Bays/Equipment</u> 8/9/2012 5.111 <u>Public Access to Fire Department Records</u> 9/18/2012 5.113 <u>Daily Required Data Entry/Forms & Reports</u> 7/10/2012 5.115 <u>Press Release and PIO Function</u> 9/18/2012 5.117 <u>Customer Service</u> 3/16/2015 5.119 <u>Fire Apparatus Civilian Rider Program</u> 4/22/2012 5.121 <u>Vehicle Collision Reporting and Investigation</u> 4/22/2012 5.123 <u>Hose Test Procedure</u> 6/12/2015 5.125 <u>Hydrant Maintenance</u> 7/10/2012 5.127 <u>Winter Operations (Snow Removal)</u> 7/10/2012 5.129 Apparatus Checks DRAFT 5.131 <u>Anti Idling Policy</u> 7/10/2012 5.133 <u>Fuel Savings Plan</u> 8/9/2012 5.141 <u>Burning Permits</u> 7/26/2007 5.143 Hot Works Permits 5.145 Knox Boxes 5.151 EMS Drug storage and accountability 5.153 EMS QA-QI 5.155 <u>Basic EMT Students</u> 2/2/2013 5.157 <u>EMS License Maintenance</u> 9/26/2008 5.159 <u>Infection Exposure Control Plan</u> 1/5/2016 5.162 HIPPA Policy 5.163 <u>Ambulance Staffing</u> 12/1/2013 5.165 <u>Out of Drug Box Drugs</u> 12/1/2012
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5.2 Personnel 5.201 Work Place Harassment (Sexual or Other) 5.203 Substance Abuse 5.205 <u>Student Firefighter Program</u> 1/15/2013 5.207 <u>Tobacco Use</u> 8/9/2012 5.209 Computer & Internet Use DRAFT 5.211 <u>Handheld Electronic Devices</u> 8/9/2012 5.213 <u>Dress Code</u> 10/18/2011 5.215 <u>Firefighter Death Notification</u> 6/12/2015 5.217 <u>Light Duty</u> 3/3/2010 5.219 <u>Critical Incident Debriefing</u> 1/31/2005 5.221 <u>Annual Medical Evaluations</u> 9/18/2012 5.223 <u>Respiratory Standard</u> 1/28/2008 (Reviewed: 2/10/2015) 5.225 <u>SCBA Fit Test Procedure</u> 4/3/2013	5.227 <u>Annual PPE Inspection and Cleaning</u> 5/15/2012 5.229 <u>Citizen Complaints</u> 6/12/2015 5.231 <u>Disciplinary/Actions Policy</u> 6/12/2015 5.233 <u>Jewelry</u> 5/22/2015 5.235 Overtime Hiring Policy DRAFT 5.237 <u>Employee Promotions (FT & CC)</u> 6/12/2015 5.239 Firefighter in Charge DRAFT 5.241 <u>Employee Evaluations (FT)</u> 7/22/2012 5.243 <u>Employee Recognition (FT & CC)</u> 7/13/2010
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5.3 Training 5.301 <u>Initial Training for FT Firefighters</u> 4/29/2012 5.303 <u>Annual Training for FT Firefighters</u> 11/30/2012 5.305 <u>Full Time Firefighter Drill School</u> 4/29/2012 5.307 <u>SPFD Firefighter 1 Program</u> 12/1/2013 5.309 <u>SPFD Firefighter 2 Program</u> 12/1/2013 5.311 <u>SPFD Line Officer Training Program</u> 4/29/2012 5.313 <u>Driver Certification and Refresher Training</u> 12/14/2015 5.315 <u>Donated Training Facilities User Agreement</u> 6/10/2012 5.317 <u>Staffing and Procedures for Live Fire Training</u> 7/1/2012 5.319 <u>Live Fire Pre-Burn Checklist</u> 7/21/2012 5.321 <u>Initial Training for CC Members</u> 4/30/2012 5.323 <u>Annual Training for CC Members</u> 11/30/12 5.325 Hazmat Training (RRT Annual) 5.327 Hazmat Training (CC Decontamination Team) 5.329 <u>Requests for Training</u> 12/30/2012	Section 6 Standard Operating Guidelines 6.1 General Operations 6.101 <u>Emergency Vehicles Operation</u> 8/8/2012 6.105 <u>I-295 & Turnpike Response</u> 6/12/2015 6.107 <u>Quint Operations</u> 8/9/2012 6.111 <u>Protective Clothing & Equipment</u> 12/2/2015 6.113 <u>Incident Traffic Control</u> 6/12/2015 6.115 <u>Police Assistance Ten Code</u> 5/5/2005 6.117 <u>Radio Use & Communications</u> 9/5/2012 6.119 <u>Off Duty Radio Assignments</u> 6/9/2015 6.121 <u>Radio Ten Codes</u> 7/19/2005 6.123 <u>Definition of Alarms</u> 6/9/2015 6.125 <u>Automatic & Mutual Aid</u> 6/9/2015 6.126 <u>Metro Chief's Strike Team SOG</u> 6/17/2011 6.127 <u>Incident Management System</u> 2/9/2009 6.129 <u>Post Incident Review</u> 7/22/2012 6.131 <u>Police – Fire Cooperation</u> 7/21/2005 6.135 <u>Staging Areas</u> 7/14/2005
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6.233 <u>Automatic Alarms</u> 7/18/2005	6.401 <u>Response to a Tasered Patient</u> 12/1/2013
6.235 <u>Fireground Operating Procedures</u> 9/26/2004	6.403 <u>Cardiac Arrest – No Transport</u> 9/12/2012
6.239 <u>Standard Apparatus Placement</u> 6/8/2009	6.405 <u>ALS/Paramedic Intercept</u> 6/3/2005
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6.249 <u>Fire Investigation Procedures</u> 7/14/2005	6.413 <u>EMS Standby</u> 12/1/2013
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6.5 Special Operations 6.501 High Angle Rescue 6.503 Extrication (Vehicle) 6.505 Missing persons (Searches) 6.507 Water Problems 6.509 Air Service Trailer (Cape/South Portland) 6.511 Shelters / Shelter Tent Deployment 6.513 Jetport Response 6.515 Plane Crash in South Portland 6.517 <u>Civil Disturbances</u> 7/22/2012 6.519 <u>Bomb Threats</u> 7/22/2012 6.521 <u>Marine 408 Operations</u> 6/9/2015 6.523 <u>Marine 404 (Small Boat) Operations</u> 5/1/2013 6.525 <u>Tank Farm & Terminal Operations</u> 3/1/2010 6.526 <u>Foam Response Out of Town</u> 6/9/2015 6.527 <u>Ice Rescue</u> 6/12/2015 6.529 <u>Confined Space Rescue</u> 8/3/2004 6.531 <u>Structural Collapse</u> 6/12/2015 6.531 <u>Appendix A USAR Recon Guide</u> 6.531 <u>Appendix B USAR Structures Identification Guide</u> 6.533 <u>Rope Classification System</u> 10/19/2004 6.535 <u>Rope Rescue Operations Guide</u> 2/4/2015 6.537 <u>Engine Company Rope</u> 7/21/2005 6.539 <u>Elevator Emergencies</u> 9/18/2012 6.541 <u>Hurricane / Severe Thunderstorm</u> 9/15/2012 6.6 Hazardous Materials Response	Hazmat Responses (Non WMD Events) 6.601 <u>Hazmat Response to an Incident in South Portland</u> 6/9/2015 6.603 <u>Hazmat Response to an Incident outside South Portland</u> 6/9/2015 6.605 <u>Hazmat Response to an Incident at the Scarborough Postal Facility</u> 6/9/2015 6.605 <u>Appendix (SFD SOG 3820 Postal Facility)</u> 6.607 Hazmat Incident Command DRAFT 6.609 <u>Hazmat Response and Site Management</u> 5/18/2010 6.611 <u>Hazmat Response to Fixed Facilities</u> 5/1/2010 6.613 <u>Hazmat Response to Flammable Liquid Leaks (Not at a Facility)</u> 5/20/2012 6.615 <u>Hazmat Response to Flammable Gas Leaks</u> 5/20/2012 6.617 <u>Hazmat Response to a Mercury Release</u> 5/7/2012 6.619 <u>Carbon Monoxide Response</u> 7/10/2014 6.621 <u>Hazmat Response to a Freon Leak</u> 12/1/2013 6.623 <u>Decontamination: Technical Decontamination Line (Wet & Dry)</u> 5/20/2012 6.625 <u>Decontamination: Civilian/Mass Decontamination</u> 5/20/2012 6.627 <u>Decontamination: Dry Decontamination & Transport</u> 12/1/2013 6.629 <u>Call Company Decontamination Team</u> 8/1/2010
WMD-CBRN Events 6.631 <u>Response to WMD-CBRN Events</u> 5/10/2012 6.633 <u>Response to Unknown Substances</u> 5/20/2011 6.635 <u>Sample Gathering for Unknown Substances</u> 5/10/2012 6.637 <u>Clandestine Drug Labs (Meth Lab)</u> 7/1/2012	Section 7 Appendices: City of South Portland Personnel Code <u>City of South Portland Fire Protection Ordinance (Chapter 8)</u> <u>City of South Portland Civil Service Ordinance (Chapter 19)</u>

6.639 <u>Improvised Explosive Devices</u> 7/1/2012 WMD-Radiological Events 6.641 <u>Radiological Emergency Response</u> 5/7/2012 6.643 <u>Radiological Technical</u> <u>Decontamination</u> 5/20/2012 6.645 <u>Radiological Decontamination of Civilians</u> 5/20/2012 6.647 <u>Radiological Decontamination of Victims</u> <u>(Civilians and Responders)</u> 5/20/2012	<u>South Portland Professional Firefighters Local</u> <u>1476 Bargaining Agreement (Contract) 2014-</u> <u>14</u> <u>South Portland Command Unit Bargaining</u> <u>Agreement (Contract) 2014-15</u>
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APPENDIX 4-G

Virtual Training and On-line Certifications



[Media](#) > [Office of the State Fire Commissioner](#) > Details

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This Pennsylvania-specific course is available at no cost to commonwealth residents and will be available through TrainPA – www.pa.train.org [Opens In A New Window](#). Users will need to create an account in order to access the course, which contains a variety of interactive activities designed to support the courses' learning objectives. Users have the option to take the entire course in one session, which will take approximately four hours to complete,

or they can spread it throughout several sessions. The user can also choose when they wish to complete the program since there are no day or time limitations.

The Occupational Safety and Health Administration (OSHA) recognizes the Awareness Level personnel as someone who is likely to discover a hazardous materials incident. Occupations that fit this description include law enforcement, ambulance personnel, and public works employees. Additionally, new firefighters can use this program to satisfy the Entry-Level Hazardous Materials Awareness requirement, and Emergency Medical Technician students can also use this to satisfy the Hazardous Materials requirements.

At the successful conclusion of the course, the user will be awarded a certificate of completion and PA Department of Health Continuing Education credits. The course is a collaborative effort between training staff at the Academy and Harrisburg Area Community College, which invested a combined 500 hours in the final product.

MEDIA CONTACT: Ruth A. Miller: ruthmiller@pa.gov



**Your Neighbors
Your News**

FIREFIGHTERS APPROVED FOR 'VIRTUAL' TRAINING

By **Steve Rogers**

April 9, 2020



FRANKFORT, Ky. (WTVQ) – Uncertainties over how long the coronavirus restrictions on public gatherings and interaction will be in place has prompted the Kentucky Fire Commission to allow fire departments and firefighters to conduct “virtual” training.

Virtual training is conducted in real time and differs from online training classes, which are pre-posted training sessions available at any time, executive director Larry Potter noted.

- Advertisement -

The new regulations take effect Friday.

“The Kentucky Fire Commission recognizes that virtual classrooms/learning/meetings have become the norm due to the current COVID-19 state of emergency,” Potter wrote, listing several online platforms fire departments can use.

The new rules are in effect until the coronavirus state of emergency is lifted. But the new rules will allow departments to continue valuable training hours.

Related Article: [Red Lick Volunteer Fire Department raises over \\$1,000 at Chili supper](#)

According to the Commission, all virtual learning classes and/or training shall meet the following criteria:

1. All classes/training shall be instructor-led.
2. All classes/training shall have a proctor/monitor, not required to be an instructor, to ensure student participation.
3. All classes/training shall be by virtual platform which allows for an individual video viewing of each attendee.
4. All classes/training shall have a roster completed by the lead instructor and shall be made available to all attendees or the attendees department within 24 hours of the completion of the class.
5. The proctor/monitor shall be responsible to complete a check of roster to attendees at the mid-point and end of the class to ensure continued participation throughout the class.
6. All curriculum requirements remain in effect and shall be adhered to.
7. It is recommended that visual aides be utilized during virtual training sessions including but not limited to Powerpoint, pictures, and other documents approved and provided by curriculum and product manufacturers.
8. The classes are considered classroom learning, not online, since they are instructor led. This will allow the virtual learning classes to be entered for initial certification.

APPENDIX 4-H

National Fire Academy





U.S. Fire Administration

Working for a fire-safe America

[Home](#) / [Training & Professional Development](#) / [National Fire Academy](#) / [Admissions & student information](#) / **How to apply**

- [National Fire Academy](#)
- [Coffee Break Training](#)
- [Professional Development](#)
- [Type 3 Incident Management Teams](#)
- [Other Training Resources](#)

How to apply for National Fire Academy courses

Thank you for your interest in training with us! We look forward to receiving your application and assisting you through the process. For help completing your application, contact our Admissions Office, Monday – Friday between 8:30 a.m. – 5 p.m., at 800-238-3358, ext. 1035 or by email at netcadmissions@fema.dhs.gov.

Ready to enroll in a free National Fire Academy (NFA) course? Follow these steps to apply for admission:

- **Understand course requirements.** Many courses have specific selection criteria or prerequisites; be sure to review the Course Description page for detailed instructions. [Search for courses](#).
- **Request a Student Identification Number (SID).** You need an SID to apply for NFA courses. [Register for a FEMA SID](#).
- **Complete the application.** [Download the correct application below](#) for the type of course you plan to take. Refer to “[Eight Tips for Completing a Successful NFA Application](#)” PDF 332 KB for additional information.
- **Use the correct [course code](#)** on your application.
- **Complete ALL fields on the application.** Your application will be returned if it is incomplete. Use the February 2012 version or later of the General Admission Application.

- **Submit your application** during the designated timeframe. Your application will be returned if it is postmarked outside of the designated application period.

[Application deadlines](#)

Semester date	Application period
Oct. 1, to March 31	Apr. 15 to June 15
Apr. 1, to Sept. 30	Oct. 15 to Dec. 15

[Send your application](#)

On-campus courses and non-U.S. citizen applicants (mail or fax)

*National Emergency Training Center Admissions Office 16825 South Seton Avenue
Emmitsburg, MD 21727-8998 Fax 301-447-1441*

Off-campus and online courses

Follow application instructions provided on the Course Description page in the [NFA catalog](#).

Application form downloads:

Form

Use this application if your course code begins with the following letters:

[FEMA Form 119-25-1, General Admissions Application](#)

formerly FEMA Form 75-5 PDF 337 KB

C, P, R or T.

[FEMA Form 119-25-2, General Admissions Short Form Application](#)

formerly FEMA Form 75-5a PDF 234 KB

FEMA Form 119-25-2 is also used for Q133, O134 and any conferences held at the NFA, such as the Executive Fire Officer Graduate Symposium and National Professional Development Symposium.

F, N, O, W or Y.

Application basics

If your application is not accepted for the first semester you must reapply for second semester courses. Applications are not carried over.

You may apply for more than one course per semester, but you must submit a separate application for each course.

Application notifications

Our Admissions Office will notify you about the status of your application via email no later than 60 days after the close of the application period. Information will not be available before that time.

Please add NETC-AdmissNotifications@fema.dhs.gov to your “safe senders” list to ensure you receive our emails. This email address is used only for sending notifications; do not reply to this email address. If you did not provide an email address on your application, your notification will be sent through U.S. Mail.

Applying for course vacancies

Your application must be received at least six weeks before the course start date to be considered. Vacancies within six weeks of the start date of the course are filled only from the established wait list, so it is beneficial for you to apply early in the application period.

Requesting a Student Identification Number

If you are interested in applying for a NFA course, you need to register for a FEMA Student Identification Number (SID). **Applications for NFA courses that do not include a SID will not be processed.**

To obtain a SID

1. Register at <https://cdp.dhs.gov/femasid>
2. Select "Need a FEMA SID?" on the right side of the screen.
3. Follow the instructions to create your account.
4. You will receive an email with your SID. Save this number in a secure location.

Understanding course codes

Every NFA course has a course code as part of the overall reference number. As you scan the catalog, the course code can help you more easily identify the delivery method for your program of interest. You can quickly scan for programs that fit your preferred delivery option. Be sure to include the correct course code when you submit your application for an NFA course.

Example: If you are interested in course number R0214: Forensic Evidence Collection, the letter "R" in the reference number tells you the delivery method. As you consult the course code list below, you will see that a course with the letter "R" is either a 10-day or six-day course offered on-campus.

The Course Description page of the catalog provides specifics on the delivery type and duration along with information such as course objectives, selection criteria, prerequisites and continuing education units.

Course code	Delivery method
C	Online-mediated delivery

F	Two-day off-campus NFA-sponsored delivery
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N	10-day and six-day off-campus NFA-sponsored delivery
---	--

O	State- and local partner-sponsored training system delivery
---	---

P	Pilot delivery
---	----------------

Q	Self-study course
---	-------------------

R	10-day and six-day on-campus delivery
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W	Two-day on-campus delivery
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Y	NFA-approved state-developed course delivery
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APPENDIX 4-J

Active Shooter Drill including Fire, Police and EMS



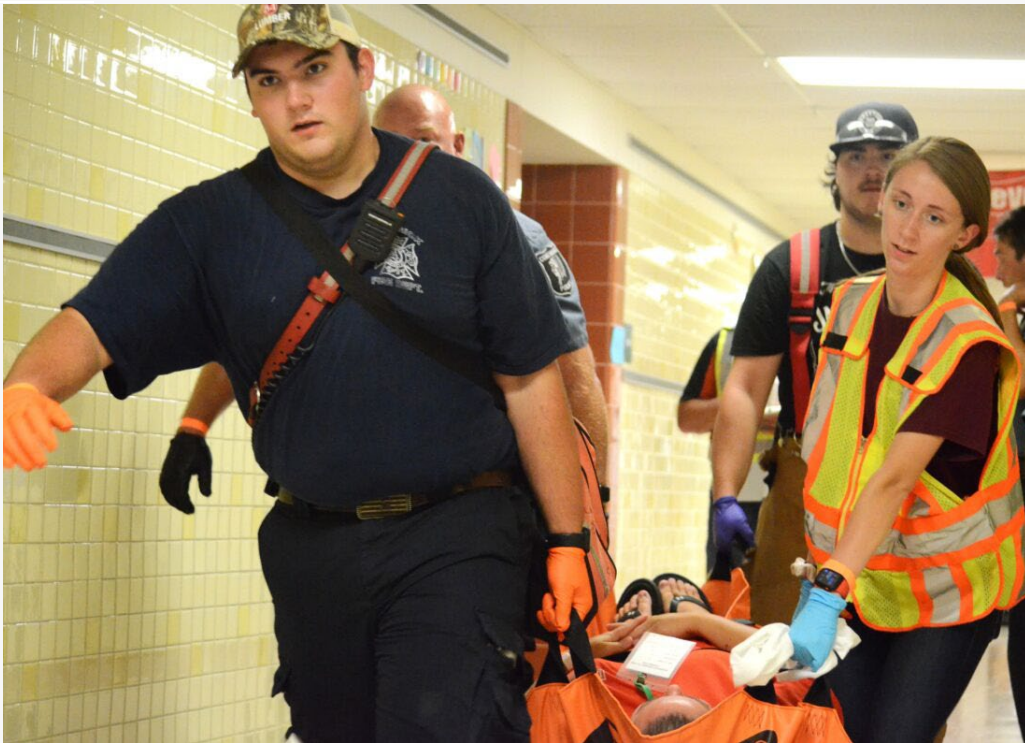
The Post-Journal

September 01, 2022

BRIAN FERRY

Active Shooter Drill Held In Youngsville, Pennsylvania

LOCAL NEWS



A rescue task force (RTF) removes a wounded victim from Youngsville Elementary School Saturday afternoon during an active shooter drill. About 30 local responders joined eight law enforcement officers in the drill.

Gunshots (from a blank gun) rang out from Youngsville Elementary School on Saturday.

Local law enforcement, emergency medical, and fire department officials participated in an active shooter incident drill hosted by Warren County School District.

The first shots – four of them – were fired at 1:04 p.m.

The emergency call went out at 1:06 p.m.

There were only eight law enforcement officers – from Youngsville Borough Police, Warren County Sheriff's Office, City of Warren Police, Warren County Adult Probation, and Conewango Township Police – available at the time of the drill. Pennsylvania State Police troopers arrived later.



Warren County Sheriff's Office Deputy and School Resource Officer Chris Riche (left) and Youngsville Borough Police Officer Ben Leach rush toward the entrance of Youngsville Elementary School after (simulated) shots rang out from the school Saturday afternoon during an active shooter drill.



The officers were staged outside the building, but, in order to create a more realistic response, were kept from simply running in all at once.

Warren County School District Safety and Security Coordinator Brandon Deppen released the officers to head into the building in ones and twos over several minutes, reflecting the time it would take them to arrive in a real emergency.

Before Deppen sent the first officers into the building, more shots rang out. First two, then eight more single shots over about two minutes.

Youngsville Borough Police Officer Ben Leach and Warren County Sheriff's Office Deputy and School Resource Officer

Chris Riche were the first to enter – at about 1:08 p.m.

The first obstacle they faced was a locked outer door. They passed that trial quickly (without damage to school property) and entered the building.

City of Warren Police Officer Wade Suppa leads two victims out of a barricaded classroom at Youngsville Elementary School during an active shooter drill Saturday afternoon. Photo by Brian Ferry

They headed down the main hall to the west, toward where they were told the shooter might be.

Deputy and School Resource Officer Josh Warmath was the next to enter, maintaining a rear guard.

Shots rang out again. This time from upstairs. All three officers dropped their caution and moved to the stairs to neutralize the threat – Warmath running to close the gap between himself and the others.

Once upstairs, they followed the sounds again.

Rapid-fire rounds – both the ‘shooter’ and the officers were using Simunition – non-lethal training ammunition for the fire-fight – were fired while the officers were still near the top of the stairs.

They tracked the shooter to a classroom at the end of the D hallway.

He had locked himself in and created a barricade.

The SROs had keys to the room and unlocked the door quickly. Once officers breached the door, many shots were fired very quickly. Moments later, the radio call went out that a suspect was in custody – and deceased.

It was 1:13 p.m.

There were about 30 local emergency medical responders waiting for the chance to save the lives of the victims of the attack.

The danger was not known to be over – there could have been other threats. So, before the RTFs – rescue task forces – entered the building to aid the 15 victims – 13 volunteers and two manikins – officers had to clear the building. They worked in groups of two, checking every room.

Once an area with a clear path to the entrance had been cleared, officers escorted RTFs into the building.

“Law enforcement is in charge of overall team security,” Butler County Community College Training Coordinator Tom Buttyan said. *“The RTF is in charge of treating patients.”*

Once the two groups teamed up, officers went ahead, finding patients and helping RTFs get safely to them.

The members of the RTF evaluated the victims and determined whether or not they would be taken out.

“Communicate,” Emergycare Director of Operations and one of the EMS evaluators for the exercise Todd Steele said. *“The EMS providers need to let law enforcement know what’s going on.”*

There was some overlap in the effort. At times, officers helped carry wounded or dragged them toward safety on their own.

During training, both groups were told that RTFs should enter the building with an officer ahead of them and an officer behind.

With only eight officers available at the start – some of them still clearing areas of the building – a decision was made to send RTFs with escorts of only one officer. That decision received approval during the after-action debriefing. *“Whoever made that call made a good call,”* City of Warren Police Capt. Jeff Dougherty said.

All 15 victims were found and removed from the building. Two were dead on arrival.

The rest were sent to the triage area where a team determined which had to be taken away first and which could wait.

All were eventually transported – nine by ambulance and four of the ‘walking wounded’ by bus – for treatment of a variety of injuries.

The drill wasn’t the only training event on the day. In the morning, emergency medical responders underwent a rescue task force awareness class.

Warren County Public Safety Director Ken McCorrison offered to host the class again for interested responders.

Warren County School District officials and others watched the events play out from the school library – one of the areas that was out-of-bounds for the exercise.

The learning experience was not limited to Warren County law enforcement, emergency medical, fire, and school officials. There were representatives from Corry Area School District and Crawford County Public Safety as observers and evaluators for the event.

During the debriefing, Deppen told all of the responders that there are ‘go bags’ and buckets containing tourniquets and other life-saving materials in school offices and classrooms throughout the district.

“Some things don’t work,” Youngsville Borough Police Chief Todd Mineweaser said. “We persevered. These guys worked like dogs today. I was impressed.”

“The law enforcement part of it went very well,” Dougherty said. “We tried to set them up for failure.”

Dougherty said that, even though they know it is a drill, responding officers get a rush of adrenaline when the exercise begins and they start looking for a bad guy in a school.

“It’s very intense,” he said. “You guys did a good job of staying focused and pushing through that.”

“This is where you learn,” Crawford County Emergency Management Agency Coordinator Allen Clark said. “The class was great, but you know when you put the gear on... the guns on... it’s as real as it’s going to get.”

“It’s eye-opening every time,” Conewango Police Lt. Randy Carlson, who has been involved in similar drills three times before, said.

“Were there mistakes? Yes,” Buttyan said. “The whole point of doing this is not to get it right. It’s to make mistakes.”

“You did the training,” he said. “That’s going to make your community better.”

“This type of drill gives all participants the opportunity to work together and address problems,” Deppen said.

“On behalf of our kids and our staff, I want to thank you for spending your Saturday with us,” Superintendent Amy Stewart said.

APPENDIX 4-K

Safety Procedures

by Rom Duckworth



FIRE RESCUE 1

5 things you can do right now to improve operational firefighter safety

Firefighter safety doesn't preclude efficiency, and it is the responsibility of every emergency responder on scene

Rom Duckworth, BS, LP

Sep 16, 2019

Most firefighters think that they are as safe as the demands of their job will allow. While total firefighter injuries are going down, [preventable injuries and deaths](#) continue to plague the fire service. Firefighters, officers and chiefs who want to stack the cards in favor of improving both safety and operational effectiveness have to begin by looking at the big five myths of firefighter operational safety.



1. MYTH: SAFETY IS A THING YOU DO

Truth: Safety is not an individual thing to do, nor a particular tool to use or a certain way to use it. Safety is the way we must approach everything we do in emergency operations. Here's an example from routine fire department roadway operations: simply putting a reflective vest on is not safety. Safety is employing good [traffic incident management](#) to alert and divert traffic, safely [blocking and protecting](#) the area of operations. Demanding that firefighters all wear reflective vests while not using other simple traffic incident management techniques is safety lip service and is neither safe nor operationally effective.

2. MYTH: A RESPONDER CAN EITHER BE SAFE OR CAN 'GET IN THERE AND DO SOMETHING'

Truth: It is not an either/or choice between operational effectiveness and operational safety. This does not mean that as firefighters, we will take no action

unless it is completely safe. It means that we will take and direct necessary actions in a manner that will allow us to remain operationally effective.

Allowing actions that cause unnecessary and [preventable injuries](#) will take firefighters out of the fight, and that isn't good either in the short term for the incident, or for the long term for the firefighter.

This practice is illustrated in the IAFC Safety, Health and Survival Sections' [Rules of Engagement for Firefighter Survival](#).

3. MYTH: OPERATIONAL SAFETY BEGINS ON SCENE

Truth: Just like operational effectiveness, operational safety must begin way before the emergency call to be effective. Departments must understand how to manage risk in every aspect of their operations.

Risk management consists of four steps:

- **Identification.** Recognizing the hazards (accidents, illnesses and injuries) associated with emergency operations that occur either within your own agency or within agencies performing similar duties.
- **Evaluation.** Looking at hazard and asking how frequently this hazard occurs and how severe or expensive it may be.
- **Control.** Controlling the risks and hazards by either *avoiding* the activity that poses the risk, *transferring* the risk by having some other specialist person or agency perform the risky activity, and finally *taking control* – when it is not possible to either avoid or transfer the hazard – taking steps reduce either the chance of occurrence or the impact of the hazard.
- **Monitoring.** The final step in risk management is to continually evaluate for new hazards, changes in the existing hazards and the effectiveness of the measures in place to avoid, and/or control the existing hazards.

Risk management helps to improve the safety of not only emergency operations, but all of the activities that help support emergency operations, including apparatus and equipment maintenance, training, vehicle response and support operations.

4. MYTH: IF ANOTHER EMERGENCY RESPONDER IS UNSAFE, THAT'S THEIR PROBLEM

Truth: If a responder gets injured or causes injury because of unsafe actions, it will destroy the operational effectiveness of the other emergency responders. A simple review of [NIOSH firefighter fatality investigations](#) will quickly convince any firefighter, officer or chief of how much of a challenge it can be to maintain effective incident operations once firefighters on scene become injured or killed.

5. MYTH: ONLY THE CHIEF, INCIDENT COMMANDER, OR SAFETY OFFICER CAN STOP AN UNSAFE ACTION

Truth: It must be within the ability of every emergency responder to immediately stop any unsafe action on any scene at any time for any reason. In fact it is the responsibility of every emergency responder to do so.

Programs such as [The Firefighter Near Miss Program](#) and the [EMS Volunteer Event Notification Tool](#) currently exist to track both firefighter and EMS near misses. These tools can be used to identify potential hazards discovered by agencies similar to yours performing similar tasks under similar conditions and can also be used to reinforce a central concept underlying effective [crew resource management](#), which is that anyone can and must report a key safety issue and has the power to stop operations if they identify an immediate life-threatening safety concern.

This concept must be backed up not only by standard operating procedures, but also by training and real-world practice. This same concept should also be applied to firefighters alerting their team, section or division leaders of critical clues and cues to enhance situational awareness in order to improve operational effectiveness. No single incident commander, no matter how skilled and experienced, can be everywhere on-scene and consider every factor from every angle.

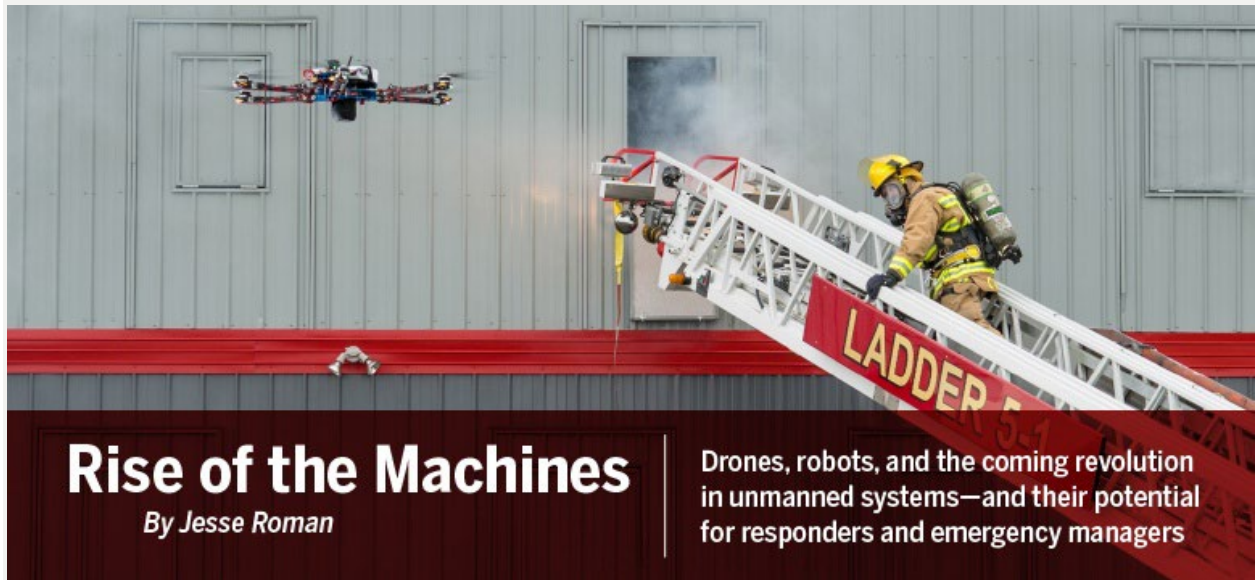
About the author Rom Duckworth is a dedicated emergency responder, author and educator with more than 30 years of experience working in career and volunteer fire departments, hospital healthcare systems, and private EMS. He is a career fire captain and paramedic EMS coordinator for the Ridgefield (Connecticut) Fire Department and the founder of the New England Center for Rescue and Emergency Medicine. Duckworth is recipient of the American Red Cross Hero Award, Sepsis Alliance Sepsis Hero Award, and the EMS 10 Innovators Award in addition to numerous awards and citations for excellence in education and dedication to service. Duckworth is a member of numerous national education, advisory and editorial boards, as well as a contributing author to more than a dozen EMS, fire and rescue books, including the IFSTA Pumping Apparatus Driver/Operator textbook as well as over 100 published articles in fire and EMS journals, magazines and websites.

APPENDIX 4-L

New Training Horizon: Robots, Drones and New Machines



NFPA Journal



. Author(s): Jesse Roman. Published on July 1, 2015.

IT'S 8:45 IN THE MORNING and I'm sitting in the Georgia World Congress Center in Atlanta, listening to Wild Cherry's "Play That Funky Music" bump through the sound system of a dark, cavernous convention hall.

Surrounding me, accented by neon lights, are a few thousand robotics engineers. We sip coffee, check our smartphones, and await the official kick-off to Unmanned Systems 2015, one of the world's largest conferences and exhibitions for drones and unmanned robots.

The music suddenly becomes dramatic and much louder, and huge video screens on either side of the stage depict animated drones and robots of all types swimming, rolling, and flying. Colin Guinn, an executive with the company 3D Robotics and host of the event's general session, bounds onto the stage with the energy of a cannonball.

"Welcome to Unmanned Systems 2015—let's get excited!" Guinn exclaims, raising his arms and clapping his hands. "There are over 7,000 of you here from 55 countries, more than 200 education sessions, and 350,000 square feet of exhibit space—that's

four football fields of drones and other fun stuff!”

An hour later, with the crowd sufficiently pumped up, we stream into the vast exhibit hall and encounter a world that could have come from the imagination of Willie Wonka’s tech-savvy younger brother. Drones, sensors, robots, and gizmos of all sorts are suspended overhead, rolling across the floor, swimming in tanks, and flying in netted enclosures. Every inch of the convention hall’s four football fields of space buzzes with industry elites, eager startups, deep-pocketed investors, and curious onlookers like me, all preparing for a future when these robots will be as familiar to us as the phones we now carry in our pockets. The conference has a strong “we-can-change-the-world” flavor, and exhibit booths are rampant with pithy slogans like “Lock In the Unmanned Advantage” and, my favorite, “Making Tomorrow Today.”

That optimism is shared by many public safety agencies and first responders, who see vast potential for unmanned systems—land- and water-borne robots, and aerial drones—to save lives and make firefighters, police, and emergency medical technicians safer and more efficient. As the technology rapidly expands and federal restrictions on operating unmanned systems become more defined, public safety agencies are scrambling to figure out how they can unleash this vast potential in a safe and smart way. NFPA has held discussions internally and with outside groups about the need to develop new codes and standards to aid first responders looking to use drones and robots. “I think there is great value to these machines and it’s an area where NFPA can really help, because we understand the needs of first responders and the unique environments they work in,” says Ken Willette, NFPA’s Division Manager of Public Fire and a former fire chief. “I see this as potentially being a whole new group of standards within NFPA’s library.”

NFPA has not yet received a formal request to develop an unmanned systems standard, but Willette and others think that could happen soon. If it does, NFPA would likely first focus on developing standards on selection, care, and maintenance, as well as professional qualifications for operators of unmanned systems, Willette says.

Meanwhile, the National Institute of Standards and Technology (NIST) is currently working to develop standard test methods to ensure that unmanned systems marketed to first responders perform as advertised. Related research projects are also taking place at universities from North Carolina to Hawaii, and in just the last year two sizable regional fire service workshops on drones were held in Maryland and Oklahoma. The Fire Protection Research Foundation has applied for a federal grant to hold at least two more of these brainstorming sessions.

“We thought we would maybe get 20 to 25 people, and we had 110 fire departments show up from all over Oklahoma, Kansas, Arkansas, and Texas,” says Jamey Jacob, the head of the new Unmanned Aerial Systems graduate degree program at Oklahoma State University, which hosted one of the workshops for firefighters. Meetings and discussions are crucial, he says, because the technology has advanced much faster than the rules and regulations on when and how to use it. “If we don’t get a handle on this,” Jacob says, “a lot of the departments are going to go off and do it on their own.”

World of possibilities

Walking through the expo in Atlanta, it’s easy to understand the enthusiasm for these machines. The Association for Unmanned Vehicle Systems International (AUVSI), which puts on the Unmanned Systems conference each year, predicts there will be 1 million unmanned drone flights per day in the United States within the next 20 years. AUVSI also estimates that the industry will contribute more than \$82 billion to the nation’s economy in the next decade. After agriculture, industry experts believe public safety and first responder applications will be the largest civilian market for unmanned ground, air, and sea robots. They predict that aerial drones, or “unmanned aerial vehicles” (UAVs), will be by far the most utilized.

The possibilities are enticing. Unmanned systems can quickly and safely go places humans can’t: hovering outside the top floors of a high-rise fire, burrowing under rubble following an earthquake, searching contaminated areas following a chemical spill. They can also get to accident scenes faster than first responders because, as iRobot co-founder Helen Grenier tells me, “the quickest distance between two points

is as the drone flies.”

Imagine an EMS crew being able to quickly dispatch a small drone to deliver anti-venom to a hiker bitten by a rattlesnake in a remote section of forest. Imagine deploying a fleet of three-foot-long autonomous boats, programmed to work in coordination to methodically complete a 10,000-square-mile ocean search in just hours. Imagine launching five-pound quadcopters to hover over a wildfire, where they can provide incident commanders real-time data on wind speeds and direction, thermal imaging, and visuals from multiple angles—all while providing a 4G wireless network for operation communications. How useful would it be if a drone could fly into a burning building, locate victims, quickly create a three-dimensional floor scan of the structure, and transmit that information to firefighters outside?

These are not fantasies—the technology exists, in various stages, and some of it is already in use. When the Chernobyl Nuclear Power Plant melted down in Ukraine in 1986, 30 workers and emergency responders died from radiation poisoning. However, in the similarly devastating 2011 Fukushima Daiichi nuclear plant meltdown in Japan, no fatalities were reported, in part because military ground robots called PackBots, outfitted with chemical, biological, radiological, and nuclear sensors, were deployed to assess the scene in advance of emergency personnel. “They were able to gradually step into the problem, rather than throwing loads of men in to die later,” says Mike Edis, a product manager at iRobot, which manufactures the PackBots.

In 2014, rubber blast mats in a granite quarry in Branford, Connecticut, caught fire dangerously close to the dynamite being used to mine the rock. Branford Fire Chief Jack Ahern could not safely move firefighters in to extinguish the blaze because he did not know how far the fire was from the explosives. A volunteer on the department flew his hobby drone over the site to get a better look and was able to visually confirm that the explosives were a safe distance from the fire. Ahern ordered crews in.

There is a robot or drone application for seemingly any emergency. California has used drones to assist in wildfire efforts. Small drones were used in search-and-rescue operations after the Nepal earthquake earlier this year. Plans are in the works for

drones to inspect bridges and survey train derailments involving hazardous chemicals. The U.S. Navy has even unveiled a prototype humanoid, bipedal robot to fight fires aboard its ships.

“In 10 years, UAVs will be just as important to firefighters as water to put on the fire,” Robert Doke, the Oklahoma state fire marshal, tells me. “They will be common pieces of apparatus for fire departments. With UAVs, the sky is the limit—it’s a bad pun, but it’s true.”

Regulatory complications

But aerial drones in particular face a significant challenge. While UAV technology is enormously promising and improving rapidly, there are few public safety agencies and virtually no fire departments in the United States currently using it. That’s because federal regulations on flying drones are so onerous, observers say, that they have effectively banned commercial UAV use in the United States for all but a few public agencies and businesses willing to undertake a lengthy permitting process. Hobbyists, however, are free to fly with few restrictions.

This regulatory climate has frustrated the UAV industry for years. According to an economic impact report published by AUVSI in 2013, “the main inhibitor of U.S. commercial and civil development of the UAS is the lack of a regulatory structure.” Until the Federal Aviation Administration (FAA), which restricts the commercial use of drones on safety and privacy grounds, loosens its rules on drones, the nascent industry has little chance of taking off, according to the UAV business leaders I spoke with.

As it stands now, in order to legally fly a drone, public safety agencies must first obtain a Certification of Authorization, or COA, and even then there are numerous restrictions on where, how, and when they can fly. The process

of obtaining a COA can be long, difficult, and confusing for large fire departments with resources, and nearly impossible for small ones. “The FAA are bureaucratic ninjas—anything you throw at them, they’ll be able to push back on you and ask for more info and more details,” Jacob says.

The Austin (Texas) Fire Department, which about a year ago launched a new robotics emergency deployment team, is poised to become the first fire department in the nation to receive a COA to operate drones later this year. Coitt Kessler, who leads the team, told me that even with licensed aircraft pilots on his staff, drones at their disposal, and time and indoor space to train and practice, the COA process has been arduous. “The rules are changing literally every week,” he says. “The FAA is trying to protect the airspace and is trying to do its best, but it is very confusing. There is no unified voice.” The FAA did not reply to requests by NFPA Journal for comment.

There is reason to believe this could all soon change. Under pressure from the drone industry, in February the FAA released proposed rules for small drones weighing less than 55 pounds. Under the proposal, drones could be flown without a COA, as long as operators passed a knowledge test and met a few other minimal qualifications. The rules included a number of conditions, including stipulations that drones only be flown during the day, within the line of sight of the operator, and below 500 feet. Many observers think it could take two years for the rules to be finalized, but recent

Drones, Robots and a World of Applications



See how first responders have already deployed unmanned systems.

developments hint it could happen sooner. In May, U.S. Senators Cory Booker, a Democrat from New Jersey, and John Hoeven, a Republican from North Dakota, introduced the “UAS Modernization Act,” with the aim of streamlining the regulatory process in the short term until the FAA’s final rules are set.

Drone industry insiders and those who follow it closely believe these developments could signal a sea change. “I think when we get a green light from the FAA, within a few months you’ll see fire departments utilizing UAVs,” says Doke, the Oklahoma state fire marshal. “In less than six months you’ll see fire department use increase rapidly as the price of UAVs falls.”

Currently, some hobby devices cost as little as a few hundred dollars, but more robust aerial platforms such as those likely to be used by public agencies can be in the thousands or tens of thousands of dollars—still substantially cheaper and easier to fly than any manned aircraft. Rapid adoption of the systems could bring costs down further, observers say, making them even more accessible.

The standards imperative

As the term suggests, disruptive innovation isn’t always a smooth process, and public safety leaders warn that a lot of groundwork needs to be done before unmanned systems can become safe and effective tools. Without proper policies, procedures, training, and equipment, the unmanned era could flounder badly with missteps and wasteful spending before it ever gets off the ground. “We don’t have the budgets to get it wrong—we have to get it right the first time,” Kessler tells me. “That process starts with groups like NFPA setting standards.”

There are a lot of considerations to weigh before the systems are ready for deployment—some obvious, some not, according to NFPA’s Willette. For instance, is it safe or even possible to operate an unmanned system if the operator is wearing full personal protective equipment? Most unmanned systems are controlled via radio frequencies—will that affect fireground communication, or otherwise interfere with the other high-tech fire service equipment that uses wireless and Bluetooth

technologies? Can unmanned systems withstand heat, chemicals, water, smoke, flying embers, and the other hazards they are bound to encounter on the fireground? “The standards need to look at safety from the operator’s point of view,” Willette says. A great deal of research is already going on in aspects of unmanned system performance, operation, and procedures for first responders, work that would likely inform any future NFPA standard on unmanned systems.

Among that research is the work taking place at NIST. If the Unmanned Systems 2015 event is a glittery Broadway production, then Adam Jacoff’s laboratory at NIST is the rehearsal space. For nearly a decade, Jacoff, the test director of the Intelligent Systems Division at NIST, has worked to develop standard test methods to make sure that drones and robots perform as advertised for the Department of Defense and, more recently, the civilian public safety market. So far he has developed 15 standard test methods, with another five to be added this year, which reliably measure baseline robot and operator capabilities necessary to perform a specific task defined by the military and emergency responders. These standard tests are currently published by ASTM International.

With so many robots and drones and so many possible scenarios and uses, it is a daunting task that will keep him busy the rest of his working life, he says. “Out of necessity, we very quickly got out of mission-specific tasks and focused on more robot-specific tasks—they all need visual acuity to some degree, radio communication, endurance, and mobility in terrain,” Jacoff says. “Once we start breaking it down into robot space, the job gets a lot easier, and figuring out where the gaps are is not so hard. We are getting quick at adapting and expanding the different test scenarios.”

NIST is currently documenting the capabilities of the unmanned systems and is leaving it to buyers to determine if those capabilities match their needs. It’s valuable information, but for many public safety departments, it may still be difficult to know exactly what to purchase. That’s where NFPA could help, Jacoff says. “NFPA’s experience in standards development would be very valuable to this,” he says. “If NFPA wanted to adopt or define the equipment-level version of what we’re doing at

NIST—take that body of work and substantiate it as a standard robot with all of the thresholds set—that might be the perfect one-two punch.”

In May, NFPA officials met with ASTM International, which publishes NIST’s performance standards, to discuss how NFPA could complement the work being done at NIST to create an equipment standard for first responders.

“It plays to our strengths perfectly—we don’t necessarily have the expertise to assess the technical capabilities of unmanned systems, but we do have the knowledge necessary to select, care for, and maintain highly technical pieces of equipment,” Willette says. “We also have experience in the area of breaking down what a responder needs to know and the capabilities they need to have.”

Having serviceable drones and robots and being able to operate them is just the start—stakeholders also have to know when to use them and how, says Jacob of Oklahoma State. “You have to know what type of vehicles should be deployed, in what manner you should deploy them, and how you should integrate them” into current operations,

There appears to be no shortage of people trying to answer these questions. The National Disaster Preparedness Training Center at the University of Hawaii, which prepares training programs for the Federal Emergency Management Agency, is working to develop a course on how to integrate unmanned systems into existing disaster procedures and to create new procedures. In 2012, the Institute for Transportation Research and Education’s NextGen Air Transportation Center at North Carolina State University conducted a series of wildfire-related tests using four drones at varying heights during a controlled burn in Florida. Researchers were trying to determine how well the drones’ sensors can detect key changes to conditions on the fire ground, as well as how to transmit that information to incident commanders and then disseminate it to firefighters on the ground in real time.

== END OF MODULE 4 ==



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Analysis of Fire Department Staffing, Facilities and Operations



York Area United Fire and Rescue,
Pennsylvania

Draft

MODULE 5 – SERVICE DEMAND, BUDGETS, FUNDING and GRANTS

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SERVICE NEEDS

The Emergency Fire Services in Springettsbury Township, Spring Garden Township and Manchester Township in York County, Pennsylvania are delivered by five stations, under the direction of York Area United Fire and Rescue (YAUFR). They are “United” as indicated in the very name of the organization. This is the fifth of six modules prepared to enhance the operations of York Area United Fire and Rescue.

The consultants performed an analysis to determine the capability of the five unified stations, individually and collectively, to deliver necessary emergency services, including fire protection and emergency medical assists, both now and into the future. In previous modules, staffing, organizational structuring, fire station conditions and locations and similar factors were studied in detail.

In this module we will examine an additional dimension of service needs or demand, together with techniques for matching limited resources most effectively to serve the greatest number of York Area United Fire and Rescue citizens and corporate entities. The Consultant found variety among the five stations, all adhering to some traditions from the past, but all endeavoring to deliver modern fire protection, against ever increasing odds due to inadequate staffing.

Occasionally well-intentioned persons will suggest that there might be ways to rejuvenate a volunteer system in lieu of ever-increasing numbers of paid personnel. This just isn’t feasible for many reasons, including demanding state training standards. **Appendix 5-A** has a relevant article about the disappearing Volunteer Firefighters in Pennsylvania. The article shows how the situation is dire where there is little funding for paid personnel. Many communities across the country have had to find ways to add paid staff to bolster a volunteer response.

INCIDENT DEMAND ANALYSIS

York Area United Fire and Rescue does retain excellent records recording the calls that are answered throughout the district. On the next nine pages are breakdowns from the years 2020, 2021 and 2022 for ten months. The hard data shows that calls are frequent, cover a variety of incident types, and point to the need for adequate staffing to handle the load. **Table 5-A** summarizes the run volume taken from the next three pages. Additional detailed breakdowns of run types are on file and available.

Table 5-A Activity Level of YAUFR Department		
<i>Year</i>	<i>Run Volume</i>	
2020	3817	Actual Call Volume
2021	4228	Actual Call Volume
2022	4371	Projected from nearly ten months of YTD data

York Area United Fire and Rescue

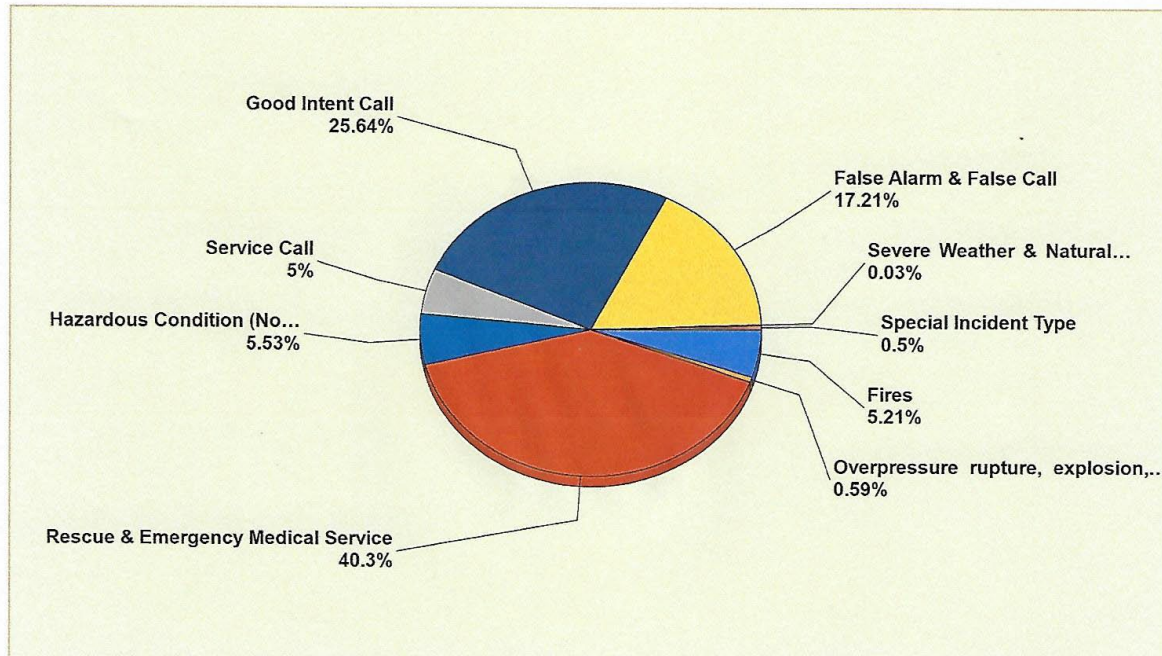
York, PA

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Breakdown by Major Incident Types for Date Range

Zone(s): All Zones | Start Date: 01/01/2022 | End Date: 12/31/2022



MAJOR INCIDENT TYPE	# INCIDENTS	% of TOTAL
Fires	178	5.21%
Overpressure rupture, explosion, overheating - no fire	20	0.59%
Rescue & Emergency Medical Service	1377	40.3%
Hazardous Condition (No Fire)	189	5.53%
Service Call	171	5%
Good Intent Call	876	25.64%
False Alarm & False Call	588	17.21%
Severe Weather & Natural Disaster	1	0.03%
Special Incident Type	17	0.5%
TOTAL	3417	100%

Only REVIEWED and/or LOCKED IMPORTED incidents are included. Summary results for a major incident type are not displayed if the count is zero.

York Area United Fire and Rescue

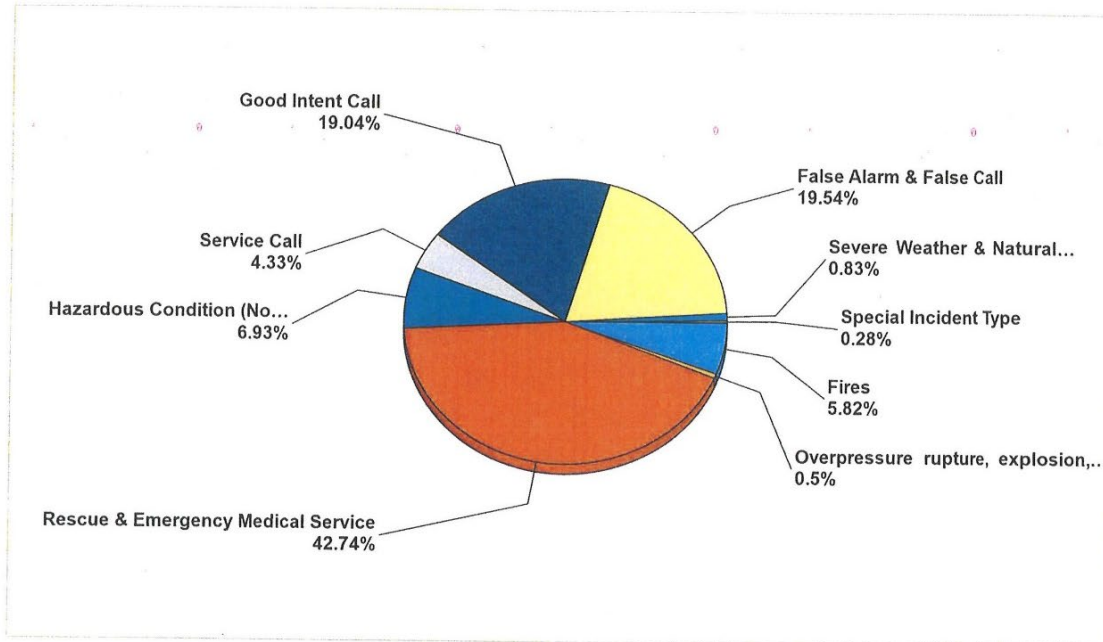
York, PA

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Breakdown by Major Incident Types for Date Range

Zone(s): All Zones | Start Date: 01/01/2021 | End Date: 12/31/2021



MAJOR INCIDENT TYPE	# INCIDENTS	% of TOTAL
Fires	246	5.82%
Overpressure rupture, explosion, overheating - no fire	21	0.5%
Rescue & Emergency Medical Service	1807	42.74%
Hazardous Condition (No Fire)	293	6.93%
Service Call	183	4.33%
Good Intent Call	805	19.04%
False Alarm & False Call	826	19.54%
Severe Weather & Natural Disaster	35	0.83%
Special Incident Type	12	0.28%
TOTAL	4228	100%

Only REVIEWED and/or LOCKED IMPORTED incidents are included. Summary results for a major incident type are not displayed if the count is zero.

York Area United Fire and Rescue

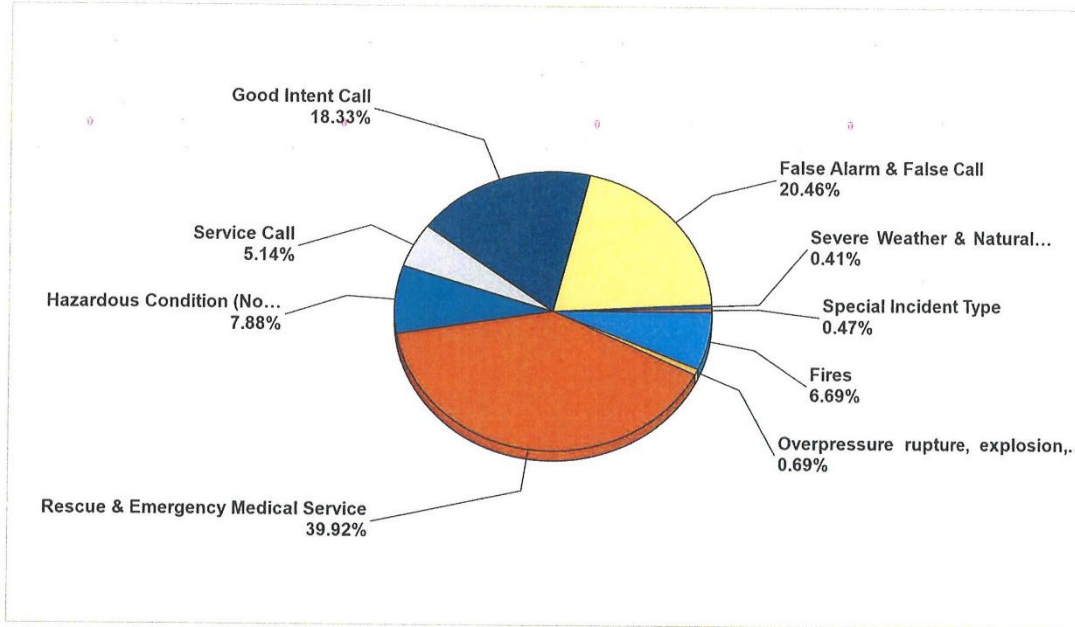
York, PA

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Breakdown by Major Incident Types for Date Range

Zone(s): All Zones | Start Date: 01/01/2020 | End Date: 12/31/2020

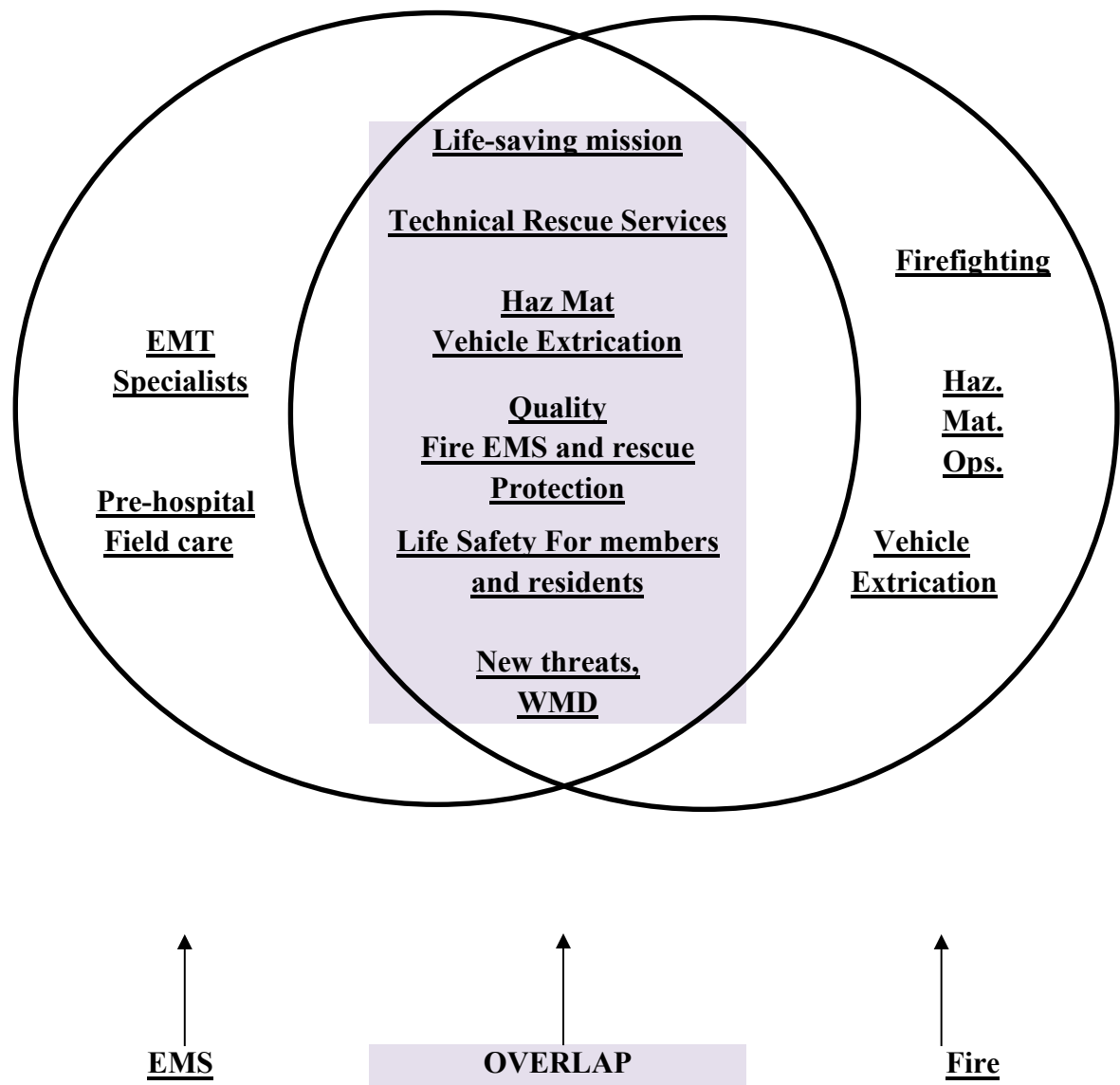


MAJOR INCIDENT TYPE	# INCIDENTS	% of TOTAL
Fires	242	6.69%
Overpressure rupture, explosion, overhear - no fire	25	0.69%
Rescue & Emergency Medical Service	1444	39.92%
Hazardous Condition (No Fire)	285	7.88%
Service Call	186	5.14%
Good Intent Call	663	18.33%
False Alarm & False Call	740	20.46%
Severe Weather & Natural Disaster	15	0.41%
Special Incident Type	17	0.47%
TOTAL	3617	100%

Only REVIEWED and/or LOCKED IMPORTED incidents are included. Summary results for a major incident type are not displayed if the count is zero.

RESCUE/EMS AND FIRE OPERATIONS OVERLAP

The above charts show a breakdown between fire calls, EMS Assists and others such as false alarms and “Good intent” calls. A simple view of the pie charts makes it clear that the dominant frequency is EMS compared to actual fire calls. Over time, the overlap between Fire and EMS is becoming greater. The graphic below shows a large overlap between fire and EMS missions.



COMMUNITY RISK ASSESSMENT FOR YAUFR

In applying the Standards of Cover assessment to the York Area United Fire and Rescue, there are certain types of buildings, occupancies and establishments that need special attention, due to special risk hazards, especially from fire. The reality of fire protection coverage in a community is that certain properties present larger life safety, property loss and fire spread possibilities than others. In this section we will identify these “special attention” properties which include the following:

1. Places of Worship
2. Urban Housing
3. Tall buildings (3 stories and above)
4. Apartments, Condos, Hotels and Motels
5. Dining and Assembly areas
6. Senior Living Facilities
7. Educational Facilities
8. Manufacturing/Distributions Centers
9. Interstate 83
10. Rail hazards

Most commercial buildings in the York Area United Fire and Rescue District date to a period in which the fire code did not require sprinklers, and fortunately the number of such is small and a few have been retrofitted with sprinkler systems and/or fire alarms. Chief Hoff reports that, throughout the York Area United Fire and Rescue District most homes and businesses still rely completely on traditional fire suppression delivered to the scene on fire trucks. The following sections show how some types of properties can be labor-intensive when they become involved in fire.

Places of Worship

Churches and other various places of worship are vacant most of the time but at times people literally form a “congregation.” History has shown that there have been deadly church fires when crowding and candles mixed with inaccessible exits.



The YAUFR Fire Prevention efforts are at work to prevent such a tragedy in these and other high-occupancy properties.

**Left: Advent
Lutheran Church**

Urban Housing

Although residential housing may not seem to possess the dangers of more elaborate commercial establishments, this type of occupancy is responsible, year after year, for having the greatest number of fire fatalities. Dwellings are the type of occupancy in YAUFR most frequently visited for service by the Fire Department. The pictures below show the type of contiguous buildings used as residential, and having the potential for extensive lateral fire spread



YAUFR has a wide variety of Homes, many in contiguous rows, with potential for block-long conflagrations

All homes are deserving of Quality Fire Protection;



Single-family homes are a primary source of fire department responses in YAUFR.

Tall buildings:

The definition of “tall” building is one with 3 stories or more. YAUFR does have tall commercial structures of many different types, and it should be noted that many of the stately homes also have three stories, posing some of the firefighting challenges as commercial buildings

Buildings of three stories or more pose an increased hazard when considering manual fire protection due to set up or reaction time upon arrival. This time is calculated from the time the fire department arrives at the scene until the water is applied to the fire.

Reaching fires on upper floors of tall buildings requires firefighters to ascend stairs to access the fire. Firefighters must take the stairs and begin to assemble equipment 1 to 2 floors below the fire.

In buildings that are 3 stories or greater, the fire department must construct the hand-held hose lines (“hand lines”) that are used to extinguish the fire. During these operations, multiple firefighters must carry hose sections and air tanks on their shoulders and transport this gear by stairs to an upper level.

At times it can take 5 to 10 minutes to completely set up a hand line. During this time the fire continues to grow.



The Holiday Inn Express located in Springettsbury Township has the size issue (Three stories) as well as other hazards common to Hotels which we elaborate upon several pages hence.

In multi-story buildings the fire department must construct the hand lines that are used to extinguish the fire due to the distance. Standpipes, built-in vertical piping with outlets on each level, and found in stairwells of commercial buildings, can speed this operation.

Apartments, Condos, Hotels and Motels

These types of occupancies have increased hazard ratings due to the number of occupant units within one building. Based on the potential for an average of two occupants per unit, occupancy approaches 20 or more people in a small hotel or apartment building and upwards of 100 in larger buildings. While fire codes do provide safeguards, such as self-closing doors and sprinklers, it is the increased number of occupants and their actions that are key factors.

Right: An Apartment Building in the YAUFR district



The Quality Inn in Springettsbury



A study in contrast: The York Area United Fire and Rescue protection zone has numerous hotel facilities varying across a wide spectrum of quality parameters. Above is the upscale Four Points by Sheraton and below, within view of the Sheraton, is the Motel 6 which had to be shut down for a time due to fire code violations. YAUFR does pay particular attention to hotel/motel operations along Route 30



The most prevalent fires in these types of occupancies are cooking related. According to NFPA, “In the last five years, U.S. fire departments responded to an average of 166,100 structure fires that involved cooking equipment per year. (Homes, apartments and hotels). These fires caused an average of 480 civilian fire deaths, 5,540 civilian fire injuries, and \$1.1 billion in direct property damage.” (1). Additionally, NFPA reports in the year 2016, 95,000 apartment fires occurred in the United States resulting in 325 civilian deaths and 3,375 civilian injuries. (2)

Civilian actions that increase the fire damage after ignition include the removal of smoke detectors, removal or alteration of automatic door closures, and tampering with fire extinguishers.

A few fire prevention tactics that can help lessen the size of an apartment and/or hotel fire are the use of Stove Top Fire Stop <https://stovetopfirestop.com/> or similar device that mounts above a stove and will dispense fire extinguishment automatically if a fire occurs. A cursory internet search shows these units can cost around \$55.00 per unit.

Motels used for long-term housing

One of the key fire safety problems that has arisen in recent years throughout the USA, is the use of inexpensive motels for on-going housing units for poorer members of the community.



YAUFR has its share of such facilities. The key problem is the mixing of heating and cooking appliances, overcrowding and carelessness.

**Left: Econo-lodge with
“Permanent Residents”**

¹ NFPA (2018). Reports and statistics about cooking fires and safety. Retrieved from <https://www.nfpa.org/Public-Education/By-topic/Top-causes-of-fire/Cooking/Reports-and-statistics-about-cooking-fires-and-safety>

² NFPA (2018). Apartment structure fires. Retrieved from <https://www.nfpa.org/News-and-Research/Fire-statistics-and-reports/Fire-statistics/Fires-by-property-type/Residential/Apartment-structure-fires>

YAUFR has trained its forces to handle fires in these multi-unit occupancies. They have increased hazard ratings due to the number of occupant units within one building. Based on the potential for an average of two occupants per unit, occupancy approaches 20 or more people in a small hotel or apartment building to upwards of 300 in larger buildings.

While fire codes do provide safeguards, such as self-closing doors and sprinklers, it is the increased number of occupants and their actions that are key factors.

Dining Establishments

Each community has a mixture of home-spun eateries and others that are parts of national chains. Covering a wide spectrum from fast food to fine dining they all have some fire-safety factors in common.



Left: The Paddock

All restaurants attract hungry patrons, sometimes in numbers large enough that occupancy limits are imposed by the fire department based on square footage. A common placard places a limit on the number of patrons that can legally assemble

Restaurants have various forms of cooking, baking, frying and heating equipment, all of which increase the potential for fire.

**Right:
Guadalajara**



Eating establishments have a variety of concerns, not the least of which is the omni-present kitchen heating appliances, accumulation of grease, and often large gatherings of people. It is up to the fire prevention arm of the department to ensure cleanliness, maintenance, and adherence to occupancy limits.



**Left: Many hotel, apartment
and restaurant fires
originate with gas-fired
cooking appliances**

Senior Living Facilities

Hospitals and senior living facilities have many of the same hazards as hotels and apartments, with many occupants per building, often housed in individual units. Hospitals and senior living facilities have occupants that may not be able to evacuate themselves. This is a significant hazard increase, as the occupants rely on building and fire protection features to protect them from the fire until staff and firefighting forces can move them from harm.

YAUFR has been pro-active in reviewing all proposed construction and remodeling projects for senior housing to ensure adequate built-in fire protection. This type of occupancy will increase in numbers over the next decade as the baby boomers continue to age and need skilled nursing care

**Right: Example:
Retirement
Community**



Another consideration for fire protection in this type of facility is the training of staff. The staff members are the true first responders and their actions/inactions can have a large bearing on the success of the fire department's operations. Once initial training occurs, the fire department should conduct joint exercises so that the department and the facility can identify their respective responsibilities in advance.

From a manual fire suppression standpoint, large numbers of firefighting forces are needed to evacuate and rescue occupants that are not under their own power. These types of events can require greater than 50 personnel even if the fire remains small.

Additionally, the need for EMS service at these types of events is great, as many residents will need oxygen and special care during evacuation, and will need to be cared for by EMS until they can reoccupy the facility or be located to another facility.

Educational Facilities

The School Districts in York County rank well when compared with others throughout the Commonwealth of Pennsylvania. From a safety perspective, quality in education usually means a good fundamental adherence to safety as well. An estimated 4000 school building fires are reported by United States fire departments each year and caused an estimated 75 injuries and \$66.1 million in property loss. Fatalities resulting from school building fires were rare. There seems to be a general increase in school building fires toward the beginning and end of the academic year.

Nearly 41% of all school fires are started intentionally. Implementing these fire safety measures in schools are vital: 1. Exterior lighting with timers, motion- or daylight-detection sensors 2. Shrubby and trees trimmed to keep areas around the building unobstructed 3. Intrusion alarms on doors, windows, ventilator openings and roof hatches. 4. Trash receptacles stored away from buildings to reduce danger of fire. Locked metal lids for extra protection 5. Encourage neighbors to alert school personnel to apparent dangerous conditions.

From FEMA: [School Fire Safety Education & Prevention](#)

[Checklist](#)blog.nationwide.com/school-fire-safety-checklist/

1. People also ask

How to teach fire safety to a child? What are OSHA hazards? What is a fire safety lesson plan? What is a fire prevention program?

2. [Fire Safety Lesson Plans for Grades PreK-8](#)

[prevention1st.org](#) › Before-The-Fire-Prevention-Works-1

Overview Fire prevention is everyone's job. Children need to understand the importance of fire prevention and learn ways they can keep themselves and their families safe. Objectives Students will be able to: • Understand that fire prevention is the responsibility of both communities and individuals.

3. [Grades 3 to 5• Fire Safety – Kids Health](#)

[classroom.kidshealth.org](#) › safety › fire safety

Fire Safety. When it comes to fire safety, kids can never be too prepared. Prevention is key, but so is knowing what to do – and not to do - in an emergency. These activities will help your students learn how to protect themselves in case there's a fire.

YAUFR is involved in fire and safety education in the schools. In **Appendix 5-B** we include information on the school districts in York County, with additional data from two which cover large portions of YAUFR District.

1. York Suburban School District

2. Central York School District

Manufacturing and Distribution Centers

In York County, including the three YAUFR townships, there are a variety of manufacturing operations and many are good neighbors. Even though factory tours were canceled in the Harley Davidson factory, it remains a well-known corporate citizen. A cursory review by the consultants indicated that many do now have ESFR (Early Suppression Fast Response) Sprinklers, which will produce a great volume of water, often needed due to the height and amount of commodity stored in the building.

Built-in fire protection in commercial properties is the best possible defense against a major fire that could place a burden on not only the business, but the property tax collection.



Apex Tool Group; Using Sulfuric Acid and Sodium Hydroxide in its processing

With the rise in E-commerce, many areas, including YAUFR are seeing a rise in warehousing. Light manufacturing and distribution centers pose many different types of hazards depending on the types of occupants. Typical hazards include size of the building, dangerous products within the building, and large number of occupants in the building.



Coca-Cola Bottling Plant on Market Street repurposed and enlarged to become a “Prime Storage” facility.

Buildings can be over one million square feet. Because it is easier to have one building housing many parts of a commercial enterprise and/or distribution center, businesses are inclined to build as large a building as possible. With the increase of e-commerce, real estate developers are building many more distributions centers, many of which have close interstate access. This will be a growth area for YAUFR, based on the recent past and the business trends toward more online shopping.



Growmark Fertilizer with its share of hazardous materials

Growmark has a reputation for safety in its plant and distribution operations. Nonetheless, it deals with ingredients that can be deadly in less-safe environments. See the inset below:

Supplied from air and water	Supplied from soil and fertilizer sources	
	Macronutrients	Micronutrients
Carbon (C)	Nitrogen (N)	Zinc (Z)
Hydrogen (H)	Phosphorous (P)	Copper (Cu)
Oxygen (O)	Potassium (K)	Iron (Fe)
	Sulphur (S)	Manganese (Mn)
	Calcium (Ca)	Boron (B)
	Magnesium (Mg)	Chlorine (Cl)
		Molybdenum (Mo)
		Cobalt (Co)

GROWMARK FS has a complete line of starter and foliar nutrients that deliver the micronutrients and supplemental macronutrients when your crop needs them most.

The overall size of the buildings again require that crews build hose lines and need to move much equipment from the fire apparatus to support operations. Distances from an exterior door to the center of the building can be over 1000 feet. The typical pre-connected hand line carried in the fire apparatus is 200 feet. As one could note, this assembly can take significantly longer than the typical 2-minute set up time that occurs at a house fire.

A second issue with the larger buildings is the time limitations of the breathing air the firefighters wear into the building. The air tanks typically only last 15-20 minutes. Just walking with a hose into the building could take 5 minutes. Searching for occupants may take 5 or more crews just to cover the area of the building.

Interstate 83

The York Area United Fire and Rescue Department is responsible for emergency response to a major portion of Interstate 83. The fire department must be able to handle fires, crashes, hazardous materials and all other emergencies which accompany an Interstate highway. See the website insert below and note the focus on safety and turnpike alerts.

On the next page is an example of how an interstate emergency can be a major challenge since it is itself deadly, affects the flow of traffic on the highway, and impacts surrounding residential areas.

Tanker Truck Fire Shuts Down I-80; Richmond Shelter-in-Place



OCTOBER 24, 2020 / CBS
SAN FRANCISCO

RICHMOND (CBS SF) -- An 8,000-gallon tanker truck caught fire on I-80 near Hilltop Drive Saturday afternoon, triggering a shelter-in-place order for nearby Richmond neighborhoods and a traffic nightmare in the westbound lanes well into the evening hours.

Crews work to extinguish a tanker truck fire on Interstate 80 in Richmond. (CBS)
The blaze was reported shortly before 11 a.m., when flames were seen coming from the engine compartment of the double-tanker on westbound I-80 near Hilltop Drive. A Sig-alert was issued about 11 a.m. The freeway was closed in both directions starting at Hilltop Drive.

The eastbound lanes of I-80 reopened to traffic shortly after 2 p.m., but all westbound lanes did not reopen until 10:45 p.m. The shelter-in-place order was lifted at 7 p.m.

Officials said it appeared the incident began when a motorcycle was caught under the truck trailer and dragged onto the shoulder where the truck's engine compartment caught fire. Remarkably, neither the motorcyclist nor the truck driver was injured, according to the CH.

The CHP is investigating but alcohol and drugs are not believed to be factors in the crash. Residents in the area were evacuated at first, but allowed to return home and were asked to go inside and close all windows and doors, according to an alert posted on the Contra Costa County Warning System site.

RAILROAD CONSIDERATIONS

Cargo Concerns:

There are numerous types of cargo carried by the rail lines that cross YAUFR, all with varying degrees of hazard. Chief Hoff has indicated that the hazardous materials training received by his personnel provides basic information on rail cargo. On this and the following pages we provide additional information relative to rail traffic.



Railroad Crossing Blockages

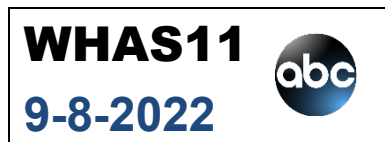
Because railroad crossing street blockages are a problem at times, we devote a special section to it here. We suggest additional technology which can be employed to help alleviate the situation. We investigated "**Railroad Crossing Blocked-Technology Solutions**" and provides the following information:



Blockage experienced by Chief Hoff and Consultant Kramer. Here the train made repeated back-and-forth maneuvers as it unloaded cars, all the while keeping the crossing blocked.

Within YAUFR, railroads do cross primary response routes for the fire department. Needing to make decisions for response routes based on the railroad crossings, the consultants have researched options that would allow a responding fire crew to know if a train is blocking any given crossing and take an alternate route prior to leaving the fire station, or start a mutual aid unit on the opposite side of the crossing

Below we introduce a recent article from Kentucky that chronicles in detail the real danger that lengthy crossing blockages can produce,



First responder expresses concern about trains stopping on railroads, blocking routes

While trying to answer a call to a nursing home, instead of having to normally drive less than a mile, firefighters were forced to drive about five miles
(Full story in **Appendix 5-C**)

Some of the options available include the use of Wireless IP camera systems that will allow the viewing of the crossing via cameras in the fire station and on a Mobile Data Computer in the apparatus. Because you have multiple crossings, the wireless IP camera system would allow dispatch centers and multiple fire stations and apparatus units to view multiple cameras simultaneously. One company that provides equipment for this solution is DLink. Their webpage displaying equipment options can be found at <http://us.dlink.com/business-solutions/ipsurveillancesolutions/>

A second system researched involved the installation of a wireless transmitter on the crossing gates that would activate a signal in the fire station, thus allowing the crews to make a routing decision based on the crossing. This option would only alert the personnel in the station and would not allow actual visualization of the tracks. It would allow the officer to make a more informed decision. However, this option is low cost and very simple to install. Wireless transmitter kits can be purchased from many vendors. One option for wireless sensor equipment can be found at <http://www.oemsensors.com/products/wireless-sensors/>

As technology continues to enhance government operations, the City of Little Rock, Colorado found success in linking their railroad crossings to their traffic signaling to ease traffic congestion. To view the article explaining this traffic enhancement, go to <http://www.imsasafety.org/journal/ja05/ja0511.pdf>

Costs are estimated to be between \$19,000 and \$25,000. The use of technology can enhance decision making throughout the organization and this provides one example of its use to overcome train delays within the YAUFR.

AUTOMATED VEHICLE LOCATER

While we devoted a good portion of **Module 2** to Fire Station location and showed polygon mapping using a 5-mile response metric, there is an additional dimension of response time that is often touted as a response-time enhancement, namely AVL (Automatic Vehicle Location). but which, in the opinion of the consultants may be overrated. We include a short passage here to explain why we don't see much merit in the system for YAUFR despite widespread interest nationally.

We have noted that throughout the United States more and more fire departments and EMS services are utilizing AVL systems to identify vehicles closest to the incident for response. Both YAUFR fire units and EMS units from Community LifeTeam or First Capital generally are staffed and are frequently in a mobile mode travelling the roadways. For this reason, we feel the AVL might be advocated as a valuable tool worth looking at in the future.

As additional staffing becomes available for YAUFR and other county fire agencies this program will become increasingly worth review and consideration. There is documentation showing how a multi-million-dollar AVL investment for FDNY (Fire Dept. of New York) provided little value.



Satellite pinpointing Fire and EMS Vehicles Locations

The AVL system has widespread applications in the private sector, often saving much time and effort for commercial distributors. While the same benefits should apply to the more serious business of saving lives and property, field results are often disappointing.

The consultants are familiar with the AVL system initiated with much fanfare in New York, NY, the most densely populated area of the country, and an area with a constant dynamic of moving emergency vehicles.

This consulting team has not endorsed AVL for a variety of reasons. It appears that the occasional time saving is offset, in our opinion, by units dispatched into less familiar territory and at times, a domino effect with multiple units sent consecutively into areas where they may not be as familiar as a scheduled unit.

If AVL were to be helpful anywhere, it would seem that New York, NY would be an area where it would provide extreme advantages. A state auditor's report falls far short of a ringing endorsement for this program which was purported to cost \$39 million.

Some of the difficulties encountered with the FDNY system are seen to a lesser degree in York Area United Fire and Rescue. Hence the audit recommendations serve as a good guide for York Area United Fire and Rescue for the following purposes:

- Decision regarding degree to which it would improve system mapping
- Best methodology for deployment for the future
- Prioritization of budgetary outlays in this field

An auditor's report available on line determined that AVL in New York was deemed to be "Not worth the Investment.". The data in this Module shows that YAUFR fire companies have grown busier each year although the total fire calls remain rather constant. In most fire departments, actual fires are declining, while in York Area United Fire and Rescue total fire calls are declining only as a percentage of overall activity.

The fire and EMS services delivered by York Area United Fire and Rescue work hard in an effort to provide quality service, but many responses are lengthy and at times personnel resources are scarce. On several occasions the consultants watched crews in action and were impressed with their grit and determination. When depth and/or additional resources are needed the volunteer agencies are ever more frequently unable to respond. This is yet another reason to seek additional YAUFR personnel.

EMERGENCY VS. NON-EMERGENCY RESPONSE

One issue that has arisen with several of our other clients is a question regarding emergency response (lights and sirens) vs. non-emergency for less serious call. There are some in the profession that feel emergency response is more dangerous than non-emergency.

There is no hard data to show that emergency response is either safer or more dangerous than non-emergency response. If we knew for sure the extent of any given emergency, we could decide whether or not the few minutes saved with lights and sirens is worth the perceived additional road risk. The consultants believe that an emergency service is that and if there are calls that are not urgent, perhaps they should be handled by a different agency. We have to trust our emergency vehicle drivers to use due caution either way. We are not sure whether the responders or the motorists they encounter while enroute to a call are safer either way. Also, it is often uncertain what true conditions are at the scene to which units are responding.

"If in doubt use lights and sirens while speed and urgency can both be adjusted based on the perceived level of the emergency." The consultants endorse the policy of YAUFR as stated by Chief Hoff: "It's a fire until we say it's not a fire. We do not cancel on the word of EMS or PD."

We cite a story from Detroit where a non-emergency response for a sparking wall outlet resulted in a fire-gutted home for one resident. See **Appendix 5-D** where we feature this story released by **Fox 2**. Here the Union threatened a lawsuit.

The lawsuit saga follows in another article from **Local 4 News**, also found in **Appendix 5-D**. The consultants feel a common theme in these two articles is: a homeowner lost her home to a fire which was dispatched as "non-emergency."

One Suggested Solution

There are instances in which citizens have undergone extra harm and more property has been lost over “routine” response models that send all responders in a non-emergency mode. There have also been many needless lives lost as fire trucks run through intersections and strike other vehicles.

The consultants are confident that the Chief and his command staff can address response protocols for incidents such as CO alarms with no victims, lifting assistance and many other calls that have little time urgency and, if deemed appropriate, can deem these to be routine or “non-emergency” responses. Having citizen input is optional but has been used by some Kramer clients to ensure the citizens understand why some of their calls are considered “non-emergency,” and more of a service call.

The command staff can examine calls that have multiple apparatus units assigned, but have a history of being false alarms, such as residential and commercial fire alarms. Consultant Randall Hanifen’s current fire department has nearly 1 fire alarm per year that equates to a significant fire, but responds to approximately 1000 fire alarms per year.

A balance is needed to ensure a quick response for the actual fires that are detected solely by the alarm system, but prevents possibly 10,000 intersection crossings in an emergency mode with fire apparatus. To help achieve this balance, the following protocol can be implemented.

1. The first due apparatus and command officer respond emergency
2. All other apparatus units assigned to the call respond non-emergency
3. If indications of a fire are received, such as multiple alarm points triggered, or a follow-up call indicating a true fire or actual emergency, all units can upgrade to an emergency response.

OVERLAPPING CALLS

The sooner units can handle one incident, the sooner they are available for another One alarming statistic that is available from the response data maintained by YAUFR is overlapping or simultaneous calls. For the first three fourths of 2022 there were more than 1451 such occurrences, or 42.46% of the time. This should add further impetus to adequate staffing.

BUDGETING AND FINANCE

In the first part of this Module, we illustrated the workload taken on by York Area United Fire and Rescue. The calls are voluminous and the housing, equipment and personnel responsible for answering them must all be paid for. The cost is significant, and the budgeting dollars have to come from somewhere. These costs are paid by homeowners and businesses throughout the district.

These costs are paid in lieu of the increased hazard to the community and the loss of tax revenues that would result with no fire and EMS protection. Because the safety of the citizens would be compromised, citizens would likely choose to live in other areas and without fire protection, the continued revenues of a business would be non-existent after a fire-related event.

Much budgeting and funding are payroll related items. Other costs such as building maintenance, apparatus, equipment and supplies do not decrease as people are added to the payroll. Fortunately, as call volumes increase, so do tax revenues typically. Farm fields with little to no taxes and no calls for service are replaced with residential and commercial buildings that pay exponentially more in taxes and require fire and EMS protection.

A key determinant of staffing levels is “affordability.” Over time, township funding has risen or fallen depending on the economy. Most recently, it is the pandemic that has had an impact on county services and county revenues. Hence, as we project and plan, we need to be cognizant that changes going forward could be sudden and unexpected. Fortunately, for the YAUFR area, the stability of property taxes is much greater than income taxes, which can vary greatly with changes in the economy.

Gradual incremental improvements that can also be reversed in the same incremental steps is our recommended approach to changes that require funding. Priorities for spending are advocated throughout these various modules, all favoring personnel over equipment. The best equipment is rendered useless without an adequate number of trained personnel staffing the equipment. The public service equivalent is buying snowplows without ensuring drivers to operate the snowplows. An old snowplow with a trained driver will clear much more snow than a brand-new snowplow parked due to a lack of driver.

As township government grows, usually all departments, fire, police, roads, parks etc. grow in some proportion. It would stand to reason in those tough economic times when revenues are not growing, that new revenues may be necessary.

Continuing to provide public safety that is commensurate with the growth of the community is a noble goal. Most community ratings are based greatly on the local schools and the public safety components. Having a township that continues to have citizens with much disposable income that will support increased commerce is tied to schools and public safety.

Some of the negative results from the national pandemic include a supply and demand issue with firefighter equipment. Stories all over the country indicate that departments are unable to fill openings, which have created the need for increased pay for existing and new firefighters.

For now, York Area United Fire and Rescue seems to be doing fairly well in prioritizing and the entire district enjoys immediate response, even as on-duty staffing is thin. The need, however, to utilize multiple stations to fulfill duties which a fully staffed fire company from one station could handle causes reduced service to other areas,

If each company had at least three personnel, proximate protection in the first due zone is improved directly and overall protection in YAUFR is improved. Due to the size of the district being covered, pulling extra stations to make these calls can create response times well in excess of 10 minutes, which is often viewed as unacceptable to citizens.

Now, if the participating townships prepare to add resources to the fire department there is an opportunity to re-evaluate government services to ensure that they are adequate to meet expanding service demands.

Budgeting should be both a planning and a financial tool. See **Appendix 5-E** which lays out the fundamentals of budgeting. The needs of more-on duty forces come at a price. The consultants feel that the methodology used by the Accreditation model from the Center for Public Safety Excellence does a great job of tying together key factors. These include community hazards, standards of cover, staffing, budgeting, and strategic planning. None of the aspects operate independently and each relies on the other.

This is also the basis in which the consultants have conducted their research methodology to create the findings of the report even as we consider many more factors that the CPSE model. It is good to see YAUFR use a continuous improvement model.

YAUFR can only grow with paid personnel, as this is the trend in Pennsylvania and throughout the United States. This growth should essentially be in fire department staffing commensurate with population growth and run volume in the community. Both volunteer firefighters and part-time personnel are getting quite scarce.

ADEQUATE RESOURCES

York Area United Fire and Rescue has a classic group of five fire companies, rich with history and tradition while they deliver an ever-increasing number of responses for fire protection, Emergency Medical Service (EMS) assists, and technical rescue.

Board members for York Area United Fire and Rescue have been supportive of the fire department and have been willing to fund a strong fire force, even at the expense other township services. Gradual increases in staffing seem to be correlated with the economy and rising tax revenues.

In the early history of the York area, the first rudimentary fire station made the giant leap from no protection to the first protection. The second and third stations improved response time and provided “depth.”

The level of fire protection must include a term some fire officials and union leaders don’t like, “affordability.” When there is a fiscal emergency, this is a major factor and there doesn’t seem to be any synonym that says it better.

An extreme example is found on some Native-American Reservations here in the U.S.A. Fire protection consists of several lengths of old fire hose connected to water mains, in the hope that someone will put the hose to use in the event of a fire. They simply cannot “afford” more.

Consider a small community that has to choose between the purchase of new paving equipment or a new fire truck. The fire truck might indeed save one life but if there are no personnel to staff it, it may have cost a life. If rough uneven roads cause a multiple fatality accident, there is a net loss of life due to the purchase of the fire truck.

Even if one could guarantee that one *could* save a life by adding a fire unit, most members of society would still want to weight this option against a “quality of life” factor. People *want* aesthetic beauty (parks, for example), and conveniences such as transportation. People as a society willing to incur some risks to have this quality of life. Limited tax dollars need to be balanced among safety services and other community needs.

If the York County Commissioners were to introduce a plan that would eliminate 100% of all highway fatalities in the county, it would certainly be more than “saving one life.” Therefore, should it be adopted? The solution would be to have no vehicle travel more than 10 miles per hour on any road within its boundaries. Residents would likely find this unacceptable.

Society members are generally daring and are willing to incur safety risks including occasional accidental fatalities in exchange for mobility in life and aesthetic beauty in the surroundings. Accordingly, citizens are usually willing to spend only limited dollars for fire protection.

The consultants do see a need for additional funding for staffing, but phased in so as not to cause “sticker shock,,” or overspending too quickly

A fire department network which is overfunded proportional to other governmental services could ultimately cause its own demise. Lack of park maintenance, unpaved streets and such factors can lead to deteriorated housing, a reluctance for new businesses to opt in and a degradation of the tax base which could greatly reduce future fire department funding.

If we were to put a fire station on every major road in York Area United Fire and Rescue, would it save one life? No doubt it would, but the price would be unpaved roads, a complete lack of any other basic services, and a populace taxed into poverty. Ultimately, there comes a decision point where “*the right level of fire protection*” must logically include the effect on other government services.



Paving Crew creating a safer York County Street

There is no equation that will dictate the proper number of fire units, and firefighters unless leaders are also willing to factor in their monetary cost and use a realistic approach regarding available funding.

GOING TO THE VOTERS

Citizens are the ultimate decision-makers as they vote to accept or reject taxes to pay for their own protection, This is not easy. There must be a proper filing with an election board, a public information campaign, and other details. On the next page, we introduce two articles:

1. New Baltimore goes to the voters
2. Matthews adds staff after successful levy campaign

New Baltimore voters to decide fire millage

Funding would boost staffing at mainly paid-on-call department

New Baltimore voters will be asked Nov. 2 to approve a 1 mill levy for fire department staffing, equipment and operations. (MediaNews Group file photo)

By [KATELYN LARESE](mailto:klarese@medianewsgroup.com) | klarese@medianewsgroup.com | **The Voice**

PUBLISHED: October 27, 2021

The city of New Baltimore will ask voters Nov. 2 to approve a fire millage to fund additional staffing and other operational costs.

The proposal slated for the ballot seeks a 1 mill levy to employ additional fire personnel, furnish and equip the fire department and cover other operational costs of the fire department. If approved, the owner of a home with a market value of \$300,000 would pay \$150 per year. The millage is estimated to raise roughly \$445,000 in the first year.

Matthews to hire more firefighters to meet public safety demands

By: Briana Harper **Updated:** Dec 31, 2018 - 10:18 PM

MATTHEWS, N.C. - Matthews Fire and EMS is enhancing its staffing plan to meet the high volume of calls it receives...

The change comes after those living in Matthews agreed to support a tax increase toward public safety. Residents are confident in the difference it will make. "It's reassuring to know that there are so many people to help you," resident Sophia Thompson said. Kinniburgh encourages volunteers to join even with the staff.

2023 TENTATIVE BUDGET

Below we summarize the budget under consideration while this report was going to press. Note that the largest contributor to income is from the governmental units and the largest expenditures is for personnel., We make the case for additional on-duty staff while noting its high cost as a percentage of budget expenditures.

2023 TENTATIVE BUDGET INCOME	
450.00 · SPRINGETTSBURY INTERGOVMENTAL	\$3,089,999
451.00 · SPRING GARDEN INTERGOVMENTAL	\$2,087,837
452.00 · MANCHESTER INTERGOVMENTAL	\$3,173,512
INTERGOVMENTAL SUBTOTAL	\$8,351,348
OTHER	\$696,133
TOTAL	\$9,047,481

2023 TENTATIVE BUDGET EXPENSES	
511.00 · SALARIES - FIRE ADMIN	\$694,891
512.00 · SALARIES - FIRE PROTECTION	\$3,514,895
513.00 · SALARIES - PART TIME	\$54,000
514.00 · OVERTIME	\$140,000
514.01 · OVERTIME-TRAINING	\$21,548
515.01. SICK LEAVE PAYMENT	\$8,000
516.00 · SOCIAL SECURITY EXPENSE	\$338,538
516.50 · UNEMPLOYMENT COMPENSATION	\$4,000
517.00 · WORKERS COMP INSURANCE	\$165,457
ALL 518 -- HEALTH INSURANCE	\$2,170,646
519.00 PENSION	\$493,779
523.00 UNIFORMS	\$90,510
PERSONNEL SUBTOTAL	\$7,696,264
OTHER	\$1,237,345
TOTAL EXPENSE	\$9,047,581

Capital Funding

Operating costs are those that are ongoing, but since many of the department's apparatus, stations, and equipment cost large sums of money, the department must develop a capital budget, which allows smaller amounts of money to be placed aside gradually, and accumulated to purchase the stations, equipment, and apparatus.

YAUFR has found a good program to finance their apparatus through **Leasing 2**, which allows the fire apparatus to be replaced at six-year intervals. This ensures level costs annually and keeps the fleet serviceable.

As the technology increases in the fire apparatus, it will become more important to keep newer apparatus and sell them on platforms, such as Municibid or GovDeals while they have residual cost. Any profit from the sale of the apparatus is placed back into the capital fund, thus lowering the annual cost of the apparatus. **Table 5-B** below show the near-term capital expenditures. One will note the payment for the apparatus increases as the cost of apparatus increases.

TABLE 5-B Capital Funding for York area United Fire and Rescue

York Area United Fire Rescue					
	1/1/2023	1/1/2024	2025	2026	Total
<i>Capital purchases requiring Twp. Funding</i>	2023	2024	2025		Total
	\$ 511,561.45	\$ 511,561.45	\$ 643,309.00	\$ 643,309.00	\$ 6,417,661.25
<i>Hose Replacement</i>	\$ -	\$ -	\$ -	\$ -	\$ 10,000.00
<i>Portable Radio Replacement</i>	\$ 10,000.00	\$ 10,000.00	\$ -	\$ -	\$ 20,000.00
					\$ -
<i>Proposed Future Purchases from Capital Improvement Plan</i>					\$ -
<i>Replacement of Hydraulic Rescue System</i>	\$ -	\$ -	\$ 115,000.00		\$ 115,000.00
<i>Portable Radio Replacement</i>					
TOTAL CAPITAL PLAN EXPENSES	\$ 521,561.45	\$ 521,561.45	\$ 758,309.00	\$ 643,309.00	\$ 6,562,661.25
<i>Capital Reserve Fund Balance</i>	\$ 36,188.37	\$ -	\$ -		\$ -
<i>Municipal Capital Required</i>	\$ 485,373.08	\$ 521,561.45	\$ 758,309.00	\$ 643,309.00	\$ 6,562,661.25
<i>Contribution from Springettsbury</i>	\$ 179,588.04	\$ 192,977.74	\$ 280,574.33	\$ 238,024.33	\$ 2,428,184.66
<i>Contribution from Spring Garden</i>	\$ 121,343.27	\$ 130,390.36	\$ 189,577.25	\$ 160,827.25	\$ 1,640,665.31
<i>Contribution from Manchester</i>	\$ 184,441.77	\$ 198,193.35	\$ 288,157.42	\$ 244,457.42	\$ 2,493,811.28

The Cost of Leadership

There has been some growth in command staff, consistent with community growth. The consultants recommend similar growth in front line staffing. Below is the budget breakdown for the Chief Officer staff in YAUFR. This shows fair and competitive compensation and can help to ensure quality leadership and direction.

	YOS	Name	PROPOSED	Longevity	SUB TO
11/16/2009	13	Dan Hoff, Fire Chief	\$ 116,832.26	\$ 680.00	\$ 117,512.26
10/24/2011	11	Lisa Einsig, Admin Director	\$ 59,379.98	\$ 560.00	\$ 59,939.98
6/4/2016	6	Matthew Arnold, Battalion Chief	\$ 92,641.17	\$ 260.00	\$ 92,901.17
12/23/2017	5	Joe Madzelan, Battalion Chief	\$ 92,641.17	\$ 380.00	\$ 93,021.17
3/23/2018	4	Laurie Noel, Admin Assistant	\$ 38,627.97	Yr. 4	\$ 38,627.97
2/9/2019	3	Brett Graham, Battalion Chief	\$ 90,788.35	Yr. 3	\$ 90,788.35
1/11/2020	2	Curvin Wolfgang, Battalion Chief	\$ 88,935.53	Yr. 2	\$ 88,935.53
8/24/2021	1	Matthew Russ, Battalion Chief	\$ 87,082.70	Yr. 1	\$ 87,082.70
4/21/2018	4	Scott Ryno, PT Battalion Chief	\$ 24.00		
1/1/2017	5	Kurt Holloway, PT Battalion Chief	\$ 24.00		
			\$ 666,977.14	\$1,880.00	\$ 668,857.14

Name	SUB TOTAL	FICA	PENSION	TOTAL	2021 WAGES
Dan Hoff, Fire Chief	\$117,512.26	\$ 8,989.69	\$ 11,751.23	\$ 138,253.17	\$ 114,541.43
Lisa Einsig, Admin Director	\$59,939.98	\$ 4,585.41	\$ 5,994.00	\$ 70,519.39	\$ 56,018.85
Matthew Arnold, Battalion Chief	\$92,901.17	\$ 7,106.94	\$ 9,290.12	\$ 109,298.23	\$ 88,229.69
Joe Madzelan, Battalion Chief	\$93,021.17	\$ 7,116.12	\$ 9,302.12	\$ 109,439.41	\$ 88,229.69
Laurie Noel, Admin Assistant	\$38,627.97	\$ 2,955.04	\$ 3,862.80	\$ 45,445.81	\$ 37,870.56
Brett Graham, Battalion Chief	\$90,788.35	\$ 6,945.31	\$ 9,078.84	\$ 106,812.49	\$ 84,700.50
Curvin Wolfgang, Battalion Chief	\$88,935.53	\$ 6,803.57	\$ 8,893.55	\$ 104,632.65	\$ 82,935.91
Matthew Russ, Battalion Chief	\$87,082.70	\$ 6,661.83	\$ 8,708.27	\$ 102,452.80	
Scott Ryno, PT Battalion Chief					
Kurt Holloway, PT Battalion Chief					
	\$668,809.14	\$ 51,163.90	\$ 66,880.91	\$ 786,853.96	\$ 552,526.63

While the cost of fielding a fire department is expensive in the community, the cost of no fire department is considerably higher and would in theory make it unaffordable for commercial enterprises to operate due to exorbitant fire insurance rates that would ensue.

AVAILABLE GRANT FUNDING

Running a professional fire department costs money, with the lion's share going to salaries as we have just seen. One way to fund equipment and personnel is grant funding. The Federal Government is there to help as witnessed recently by Grand Rapids Michigan which received nearly \$3 Million in Federal Grant Funding (See **Appendix 5-G.**). There are numerous sources of grant funding available to fire departments in Pennsylvania.

. Professional help is available in the Grant Application process by various vendors, but most work for fixed fees up front with no guarantee of success. York Area United Fire and Rescue does apply regularly for grants. The organization has received and has recently received a large AFG grant for total SCBA (Self-Contained Breathing Apparatus) replacement. YAUFR also applies to the FP&S program for fire prevention needs. Here are some grant descriptions:

The Staffing for Adequate Fire and Emergency Response (SAFER) ACT is comparable to the COPS grant for police departments in the 1980's. One part of this funding will provide \$65 Million for personnel in this year's funding period. See **Appendix 5-H** for tips on successful applications for SAFER funding and tips on applying for SAFER grants.

The Assistance to Firefighters Act, commonly called the Fire Act Grant, has been available since 2001, and provides about \$650 Million in funding for specific equipment, apparatus, and public education funds. The application period begins at the end of March and closes in early April. In **Appendix 5-J** we show how Sharon, PA recently applied for and received nearly \$1 million for needed equipment.

As noted above, there are various Pennsylvania grants, equipment grants, and training grants available. In addition, there are weapons of mass destruction (WMD) grant funds available through the State Emergency Management Agency (EMA) for providing equipment and resources for homeland security issues, which often overlap the needs of firefighting personnel, particularly in the area of training, and safety gear such as SCBA's, etc. **Appendix 5-K** shows some of these opportunities.



FEMA

KEY APPENDICES RELEVANT TO GRANT FUNDING:

APPENDIX 5-H: Nine keys to a competitive SAFER grant

APPENDIX 5-J: Nearly \$1 Million Grant for Sharon, PA.

APPENDIX 5-K: Pennsylvania Grants

PRIORITIZING FUNDING

Since the quantity and quality of fire protection remains a subjective rather than an objective study, decisions regarding these topics end up being a balancing act between public safety and finances.

In concluding this module, we note that York Area United Fire and Rescue has provided fundamental service throughout their history. They continue to protect the YAUFR District, including the high-profile tenants and a growing number of residential subdivisions.

Although the frequency and severity of structure fires are declining nationally and locally, York Area United Fire and Rescue continues to have a significant number of fires, the primary purpose of its existence one could argue. Also, new demands such as Carbon Monoxide alarms, increasing hazardous material incidents, and vehicular accident assists all require the presence of a well-trained quick responding fire department.

Over time, the fire department has undergone various transitions and currently is positioned where its future should be plotted. The department has enough experience and enthusiasm among fire department members, including both veteran firefighters and younger personnel, to remain successful.

The proper size of this department, including numbers of personnel and numbers of stations is open to subjective interpretation but there are national standards and comparisons with other similarly populated communities that we used in **Module 1** to help York Area United Fire and Rescue "right size" its forces. Citizens are the ultimate decision-makers as they vote to accept or reject taxes to pay for their own protection.

In the final appendix of this Module, **Appendix 5-L**, we have an entry that shows a new NFPA grant program for home smoke alarms.

YAUFR has been attuned to its mission of life-saving. For example, it has submitted a second application for a smoke detector program, since receiving a successful such grant in 2090. Such grants can provide hard-wired battery-back-up ionization smoke alarms in all homes.

MODULE 5 CONCLUSION

This Module addressed many facets of system demand, including statistical alarm data and other key metrics that show where YAUFR is and where it is headed.

We note the previous dedication of volunteers even as we recognize how they are shrinking in number. Response times improve when personnel are on duty, but the price is high. Nonetheless, the system continues to work for now. We can state that “York Area United Fire and Rescue fares better than most jurisdictions with similar populations.”

The Module addressed “Community Risk Assessment” and showed the “types of dangers that are faced and the magnitude of the fire threat. It is commendable that some dedicated volunteers remain available.

There is an ever-increasing overlap between Fire and EMS, and the vital “EMS Assist” role provided by the fire departments will continue to be enhanced as YAUFR continues to budget for the latest technology in equipment. *Lucas* devices, for example, provide automatic chest compressions, thus providing much improvement over manual CPR.

It can be said that both the Board Members who oversee the fire department, and Chief Officers who manage it can be allies for progress in future improvements. Hopefully this Module will be part of a helpful blueprint. The consultants note that they found positive attributes in all five stations and note also that they can draw upon plus factors of one other for the betterment of the entire YAUFR District.

Fire protection is expensive but a lack of fire protection can be even more costly. If homeowners and businesses cannot afford or cannot even find insurance because there is no fire department, then a community could literally die.

We note early in this Module that as York Area United Fire and Rescue is becoming more and more labor intensive and as career personnel replace volunteers, personnel costs continue to rise. Payroll and other personnel-related expenses are at the heart of the expense side of budgeting. Other costs such as building maintenance, apparatus, equipment and supplies do not decrease as people are added to the payroll.

Budgeting always involves allocating limited funds among unlimited needs and wants. We noted in the Module that York Area United Fire and Rescue makes an effort to properly prioritize expenditures but that there will always be Officers and Firefighters who feel their priorities are not totally in sync with those of the board. As consultants we trust the decision-makers.

APPENDIX 5-A

Disappearing Vol. FF's In Pennsylvania



‘So Tragic’: Volunteer Firefighter Shortage Threatens PA Traditions and Public Safety

By Jen Kinney | February 6, 2020

KEYSTONE CROSSROADS — Mike Kitsock never thought he’d still be fighting fires as a sexagenarian.

But such is life for Kitsock, 66, in a land where volunteer ranks have dwindled and old wooden homes can quickly turn to ash.

“We get a daytime call, I’m hoping there’s two or three others who show up with me,” said Kitsock, who still runs with the Seltzer Hose Company in Norwegian Township in Schuylkill County, Pennsylvania. In the early days, he had to jostle with 20 to 30 other volunteers just to get on the engine. Now, comparatively, it’s a ghost town.



Matt Smith / Keystone Crossroads. Veteran firefighter Mike Kitsock stands by a 1909 Ahrens Continental steam fire engine is displayed Jan. 16, 2020, at the Schuylkill Historical Fire Society in Shenandoah, Pennsylvania.

Fifty years ago, Schuylkill County had 10,000 volunteers. Today, it still has 100 fire houses, but fewer than 1,000 volunteers. Longer working hours, longer commutes and the rise of dual-income households have left less time for volunteering. Firefighters are aging and not being replaced. Pennsylvania is the birthplace of the volunteer fire company and to this day most firefighting in the state — and in the country — is done by volunteers. In the 1970s, Pennsylvania had 300,000 volunteer firefighters. Today, it has around 38,000.

“If you could post a sign out front, here’s what the sign would say: ‘Apply for a job here. No permanent hours, working holidays, family vacations, no overtime pay. Please pay your dues and be a member here in our fire company,’” said Frank Zangari, Girardville fire chief and 30-year president of the Schuylkill County Fire Chiefs Association.

“They work for free all the time, 24/7. Hell of a job.”

It’s not just public safety that’s threatened. A beloved tradition feels at risk too. Fire companies play a special role in Schuylkill County, where anthracite coal was discovered in 1790. Mining boom towns sprung up, built by immigrants from Wales, Poland, Germany and Ukraine. They were comprised of rowhouses with wood frames and connected attics, structures that burned easily.

An 1883 fire in Shenandoah wiped out 400 structures in a few hours — the opera house, the Academy of Music, the offices of the Mining Herald newspaper — until most of the Irish neighborhood had burned.

The Phoenix Fire Company No. 2 sprang up in its ashes, an Irish fire hall to serve the Irish of Shenandoah.



Matt Smith for Keystone Crossroads. Inside the meeting room of the 19th century Phoenix Fire Company No. 2 on Jan. 16, 2020, in Shenandoah, Pennsylvania.

The same story played out all across the county. Immigrant miners, merchants, and railroad workers constructed neighborhoods and then fire halls to protect them. Many had attached social halls and bars, where the community pitched in at dances and dinners to pay for hand carts, or better yet, steam engines, easier to chug up and down the hilly streets. They were proud structures christened with names that reflected their lofty ideals: the Citizens Fire Company, the Friendship Hook and Ladder Company, Independence, Vigilant, Hope, Good Will.

They were the jewels of their communities, part of what made coal country great. Their elegance reflected this. The Phoenix has hardwood floors, pressed tin ceilings, gilded portraits of members from the 1800s.

“Shows the support and the importance that this organization meant for these people,” said Kitsock. “The churches were infinitely important, but the churches became important on holy days and on Sundays. We have 365 days a year in which people can lose life and property here.”

But whereas the Phoenix once had to limit membership to 220 people at a time, today there’s only 50 volunteers, and fewer than 20 still actively respond to fires.

As in other rural areas, Schuylkill County’s population has dropped year after year, from 235,000 in 1930 to 148,000 today. As these once grand towns fell into disrepair, old factories and vacant rowhomes with shoddy wiring become easy fodder for fires. With fewer volunteers, response times can be longer, leading to more destruction and loss of life.

The population decline is driven in part by young people, prime firefighter material, leaving in early adulthood and not returning. The county’s birth rate no longer exceeds its mortality rate.



Bas Slabbers for Keystone Crossroads. Firefighters gear and call box locations at the fire house of the Humane Fire Co., in Pottsville, PA, on December 15, 2019.

Many fire company social halls, however, remain lively places. They host gun raffles, Taco Tuesdays, Halloween parades, bingo to win meat and designer purses — even sex toys.

Gloria Donatti serves pancake breakfast at the Rainbow Hose Company in Schuylkill Haven every other week. Its social hall had been open for decades. Proceeds helped fund the firefighting, like paying for the engines in the bay next door.

“I was raised with it. My dad was a volunteer, my brother was a volunteer, I was a volunteer for a short period of time,” she said.

She gestures around the kitchen. “This is my grandson, my daughter in law back there, this is my granddaughter, my son’s over there. We’re all family, friends, we’ve all been members here forever.”

But as of January 1st, the Rainbow’s bar is shut down. It will open for fundraising events like the pancake breakfasts, but no longer for drinks seven days a week. “We don’t have enough business to keep it open,” said Donatti.



*Matt Smith / Keystone Crossroads.
Robert Dusel talks about firefighters
staying over in bunks in the past while
speaking Jan. 16, 2020, at Good Will
Fire Company No. 4 in Pottsville,
Pennsylvania.*

Wealthier townships are less dependent on fundraising and volunteers to keep their firehouses running. Some, like Upper Merion in Montgomery County, now pay some firefighters to pick up the slack.

Schuylkill County and many rural areas can’t afford that. So, the state has an unpopular suggestion: consolidation. Firehouses would merge, blending members and resources. It’s a strategy becoming more common across the state.

“The older members, we’re against it. I have history here,” said Robert ‘Ace’ Dusel, an active volunteer at 71 years old with the Good Will Fire Company in Pottsville.

Kitsock jumped in. “There’s more to it than just firefighting end of it. This is your culture, this is part of your existence.” Older volunteers, sometimes third and fourth generation firefighters, may leave the fire service altogether rather than join a new company.

“The thousands of hours that these families put into these fire companies,” Kitsock trailed off, remembering. “To lose that is so tragic.”

Bas Slabbers for Keystone Crossroads. Engines 32 and 33 of the Humane Fire Co., in Pottsville, PA, on December 15, 2019.



In a presidential election year, it’s common for candidates to pay lip service to the needs of rural America. But, often, the day-to-day problems facing less

populated parts of the country don’t end up in stump speeches.

There’s no quick fix and the issues aren’t often the stuff of headlines.

In Schuylkill County, Kitsock and his friends don’t mind. When it comes to the volunteer firefighter shortage, they aren’t looking to politicians to solve the problem. The state fire commissioner estimates it would cost around \$10 billion to replace Pennsylvania’s volunteer firefighting force with a paid one. Kitsock knows that won’t happen.

What he wants is his friends and neighbors to step up. “I don’t know if young people today are willing to make that commitment,” he said.

Some are, like Hattie Ebling, 17, a high school senior in Pottsville. Despite her other commitments in sketch club, drama club, as a dancer, dance teacher, and the Pottsville mascot,

she is following in her father and brother's footsteps as a junior firefighter at the American Hose Company No. 4.

"You are the puppy of the firehouse," she said. "You kind of have to follow your older members and you have to see what they do."

Hattie's brother Brandon, 24, is the first lieutenant here. He sees the fire service aging around him and he's noticed that, like the military, it's almost generational — it's harder to recruit people if their family members didn't serve.

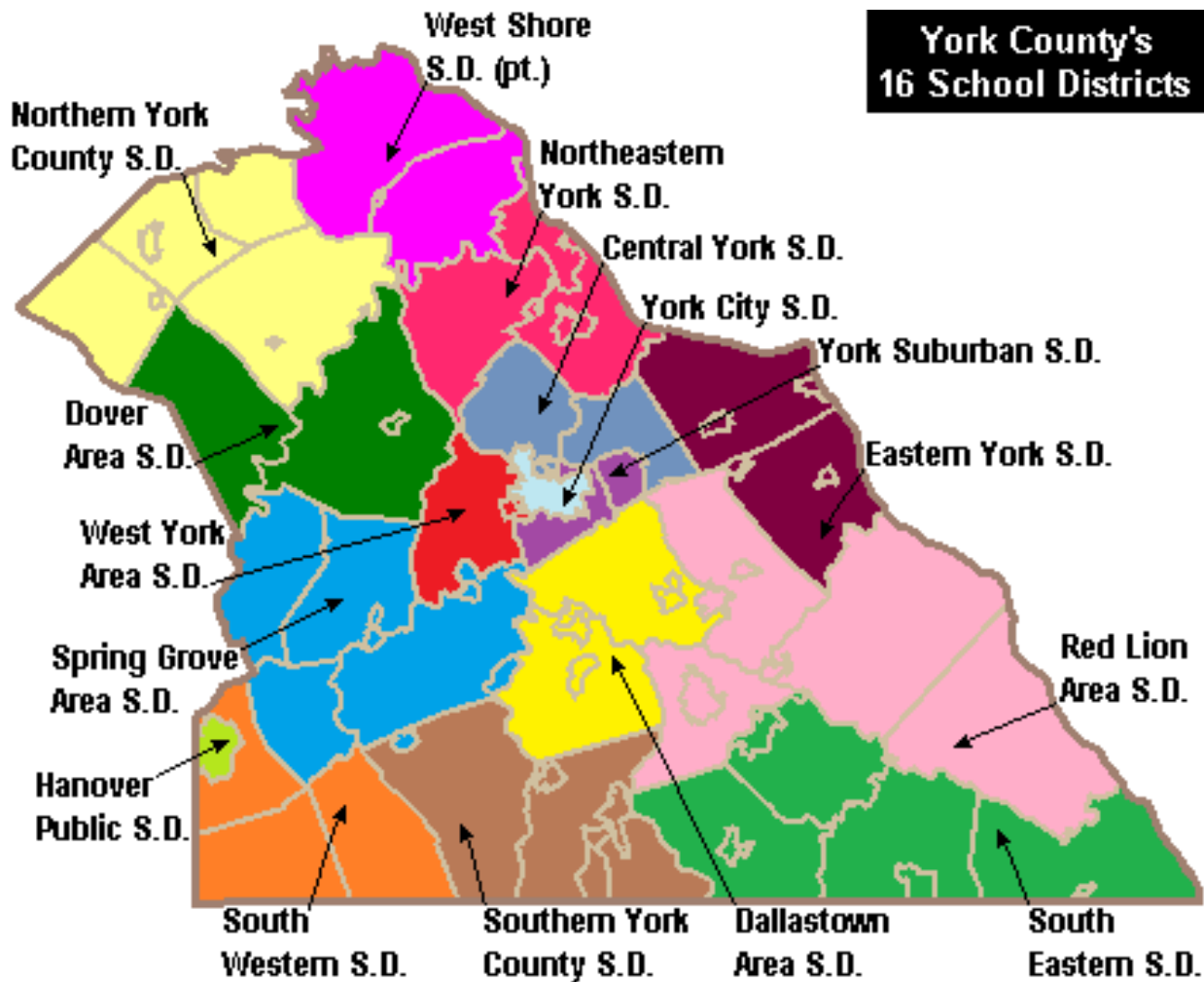
Recently, responding to a fire, he realized the other volunteers were all in their 40s and 50s. "They said, 'One day, you're going to be in our shoes,'" he said. "I said, 'Yeah. And I hope to have a younger kid behind me and show him the work.'"

Keystone Crossroads is a statewide reporting collaborative of WITF, WPSU and WESA, led by WHYY. This story originally appeared at <https://whyy.org/programs/keystone-crossroads>.

APPENDIX 5-B

School Districts in York County





York Suburban School District

York Suburban School District is a highly rated, public school district located in YORK, PA. It has 2,988 students in grades K-12 with a student-teacher ratio of 15 to 1. According to state test scores, 59% of students are at least proficient in math and 78% in reading.

About

yssd.org

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- [Valley View](#)

[York Suburban School District Rankings](#)

Niche ranks nearly 100,000 schools and districts based on statistics and millions of opinions from students and parents.

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61 of 495

- [Districts with the Best Teachers in Pennsylvania](#)

90 of 496

- [Best School Districts for Athletes in Pennsylvania](#)

99 of 495

Northeastern York School District is a highly rated, public school district located in MANCHESTER, PA. It has 3,814 students in grades K-12 with a student-teacher ratio of 15 to 1. According to state test scores, 57% of students are at least proficient in math and 73% in reading.

About

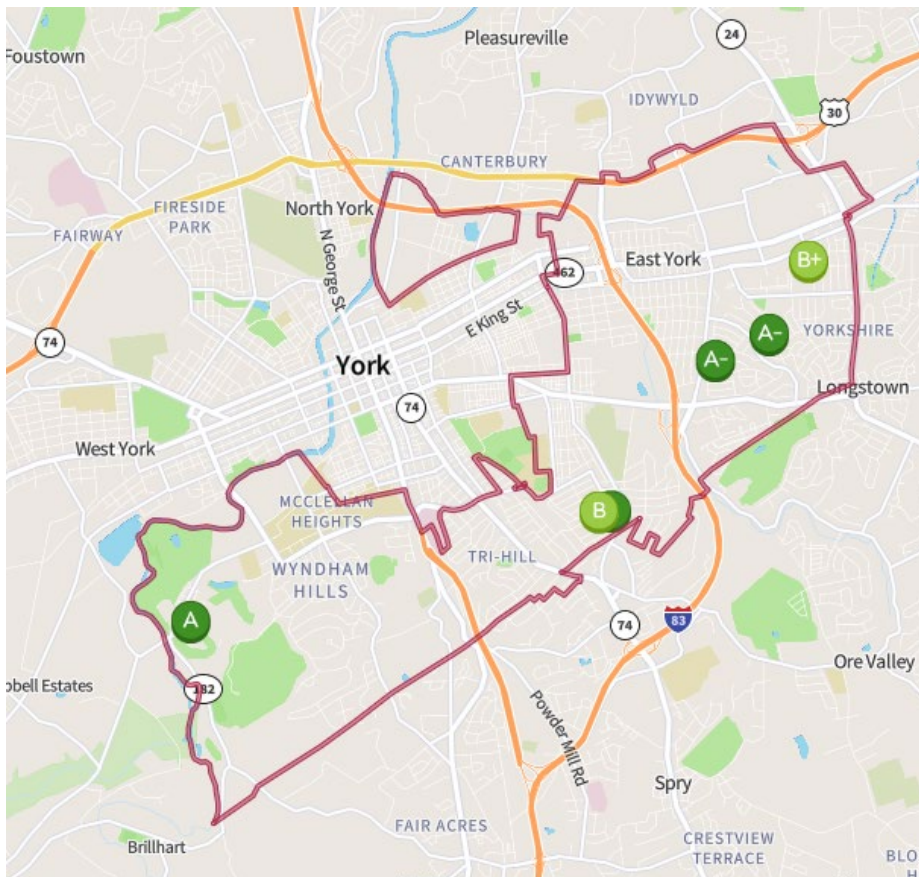
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Northeastern York School District Rankings

Niche ranks nearly 100,000 schools and districts based on statistics and millions of opinions from students and parents.

- [Districts with the Best Teachers in Pennsylvania](#) **58** of 496
- [Best School Districts in Pennsylvania](#) **65** of 495
- [Most Diverse School Districts in Pennsylvania](#) **86** of 496



APPENDIX 5-C

Dangers of Railroad Crossing Blockages



First responder expresses concern about trains stopping on railroads, blocking routes

While trying to answer a call to a nursing home, instead of having to normally drive less than a mile, firefighters were forced to drive about five miles.



Author: John Charlton

September 8, 2022

LYNDON, Ky. — In times of emergencies, time is always a factor.

The faster first responders can respond to a scene, the better.

However, in the city of Lyndon, there are four railroad crossings -- UPS Drive, Whipps Mill Road, Lyndon Lane and Washburn Avenue -- which can and have significantly delayed response times.

"If it's blocked, then we either have to go around or we can call one of our other stations if they're available," Asst. Chief David Howser of St. Matthews Fire & Rescue said.

The Lyndon Fire Department and St. Matthews Fire & Rescue merged in July 2018. One particular fire station facing challenges with long freight trains is Station 3.

Even when it's moving, it could take a freight train a few minutes to clear a crossing, but when it's completely stopped, that's so much more than an inconvenience for firefighters and EMS.

"It takes time to turn around and go to a different crossing, come to find out that one's blocked," Howser said.

That's exactly what happened the night of Dec. 27.

The fire truck from Station 3 was dispatched to Lyndon Woods Care and Rehab, a nursing home on Lyndon Lane less than a mile from the fire station.

"Perplexed and baffled by what I'm seeing," Chris Bayer of Lyndon recollected.

So Bayer had pulled out his cell phone and video recorded the fire truck driving all the way up to the tracks and then turning around to head back to New La Grange Road.

"Interestingly, a minute later, an ambulance followed," Bayer said.

The next option for the fire truck was to try to crossover on Washburn Avenue, but that was blocked as well.

Turning around again, firefighters then got onto the Watterson Expressway and got off on Westport Road, to eventually take a right onto Lyndon Lane, and finally arrive at the nursing home.

Instead of having to normally drive less than a mile, the fire truck was forced to drive about five miles.

On a normal day, that response time should have been only two to three minutes.

It was almost 10 minutes.

“It seems like a logistical fail to me,” Bayer said. “If you can’t prevent a train from stopping, which is one major question, at least inform who really need to know.”

First responders argue they should be first to know, but Howser said the railroads do not communicate with them.

“It’s sad that we don’t receive notifications that these trains are blocked,” he said.

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Have a news tip? Email assign@whas11.com, visit our [Facebook page](#) or [Twitter feed](#).

APPENDIX 5-D

Lawsuit in Detroit over Lights and Sirens



Detroit fire union claims new lights, sirens policy cheats residents



Posted: Oct 15 2018 07:59PM EDT [by Taboola](#) [Sponsored Links](#)

DETROIT (WJBK) - The battle over a new policy limiting the use of lights and sirens by Detroit firefighters is getting hotter - on Monday state reps joined the fray.

It's an ongoing battle quickly heating up between the city of Detroit and the Detroit Fire Fighters Association. "Our residents are being cheated," said Mike Nevin, president of the Detroit Fire Fighters Association.

Democratic state reps joined the DFFA Monday to protest the new and controversial "no lights, no sirens" response policy Monday. LaTanya Garret of Detroit -- says the policy makes the community feel like their lives don't matter.

"How does the public identify that there is a true emergency?" said Garrett. "Lights and sirens. "The policy, that went into effect in August, classifies fire runs using two codes - Code One for emergency runs -- and Code Two for other calls not deemed life-threatening.

The response procedures of course based upon those tiers. "You don't fart around with public safety," Nevin said. "We had a system that worked."

Detroit Fire Fighter Association President Nevin says the new policy has already proven to be dangerous, adding that hundreds of calls have already been coded inaccurately since the policy took effect.

"The public shouldn't have to worry if they're going to get response to a 911 call," Nevin said. "Whether it is a cat in a tree, you are upside down in a car, or you are trapped on the 12th floor somewhere."

Nevin also says the policy is greatly slowing down response time from roughly eight minutes to 11 and a half minutes, claiming it is also the city's way to manipulate data.

"What the city is doing right now is they are using the code system and they are moving it into fire to hide emergencies," he said.

In a bulletin to all department personnel, Detroit Fire Commissioner Eric Jones says responding to all runs in emergency mode is "unsafe and unreasonable," adding that traffic collisions are the second leading cause of on-duty firefighter deaths.

Jones previously told FOX 2 that the policy protects pedestrians - and drivers.



"Being struck by one of these very large rigs 30,000 to 60,000 pounds, you don't want to be on the other end of that," Jones said.

Jones also calls the union's information "false and misleading," adding that the new policy has been amended.

Firefighters now respond with lights and sirens to all home smoke and carbon monoxide alarms and reports of any downed wires.

But Nevin says Monday that's not good enough and he's prepared to file a lawsuit.



Detroit Fire Union plans to file lawsuit to end controversial new policy

Lights, sirens only used for life-threatening emergency

By Jermont Terry - Reporter, Kayla Clarke

Posted: 11:12 PM, October 01, 2018 Updated: 11:12 PM, October 01, 2018

DETROIT - A controversial new policy is coming under fire by members of the Detroit City Council.

When there's an emergency every second counts, but leaders at Detroit Fire believe that when a call is not life-threatening, fire trucks don't need to leave the station and others across the city with their lights and sirens on.

When sirens are blaring it indicates fire crews are responding to an emergency. In Detroit those flashing lights and loud sirens will only go off when the fire department knows for sure that someone's life is in danger.

Code 1 is immediate danger and code 2 is a non-life-threatening call. Under a new response policy anything classified as a code 2 won't send firefighters racing down the street. The [Detroit Fire Department](#) averages between 400 to 500 calls weekly. The city made a point of a crash in About half of those calls turn out to be non-life-threatening.

2017. A driver rammed into a fire truck, slightly injuring a firefighter onboard on the east side. Lights and sirens were on and the crew was only responding to a small garbage fire.

The Firefighter's Union president, Mike Nevin, doesn't believe the decision is beneficial to those in the union. Detroit Firefighter Assn. President Michael Nevin stands with homeowner Sandra Baily Oct. 2, 2018 whose home was severely damaged recently from an electrical fire.

The Detroit Fire fighter Assn held a news conference to protest the city's policy that treats some city fire runs as lower priority. Baily's home was gutted from the fire. The Firefighter's Union president, Mike Nevin, released the following statement:

"The DFFA is proud of Detroit City Council and State Legislators concern/action as it relates to Fire Administrations invented and mentally unbalanced Fire/EMS response policy. Fire Administrations appearance today before the City Council proves their fabricated manipulation and misunderstanding of proper Fire/EMS response to the public's 911 emergency's will create deadly results.

It is unfortunate that Mayor Duggan continues to rubber stamp his fraudulent appointed leadership after numerous personal/professional attempts have been made to resolve critical interdepartmental concerns is a shameful disgrace of willful neglect alarming enough to wonder if his administration is out of touch or not concerned for Detroit Public Safety."

Councilman Scott Benson said he plans to give the department a few months to see if it's helpful or harmful. "On Jan. 7 we made sure that the fire department is coming back to the table with metrics about how this went," said Benson

APPENDIX 5-E

Budgeting 101



Fire Department Budgeting 101

David Hesselmeyer provides a quick guide to fire department budgets.

DAVID HESSELMAYER

MARCH 24, 2015

0

Tweet

Share

Who needs a budget? Simply put...all of our departments do!

What Is A Budget?

First, it is important to understand budgets. A budget is a financial document that forecasts (or estimates) the revenue that a department will earn/receive and details where that money will be spent.

In most municipal departments, and in some other types of departments, the revenue is a set amount that the commissioners or councilpersons allot for them. In other departments, such as mine, it is an estimate of how much tax funding we will receive based on the fire department tax rate and the total amount of property value within our district.

Either way, these two revenue amounts can be problematic for us when we do the budget. If we are given a set amount as in the municipality example, then we are competing with other departments or agencies for limited resources. Bad economic times can make it even more difficult to ensure funding for your department. On the other hand, variable funding can also be problematic. In the example of my department, it becomes an issue because the county tax department has to estimate how much of the tax money we will actually receive. We may be expecting to receive \$500,000 in tax funding, but if people cannot or do not pay their taxes, then we will receive less and thus have to make mid-year adjustments to the budget.

The Budget Process

Budgets normally follow the fiscal year pattern which runs from July 1 through June 30 of the following year. We refer to this budget as the Fiscal Year Budget followed by the later year that the budget covers.

The budget process normally starts around the beginning of the new calendar year. During this early part of the process, we are going to be looking at the current budget. Where have we had to make changes? Where did we make bad estimates in funding and or expenses? Where did we hit the mark exactly? We also will look at the budgets from the past couple years. This will allow us to see trends such as increases in employee health insurance costs.

The next step is not always used, but I highly encourage it. As firefighters, we all like our input considered and this is no different when looking at future expenses. Historically, in my department, the chief has sent out an email with a budget consideration document attached. The document asks for what expense we would like to have considered, the approximate cost, and then how it will benefit our department. It is explained that not everything can be included, but opening this up to our members can provide for innovative ideas that we may otherwise miss out on.

Now the chief or their designee has information on the current year's budget's strengths and weaknesses, ideas from members within the department and similar documentation. They will take all of this information and begin compiling the draft budget for the following fiscal year. This is done in concert with the county or authority having the jurisdiction's budgetary authority. They will normally provide instructions on how to plan for the following year. For example, you may be asked to submit a budget that estimates the same amount of revenue as the current year and then a second budget that estimates a 5% reduction in revenue. Either way, this still allows for the chief to formulate their budget priorities into the document.

Following this hard work, the budget office will begin review of the document. They normally do not make changes to the budget document itself, but after their review they may suggest adjustments to help ensure the budget's approval. For example, if they asked for a budget with a 5% reduction, but they are given one with a 3 1/2% reduction, they will return the document for further changes.

When this is complete, the authority having jurisdiction may have a budget retreat. During this retreat the only focus will be to review all of the department's draft budgets and put them together into a single budget document. The retreat is attended by elected officials, such as county commissioners and senior level administrative staff like the county manager or other administrators. Most of the time, due to the work already done, this retreat can focus on the final difficult decisions that have to be made.

Once the retreat is completed, the senior level administrator will present the budget to the elected officials where there is time for public comment and then a final vote to adopt the budget. Even when the budget is adopted, the process is not necessarily complete. Revisions will usually be made during the year if needs, priorities, revenues or expenses change. There are different processes for transferring funds from one line item to another or from one department to another if needed. Every agency has different rules defining how this can be done.

APPENDIX 5-F

Going to the Voters



New Baltimore voters to decide fire millage

Funding would boost staffing at mainly paid-on-call department



New Baltimore voters will be asked Nov. 2 to approve a 1 mill levy for fire department staffing, equipment and operations. (MediaNews Group file photo)

By [KATELYN LARESE](#) | klarese@medianewsgroup.com | The Voice
PUBLISHED: October 27, 2021

The city of New Baltimore will ask voters Nov. 2 to approve a fire millage to fund additional staffing and other operational costs.

The proposal slated for the ballot seeks a 1 mill levy to employ additional fire personnel, furnish and equip the fire department and cover other operational costs of the fire department. If approved, the owner of a home with a market value of \$300,000 would pay \$150 per year. The millage is estimated to raise roughly \$445,000 in the first year.

“My department consists of one full-time chief, one full-time firefighter and eight paid-on-call firefighters,” New Baltimore Fire Chief Jeff Stellman said at an Oct. 12

town hall focused on the millage proposal. "All other departments in the city are full-time except for the fire department.

As the city grew, we never grew with it, and I think it's time that we start putting some people in here to serve the residents." Stellman said staffing issues are affecting response times, which could affect residents' safety. "It's no longer if something happens, but when something happens," he said.

Paid-on-call employees respond from home when called for an emergency, drive to the fire station, put their gear on, get in the appropriate vehicle and then respond to the scene of the incident.

A primarily paid-on-call department can mean long response times, personnel becoming burned out, solo responses or no response. It also results in employment retention issues, as firefighters have other full-time jobs or attend school, and the paid-on-call posts offer no benefit packages or regularly schedule hours.

While run volumes have drastically increased, personnel volumes are at an all-time low, the chief said. The department recorded 872 runs in 2010, jumping to 1,071 in 2015 and 1,255 in 2019.

Funding from the fire millage would be used to hire two more full-time firefighters, which would provide 24/7 coverage for the city. Each of the three firefighters would be scheduled on a 24-hour shift. On-call firefighters would still be scheduled when available to help supplement staffing. The fire millage would also help pay for needed equipment and other department operational costs.

The proposal will appear on the ballot as follows: "Shall the City of New Baltimore, Macomb County, Michigan, increase the tax limitation on the total amount of general ad valorem taxes which may be imposed and levied for all purposes upon all taxable real and personal property in the City of New Baltimore, as provided in Article IX, Section 6 of the Michigan Constitution of 1963, as amended, up to 1.0 Mill (\$1.00 per \$1,000) of the taxable value of such property and levy such millage for the purpose of (1) employing additional fire personnel, (2) furnishing and equipping the fire department, and/or (3) other operational costs of the fire department, which if fully levied is estimated to raise \$445,153.67 in the first year?" For more information, contact the fire department at 586-725-0990 or go to cityofnewbaltimore.org.

Katelyn Larese can be contacted at 586-273-6196 or klarese@medianewsgroup.com.



Matthews to hire more firefighters to meet public safety demands

By: Briana Harper Updated: Dec 31, 2018 - 10:18 PM

MATTHEWS, N.C. - Matthews Fire and EMS is enhancing its staffing plan to meet the high volume of calls it receives.

Crews respond to about 3,500 calls a year, which is about 10 a day. The department was formed in the 1950s consisting of volunteers.

It became a full-time career staff operation after Matthews was incorporated in 2005. "We have more people working around the clock," fire Chief Rob Kinniburgh said.

There will be 10 new firefighters hired to help cover the 24-hour schedule supplemented by volunteers. "Having consistent staffing makes us a much more effective department," the fire chief said. (It) makes us be able to respond to the needs of the community that much greater."

The change comes after those living in Matthews agreed to support a tax increase toward public safety. Residents are confident in the difference it will make. "It's reassuring to know that there are so many people to help you," resident Sophia Thompson said. Kinniburgh encourages volunteers to join even with the staff.

APPENDIX 5-G

Grand Rapids Receives \$2,862,128 in SAFER Funding





Grand Rapids Fire Dept. to receive millions in federal funding for new hires

By: [Megan Viece](#)

Sep 22, 2022

GRAND RAPIDS, Mich. — United States Senators Debbie Stabenow (D-MI) and Gary Peters (D-MI) announced Thursday that the Grand Rapids Fire Department will receive nearly \$3 million in federal funding to hire eight new firefighters.

The \$2,862,128 comes from the Department of Homeland Security's Staffing for Adequate Fire and Emergency Response (SAFER) grant program.



“Our firefighters put their lives on the line to protect our families, homes and communities,” said Sen. Stabenow. “These new resources will help the Grand Rapids Fire Department make sure there is always someone there to answer the call in an emergency.”

“It’s important that our fire departments have the resources to maintain and hire personnel to continue serving their communities effectively,” added Sen. Peters. “I’m pleased to welcome this

federal grant that will enable the Grand Rapids Fire Department to hire additional firefighters to support their operations.”



“This grant along with other FEMA assistance that we have been lucky enough to receive will strengthen our ability to respond to areas where we have demonstrated gaps,” said Grand Rapids Fire Chief John Lehman. “We are very thankful for these federal programs which reduce the stress on our city’s budget.”

For more information about the SAFER grant, [click here](#).

APPENDIX 5-H

SAFER Grant Funding Tips





Getting Grants

by Jerry Brant

9 keys to a competitive SAFER grant

The grant period opens in about two weeks; have these bases covered to give your application the best chance at success

By Jerry Brant

The Department of Homeland Security through FEMA announced that the Staffing for Adequate Fire and Emergency Response grant application period will begin on February 9 and remain open until 5 p.m. March 6.

The SAFER grant program provides funding directly to fire departments and national, state, local or tribal organizations representing the interests of volunteer firefighters to assist them in increasing the number of firefighters that are available to help fire departments meet industry minimum standards.

This funding would allow these departments to attain 24-hour staffing to protect communities from fire and fire related hazards and to fulfill traditional missions of fire departments.

The SAFER program is comprised of two categories: hiring firefighters and recruiting and retaining volunteer firefighters.

Hiring firefighters_

Included in this are the subcategories for rehiring, retention, attrition and new hires.

Career, combination and volunteer fire departments are eligible to apply under this activity.

The period of performance for this grant will run for 24 months. There is no local match required. The grant will cover the full salary and fringe benefits of the SAFER firefighters.

The priorities under this category are:

- Rehiring laid-off firefighters.
- Retaining firefighters who face imminent layoff or filling positions vacated through attrition, but not filled due to economic circumstance.
- Hiring new firefighters.

Recruiting and retaining volunteers.

Combination fire departments, volunteer fire departments and national, state, local, or tribal organizations that represent the interests of volunteer firefighters are eligible to apply.

The period of performance can be between 12 and 48 months and there is no local match involved.

The priority under this category is to assist departments experiencing a high rate of turnover and with staffing levels significantly below the ideal staffing required to comply with National Fire Protection Association Standards 1710 or 1720.

9 areas

Regardless of which category you are applying under there are nine areas to keep in mind as you develop your application.

1. SAFER-funded activities should help your department to meet the appropriate NFPA Standard (either 1710 or 1720) for staffing and assembly if you are funded.

2. SAFER should allow your department to have at least four firefighters on the first arriving apparatus.

3. If you are applying under the hiring category, SAFER-funded firefighters should meet NFPA 1001 Firefighter II certification by the end of the second year.

4._If you are applying under the hiring category, SAFER-funded firefighters should meet at least the minimum EMS certification for your state or locality.

5._Under either category, new firefighters should receive entry-level physicals and immunizations through your SAFER program.

6._New firefighters should receive annual medical exams.

7._Under either category, your department's SAFER program should provide firefighters with accidental death and dismemberment insurance.

8._Recruitment and retention applications should be based on a formal recruitment and retention plan. In addition, recruitment and retention applications should have a periodic evaluation of the program's impact built into the application. Hiring applications should be based on a staffing needs assessment.

9._For a regional request for recruiting and retention, every department involved in the application must sign a memorandum of understanding prior to the close of the application period.

Regardless of which SAFER category your department is considering make sure you have a current DUNS number, an employee identification number and an active registration with System for Award Management.

About the author

Jerry Brant is a Senior Grant Consultant and Grant Writer with FireGrantsHelp and EMSGrantsHelp. He has 40 years of experience as a volunteer firefighter in rural west central Pennsylvania. He is a life member of the Hope Fire Company of Northern Cambria, where he served as chief for 15 years. He is currently an active member of the Patton Fire Company #1. For 20 years, Jerry was employed as the executive director and then president of a small non-profit community development corporation. Jerry has successfully written more than \$52 million in grant applications and proposals. Jerry can be reached at Jerry.Brant@FireGrantsHelp.com.

APPENDIX 5-J

Grant Funding for Sharon, Pennsylvania Fire Dept.



The Herald

Sharon to receive \$968K for fire protection

Sep 1, 2022



Fire trucks are lined up in the garage at Sharon Fire Department.

SHARON — The city will receive more than \$950,000 in public safety grants through the Federal Emergency Management Agency.

Sharon fire department will receive \$769,320, and the city department of Operations and Safety is in line for a grant of \$199,285.71. The funds come

from the Assistance to Firefighters Grant through the Federal Emergency Management Agency. U.S. Rep. Mike Kelly, R-16, Butler, announced the grants Thursday evening.

Bob Fiscus, Sharon city manager and fire chief, said the grants will be used to purchase personal protective equipment and to increase fire department staffing. The city will work with the firefighters' union to determine how they will use the second grant, Fiscus said.

APPENDIX 5-K

Pennsylvania Grants



Fire Company and EMS Grants

Contact Us Please contact us at ra-vfcvasgp@pa.gov



[Begin Main Content Area](#)

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[2022-2023 FCEMSGP Grant Awards List \(PDF\)](#)

- [Grants Password Reset Instructions](#) (PDF)
- [Change of Contact Letter](#) (PDF)

Annual Grant Application Program

The Fire Company and Emergency Medical Services Grant Program (FCEMSGP) makes an annual grant program available for volunteer and career fire companies, emergency medical services and rescue squads. The program provides grant eligibility information and makes an [online grant application](#) available for all eligible applicants.

Based on applicant and project criteria, staff reviews and approves or disapproves all applications, processes signed grant agreements, and authorizes dispersal of grant funds. Final grant reports are reviewed for compliance with project description and program guidelines.

You MUST create a user id and password before you can access the grant application, even if you created one for a previous grant cycle.

[GRANT APPLICATION](#)

Eligible Organizations

The following organizations may be considered eligible for grant funding:

- All fire companies, Emergency medical services, Volunteer rescue squads

Eligible Projects

Eligible organizations may apply for grant funding for a combination of up to two projects in the following categories:

- **Facilities:** Construction and/or renovation of the fire company's or ambulance service's facility and purchase or repair of fixtures and furnishings necessary to

maintain or improve the capability of the company to provide fire, ambulance and rescue services.

- **Equipment:** Purchase or repair of fire fighting, ambulance, or rescue equipment. This includes the purchase of fuel for company vehicles.
- **Debt Reduction:** Debt reduction associated with the facility (1) or equipment (2) categories above.
- **Training:** Training and certification of members.
- **Training and Education:** Materials regarding fire prevention for the general public.
- **Career Departments Only:** Overtime costs associated with backfilling positions while firefighters are attending training.
- **Recruitment and Retention:** Including, but not limited to, volunteer firefighter length of service award programs and programs for minors.
- **Construction Savings Account – Fire Companies Only:** A fire company may apply for a grant for the purpose of constructing a new facility. The grant funds shall be deposited into a Construction Savings Account. The account will be administered by the Commissioner. A fire company may only apply for a grant for up to 5 years. **THIS PROJECT CANNOT BE AMENDED.**

Application Availability and More

To be eligible to receive your awarded 2022-2023 grant, which will be determined in January 2023, your Fire/Rescue organization must report all incidents using PennFIRS, from January 1, 2022 through December 31, 2022.

To maintain current and future fiscal year FCEMSGP eligibility, your organization must continue to report your incidents on a monthly basis.

FCEMSGP Resources

- [2020-2021 FCEMSGP Annual Report](#) (PDF)
- [2022-2023 FCEMSGP Annual Grant Mailing Letter](#) (PDF)
- [2022-2023 FCEMSGP Important Dates](#) (PDF)
- [2022-2023 FCEMSGP Program Guidance](#) (PDF)
- [Act 91 of 2020](#) (PDF) or on legis.state.pa.us

APPENDIX 5-L

Grant Funding for Smoke Alarm Programs





NFPA RSS NEWS FEEDS
DOWNLOADED JANUARY, 2022

NFPA LAUNCHES HOME FIRE SPRINKLER GRANT PROGRAM

To further the life-saving impact of home fire sprinklers, the [National Fire Protection Association's](#) (NFPA) [Fire Sprinkler Initiative](#) today announced the launch of a new grant program to help fund sprinkler advocacy campaigns across North America.

The [Bringing Safety Home Grant Program](#) will assist as many as 10 selected [U.S. state sprinkler coalitions](#) and other safety advocates with up to \$10,000 grants to support activities that showcase the importance of home fire sprinklers. Sprinkler advocacy is gaining momentum as more residents and policy-makers understand the value of the devices in new homes. Home fire sprinklers can reduce home fire deaths by about 80 percent and direct property damage by about 70 percent, according to NFPA research.

The vast majority of U.S. fire deaths occur in homes. In 2013, home fires caused nearly 2,800 deaths out of more than 3,000 total fire deaths and injured more than 12,000 others in the U.S. The life-saving capability of home fire sprinklers is the reason why all model building codes require sprinklers in all new, one- and two-family dwellings.

"At NFPA, we are committed to doing all we can to make sure that more people are protected by sprinklers at home," said Lorraine Carli, vice president of Outreach and Advocacy at NFPA. "To help save lives, the Fire Sprinkler Initiative's Grant Program supports the great ideas of sprinkler coalitions and other safety advocates across North America."

Grant applicants throughout the U.S. and Canada can apply for up to \$10,000 to fund a proposed home sprinkler campaign or project in their state or province that underscores the necessity of sprinklers. The grant program spurs innovative thinking for sprinkler advocacy, with questions including: How can this grant help further the message in your state or region that sprinklers in new homes save lives? Is there a new way to educate the public and decision-makers on the value of home fire sprinklers? How can you expand on a tried-and-true method of sprinkler advocacy? NFPA has also developed a number of campaign options to help inform applicants' proposed ideas.

About the Fire Sprinkler Initiative®

The Fire Sprinkler Initiative®, a project of the National Fire Protection Association, is a nationwide effort to mandate the use of home fire sprinklers and the adoption of fire sprinkler requirements for new construction. Visit the Fire Sprinkler Initiative website at www.firesprinklerinitiative.org.

About the National Fire Protection Association (NFPA)

NFPA is a worldwide leader in fire, electrical, building, and life safety. The mission of the international nonprofit organization founded in 1896 is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. NFPA develops more than 300 codes and standards to minimize the possibility and effects of fire and other hazards. All NFPA codes and standards can be viewed at no cost at www.nfpa.org/freeaccess. Contact: [Lorraine Carli](#), Public Affairs Office: +1 617 984-7275

=== END OF MODULE 5 ===



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Analysis of Fire Department Staffing, Facilities and Operations



York Area United Fire and Rescue, Pennsylvania

Draft

MODULE 6: FUTURE OUTLOOK, ORGANIZATIONAL ENHANCEMENTS

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THE FUTURE

In this final **Module** we will recap the findings of the preceding five modules and provide suggestions for planning a more dynamic future for York Area United Fire and Rescue. All members in the organization, career, part-time and volunteer can feel proud of the service they provide. A personnel roster is found in **Appendix 6-A**. A quality factor among personnel in all five stations is the primary reason that the consultants can state unequivocally that the future is bright for the Fire and EMS service in York Area United Fire and Rescue. The only possible downfall will be if adequate staffing does not keep pace with community growth.

The firm of Kramer and Associates has produced these six Modules, which used analytic data and empirical research to highlight the dedicated service being provided by the five stations that comprise York Area United Fire and Rescue. This includes fire prevention, fire suppression, technical rescue and first response to assist the separate EMS service. All stations are performing well and all seem willing to improve.

One area where there is room for growth and improvement, and the one area most capable of broadening the life-saving mission of the organization is technical rescue. Hence, in this module which looks to the future, we include a section with the latest technical updates on these specialty functions.

In a growth county like York, it is difficult to stay ahead of the growth in providing emergency services. York Area United Fire and Rescue has done its best to keep pace and now has the opportunity to be more pro-active. Later in this module we show how to empower members of all ranks to contribute to meaningful future objectives. The entire organization can use such techniques to prepare for needed new staffing and organizational expansion.

The YAUFR district is definitely in a growth mode, especially in Manchester Township according to the demographic data reviewed as part of **Module 3**. York County has a long-standing tradition of preparing plans to help guide growth and development in its cities, villages and townships. The results of the more recent efforts are adapted as baseline data by the consultants in this module. On the next page we show again the growth data from **Module 3**.

Growth should be viewed as a positive both for the three townships and for the emergency services. Essentially there is an “economy of scale” where taxation rates at any level draw new revenue in direct proportion to growth. This allows areas which have been under-protected due to budget limitations to begin meeting or approaching minimum standards.

YAUFR AREA GROWTH

We reproduce here the county growth statistics first seen in **Module 3**. The population growth projection is shown on the following page. YAUFR mirrors this percentage rise projection.

York County Growth

1860	1880	1900	1920	1940	1960	1980	2000	2020	2040	2060
68,200	87,841	116,413	144,521	178,022	238,336	312,963	381,751	456,438	520,339	582,779
									Projected	

The consultants feel that as masterplans for the three participating Townships are updated, and economic studies undertaken, there should be attention to emergency services. The vast majority of the York Area United Fire and Rescue footprint is devoted to single-family housing.

SPECIALTY TEAMS

In York Area United Fire and Rescue the personnel participate as well as can be expected in County-wide Specialty Teams for various technical rescue needs. This is a noble concept in that it provides specialty services from throughout the county to the entire county. These are services that individual fire departments would be unable to provide. YAUFR has some techs and the department trains to the “Operations Level.” More advanced training is planned for the future.

In **Table 6-A** below, we see a breakdown of common technical rescue disciplines. One specialized type of confined-space rescue is Grain-Bin which should be part of rural fire districts. We do suggest reasons why it should be considered for York Area United Fire and Rescue.

As new personnel are hired, and the roster expanded, one spin-off benefit will be a larger pool from which to have specialty disciplines. Currently YAUFR must often wait patiently on teams comprised of volunteers from other York County agencies for specialty functions. The commonly recognized specialty teams are listed below. There is obvious room for improving capabilities within the YAUFR group.

Table 6-A YAUFR Technical Rescue Capability

Specialty	Availability
Haz-Mat	AVAILABLE IN YAUFR (Ops level)
Trench Rescue	AWARENESS
Water Rescue	AWARENESS, WET SUITS
Confined Space Rescue	OPERATIONS
High angle rope rescue	NEAR OPERATIONS LEVEL
Low angle rope rescue	NEAR OPERATIONS LEVEL
Rescue, Heavy-Medium	AVAILABLE IN YAUFR*
Grain Bin Rescue	AWARENESS**

* One of the most likely disciplines to be needed is Haz-Mat. Over one third of York County Haz-mat facilities are in YAUFR

** Grain-Bin rescue, usually a part of rural fire districts, may also be valuable for various industrial processes.

Technical Rescue Disciplines Explained

The Kramer group researched the latest information on technical rescue accumulated by several reputable sources, such as those found in this module's various appendices. We endeavor to explain in Layman's terms the aspects of these specialty functions. Subsequent sections will provide information on skills required from the NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications and NFPA 1670 Standard on Operations and Training for Technical Search and Rescue Incidents.

Rope Rescue

Rope Rescue is one type of rescue that can be needed in a variety of scenarios throughout York Area United Fire and Rescue, and the consultants note that there is real interest and proficiency among various YAUFR personnel in this skill set. Chief Hoff advises that intensified training in this discipline begins this Fall.

Rope rescue is a subset of technical rescue that involves the use of rope, be it steel or cable rope, or more commonly used nylon, polyester, or other type of rope. Kernmantle (kern = core and mantle = sheath) rope as it is called, is available in various types: Dynamic (stretches to absorb the shock of a falling lead climber or rescue professional) or Static (actually low stretch) which is most commonly used in rescue and industrial rope work. **Appendix 6-B** contains a great article explaining the "Difference Between High Angle & Low Angle Rescue."

The techniques in the article in the Appendix are further subdivided, and sometimes the techniques and equipment are modified to better suit the specialty area. The subdivisions are:

- high angle
 - urban
 - structural
 - mine rescue
 - wilderness
 - river
 - mountain rescue
 - cave rescue
- 
- ROPE RESCUE SUBDIVISIONS

As a rule, urban or industrial rope rescue involves heavier equipment, which is chosen due to the close proximity to cities. York Area United Fire and Rescue is fortunate to have this expertise within its emergency response system. Since it is seldom needed, the challenge is to have drills and practice sessions so that the teams can remain proficient. Also due to this fact, long approaches and lengthy extractions are not required in the County.

These skills make it possible to rescue a subject from a vertical environment, without exposing the rescue professional (volunteer or paid) to the danger or risk of the vertical environment. These techniques involve skills used to rescue an individual(s) from their precarious situation, without sending a rescue professional over the edge or suspending them from the rope and safety equipment. An example of one such technique is the: Clip, Snip, and Lower/Raise technique.

High angle rescue is considered to be an operation where terrain has a slope angle of 60 degrees and higher. Examples of industrial work hazards that may require high angle rope rescue are wind turbines, towers, pipe cracks, ledges and tanks. In this type of rescue, rescuers are totally dependent upon the ropes for accessing and exiting the rescue.

Water Rescue

We saw in **Module 3** where we studied the demographics of York County, including the YAUFR zone, that there are water body types that may become the scene of a needed rescue. According to the latest survey, the breakdown in York County includes 6.5 square miles of water. (See below):

York County Area

- **Total** 911 sq mi (2,360 km²)
- **Land** 904 sq mi (2,340 km²)
- **Water** 6.5 sq mi (17 km²) 0.7%%

All too often, in all jurisdictions throughout the United States, even with the best in personnel, equipment and speedy response, a rescue becomes a “body recovery.” Its possible that by having some capability directly within YAUFR this might make the difference between a rescue and a recovery. We do note the presence of wet suits among the equipment carried, and were pleased to hear from Chief Hoff that a majority of YAUFR personnel have the requisite water rescue training.

The key to any type of rescue is understanding and identifying the principles which are involved. Once the principles are identified, appropriate techniques or methods, which fits the circumstances, can be determined and applied. "Ways, Means, Methods, and Techniques Change; Principles Never Do." D.S. Hansen. More recently, Noncommittal Vertical Rescue Techniques have been introduced.

For more information on Water Rescue See **Appendix 6-C**.

Trench Rescue

The fact that York Area United Fire and Rescue is growing means that there will be numerous construction sites, both residential and commercial, where trenches are need for structural foundations and utilities.

According to *Fire Engineering*, “Trench rescue is not a typical response for many fire departments and is hazardous for responding personnel. The risk for emergency personnel responding to a “cave-in” is especially high. A collapsed trench or excavation has greater than a 50 percent chance of collapsing again, particularly when rescuers are digging out the original victims. This potential secondary collapse, combined with numerous other factors such as adverse weather, hazardous atmospheres, release of gas from ruptured lines, broken water lines, the number of victims, and department capabilities, makes such a response challenging.”

According to the Safety Committee in the NFPA, rescues, including trench rescues, should not be attempted by individuals who have not been formally trained and should only be done by those who have recent and relevant continuing education in the rescue discipline. The Occupational Safety and Health Administration (OSHA) defines an excavation as “any man-made cut, cavity, trench or depression in the earth’s surface formed by earth removal.” A trench is defined as “a narrow excavation made below the surface of the ground in which the depth is greater than the width, the width not exceeding 15 feet.”

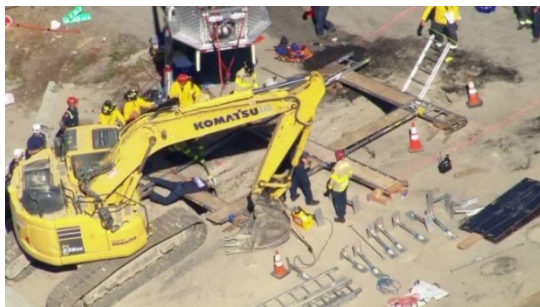
Renton trench collapse happens amid rise in incidents nationwide

The Occupational Safety and Health Administration says 22 fatalities in trenching and excavation were reported in first half of 2022, compared to 15 in all of 2021.

Author: Erica Zucco

Published: September 8, 2022

RENTON, Wash. — The Washington State Department of Labor & Industries (L&I) is



investigating what led to a worker being killed when a trench collapsed near [38th and Lincoln in Renton](#) on Wednesday.

Fire crews said dry soil was more susceptible to sloughing off and caving in. Though there was a trench box on site, not all areas were protected. L&I said its investigation will take time....

Full Story plus Trench Rescue Pointers in Appendix D.

Confined Space Rescue

Confined Space Rescues come in a variety of forms, and York Area United Fire and Rescue will have its fair share of opportunities to use the skills necessary for successful confined space rescue. We provide an update on Confined Space Rescues, as it pertains to York Area United Fire and Rescue in **Appendix 6-E**, and reproduce a few key points from a relevant article here in the text of Module 3.

“Confined space rescues can be technically challenging due to the environment in which they occur. Confined spaces are often narrow and constricting, preventing easy access by rescuers. They are usually either unlit or poorly lit, so rescuers must provide their own light source. Finally, confined spaces often contain hazardous materials in liquid or gas form which can be harmful or fatal to humans.”

“These hazards can be fatal as they create a limited window in which to perform a rescue. The general rule is that after four minutes without oxygen, a person in a confined space will likely suffer asphyxia resulting in either brain damage or death. The urgent need to rescue someone from a confined space often leads to ill-prepared rescue attempts. Two-thirds of all of deaths occurring in confined spaces are attributed to persons attempting to rescue someone else.”

Structural Collapse Rescue

Structural Collapse sometimes seems synonymous with Urban Search and Rescue, as this is what US&R conducts most frequently.

Structural collapse incidents can be comprised of unstable or collapsed structures in an unsafe position. Usually collapse incidents leave voids inside the debris that can result in numerous casualties trapped under large amounts of very heavy and often unstable debris.

Equipment Cache: The equipment cache used to support a structural collapse team can weigh more than 60,000 pounds and is worth more than \$1.4 million. USAR task forces can:

- Conduct physical search-and-rescue in collapsed buildings
- Provide emergency medical care to trapped victims
- Utilize search and rescue dogs to find survivors of the collapse
- Assess and control utilities and hazardous materials
- Evaluate and stabilize damaged structures

The three phases of a USAR operation are 1. **Size-up**, 2. **Search** and 3. **Rescue**

Agricultural and Grain Bin; Industrial Processing Bin Rescue.

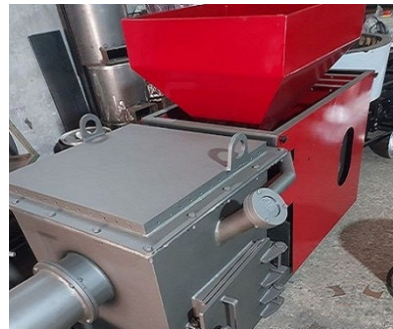
Grain entrapment, or grain engulfment, occurs when a person becomes submerged in grain and cannot get out without assistance. This is not likely in YAUFR since rural farmland has given way to development, but there are operating farms still in the YAUFR first due area. Also, in light of the fact that we discuss these specialty rescue teams in county terms, it could be a factor somewhere in York County. It might also prove helpful in industrial processes using raw materials similar to grain.

This type of rescue need most frequently occurs in grain bins and other storage facilities such as silos or grain elevators, or in grain transportation vehicles, but has also been known to occur around any large quantity of grain, even freestanding piles outdoors.

Usually, unstable grain collapses suddenly, wholly or partially burying workers who may be within it. Entrapment occurs when victims are partially submerged but cannot remove themselves; engulfment occurs when they are completely buried within the grain. Engulfment has a very high fatality rate. While the death rate from workplace accidents on American farms has declined in the first decades of the 21st century, grain-entrapment deaths have not.

Right: shown: Industrial Pellet Burner Not shown: Large Pellet storage bin

Many of those victims have been minors. Agricultural organizations have worked to protect them and improve rescue techniques, as well as spread awareness among farmers of prevention methods. Primary among these is a federal regulation that forbids opening an auger or other opening at the bottom of a grain storage facility while someone is known to be "walking down the grain"



Several factors complicate the rescue of entrapment victims even if their heads remain above the grain.

Left: Grain Storage

Most grain storage and similar industrial processing facilities are confined spaces, posing hazards to rescuers. Rescues of an entrapped victim usually entail building makeshift retaining walls around victims with plywood, sheet metal, tarpaulins, snow fences or any other similar material available.

The next step is creating the equivalent of a cofferdam from which product can then be removed by hand, shovel, grain vacuum or other extraction equipment. Purpose-built plastic grain rescue tubes are also available for this purpose. Using them causes an increase in pressure around the victim, possibly by increasing the bulk density of the grain within the tube, which in turn requires more force to pull them out until the grain surrounding them is removed.

NFPA STANDARDS RELATED TO TECHNICAL RESCUE

A few of the key points related to current operations in York Area United Fire and Rescue are found in NFPA 1670 section 4.1.3.2, which states that if an organization expects to deliver above the most basic of services in technical rescue, the organization should have a system in place to utilize the most appropriate resource available through the use of local experts. Also helpful are agreements with specialized resources.

Section 4.1.10.4 states that the Authority Having Jurisdiction should provide continuing education to ensure the personnel can effectively deliver the level of service identified. These two statements recognize that technical rescue is often performed on a tiered basis and that the majority of departments cannot safely train and equip personnel alone.

Most successful technical rescue service delivery models are conducted on a regional basis by a group of dedicated and highly trained personnel from many departments. Configurations vary from departments training and equipping for a certain discipline, such as Department A would perform trench rescue and Department B would perform Swiftwater.

Other configurations involve the local Emergency Management and Fire Chief Association partnering to have a separate technical rescue team that services the entire region. Consultant Hanifen discovered in the county of 385,000 people in which he works, no fire departments were able to properly sustain technical rescue operations in a safe and efficient manner due to the significant training requirements and the expense of the needed cache of equipment to perform the tasks.

Hence, a county-wide technical rescue team was started that utilized personnel from the county fire departments and a cache of equipment purchased by the county commissioners. This model has been in operation since 2005. NFPA Standards 1006 and 1670 can be adopted by York Area United Fire and Rescue and implemented as regulation. These state that all "rescuers" must have medical training to perform any technical rescue operation, including cutting the vehicle itself during an extrication.

These standards specify equipment, personnel, and training. Additionally, the standard references the NIMS resource typing that is developed through FEMA with input from subject matter experts. Consultant Randall W. Hanifen helped build many of these documents and through the development process, the premise of MINIMUM Standards was noted, meaning that many organizations through critical task analysis and/or experience in responding to the types of incidents that needed specialized resources would go above and beyond the minimums

Another area that Consultant Hanifen noted as an issue is the revision of the Pennsylvania standards, as opposed to the current FEMA resource typing. For example, the Swiftwater standard states that the PA standard qualifies as a Type 4 team, but the currently adopted 2021 Swift Water Team typing provided by FEMA only recognizes 3 different types.

An example would be deploying a Swiftwater team with only 2 personnel. This violates the basic premise of 2-in/2-out, as no other rescuers are present to rescue those performing the rescue of the citizens. Additionally, command personnel and safety personnel may not be present.

In summary, the NFPA Standards regarding technical rescue are the ideal, and both YAUFR and York County shouldn't let "perfect" get in the way of "Safe and adequate."

NEW IDEAS, BEST PRACTICES

The consultants will share information about some modern creative concepts and new technologies that have been successfully adopted or deployed by leading fire service agencies throughout the United States.

A library of articles and anecdotes has been assembled by the Kramer group covering innovative ideas and equipment which have improved the ability of emergency service agencies to accomplish their respective missions. On a gratis basis these are available to York Area United Fire and Rescue, and can be incorporated into the budget and/or future planning endeavors.

A real-life example for York Area United Fire and Rescue could be the adoption of an improved smoke detector program. Yes, most departments have a smoke detector program, but there is one continuing problem. Over 50% of the detectors purchased by homeowners, as well as those that have been given out by departments across the Country, are continually being found after fires with no working battery. Some research lately advocates the replacement of all ionization detectors with photoelectric since the latter activate more quickly in most fires See

Appendix 6-F for a current article out of Michigan designed to show how to greatly reduce the problem of non-working smoke alarms. In the previous Module we noted that YAUFR successfully received a smoke alarm grant in 2009. YAUFR has covered the entire district with a replacement program ever since. Noteworthy is the fact that YAUFR recently submitted again for a Fire Prevention Grant that will update its smoke alarm program. This presents a great opportunity for a public relations benefit to York Area United Fire and Rescue.

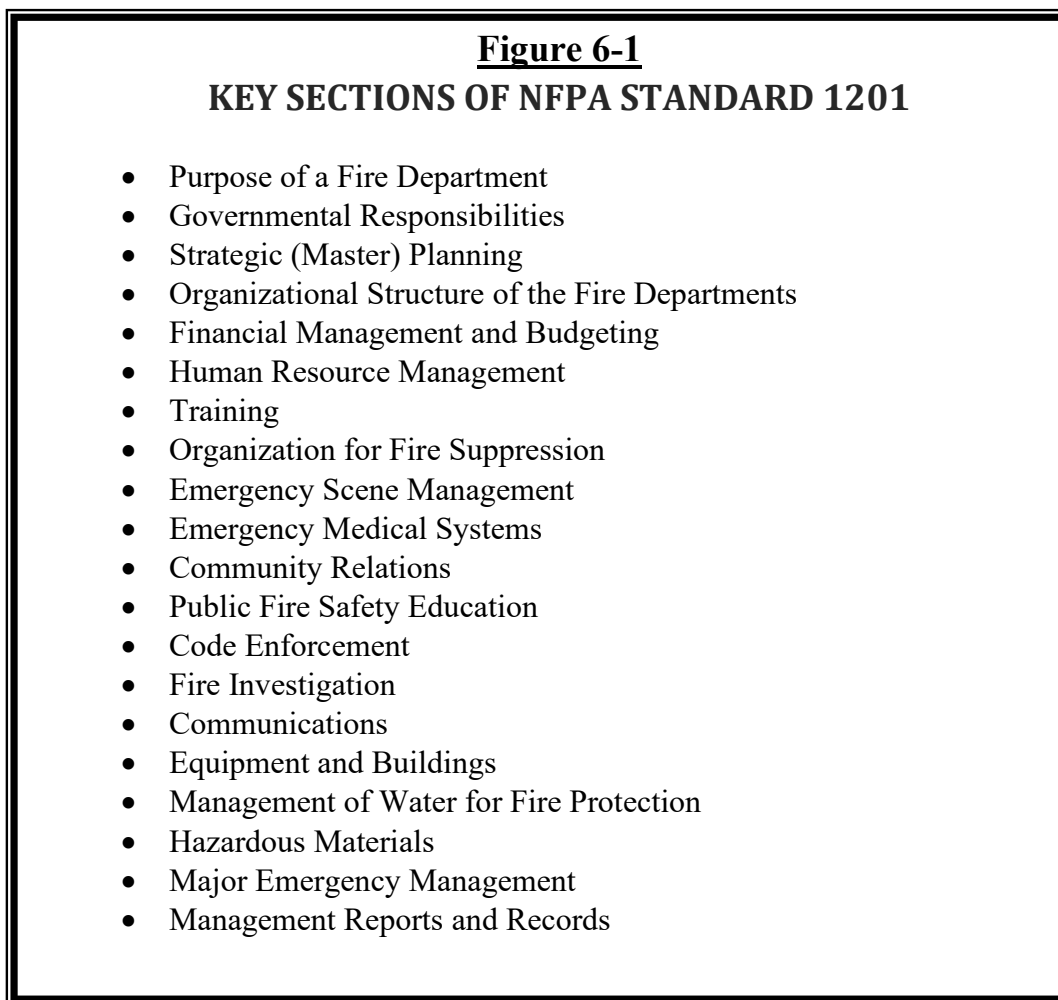
Below is a sampling of newer topics that can be investigated by YAUFR, if not already in use or under consideration. Some have already been discussed in some detail:

- Use of Body Cameras by Firefighting personnel and EMS First Responders.
- Drone technology and how it can be adapted to fireground operations and search-and-rescue situations.
- Training for electric-driven and self-driving vehicles.
- Virtual reality tied to training opportunities.
- New Pediatric Emergency Standards which will allow for firefighters to act quicker and more efficiently when it comes to treating the smallest patients.
- Adjusting deployment to account for combustion properties of newer materials in modern home and office construction.
- New, high-tech automatic chest-compression devices for CPR.
- See **Appendix 6-G** for an article on a life-saving device for children trapped in hot cars.

EXCELLENCE CHECKLIST

This report has already referenced several of the key NFPA (National Fire Protection Agency) standards and showed their relevance to staffing issues in York Area United Fire and Rescue. Since the NFPA is a non-profit information collection center and internationally respected authority for the fire protection industry, it can provide useful guidelines for organizations wishing to improve themselves.

In terms of the future, one of the most comprehensive standards is NFPA Standard 1201, *Developing Fire Protection Services for the Public*. This Standard, which was introduced more than two decades ago in the year 2000, is an excellent checklist for fire agencies that want to list potential areas for improvement as they plan ahead. This standard may be helpful to York Area United Fire and Rescue fire officials as they ensure that they are “covering all the bases.” **Figure 6-1** below shows key component sections of NFPA Standard 1201.



MAKING IMPROVEMENTS IN YORK AREA UNITED FIRE AND RESCUE

York Area United Fire and Rescue is facing an immediate need for improvements in staffing and personnel so as to remain viable as a service provider in vital life-saving operations. At this pivotal time there is also a window of opportunity to provide improvement in organizational communications, training and accountability that require little or no cost.

Personnel have been receptive to improvements. New challenges and new funding needs are illustrated throughout the six modules of this report. **Table 6-B** below is only a sampling

Table 6-B -- EXAMPLES OF PERFORMANCE OBJECTIVES NEEDED	
Immediate	Increases in on-duty staffing
	Change in Compensation Schedule for part-time personnel
	Community Risk Assessment
	Strengthening of automatic aid
Short-range	Broader role in EMS response
	Application for grant-funding
	Plans underway for upgrades to fire stations
	Plans underway for new fire stations
Longer-range	Replacing aging aerial trucks and engines
	Actual Construction underway for new fire stations
	Pro-active community Safety Programs
	Adopting New Technology*

*New technology is already here and being adopted by many forward-thinking fire departments. See **Appendix 6-H** for a recent Pennsylvania article (Sept. 2022) on a \$400,000 Robot for firefighting and **Appendix 6-I** for a more comprehensive report on Robots Drones and New Machines

The ***Fire Chief's Handbook*** states that for planning to be effective, it must neither be done in a vacuum nor be rigid. Planning in a vacuum is planning without taking into consideration the needs of the community, its citizens, the members of the department, and the department itself. Effective planning would involve specific plans, for example, on how to use the new on-duty York Area United Fire and Rescue staffing for meaningful service improvements.

As the consultants studied York Area United Fire and Rescue, much effort toward service improvement was already underway. New ideas present an opportunity for input and a “buy-in” by YAUFR members, most of whom will embrace change, as long as it represents genuine improvement in service to the community.

We conclude this Module and this study with some guidelines which can serve as a blueprint for the future. This portion of **Module 6** will have the following sections:

- Overview of the Planning Process
- Three Key Ingredients of Planning
- Participatory Management
- Plan 2023

OVERVIEW OF THE PLANNING PROCESS

Implementation of improvements should be in accordance with a structured planning process if they are to be successful. The only way that YAUFR will be able to effectively meet the challenges of the future is to prepare, in advance, for needed changes and improvements. In a quality organization, planning is done on a daily basis, a weekly basis, a monthly basis, a yearly basis, and a multi-year basis.

An early version of the Fire Chief's Handbook provides concise directions on how to prepare for the future:

“Looking ahead and creating a scheme or method to attain a particular goal or objective is called *planning*. Before any endeavor can be launched, a plan of action must be developed. In the management arena, planning precedes the other management functions (PODC = Planning, Organizing, Directing and Controlling) since it is an integral part of each function.”

“Planning as a function of management affects every level of the organization, from first-line supervisors to top-level commanders. Properly prepared plans assure us of the most successful outcome of any activity, whether it be the daily duties of a firefighting unit or the long-range plans of an entire department.”

We noted a bit earlier how the Fire Chief's Handbook states that for planning to be effective, it must be flexible and transparent. Planning in a vacuum is planning without taking into consideration the needs of the community, its citizens, the members of the department, and the department itself. Effective planning would involve specific plans, for example, on how to use the new reorganization for meaningful improvements

The first way to begin planning is to start with a goal statement and then list the steps necessary to accomplish the goal. Plans can be long, intermediate, or short-range.

Short-range plans are the most specific and should contain the following information:

- List of tasks to be accomplished
- The people and/or units and their alternatives, that accomplish the tasks
- The resources that will be required, such as materials and equipment
- Time frames and deadlines
- Control and reporting systems

Intermediate plans will be less specific than short-range plans. Intermediate two to three-year plans must allow for changes in personnel, shortfalls in the budget, or changes in department philosophy.

Long-range plans of more than three years might be only a broad goal statement. As the time to begin implementing long-range planning nears, development of the plan becomes more and more specific. Component parts of long-range goals become short-range objectives. Common time frames are labeled as follows:

- Short-range ----- One Year
- Intermediate Range ----- 2 to 3 years
- Long-range ----- 4 to 20 years

Board members, Chief Dan Hoff and all of fire administration all have the same pro-active mentality and many of the forward-thinking officers have a similar management perspective. Many have made considerable progress toward necessary planning already. As part of the accreditation process, YAUFR approved a three-year strategic plan earlier in 2022.

Since YAUFR is at a pivotal point in terms of defining the future of its fire and EMS protection, it may be able to improve its planning with suggestions and techniques presented in this concluding section of **Module 6**.

Effective planning would involve Fire, EMS and Emergency Management, and balancing all of these primary components in an “Emergency Services Comprehensive Plan.” The flexibility of a plan lies in having alternatives or fallback solutions to problems that may arise after the fact. For example, well-intentioned environmentalists can suddenly change the types of equipment or materials we have become used to using. See **Appendix 6-J** for an article on new foam restrictions.

York Area United Fire and Rescue can best face up to a complex future with advanced planning. Often an organization that plans can mold the future in a positive way rather than have to accept what comes along.

We recommend that York Area United Fire and Rescue look ahead to future challenges. Based on the changing needs of the fire service, short-range, medium-range, and long-range plans can be formulated. Working within the York Area United Fire and Rescue framework, key personnel can ensure that they are addressing primary issues in advance, rather than reacting to them as they occur.

THREE KEY INGREDIENTS OF PLANNING

Regardless of the types of problems, complexity of the issues, or nature of the new challenges, the fire departments can always be assured that they will be ahead of the game, and be in a pro-active, rather than a reactive, stance if it involves itself in an objective based planning process. While many fire departments claim to plan, these planning efforts tend to be sporadic and at times non-productive because they lack one of the three primary ingredients, which include:

- **Participation**
- **Objectives**
- **Review**

All three will be especially necessary in York Area United Fire and Rescue. The reason each of these is important in the future planning process is that the absence of any one will virtually ensure inadequate planning, and will virtually assure that any planning process undertaken remains incomplete. The three components are described as follows:

1. Participation: This simply means that those most closely affected by future decisions should be involved in formulating the plan that will affect them directly. A participatory process ensures that many minds will be brought to bear on critical issues as they are discussed, anticipated, and planned for. Likewise, it will ensure that a “buy-in” will likely occur among key elements in the fire department, officers of all ranks, and rank-and-file members, if they helped formulate the plans.

Participatory planning, as a minimum, should include:

- YAUFR Board members
- Township Department Heads, or their representatives
- Fire Chief Dan Hoff
- Officers of all Ranks
- Line personnel
- Other Stakeholders

2. Objectives: The converting of ideas into objectives is accomplished simply by breaking these ideas into component pieces, by putting target dates on them, and by putting someone in charge of the achievement of these objectives. This is a break-through process, which takes “nice ideas” and converts them into achievable results.

3. Review: If a grandiose scheme of planning for the future is undertaken, and if key members participate in the formulation of meaningful objectives, there is no guarantee that anything will happen, or any goals will be met unless there is an accountability session, or review process where actual results are measured against the objectives set. This can occur quarterly, on an annual management plan, or yearly on a longer-range plan. Regardless, it is a key component of a planning process required to ensure accountability.

PARTICIPATORY MANAGEMENT

While it could be argued that participatory management could undermine the authority of the administrative leaders, studies by this Consultant have indicated that just the opposite will occur. Now and continuing into the future, employees are far less willing to follow blind allegiance and are far more desirous of contributing to managerial decision-making. In a lengthy series of interviews while serving many clients, the consultant found devotion to fire departments and a genuine desire to contribute meaningful input.

Management philosophers have pointed out that there are two types of authority that administrative leaders, such as fire chiefs and fire officers, possess as follows:

1. Position Authority
2. Acceptance Authority

The first type of authority is that which comes with the bestowing of a title, the awarding of additional bugles on the collar, and the painting of titles on the office doors. There is a certain authority that goes with an administrative office of authority such as that of “Fire Chief”, “Shift-Commander”, “Fire Captain”, etc., but this is only part of the authority needed to be a manager.

Effective leaders must also have “acceptance authority.” That means that they must be respected and accepted by the rank and file before their leadership is effective. The simple bestowing of a title or rank is no longer sufficient. Based on this premise, a Fire Chief who allows, in good faith, his or her subordinates to contribute to decision-making or planning will gain this critical “acceptance” factor and will, in fact, strengthen his or her authority base.

A simple mathematical equation will show how participatory management can actually strengthen a chief officer’s authority:

$$\mathbf{TA = PA + AA}$$

Total Authority = Position Authority + Acceptance Authority

If a leader allows subordinates to contribute to the planning or decision-making process for the organization, the right-hand component of this equation AA (Acceptance Authority) increases. If that is the case, simple algebra will show that that because the right-hand side of the equation increases, the left-hand, TA (Total Authority) factor increases accordingly. Hence, one of the keystone principles in planning is participation by the members of the organization who are affected by the planning process.

PLAN 2023 EXAMPLE:

Let's consider a plan used annually in Deerfield Township, Warren County, OH since the early 2000's. A list of objectives is established in a participatory fashion and the consultants recommend that YAUFR examine this tracking system in case it can improve planning.

In October each year, the Fire Chief of the Deerfield Township Fire Department, in a practice begun three chiefs ago, has three consecutive retreat sessions where all members of the fire departments are invited to contribute ideas, suggestions, and recommended goals for the fire department. All of the grass roots input from these three retreat sessions are collected, and massaged by the staff of chief officers in this department. From this, key objectives are established for the coming year. Back in 2004, 27 Objectives were identified. They are listed on the goal chart shown on the next page. Every year a new set of goals and a new chart is produced.

This year a "Master Plan 2023" includes goals that were broken down into component parts, some with their first components dating back to 2012. Time lines are established and individuals who are responsible for their achievement are identified. While the nature and types of objectives will vary from one fire department to another, this process, which holds persons responsible and pegs their actions to target dates, is virtually assured of achieving progress toward the desired goals.

Figure 6-2 on the next page shows the actual Gantt Chart used by Deerfield Township in 2004, with similar charts used every year since. This is used to track the progress of objectives. And works well in setting goals, establishing deadlines, and letting take-charge people make progress. The color-coding scheme is as follows:

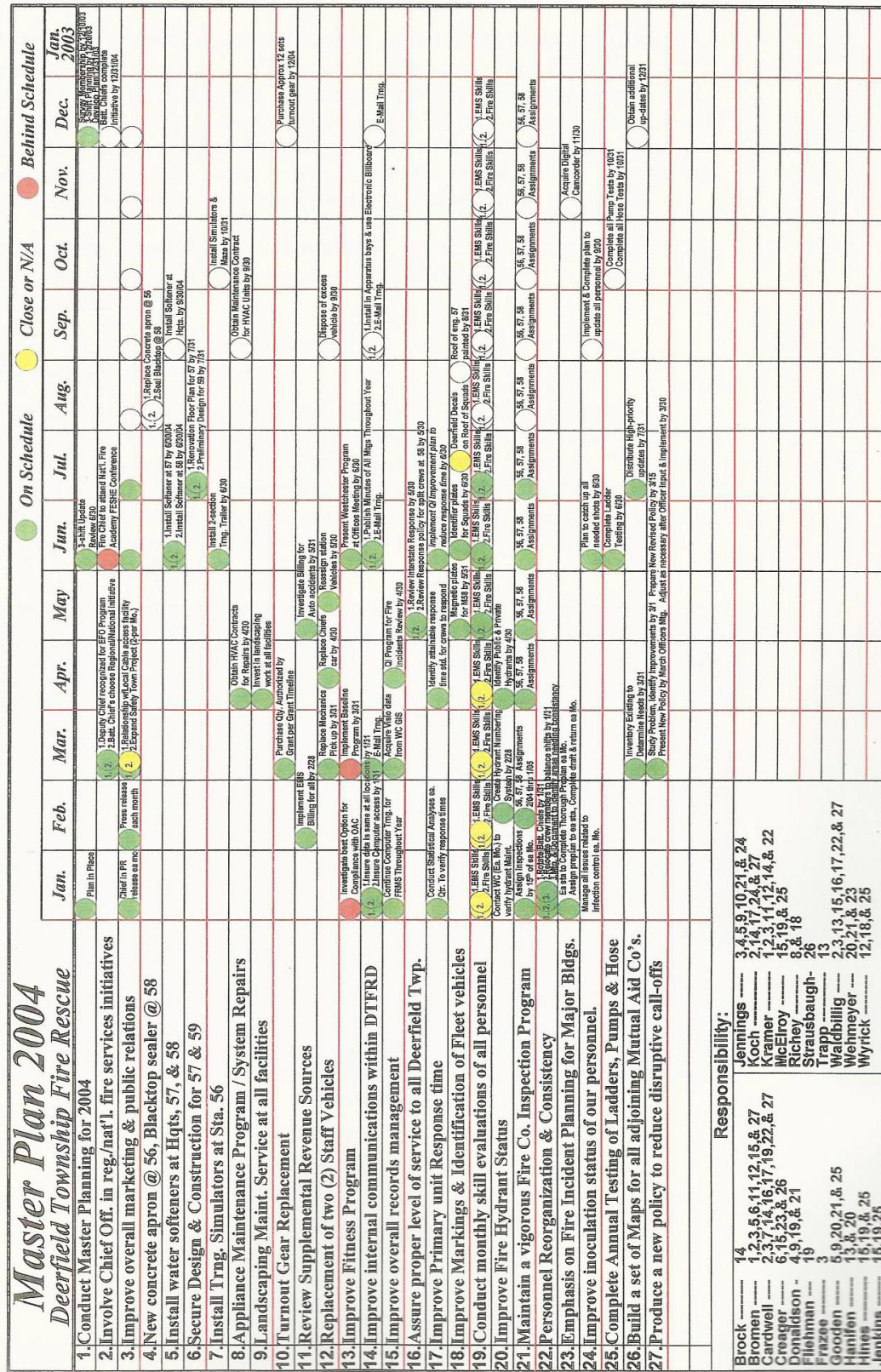
1. Red – Behind schedule
2. Yellow – Close or not applicable
3. Green – On schedule

As the chart shows, most of these ambitious fire departments goals were achieved in 2004. They continue to be achieved every year since and this department has achieved a reputation for excellence throughout the Greater Cincinnati area. One can only speculate about how many of these positive achievements would not have materialized in the absence of the annual plan, mapped out in advance. Peer pressure and healthy competition help achieve results.

One of the most ambitious plans and one with great lifesaving potential involves installation of smoke alarms in all dwellings in a fire jurisdiction. Even if successful, sometimes tragic fires occur only to find missing or spent batteries in a smoke alarm which could have saved a life.

NEXT PAGE: Figure 6-2 -- Master Plan Status Chart Example

Figure 6-2 – 18 -year old Gantt Chart – Still Useful planning tool



The 2004 chart version has been replaced with a modern-day electronic version which still maintains the concept of deadlines and persons accountable for goal achievement.

While Plan 2004 shown has survived in various forms through time and is now Plan 2022 it continues to serve as an annual plan. Several of the objectives contain component parts of a multi-year plan. The objectives address topics like adding new fire stations, a goal which will take several years to fund, plan and construct. While this was a longer-range objective, the first steps were scheduled in the year 2006 plan, and the next phases were planned in 2007 through 2010. The Department has now successfully added two new stations and remodeled two older ones. In this way, longer-range goals and objectives designed to meet future needs over a multi-year period can be incorporated into an annual plan by including components of the longer-range objectives.

At times various specialists can be brought into the planning process and are quite willing to add their expertise. If planning is to be done to improve the mutual aid, automatic aid, or RIT (Rapid Intervention Team) programs, for example, maybe key players from the mutual aid network would attend a meeting to gain accuracy in discussion and dialogue.

York Area United Fire and Rescue might find the planning suggestions and techniques presented in this section helpful.:

- Personnel incentives
- Improved duty-crew response
- Preparation for additional on-duty personnel
- Apparatus replacement
- Intra-department meetings and training sessions
- New or revised General Orders
- Improved EMS Coverage
- New Technical Rescue Training

Most of the objectives in an annual plan should be formulated by top management in York Area United Fire and Rescue, working in conjunction with Township officials, through the Board. They ideally include input from Fire Department Membership.



MODULE 6 CONCLUSION

A consultant is usually no more intelligent than the client that he or she is serving, but can bring objectivity and non-bias to a jurisdiction that can be quite valuable. It is hoped that these six Modules will provide information that can be used by York Area United Fire and Rescue officials to create Fire, EMS and Rescue operations commensurate with increasing demands, and quality service which residents and businesses of York Area United Fire and Rescue deserve. The district deserves credit for seeking a neutral opinion regarding the Fire Department and EMS Operations since these are among the most vital and expensive of governmental services.

York Area United Fire and Rescue can be proud of the fine fire and rescue personnel which have served the community for years. YAUFR Board Members and Chief Dan Hoff are commended for their efforts in planning for strong forces and adequate coverage.

The consulting team agrees that York Area United Fire and Rescue is at an opportune time in its history when it will profit by planning and preparing for an expanded service and a improved future. The economy presents new financial challenges and opportunities but the good stewardship of funds found by York Area United Fire and Rescue should help to ensure that future expenditures will be reasonable and sound.

The firm of **Kramer and Associates** has been asked to review fire protection and EMS service in communities of many different sizes and in many diverse geographical locations. It can be said that the fire and rescue protection in York Area United Fire and Rescue ranks well when compared with that provided in similar-sized jurisdictions.

Nothing really will happen with the information in these six modules, however, unless there is follow-up action to initiate the key components deemed advisable. Hence it is our strong recommendation that while the contents of this report are fresh, and are being discussed by the key stakeholders, that leadership act to commission an implementation task force, charged with the responsibility to prioritize and move forward with recommendations.



APPENDIX 6-A

YAUFR ROSTER



YAUFR SPRING GARDEN AND SPRINGGETTSBURY PERSONNEL ROSTER - 2022

	Name		ID#	YAUFR Hire Date	Original Hire Date	SHIFT	RANK
1	Arnold	Matthew	90036	6/4/2016	8/28/2008		BC
2	Einsig	Lisa	90046	10/24/2011			AD
3	Graham	Brett	90050	2/9/2019	7/24/2012	B	BC
4	Hoff	Daniel	90016	11/16/2009			Chief
5	Madzellan	Joseph	90069	12/23/2017	12/15/2003		BC
6	Russ	Matthew	90108	8/21/2021	8/18/2008	A	BC
7	Noel	Laurie	90089	3/23/2018			AD
8	Ryno	Scott	90091	4/21/2018			PT-BC
9	Wolfgang	Curvin	90104	1/11/2020	2/19/2008	C	BC
10	Banks	Brandon	90065	3/10/2018	4/19/2017	C	FF
11	Beaver	Clyde	90005	9/5/1999		A	FF
12	Bosserman	Ryan	90098	2/23/2019		A	FF
13	Cosner	Lyle	90009	11/6/2000		C	FF
14	Davis	Nicholas	90113	8/8/2022		B	FF
15	Eckert	Aaron	90010	3/6/2007		C	FF
16	Freet	Michael	90012	8/21/2000		B	CAPT.
17	Fronheiser	Grant	90013	8/28/2001		A	FF
18	Harlackner	Craig	90014	3/17/2007		B	FF
19	Kane	David	90018	8/15/2005		B	FF
20	Kauffman	Michael	90063	10/7/2016			PT-FF
21	Keough	Kevin	90019	8/28/2001		A	FF
22	Krout	Kevin	90022	3/12/2001		C	CAPT.
23	Lacognata	Vincent	90090	1/12/2019	3/28/2018	A	FF
24	Lenker	Justin	90109	10/18/2021			PT-FF
25	Lockett	Gerell	90092	5/25/2018			PT-FF
26	McCullough	Chad	90052	8/5/2013		A	FF
27	Mooney	Patrick	90044	6/10/2013		A	CAPT.
28	Morin	Edward	90026	6/4/2007		B	FF
29	Pennington	Andrew	90100	6/1/2019		C	FF
30	Poole	Jared	90110	7/1/2022	10/19/2021		FF
31	Poole	Justin	90101	1/11/2020	6/1/2019	B	FF
32	Potter	Adam	90099	4/20/2019		B	FF
33	Raber	Ross	90054	3/23/2017	9/2/2013	A	FF

34	Rhoads	G. Lester	90029	1/1/2005		C	FF
35	Ryan	Dylan	90112	2/24/2022			PT-FF
36	Serikstad	Nicholas	90093	6/16/2018		A	FF
37	Shearer	Kristopher	90048	3/5/2012	2/6/2012	B	CAPT.
38	Stiffler	Cody	90053	3/26/2016	8/27/2013	B	FF
39	Stoppard	Joseph	90032	3/15/1993		C	FF
40	Stroble	Gerald	90033	9/3/2002		C	CAPT.
41	Ulsh	Matthew	90103	1/11/2020			PT-FF
42	Willcox	Nicholas	90058	6/18/2016	7/1/2015	C	FF
43	Wirth	Frank	90095	6/16/2018		C	FF
44	Yahnke-Schrum	Julie	90038	3/8/2010		B	FF

APPENDIX 6-B

High-angle vs. Low-angle Rope Rescue



Source: Protocol Rescue

What's the Difference Between High Angle & Low Angle Rescue?

Rope access is used in a variety of [industrial, commercial and rescue](#) situations. When it comes to rescue scenarios, the higher the angle, the more challenging and technical the rescue becomes. This is because at higher angles, more weight is dependent on the rope setup. At lower angles, at most or all of the rescuer and victim's weight are supported by the ground which, in most situations, are stable.

Here are the three categories of rope rescues based on their angle, and the differences between each approach.



Low angle rope rescue

A rescue situation that involves angles of up to about 15-35 degrees is considered low angle. In these scenarios, most of the rescuer's weight is supported by the ground and rope is only used for balance or assistance with the rescue.

Common examples of low angle situations are car accidents when the vehicle has gone down the side of the road, or someone falling over a slight ridge or incline such as down a ravine.

Many emergency personnel, such as firefighters, have some kind of low-angle rescue training because it's more commonly encountered and is less specialized than steep angle and high angle rope rescues.

Steep angle rope rescue

Rescues at 35-60 degrees are considered steep angle rescues. In this situation, the weight of the rescuer and victim are distributed relatively evenly between the ground and ropes.

These rescues can actually be a higher risker than a low angle rescue because more weight may be placed on objects around the setup, such as on rocks. Rescuers are also fully dependent on the rope system for upward travel because of how much higher the angle is compared to a low-angle rescue.

High angle rope rescue

High angle rescue is considered to be terrain that has a slope angle of 60 degrees and higher. Examples of industrial work hazards that may require high angle rope rescue are wind turbines, towers, pipe cracks, ledges and tanks.

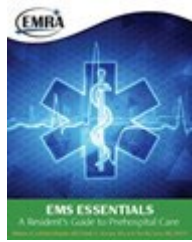
In this type of rescue, rescuers are totally dependent upon the ropes for accessing and exiting the rescue. Since most of the rescuer's and victim's weight is handled by ropes, errors in setting up the rope system could be catastrophic or fatal.

Rescue technicians who perform high angle rope rescue require more [specialized rope training](#) than specialists performing low-angle rescues because since there is more risk of an accident due to judgement errors.

APPENDIX 6-C

Water Rescue





EMRA EMS Essentials

: Water Rescue

Water rescue is any incident that involves the removal of victims from any body of water other than a swimming pool. Floods are the most common of all natural disasters and generally cause greater mortality than any other natural hazard.

Hazards Associated with Water Rescue

- Human nature: The “need to do something now” can prompt people to make rescue attempts without proper training or equipment.
- Environmental: Hazards can involve extreme temperatures; cold affects ability to think clearly and hampers fine motor skills; heat exhaustion and dehydration are a concern as well.
- Weather: Accelerates hypothermia. In still water body heat is lost 25 times faster than in air at the same temperature.
- Aquatic environment: Be aware of animal life, fish, insects, plant life, seaweed, biohazards, bacterial, and viral risks.
- Dive option hazards: These include barotrauma, decompression sickness, nitrogen narcosis, oxygen toxicity, embolism, fatigue, loss of air, anxiety reactions.
- Ice operation hazards: Cold injuries such as frostbite or hypothermia; thin ice with sudden immersion reflex or entrapment under ice.
- Swift water operation hazards: Strainers and debris, holes, obstructions above or below the water surface.

Safety of a Rescuer – “Throw, Don’t Go”

Jumping in the water to rescue a victim is the last resort. Avoid getting into a dangerous situation. Your safety is priority.

Water Rescue PPE

Wet suits/dry suits/exposure suits Thermal protection

PFDs include a whistle, knife, strobe light, or light stick worn by all personnel in or near water or on a boat

Lifelines, helmet, gloves

Rescue Plan of Action & Methods

First unit on scene sizes up the situation and determines the number and condition of patients. If rescue is deemed necessary, consider the need for additional personnel and equipment.

Secure the immediate area to prevent an increase of victims.

Assess hazards, location, and number of victims. Before commencing extraction, yell clear and simple instructions to the victim. Ensure firm footing and remember the victim is in duress and may pull rescuers into the water.

REACH

Step 1: Reach with an outstretched arm, leg, or other tool (long stick/scarf/clothes) from a crouched or lying position.

- DO NOT enter water any deeper than knee deep, unless tethered.

WADE

Step 2: Test the depth with a long stick before wading in and then use the stick to reach out. Hold on to someone else or the bank.

THROW

Step 3: Throw rope bags, life rings, and floats - anything that will float (this is only effective when the subject is cooperative)

ROW

Step 4: Use a boat if you can use it safely. Do not try to pull the person on board in case they panic and capsize the boat.

Continuously monitor situations that could adversely affect the rescue, such as a rise in water, top loads, suspended loads, or shifting of rescue vehicle.

Once the victim has been removed to a safe area, medical personnel should be on scene to evaluate and transport to the hospital if necessary.

APPENDIX 6-D

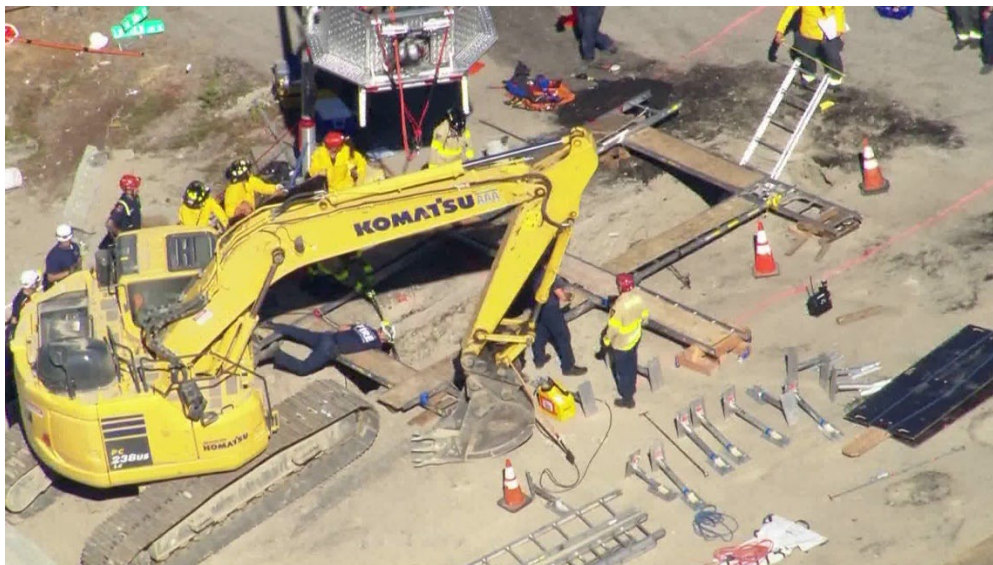
Trench Rescue



Renton Washington 9-8-22

Renton trench collapse happens amid rise in incidents nationwide

The Occupational Safety and Health Administration says 22 fatalities in trenching and excavation were reported in first half of 2022, compared to 15 in all of 2021.



Author: Erica Zucco

Published: 4:41 PM PDT September 8, 2022

RENTON, Wash. — The Washington State Department of Labor & Industries (L&I) is investigating what led to a worker being killed when a trench collapsed near [38th and Lincoln in Renton](#) on Wednesday.

Fire crews said dry soil was more susceptible to sloughing off and caving in. Though there was a trench box on site, not all areas were protected.

L&I said its investigation will take time.

"We look at a number of different things, from the type of soil they were working in, what protections they had in place, whether those were up to the requirements that we have for trenching worksites, and all of that type of thing. So, it can take some time to get those done, anywhere from a few months to six months," public affairs manager Matt Ross said. "Especially in a fatality inspection where a worker death is involved, we really want to make sure we take our time and are getting that right."

It comes around two months after two workers were killed in a [trench collapse at a Shoreline home](#) while fixing a fractured sewer line when a topside dirt pile caved in.

Both incidents were part of a nationwide trend. The [Occupational Safety and Health Administration says](#) in the first six months of 2022, 22 workers died in trenching and excavation work -- compared with 15 in all of 2021. The agency said it would ramp up enforcement in response.

Earlier this year, a [Washington construction company's owner was sentenced](#) to jail for the death of one of his workers who died when a trench collapsed at a site in West Seattle in 2016. In that case, an L&I investigation found the company "knowingly ignored basic, common-sense safety rules." "We do have oversight into construction sites where trenching is happening," Ross said. "We have a very specific set of rules in place that cover what requirements companies need to have when they're doing any sort of trenching work."

L&I conducts pop-up inspections across the state on all types of work sites, including those where trenching is happening. It also responds to complaints by workers and witnesses.

"To keep Washington safe and working. It's our goal that every worker should go home safe at the end of the day and your life shouldn't be at risk just to earn a paycheck," Ross said. "It's terrible to see another tragedy like this so soon after the last one, just a couple months ago where two workers died in Shoreline, and on the heels of a national focus to limit these deaths that are happening in trenches."

7 essentials to better trench rescues:

Part 1

with Dalan Zartman

Use this approach to make your trench rescue team safer, faster and more effective

Nov 11, 2013

The prevailing question of trench rescue is: How do we do it faster and safer?

Trench rescues have very high morbidity rates because the forces imposed on the victims through soil weight are unforgiving. The window of opportunity to enter the trench and relieve that pressure is very small.

Additionally, the likelihood of further engulfment or secondary collapse poses such a significant risk to rescuers that we have to establish engineered systems that will truly protect us.

Knowing the hazards of the confined-space environment will help make an incident action plan. With this being the driving mechanism, I am a firm believer that the approach and layout for trench rescue makes all the difference in the world.

We were indoctrinated into the "technical rescue" way of performing trench rescue until we were exposed to some industrial theories and techniques that were shared with us by Dennis Hobart of Baker Corp.

There are seven essentials that emerge through blending these industrial concepts with technical rescue concepts that will radically impact the speed, safety and efficiency of a trench rescue operations.

1. Consider removing the bottom of the pop sickle stick or strong back so that it is flush with the bottom edge of the trench panel.
2. Acquire a significant cache of bridging, preferably corrugated aluminum or steel, to frame out the trench.
3. Increase the cribbing cache to support the bridging with remote contact points.
4. Use bridging material as slides when placing trench panels.
5. Acquire low-pressure trench bags for slough operations and trench wall deviations.
6. Stop using timber and mechanical shoring. Pneumatics and hydraulics provide a wide array of solutions that will fit a variety of budgets and are remarkably faster and more effective.
7. Use techniques and tools that completely shore the trench from the topside.

These seven essentials require training and resources but yield tremendous returns. In this article we will discuss essentials one through four. Essentials five through seven will be discussed next month.

Strongback augmentation

Trench panels should include a center strong back. Some applications used around the world apply spot-

shoring techniques or panel designs without a strong back. Engineering and testing data shows that these options will fail at much lower forces than panels engineered with strong backs.

Most panels are designed with strong backs (2 x 12 feet) that extend above and below the 4- x 8-foot panel by 12 to 24 inches and are fastened to the panel with recessed, engineered carriage bolts. The downside of this design is the bottom 12 to 24 inches of the trench wall is left untouched and ultimately not shored.

This is particularly evident when a slough zone is being back filled with soil and the soil continuously spills out at the bottom of the panel. The advantage of this design is that the strong back acts as a pivot point when placing the panel and facilitates manipulation of the panel during setting operations.

The proposed essential removes the lower section of the strong back providing complete coverage of the trench wall. The advantage is a safer trench.

This holds particularly true in trenches with standing water and propensities for bell pier collapses where the lower portion of the trench is a grave concern. The disadvantage of this design is the loss of a center pivot point, which can make manipulating the panel during setting operations more difficult.

Bridging and framing

Traditional approaches to trench rescue use bridging to span the trench or slough zones. Industrial applications often eliminate ground pads in lieu of bridging because it requires less material and is more versatile.

Framing out a trench is a relatively common practice on the industrial side. This is relatively unheard in technical-rescue circles where bridging is typically dimensional timber that is of adequate width to stand on and perform work (2 x 10 or 2 x 12).

The industrial side uses corrugated lightweight steel that is 16-inches wide and comes in lengths ranging from 4 to 20 feet. These bridging elements should be built up on the ends with cribbing so that the material is stable and does not contact the immediate soil surface around the trench.

Timber bridging bows excessively under lateral loading compared with corrugated metal. It also cannot be interlocked effectively, whereas the corrugated material can be married flange to flange to create greater width platforms that are stable and relatively rigid.

The proposed application follows a very systematic approach to the trench.

Step one

Approach the side of the trench where the victim is located and place three ground pads with the 4-foot edge at the trench lip. The center ground pad should be where the victim is located.

This creates a spacing template for a six-panel set and maximizes the distance from the trench for the initial placement of load-distribution material.

Once these three ground pads are established, place the rest of the ground pads to cover the work zone. Advance bridging material across the trench at each end of the 16-foot zone identifiable by the ground pad placement. This bridging should be long enough to extend at least 4 feet past the walls and lips of the trench.

Step two

Orient additional bridging parallel to the trench walls and place it on top of the perpendicular bridging already in place. Advance it until it is positioned above each trench wall so that is vertically in line with the bottom line or joint of the trench floor and wall.

This accomplishes two things. It creates a straight edge for clean horizontal and vertical placement of panels and it establishes a working platform for all of the personnel working near the lip of the trench.

When the parallel bridging rides on top of the perpendicular bridging, a slough or failure of a wall section will not result in personnel spilling into the trench. They will all be left standing on top of the bridging.

The disadvantages of this essential are the requirements for more resources and training. This also may sound more time consuming. However, a trained crew can accomplish this in less than 5 minutes.

Cribbing contact points

Place cribbing layers under the bridging joints and ends to create platforms that have limited contact with the surface soil. This limits the surface loading and greatly reduces the likelihood of point loading causing secondary collapse.

By increasing the working height of these platforms, more advanced applications are also facilitated. For example, intersecting trenches such as “L” trenches that have unstable interior corners can be spanned in a variety of ways that still allow panels to be placed or slid underneath the bridging.

Another example is advancing low-pressure airbags and hoses under the parallel working bridges. Gaps between the bridging and ground allow these placements to be done with ease. Wedge packs should also be a part of this cache to fill those necessary voids and make the platforms as stable as possible. Panel slides

Using bridging material as slides for the panels will help ensure that the panels are placed safely, accurately and with ease. The first set of panels should go where the victim is presumed to be.

Place two slides into the trench that will capture the opposite side wall and floor joint and progress up to the near side wall and lip. These slides should extend above the trench lip. Use a 16-foot slide for an 8-foot-deep trench.

Place two rescuers on each side of the trench panel and one rescuer on the strong back. This panel should be oriented strong back down. All three rescuers should pick up the panel and advance it to the slides.

Have the slides spread apart just enough to accommodate the width of the strong back. Place the panel on the slides and lift the strong back while the two side rescuers control the descent of the sliding panel with the panel ropes. The panel should slide down and make optimal contact with the lower corner.

Establish a receiving crew on the far side of the trench and direct the panel into a vertical position by pushing the slides and panel to the far side crew. Once the panel is in position, the far-side crew pulls the top of the slides towards them, which redirects the bottom side of the slides to the near side lower corner.

The near side crew then picks up the second panel in the same fashion but the strong back is now oriented up. Advance the panel across the parallel bridging until the bottom edge of the panel contacts the slides. Control the descent with ropes. The panel should come to rest in the near side wall and floor corner.

Predictable performance

By simply shifting the slides back and forth across the trench and maintaining a width gap just adequate for the strong back, both panels should end up directly across from one another. The use of the top side frame work should result in vertical panels.

This is imperative for shoring to perform in a predictable fashion. There is a very limited allowance for deflection in shores both vertically and horizontally. Shoring that is not engineered correctly will fail catastrophically under load.

Additionally, losing a panel while placing it is an extremely heavy edge impacting the victim, causing significant injury if not death. Slides establish bridges above the victim, which prevent this type of mistake.

Slides also create ideal floor and wall marriages. This help reduce bowing of the strong backs and inaccurate measurements or inability to drop shores in.

Watch the video to fully understand these essentials, and then put them to the test. Take your trench team out and see if these don't increase the speed, safety and efficiency of your operation. I'd love to hear how this impacts your approach to trench rescue.

About the author



Dalan Zartman is a technical-rescue curriculum subject-matter expert for the Ohio Emergency Management Agency and Department of Homeland Security. He has also taught more than 100 technical-rescue courses at Bowling Green State University, where he serves as regional training program director and advisory board



member. Zartman is a member of and instructor for the Central Ohio Strike Team and the Washington Township Fire Department. He is a certified rescue instructor, rescue technician level II, fire instructor II, firefighter and EMT. Zartman is founder and president of [Rescue Methods](http://RescueMethods.com). You can reach him at Dalan.Zartman@FireRescue1.com

APPENDIX 6-E

Confined Space Rescue



CONFINED SPACE RESCUE

From Wikipedia, the free encyclopedia

Confined space rescue is a subset of [technical rescue](#) operations that involves the rescue and recovery of victims trapped in a [confined space](#) or in a place only accessible through confined spaces, such as underground [vaults](#), [storage silos](#), [storage tanks](#), or [sewers](#).



Left: A warning label on a storage tank, indicating that it is a confined space.

Confined space rescues can be technically challenging due to the environment in which they occur. Confined spaces are often narrow and constricting, preventing easy access by rescuers. They are usually either unlit or poorly lit, so rescuers must provide their own light source. Finally, confined spaces often contain [hazardous materials](#) in [liquid](#) or [gas](#) form which can be harmful or fatal to humans.

These hazards can be fatal as they create a limited [window](#) in which to perform a rescue. The general rule is that after four minutes without [oxygen](#), a person in a confined space will likely suffer [asphyxia](#) resulting in either [brain damage](#) or [death](#).^[1] The urgent need to rescue someone from a confined space often leads to ill-prepared rescue attempts. Two-thirds of all of deaths occurring in confined spaces are attributed to persons attempting to rescue someone else.^[1]

There are three categories of confined space rescue: self rescue, non-entry rescue and entry rescue.^[2]

Self rescue

In a self-rescue, much as the name suggests, the individual recognizes a critical condition or symptoms of exposure and exits the space on his or her own. Alternatively, an entry monitor, who is outside of the space, may recognize a new hazard and order individuals to leave the space before they are affected. This is the preferred rescue

method as confined space hazards can quickly incapacitate or kill an individual. An individual can almost always exit a confined space in far less time than it takes to wait for someone to come in and retrieve them.^[1]

Non-entry rescue]

A non-entry rescue involves attempting to extricate an incapacitated person without having anyone else enter the confined space.^[1] This can be done via a safety line attached to the personnel in the confined space or by grabbing the personnel with a [rope](#), strap or pole and pulling them to safety. ^[2]

Military and police personnel practicing confined space rescue techniques.

Less commonly, a non-entry rescue may be performed by passing equipment or tools to the incapacitated person, which because of the nature of the confined space, only they can effectively use.



Entry rescue

This is a last resort option as having more personnel enter an area that has already incapacitated one or more persons places the rescuer at considerable risk. Entry rescues must be carefully planned and executed to avoid creating more victims in need of rescue. Rescuers need to be aware of their surroundings and must reevaluate their plans immediately if there is any change in the conditions of the confined space.^[1]

In the event of an entry rescue, standby rescuers are recommended in the event that the initial entry rescuer(s) encounter trouble.^[1]

Rescue equipment

Due to the unique nature of confined space rescues, there is specialized equipment necessary to perform a safe and successful rescue.

One of the initial pieces of equipment employed in a confined space is a [method of ventilation](#) to disperse collected hazardous gases and introduce fresh [air](#) into the environment.

A wristlet is often the first item used to actually perform the rescue, as opposed to the ventilator which is used to prepare the environment for a rescue. A wristlet is a cloth strap that is used to [cinch](#) tightly around the wrist or ankle of an incapacitated person. Once the strap is looped around a hand or foot, its attached rope is pulled by rescuers, tightening around the arm or leg and pulling the victim out of the confined space.

In the event that an entry rescue must be performed, rescue personnel will wear [protective clothing](#) appropriate for the situation. This may include a [self contained breathing apparatus](#) (SCBA), protective headgear and the use of [explosion proof](#) lighting (to prevent [igniting](#) any gases). The rescuer may also wear a full body [harness](#) with an

attached safety line, especially if a vertical descent is required.^[1] To assist in vertical descents, a [mechanical winch](#) and tripod may be set up over the access point, if the bottom of the confined space is more than five feet from the entrance.^[1]

The rescuers may also carry monitoring equipment by which they can ascertain the quality of the air in the environment. Even if the [air quality](#) reading does not indicate any hazardous conditions, it is still recommended that rescuers wear SCBA.^[1]

Rescue training

Agencies that oversee [workplace safety](#) require that persons qualified for confined space rescue operations complete rescue training and exercises annually, at the least, and recommend more frequent training.

Numerous agencies in the United States have facilities for technical rescue training and often have a confined space training area.

In the [USA](#), confined space rescue is covered under the [National Fire Protection Association](#) (NFPA) 1670, and under 29 CFR 1910.146 and 29 CFR 1910.147, and must follow [Occupational Safety and Health Administration](#) standards or heavy fines will be levied upon the company that violates their regulation and injury occurs in the workplace. Others are often is managed according to the [Incident Command System](#).

In the UK confined space is governed under by HSE (Health and Safety Executive), which states that those entering a confined space cannot rely on 999 for rescue.^[3]

In Canada, The Oil Sands Safety Association has a certification program for Confined Space Entry and Monitor. <http://www.misafety.ca/safety-training-edmonton-devon/ossa-confined-space-edmonton>

APPENDIX 6-F

Lasting Smoke Alarm Batteries



No more changing smoke detector batteries under Linden lawmaker's plan

Michigan would only allow smoke detectors with a sealed 6-year battery to be sold by 2022 under a plan being discussed in Lansing.

By ABC12 News Team |

Posted: Tue 2:26 PM, Mar 03, 2020

LANSING (WJRT) (3/3/2020) - A Linden lawmaker wants to remove human error from smoke detectors with a new plan to sell only sealed battery models in Michigan by 2020.



Republican State Rep. Mike Mueller testified in support of the plan before a State House committee on Tuesday. He hopes the sealed smoke detectors help save lives because they don't require batteries.

Michigan ranked third-worst in the United States with 139 fire deaths in 2018 and 102 deaths in 2019. Firefighters found that 3 of 5 fire deaths from 2012 to 2016 occurred in homes with no working smoke alarms. Of the homes with nonworking smoke detectors, 92% did not function because the batteries were missing, disconnection, dead or discharged, Mueller said.

"With my background in public safety, I've seen the devastating effects a house fire can have on a family," said Mueller, a retired sheriff's deputy. "We need to do everything we can to make sure residents have working smoke alarms in their homes, so they can escape with their lives if a fire occurs."

House Bill 5407 would require all smoke detectors sold in Michigan by 2022 to have sealed batteries with a 6-year lifespan or be hooked to another power source besides removable batteries.

"The firefighters I worked closely with found that often – especially around the holidays – families would need a battery and take one out of their fire alarm. Then they'd forget to replace it," Mueller said. "The new, tamper-resistant alarms ensure fire safety remains top priority because no one can remove the batteries."

While the sealed battery smoke detectors can cost more to purchase, Mueller said homeowners save money with them by not replacing the batteries.

"Since the alarm's battery does not need to be replaced twice per year, homeowners could save between \$40 and \$60 in battery replacement costs over the life of the alarm," he said.

Thirteen other states and several large cities already require sealed battery smoke detectors. The bill remains up for discussion in the House Regulatory Reform Committee.

APPENDIX 6-G

Rescue Equipment for Kids Trapped in Hot Cars



De Pere Firefighters buy special equipment to rescue kids trapped in hot cars

By [Sarah Thomsen](#) **Jul. 27, 2021**

DE PERE, Wis. (WBAY) - By this time of the summer, nearly every year, many fire and police departments start receiving panicked calls from people about children or pets trapped inside hot cars.

It's enough of a concern one local fire department actually purchased new equipment to help reach victims faster and safer.

Whether it's a day that makes you beg for air conditioning, or it's just a beauty from mother nature, it's not always the temperature *outside* that's a concern for firefighters.

"The statistics show the outside temperature can be as low as 57 degrees out, which isn't very warm, and the car can heat up enough if a child is left alone in there," says De Pere Fire/Rescue Assistant Chief of Training and Safety Eric Johnson. He has been on the calls.

He's seen parents frantic because their child got locked inside a car, or a dog somehow hit the lock button. Nationwide, in 2019, Johnson says 53 children died after being stuck inside hot cars.

Thankfully, no children locally have died, but Johnson says firefighters have seen heat stroke or other complications, like organ damage, from children getting too hot.

"The problem with young children is their bodies rise three to five times more, because of their little stature than an adult, so they heat up faster and get overheated quicker," explains Johnson.

He says on an 80-degree day, temperatures can reach deadly levels in less than 10 minutes. By the time rescue crews get there, Johnson calls it a 'dire emergency,' leaving them no choice but to break a window.

"When we get the call, time has already ticked away," he says. "Parents are scrambling to find a way to open up the car. When we finally get on scene, we're in panic mode. We're already behind the power curve when we get called."

So last summer, De Pere Fire/Rescue went searching for a solution. Firefighters found a special tool designed specifically for emergency crews to open a locked door or window in seconds, but without breaking it.

De Pere now has three such tools, all ready to use, but firefighters hope they're never needed. Johnson says cracking a window in hot weather just doesn't cut it. Better yet, take kids into the store with you, he advises.

To keep kids from accidentally locking themselves in a car while playing, he suggests always leaving cars locked at home.

"Especially if you're going out of town, you don't think of it, but take both sets of keys with you so if one gets locked in there, you still have a backup set to unlock the car quickly," he adds.

APPENDIX 6-H

\$400,000 Robot For Firefighting





Firefighting robot demonstration in Lackawanna County

Firefighters gathered Tuesday night in Moosic to see what the machine can do. Newswatch 16's Jack Culkin spoke to them about the benefits the robot would bring.



Author: Jack Culkin

September 20, 2022

MOOSIC, Pa. — You expect to find firefighters at a fire department. But what you may not expect to find is a firefighting robot like the one on display at the Greenwood Fire Department in Moosic. It's called the Super Vac TAF 35

Mobile Firefighting Robot. It's remote-controlled and can pour 1,200 gallons of water a minute on a fire.

"The video surveillance that it has on it also has thermal imaging, so it could help for looking for occupants in the building or looking for hotspots of the fire. right here in Moosic, we are looking at starting just over a million square foot warehouse, so that's a lot of ground to cover," said Buddy Miller, Greenwood Fire Department.

"Sending an unmanned unit in, in the event of a potential collapse hazard, it allows you to get into the deep seed of a fire without endangering some of your firefighter lives," said Dana Shaffer, SuperVac Manufacturing.

Shaffer, who is a salesman for the company, offered to demonstrate the mobile firefighting robot in Moosic. And the chief at Greenwood invited firefighters from other departments in the area to see how it works.

"There's 51 of them in the world currently. This is the first one across the pond in the U.S." said Shaffer. They saw how it can move across a grassy area and shoot a stream of water from some 75 yards away.

A machine like this may look difficult to drive at first, but just give it a couple of minutes, and anyone can learn how to operate it. Even kids had a go at working the controls. The mobile firefighting robot costs around \$400,000.

"We all wanna go home. At the end of the day, everybody wants to go home safely, so yeah, it's worth the price. It's just a lot of fundraising if we want something like this," said Miller.

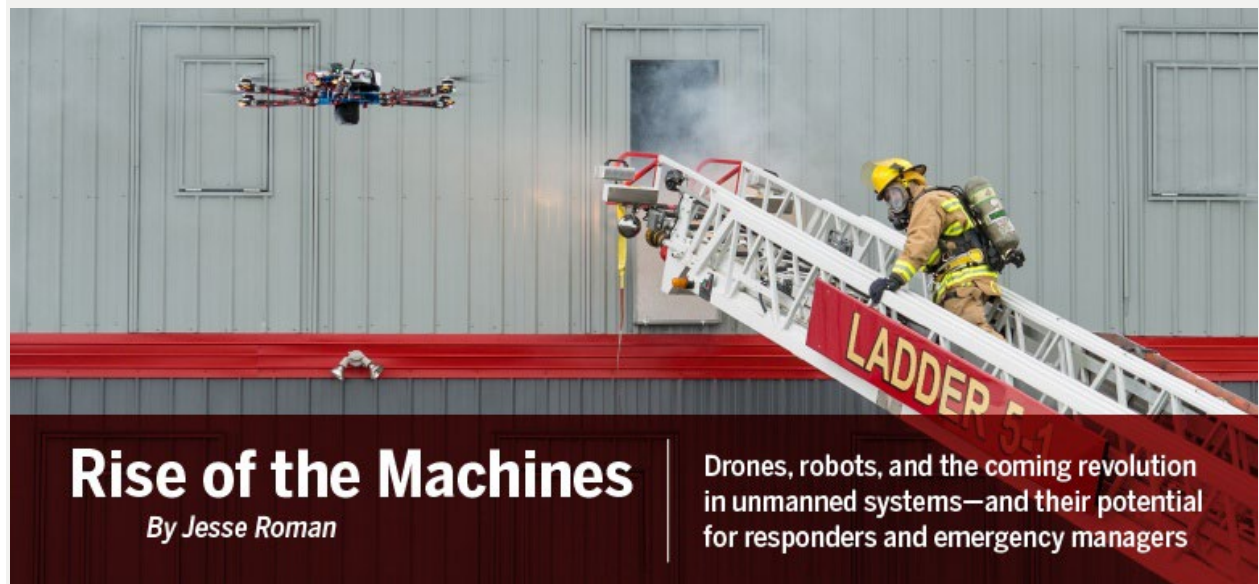
While the price tag for Mobile Firefighting Robot may be out of range for an individual fire company such as Greenwood, officials say getting one of the robots could be possible if several fire departments joined together.

APPENDIX 6-I

New Horizon: Robots, Drones and New Machines



NFPA Journal



Rise of the Machines

By Jesse Roman

Drones, robots, and the coming revolution in unmanned systems—and their potential for responders and emergency managers

. Author(s): Jesse Roman. Published on July 1, 2015.

IT'S 8:45 IN THE MORNING and I'm sitting in the Georgia World Congress Center in Atlanta, listening to Wild Cherry's "Play That Funky Music" bump through the sound system of a dark, cavernous convention hall.

Surrounding me, accented by neon lights, are a few thousand robotics engineers. We sip coffee, check our smartphones, and await the official kick-off to Unmanned Systems 2015, one of the world's largest conferences and exhibitions for drones and unmanned robots.

The music suddenly becomes dramatic and much louder, and huge video screens on either side of the stage depict animated drones and robots of all types swimming, rolling, and flying. Colin Guinn, an executive with the company 3D Robotics and host of the event's general session, bounds onto the stage with the energy of a cannonball.

"Welcome to Unmanned Systems 2015—let's get excited!" Guinn exclaims, raising

his arms and clapping his hands. “There are over 7,000 of you here from 55 countries, more than 200 education sessions, and 350,000 square feet of exhibit space—that’s four football fields of drones and other fun stuff!”

An hour later, with the crowd sufficiently pumped up, we stream into the vast exhibit hall and encounter a world that could have come from the imagination of Willie Wonka’s tech-savvy younger brother. Drones, sensors, robots, and gizmos of all sorts are suspended overhead, rolling across the floor, swimming in tanks, and flying in netted enclosures. Every inch of the convention hall’s four football fields of space buzzes with industry elites, eager startups, deep-pocketed investors, and curious onlookers like me, all preparing for a future when these robots will be as familiar to us as the phones we now carry in our pockets. The conference has a strong “we-can-change-the-world” flavor, and exhibit booths are rampant with pithy slogans like “Lock In the Unmanned Advantage” and, my favorite, “Making Tomorrow Today.”

That optimism is shared by many public safety agencies and first responders, who see vast potential for unmanned systems—land- and water-borne robots, and aerial drones—to save lives and make firefighters, police, and emergency medical technicians safer and more efficient. As the technology rapidly expands and federal restrictions on operating unmanned systems become more defined, public safety agencies are scrambling to figure out how they can unleash this vast potential in a safe and smart way. NFPA has held discussions internally and with outside groups about the need to develop new codes and standards to aid first responders looking to use drones and robots. “I think there is great value to these machines and it’s an area where NFPA can really help, because we understand the needs of first responders and the unique environments they work in,” says Ken Willette, NFPA’s Division Manager of Public Fire and a former fire chief. “I see this as potentially being a whole new group of standards within NFPA’s library.”

NFPA has not yet received a formal request to develop an unmanned systems standard, but Willette and others think that could happen soon. If it does, NFPA would likely first focus on developing standards on selection, care, and maintenance, as well as professional qualifications for operators of unmanned systems, Willette says.

Meanwhile, the National Institute of Standards and Technology (NIST) is currently working to develop standard test methods to ensure that unmanned systems marketed to first responders perform as advertised. Related research projects are also taking place at universities from Pennsylvania to Hawaii, and in just the last year two sizable regional fire service workshops on drones were held in Maryland and Oklahoma. The Fire Protection Research Foundation has applied for a federal grant to hold at least two more of these brainstorming sessions.

“We thought we would maybe get 20 to 25 people, and we had 110 fire departments show up from all over Oklahoma, Kansas, Arkansas, and Texas,” says Jamey Jacob, the head of the new Unmanned Aerial Systems graduate degree program at Oklahoma State University, which hosted one of the workshops for firefighters. Meetings and discussions are crucial, he says, because the technology has advanced much faster than the rules and regulations on when and how to use it. “If we don’t get a handle on this,” Jacob says, “a lot of the departments are going to go off and do it on their own.”

World of possibilities

Walking through the expo in Atlanta, it’s easy to understand the enthusiasm for these machines. The Association for Unmanned Vehicle Systems International (AUVSI), which puts on the Unmanned Systems conference each year, predicts there will be 1 million unmanned drone flights per day in the United States within the next 20 years. AUVSI also estimates that the industry will contribute more than \$82 billion to the nation’s economy in the next decade. After agriculture, industry experts believe public safety and first responder applications will be the largest civilian market for unmanned ground, air, and sea robots. They predict that aerial drones, or “unmanned aerial vehicles” (UAVs), will be by far the most utilized.

The possibilities are enticing. Unmanned systems can quickly and safely go places humans can’t: hovering outside the top floors of a high-rise fire, burrowing under rubble following an earthquake, searching contaminated areas following a chemical spill. They can also get to accident scenes faster than first responders because, as iRobot co-founder Helen Grenier tells me, “the quickest distance between two points is as the drone flies.”

Imagine an EMS crew being able to quickly dispatch a small drone to deliver anti-venom to a hiker bitten by a rattlesnake in a remote section of forest. Imagine deploying a fleet of three-foot-long autonomous boats, programmed to work in coordination to methodically complete a 10,000-square-mile ocean search in just hours. Imagine launching five-pound quadcopters to hover over a wildfire, where they can provide incident commanders real-time data on wind speeds and direction, thermal imaging, and visuals from multiple angles—all while providing a 4G wireless network for operation communications. How useful would it be if a drone could fly into a burning building, locate victims, quickly create a three-dimensional floor scan of the structure, and transmit that information to firefighters outside?

These are not fantasies—the technology exists, in various stages, and some of it is already in use. When the Chernobyl Nuclear Power Plant melted down in Ukraine in 1986, 30 workers and emergency responders died from radiation poisoning. However, in the similarly devastating 2011 Fukushima Daiichi nuclear plant meltdown in Japan, no fatalities were reported, in part because military ground robots called PackBots, outfitted with chemical, biological, radiological, and nuclear sensors, were deployed to assess the scene in advance of emergency personnel. “They were able to gradually step into the problem, rather than throwing loads of men in to die later,” says Mike Edis, a product manager at iRobot, which manufactures the PackBots.

In 2014, rubber blast mats in a granite quarry in Branford, Connecticut, caught fire dangerously close to the dynamite being used to mine the rock. Branford Fire Chief Jack Ahern could not safely move firefighters in to extinguish the blaze because he did not know how far the fire was from the explosives. A volunteer on the department flew his hobby drone over the site to get a better look and was able to visually confirm that the explosives were a safe distance from the fire. Ahern ordered crews in.

There is a robot or drone application for seemingly any emergency. California has used drones to assist in wildfire efforts. Small drones were used in search-and-rescue operations after the Nepal earthquake earlier this year. Plans are in the works for drones to inspect bridges and survey train derailments involving hazardous chemicals. The U.S. Navy has even unveiled a prototype humanoid, bipedal robot to fight fires

aboard its ships.

“In 10 years, UAVs will be just as important to firefighters as water to put on the fire,” Robert Doke, the Oklahoma state fire marshal, tells me. “They will be common pieces of apparatus for fire departments. With UAVs, the sky is the limit—it’s a bad pun, but it’s true.”

Regulatory complications

But aerial drones in particular face a significant challenge. While UAV technology is enormously promising and improving rapidly, there are few public safety agencies and virtually no fire departments in the United States currently using it. That’s because federal regulations on flying drones are so onerous, observers say, that they have effectively banned commercial UAV use in the United States for all but a few public agencies and businesses willing to undertake a lengthy permitting process. Hobbyists, however, are free to fly with few restrictions.

This regulatory climate has frustrated the UAV industry for years. According to an economic impact report published by AUVSI in 2013, “the main inhibitor of U.S. commercial and civil development of the UAS is the lack of a regulatory structure.” Until the Federal Aviation Administration (FAA), which restricts the commercial use of drones on safety and privacy grounds, loosens its rules on drones, the nascent industry has little chance of taking off, according to the UAV business leaders I spoke with.

As it stands now, in order to legally fly a drone, public safety agencies must first obtain a Certification of Authorization, or COA, and even then there are numerous restrictions on where, how, and when they can fly. The process

Drones, Robots and a World of Applications



See how first responders have already deployed unmanned systems.

of obtaining a COA can be long, difficult, and confusing for large fire departments with resources, and nearly impossible for small ones. “The FAA are bureaucratic ninjas—anything you throw at them, they’ll be able to push back on you and ask for more info and more details,” Jacob says.

The Austin (Texas) Fire Department, which about a year ago launched a new robotics emergency deployment team, is poised to become the first fire department in the nation to receive a COA to operate drones later this year. Coitt Kessler, who leads the team, told me that even with licensed aircraft pilots on his staff, drones at their disposal, and time and indoor space to train and practice, the COA process has been arduous. “The rules are changing literally every week,” he says. “The FAA is trying to protect the airspace and is trying to do its best, but it is very confusing. There is no unified voice.” The FAA did not reply to requests by NFPA Journal for comment.

There is reason to believe this could all soon change. Under pressure from the drone industry, in February the FAA released proposed rules for small drones weighing less than 55 pounds. Under the proposal, drones could be flown without a COA, as long as operators passed a knowledge test and met a few other minimal qualifications. The rules included a number of conditions, including stipulations that drones only be flown during the day, within the line of sight of the operator, and below 500 feet. Many observers think it could take two years for the rules to be finalized, but recent developments hint it could happen sooner. In May, U.S. Senators Cory Booker, a

Democrat from New Jersey, and John Hoeven, a Republican from North Dakota, introduced the “UAS Modernization Act,” with the aim of streamlining the regulatory process in the short term until the FAA’s final rules are set.

Drone industry insiders and those who follow it closely believe these developments could signal a sea change. “I think when we get a green light from the FAA, within a few months you’ll see fire departments utilizing UAVs,” says Doke, the Oklahoma state fire marshal. “In less than six months you’ll see fire department use increase rapidly as the price of UAVs falls.”

Currently, some hobby devices cost as little as a few hundred dollars, but more robust aerial platforms such as those likely to be used by public agencies can be in the thousands or tens of thousands of dollars—still substantially cheaper and easier to fly than any manned aircraft. Rapid adoption of the systems could bring costs down further, observers say, making them even more accessible.

The standards imperative

As the term suggests, disruptive innovation isn’t always a smooth process, and public safety leaders warn that a lot of groundwork needs to be done before unmanned systems can become safe and effective tools. Without proper policies, procedures, training, and equipment, the unmanned era could flounder badly with missteps and wasteful spending before it ever gets off the ground. “We don’t have the budgets to get it wrong—we have to get it right the first time,” Kessler tells me. “That process starts with groups like NFPA setting standards.”

There are a lot of considerations to weigh before the systems are ready for deployment—some obvious, some not, according to NFPA’s Willette. For instance, is it safe or even possible to operate an unmanned system if the operator is wearing full personal protective equipment? Most unmanned systems are controlled via radio frequencies—will that affect fireground communication, or otherwise interfere with the other high-tech fire service equipment that uses wireless and Bluetooth technologies? Can unmanned systems withstand heat, chemicals, water, smoke, flying embers, and the other hazards they are bound to encounter on the fireground? “The standards need

to look at safety from the operator's point of view," Willette says. A great deal of research is already going on in aspects of unmanned system performance, operation, and procedures for first responders, work that would likely inform any future NFPA standard on unmanned systems.

Among that research is the work taking place at NIST. If the Unmanned Systems 2015 event is a glittery Broadway production, then Adam Jacoff's laboratory at NIST is the rehearsal space. For nearly a decade, Jacoff, the test director of the Intelligent Systems Division at NIST, has worked to develop standard test methods to make sure that drones and robots perform as advertised for the Department of Defense and, more recently, the civilian public safety market. So far he has developed 15 standard test methods, with another five to be added this year, which reliably measure baseline robot and operator capabilities necessary to perform a specific task defined by the military and emergency responders. These standard tests are currently published by ASTM International.

With so many robots and drones and so many possible scenarios and uses, it is a daunting task that will keep him busy the rest of his working life, he says. "Out of necessity, we very quickly got out of mission-specific tasks and focused on more robot-specific tasks—they all need visual acuity to some degree, radio communication, endurance, and mobility in terrain," Jacoff says. "Once we start breaking it down into robot space, the job gets a lot easier, and figuring out where the gaps are is not so hard. We are getting quick at adapting and expanding the different test scenarios."

NIST is currently documenting the capabilities of the unmanned systems and is leaving it to buyers to determine if those capabilities match their needs. It's valuable information, but for many public safety departments, it may still be difficult to know exactly what to purchase. That's where NFPA could help, Jacoff says. "NFPA's experience in standards development would be very valuable to this," he says. "If NFPA wanted to adopt or define the equipment-level version of what we're doing at NIST—take that body of work and substantiate it as a standard robot with all of the thresholds set—that might be the perfect one-two punch."

In May, NFPA officials met with ASTM International, which publishes NIST's

performance standards, to discuss how NFPA could complement the work being done at NIST to create an equipment standard for first responders.

“It plays to our strengths perfectly—we don’t necessarily have the expertise to assess the technical capabilities of unmanned systems, but we do have the knowledge necessary to select, care for, and maintain highly technical pieces of equipment,” Willette says. “We also have experience in the area of breaking down what a responder needs to know and the capabilities they need to have.”

Having serviceable drones and robots and being able to operate them is just the start—stakeholders also have to know when to use them and how, says Jacob of Oklahoma State. “You have to know what type of vehicles should be deployed, in what manner you should deploy them, and how you should integrate them” into current operations,

There appears to be no shortage of people trying to answer these questions. The National Disaster Preparedness Training Center at the University of Hawaii, which prepares training programs for the Federal Emergency Management Agency, is working to develop a course on how to integrate unmanned systems into existing disaster procedures and to create new procedures. In 2012, the Institute for Transportation Research and Education’s NextGen Air Transportation Center at North Carolina State University conducted a series of wildfire-related tests using four drones at varying heights during a controlled burn in Florida. Researchers were trying to determine how well the drones’ sensors can detect key changes to conditions on the fire ground, as well as how to transmit that information to incident commanders and then disseminate it to firefighters on the ground in real time.

APPENDIX 6-J

New Environmental Restrictions on Foam



CHICAGO SUN*TIMES

State moves toward phaseout of firefighting foam with harmful ‘forever chemicals’

Gov. Pritzker signed into law a measure that aims to reduce the use of foam containing PFAS, which have been tied to drinking water contamination and health threats.

By Brett Chase Aug 9, 2021, 6:19pm CDT



A foam used to extinguish industrial fires will be limited in its use in Illinois because of the concern over the chemicals that can contaminate drinking water. *Jana - stock.adobe.com*

Illinois will take a first step toward reducing the use of firefighting foam containing harmful “forever chemicals” under a bill signed into law by Gov. J.B. Pritzker Friday.

The measure aims to curb the use of one source of PFAS chemicals that are tied to a host of health threats, largely through a limitation on using the foam for anything other than emergencies. Fire departments that want to conduct

emergency drills or test the foam have to take precautions that prevent the chemicals from reaching waterways through sewer systems, for instance.

The bill, a compromise between environmental groups, an association of fire chiefs and industry groups, does not restrict any use in an emergency. The foam is used for serious industrial fires like those that can occur at a refinery, chemical plant or another source of flammable liquids.

Separately, state officials found more than 100 drinking water systems across Illinois with some PFAS contamination, the *Sun-Times* recently reported. The chemicals are used in a number of products, from stain-resistant clothing to non-stick pans.

Environmentalists called the reduction a first step.

“This new law is a foothold in moving Illinois in the right direction on one of the most frightening threats to our clean water,” Iyana Simba, city programs director at the Illinois Environmental Council said in an emailed statement.

Business groups originally opposed the bill, saying deadlines initially proposed would phase out an effective product before a comparable one was created, said Mark Denzler, chief executive of the Illinois Manufacturers Association.

Local fire departments used to train often with PFAS foam but began using alternatives for those drills largely because of the cost of using the specialty foam on anything other than a true disaster, said John Buckley, who works on legislative issues for the Illinois Fire Chief Association.

In addition to limiting the foam’s use in training exercises, departments will be required to report to the state any discharge or disposal of the product.

A Chicago Fire Department spokesman said he wasn’t able to quantify how much foam the city uses or stockpiles but said the department will adhere to the required documentation.

Brett Chase’s reporting on the environment and public health is made possible by a grant from The Chicago Community Trust.

== END OF MODULE 6 ==