Joint Fire & EMS District Feasibility Study

for the

City of Northwood, City of Rossford, and Lake Township

Prepared by

The Ohio Fire Chiefs' Association
Consulting Services

PREMIER • PROFESSIONAL • PROACTIVE

December 2022

Executive Summary

The Ohio Fire Chiefs' Association performed a feasibility study to determine if the formation of a joint fire and emergency medical services (EMS) district involving the city of Northwood, Lake Township, and the city of Rossford would be beneficial to their respective communities. The study included an analysis of the current fire and EMS delivery systems in their respective response areas, risk analysis, evaluation of equipment and facilities, and creation of a budget based on the projected operational expense of a new fire and EMS district.

The Northwood Fire Department (NFD) is a municipal-operated agency that provides fire protection and EMS to the city of Northwood. NFD is primarily a paid-on-call (POC) staffed agency with 41 personnel. The roster includes a fire chief, deputy chief, district chief, captain, six lieutenants, and 28 firefighters. The fire chief is considered part-time and receives a fixed annual salary. Some of the POC personnel who have Firefighter II certification and either emergency medical technician (EMT) or paramedic certification are qualified to serve in a part-time capacity. Station 82, one of the department's two stations is staffed around-the-clock with two part-time personnel to improve response capability, primarily for EMS incidents. The scheduling of part-time personnel has been good; there were four instances in 2021 in which the department worked short for a six-hour period. Over the past two years, the POC response has been inconsistent.

Over the past 10 years (2012-2021), the department experienced a 54% increase in calls for service, responding to 1,083 incidents in 2021. The fire responses increased by 50% while the EMS responses increased 55% during this time period. The department's operating budget for 2021 was $788,762. Operating expenditures are supported by the city's 1.5% wage earner income tax and EMS billing for patients transported to the hospital.

Lake Township Fire Department (LTFD) is a township-operated agency that provides fire protection and EMS to Lake Township and the villages of Millbury and Walbridge. LTFD is a combination staffed organization with a current roster of 54 personnel. The department is led by a full-time fire chief, full-time deputy chief who manages EMS, and a full-time captain who manages training and prevention. The remaining personnel are POC; a deputy chief in charge of fire operations, two battalion chiefs, four captains (two vacant), four lieutenants (two vacant), and 40 firefighters. Some of the POC personnel who have Firefighter II certification and either EMT or paramedic certification are qualified to serve in a part-time capacity. Station 26, one of the department's three stations is staffed around-the-clock with two part-time personnel to improve response capability, primarily for EMS incidents. During 2021, there were 250 hours where a part-time member was not scheduled to work; however, those shifts were filled by either the full-time captain or deputy chief. Over the past two years, the POC response has been inconsistent.

Over the past eight years (2014-2021), the department experienced a 72% increase in calls for

service. Fire responses increased by 21% while EMS responses increased 89% during that time period. Call data for 2012 and 2013 was not available.

The department's operating budget for 2022 was $1.46 million. Revenue for operating expenditures is generated from four tax levies; an ambulance and EMS .80-mill continuous levy; a fire and EMS 2.0-mill continuous levy; an ambulance and EMS 1.0-mill levy; and a 1.0-mill, five-year fire levy. Revenue is also received from EMS billing for patients transported to the hospital.

The Rossford Fire Department (RFD) is a municipal-operated agency that provides fire protection and EMS to the city of Rossford. RFD is a combination staffed organization with a current roster of 31 personnel. The department is led by a fire chief, assistant chief, two captains, four lieutenants, and 23 firefighters. The fire chief is the only full-time position; there are nine part-time employees and the remainder of the roster are POC employees. The department's only station is staffed around-the-clock with two part-time personnel to improve response capability, primarily for EMS incidents. All department personnel are certified as a firefighter and EMT or paramedic. In 2021, there were nine incidences where the department worked short with one firefighter on duty. There were also nine incidences when no personnel were on duty.

Over the past 10 years (2012-2021), the department experienced a 56% increase in calls for service, responding to 1,262 incidents in 2021. Fire responses increased by 66% while the EMS responses increased 64% during this time period. The department's operating budget for 2021 was $538,540. Operating expenditures are supported by the city's 2.25% wage earner income tax and EMS billing for patients transported to the hospital. The city also has a 1.0-mill tax levy to support the part-time personnel on duty and a 2.8-mill fire department capital improvement levy.

For the purposes of the feasibility study, the service area of the proposed fire and EMS district included the city of Northwood, Lake Township, and the city of Rossford. Additional areas can be added to the district at a later time if desired.

Several options were reviewed regarding the creation of the joint fire and EMS district. Staffing Scenario #1 involved taking the existing part-time staffing plans of all three agencies and creating a joint fire and EMS district. This scenario included a command staff with a full-time fire chief, assistant chief, and training and EMS officer. The POC personnel of all three agencies would continue to be a part of the district's fire incident response. The projected cost of this scenario was estimated at $2.8 million.

Two scenarios (Staffing Scenario #2 and #3) were developed to improve in-station staffing and response reliability. Both scenarios featured a command and support staff that included a full-time fire chief, full-time assistant chief, full-time training and EMS officer, full-time inspector, and part-time administrative assistant.

Staffing Scenario #2 included 13 response personnel on duty in-station around-the-clock at three fire stations, Stations 26, 29, and 82. Each station would have one full-time lieutenant and three part-time firefighters on duty plus a shift captain for the district. POC personnel would continue to be an integral part of the response force. The projected operating budget for this scenario, including debt service, was $5.1 million.

Staffing Scenario # 2 included a similar staffing plan as Scenario #1; 13 response personnel on duty in-station around-the-clock at three fire stations, Stations 26, 29, and 82. However, with this scenario, each station would have one full-time lieutenant, one full-time firefighter and two part-time firefighters on duty plus a shift captain for the district. POC personnel would continue to be an integral part of the response force. The projected operating budget for this scenario, including debt service, was $5.3 million.

Staffing Scenario #4 was also developed, which included a joint fire and EMS district with two agencies participating instead of three. Using Northwood and Lake Township as an example, Staffing Scenario included eight response personnel on duty in-station around-the-clock at two Stations, Station 26 and Station 82. Each station would have a full-time lieutenant or captain and three part-time firefighters. POC personnel would continue to be an integral part of the response force. The command staff included a full-time fire chief, full-time assistant chief, and full-time training and EMS officer. The projected operating budget for this scenario, including debt service, was $3.9 million.

An analysis was performed on potential revenue based on several tax levy scenarios along with projected income from EMS billing. Those revenue scenarios were then analyzed versus the project operating cost of each staffing scenario. Included in the analysis was three-year projections with inflationary increases of operating expenses and accumulation of reserve funds.

After analysis, the assessment team determined that a joint fire and EMS district was feasible and could provide improved response reliability, improved response times, and enhanced response force efficiency and effectiveness. While creation of a joint fire and EMS district would not lower current expenditures, it would provide the citizens with improved response reliability and participating entities long-term financial stability and control over operations and expenditures.

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Acknowledgements

The Ohio Fire Chiefs' Association (OFCA) recognizes Northwood Fire Chief Joel Whitmore, Lake Township Fire Chief Bruce Moritz, and Rossford Fire Chief Josh Drouard, their staffs and personnel of their respective departments for their cooperation and effort during this project. They were prompt, courteous, and professional in providing the background information and data necessary to conduct this analysis. It was obvious to the assessment team that personnel of all three departments serve with pride and are committed to delivering quality service to their communities. The OFCA also recognizes Northwood City Manager Robert Anderson, Lake Township Administrator Mark Hummer, Rossford City Administrator Allyson Murray, and the elected officials of all three communities for their commitment to the project.

Introduction

The Ohio Fire Chiefs' Association (OFCA), a professional association and consulting firm, was selected by the city of Northwood, city of Rossford, and Lake Township to perform a feasibility study to determine if the formation of a joint fire and emergency medical services (EMS) district would be beneficial to their respective communities. To conduct this study a review of the current fire and EMS delivery in each community was performed, which included an in-depth evaluation and analysis of the Northwood, Rossford, and Lake Township Fire Departments. This allowed the assessment team to understand each department's current service demands, response performance, and staffing challenges. A community risk assessment and review of each department's general operations, management, and financial status were also examined. Interviews with city and township officials, as well as fire department leadership helped identify past and current economic development efforts, projected growth, and future concerns regarding fire and EMS delivery.

The OFCA assessment team conducted site visits with each department on May 11th and 12th, 2022 to review department policies, procedures, operational areas of concern, and to inspect department facilities, apparatus, and equipment. Prior to the site visits, the assessment team met virtually with the leadership of each department to review previously requested information and discuss general department operations. Those included virtual meetings with Lake Township Chief Bruce Moritz and his staff on April 27th, Northwood Chief Joel Whitmore and his staff and Rossford Fire Chief Josh Drouard and his staff on May 4th.

Overview

The cities of Northwood and Rossford and Lake Township are located in the northeastern corner of Wood County. Northwood's northern corporation line borders the city of Oregon and city of Toledo (Lucas County) and its eastern corporation line borders Ottawa County. Rossford abuts Northwood to the west and Lake Township abuts Northwood on its southern corporation line. Rossford does not abut Lake Township but is approximately one mile from the northwestern corner of Lake Township.

Northwood and Rossford are considered suburbs of the Toledo metropolitan area and all three communities are part of the Toledo Metropolitan Statistical Area. Figure 1 is a map of Wood County with the three communities highlighted.

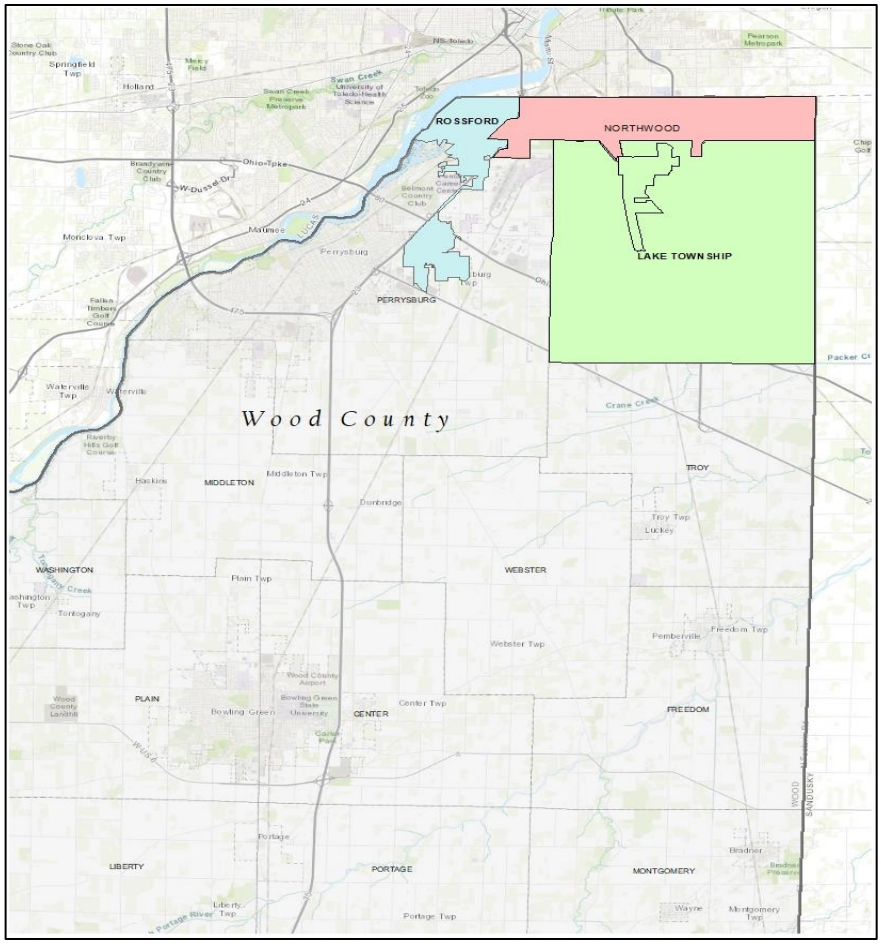


Figure 1: Map of the three communities and surrounding jurisdictions

City of Northwood

Northwood is located in the northeast corner of Wood County. The city has a unique "long rectangle" shape, approximately 1.25 miles in length from the northern city boundary to the southern city boundary, and 6.5 miles wide. The total city area spans 8.4 square miles. Figure 2 is a map of the city.

The city has a mix of low- and medium-density residential development as well as some light industrial development in the western areas of the city. There are significant open green spaces and some farm land in the eastern areas of the city. The city boasts numerous residential opportunities and has several city parks and a scenic one-mile nature trail. Other amenities include an active senior program and community events including a fall festival and Northwood Nights, a monthly family event at Central Park from May through September. Lake Erie and the Maumee River are close by offering numerous recreational opportunities for residents and visitors.

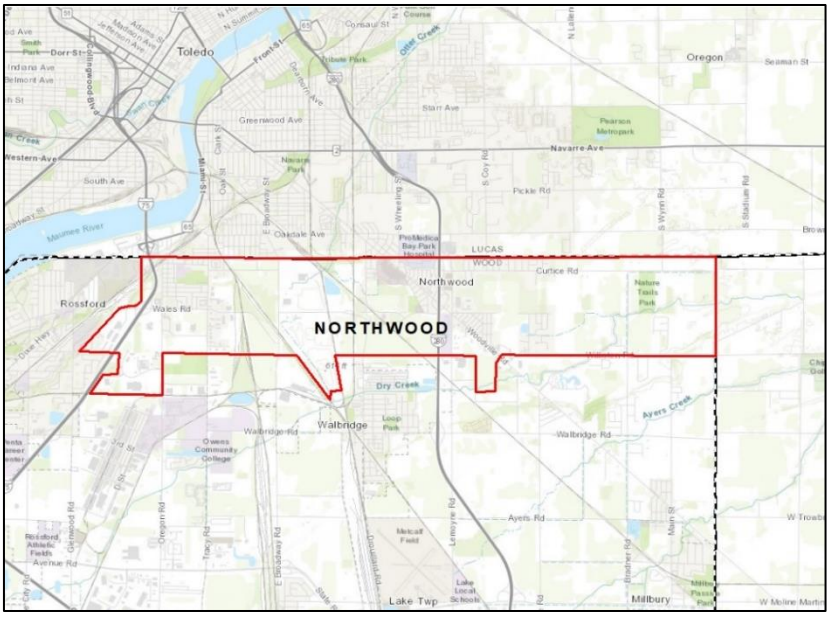


Figure 2: Map of Northwood

Major employers in the city include: Norplas, an automotive parts manufacturer; Buckeye Broadband, a cable and internet provider; Adient/Johnson Controls, an automotive parts manufacturer; and North America Science Association, a medical equipment testing company.

A one mile north-south section of Interstate-75 is located in the western portion of the city, including an interchange at Wales Road. Interstate 280 bisects the city and serves as a north-south connector from the Ohio Turnpike (located south of the city) to Interstate-75 near downtown Toledo. There is one interchange at State Route 51 (Woodville Road). A commercial and retail corridor is located along State Route 51.

Norfolk-Southern Railroad operates a main line through the city. The line runs northwest to southeast and handles regular freight and commodities. Amtrack passenger service also runs on the same line. Freight trains can at times block the Wales Road crossing, but there are other roadways with bridges that allow fire department vehicles to respond to an emergency. There are several spur lines that serve industrial facilities and a line to Stanley Yard, a large rail classification yard located just outside the city in the village of Walbridge.

The city is a home-rule municipality operating under its own charter as provided by the Ohio Constitution. The city is governed by a council – mayor form of government. The mayor is an elected position (four-year term) and seven council members elected to staggered four-year terms. There also is an appointed city administrator who is responsible for developing and managing the city budget, overseeing service delivery to the public, and coordinating between the mayor, council, and department heads.

Demographics

According to the most recent published U.S. Census data, the city's population in 2020 was 5,160, which is a decrease of 165 residents (down .03%) from the 2010 census. The current population is 86% White, 9% Hispanic or Latino, 1% Black, and 1% Asian; other ethnicities make up 3% of the population. Citizens over the age of 65 account for 18% of the population and children under five years of age account for 6% of the population. The median household income is $70,182.[1] The city has a population density of 614 people per square mile.

Growth

Northwood appears well positioned for responsible growth, working to ensure economic health for the city while preserving the charm and desirability of the community. The city has experienced some commercial and industrial development near the I-75/Wales Road interchange. There are industrial and commercial zoned sites available in the city, with projected future growth along Oregon Road. City officials are very excited about the residential planned unit development project known as "The Enclave". This 100-acre site, designed as an "age-in-place" sustainable mixed-use neighborhood, will feature residential and senior living opportunities, neighborhood commercial and office areas, and the future home of Northwood's Civic and Recreation Center. This development is located on the former site of the vacated Woodville Mall along State Route 51. The city has also identified an additional 20-acre residential site currently being studied by local developers.

Fire and Emergency Services

The Northwood Fire Department (NFD) serves the city of Northwood. The department operates from two fire stations and provides fire suppression, emergency medical services (EMS), fire prevention and public education services to the community. The EMS is an advanced life support (ALS) level and transport service. ALS level service is often referred to as paramedic level service.

The department began service to the community as the Ross Township Fire Department in 1950. Ross Township Volunteer Fire Department #2 was established initially followed by Ross Township Volunteer Fire Department #1 in 1953. The two departments continued service until the village of Northwood was incorporated (encompassing all of Ross Township) as a result of a special election in 1962 and the department transitioned to the NFD.

The department began providing ambulance service in 1972 and ALS level service in 1996. Due to increasing demand for service, the department began staffing a fire station Monday through Friday during regular business hours in 2000. This was followed in 2012 with around-the-clock part-time staffing, a model that continues today in combination with a volunteer work force.

[1] U.S. Census 2020

Funding

The city of Northwood has a 1.5% income tax on earned income and business profits. Income tax revenue is the primary funding source for the city's general fund. The city's general fund is used to fund many basic services such as police, fire, parks and recreation, and other functions and projects. Revenue from the income tax is earmarked 70% for operating expenditures and 30% for capital improvement and replacement. The city also receives revenue from EMS billing for patients treated and transported to a hospital. EMS billing revenue, which goes to the city's general fund, was $170,482 in 2019, $135,000 in 2020 and $176,000 in 2021. The city contracts with Great Lakes Billing of Cleveland to manage and process all billing for the fire department. The city has a "soft-bill" policy for city residents and "hard-bill" policy for non-residents.

The NFD appropriated operating budget for 2021 was $788,762, with actual expenditures totaling $733,261. Expenditures for personnel accounted for 73% of the total expenditures, which includes Medicare, federal payroll tax (FICA), and Ohio Bureau of Workers' Compensation (BWC) premiums. The fire department operating budget has a line item for personnel expenses for paid-on-call personal and a separate line-item for personnel expenses for part-time personnel who staff the station.

The city has capital improvement and capital replacement funds that are adjusted each year to address needs of all city departments. Some of the capital replacements approved for purchase in 2021 included: firefighting personal protective equipment ($36,000), fire hose ($4,000), utility vehicle ($44,000), portable radios ($26,400), and self-contained breathing apparatus filling station ($24,000). NFD's detailed apparatus replacement plan is found on page 35.

Staffing

NFD is a combination department with a roster of 41 uniformed personnel. This includes volunteer members and those who work as "part-time". The volunteer personnel are actually paid-on-call (POC) in which they receive payment for each emergency response and training session attended. Some personnel also serve as part-time firefighters in which they are scheduled to work a designated shift and staff the station. The department's goal is to staff two personnel around-the-clock at Station 82. Both personnel are required to have emergency medical technician (EMT) certification with the goal of having at least one with paramedic certification. Chief Whitmore reported that at least one paramedic was on duty 54% of the time during 2021. This does not include those incidences where paramedic certified personnel may have responded from home. Although the primary goal of part-time staffing is to have personnel on-station to respond to an EMS incident in a timely fashion, personnel on-station can also respond to a fire incident or service call with a mini-pumper or other vehicle.

Part-time schedules are organized into 12-hour and 24-hour shifts per day. The department strives for some flexibility in scheduling in order to maximize the availability of personnel. The

department's ESO records management software is used to aid in scheduling. Personnel can sign up for shifts by the 20th of the existing month for openings the following month. If a call-off occurs (such as a firefighter becoming ill prior to the start of the shift), the department announces the opening and personnel, if available, fill the position. If the individual filling the position is over 40 hours of work for the week, they receive overtime pay. The scheduling experience is good; there were four instances in 2021 when the department worked short for a six-hour period. Part-time personnel are limited to 36 hours per week.

The current roster includes the fire chief, deputy chief, district chief, captain, six lieutenants, 25 firefighters and three recruit firefighters. Thirty-five of the department's personnel are dual-certified as a firefighter and EMT or paramedic. There are 13 personnel who are Firefighter (FF) II and paramedic certified, 18 personnel who are FF II and EMT-Basic (EMT) certified, three personnel who are FF II and advanced EMT (AEMT) certified, and three personnel who are FF I and EMT certified. One person is EMT certified only. One new recruit is currently in training and five personnel are attending paramedic training. An organizational chart depicting the department's current structure is displayed in Figure 3.

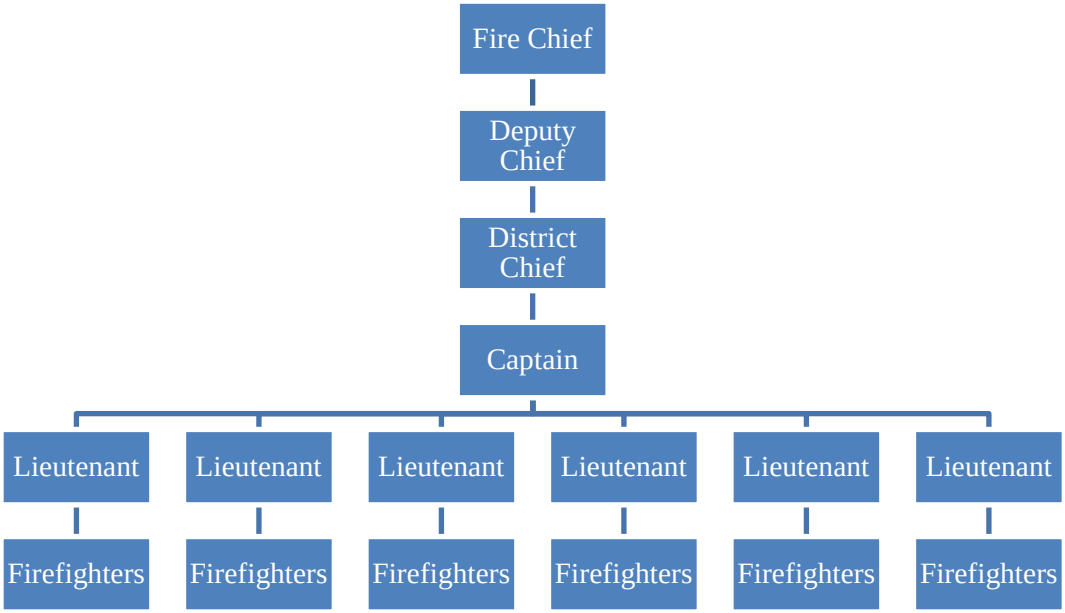


Figure 3: NFD organizational chart

POC personnel receive an hourly rate for emergency responses, attending training sessions, and other special details that may be called by the fire chief or supervising officer. The hourly base rate is based on the individual's firefighter and EMT certification level. The base pay increases with completion of more advanced training and certification. The current pay rates for POC personnel are listed in Table 1.

Paid-on-Call Pay Scale	
Rank	**Rate**
Recruit	$13.82
Firefighter	$17.10
Firefighter /EMT	$20.37
Lieutenant	$21.42
Captain	$21.86
District Chief	$23.67
Deputy Chief	$24.19
FF I - increase	.50%
FF II - increase	1.0 %
AEMT - increase	.50%
Paramedic - increase	1.5%

Table 1: NFD POC pay scale

To illustrate, a firefighter/EMT who has obtained FF II and EMT certifications receives $20.68 per hour. This rate is determined by taking the base rate of $20.37 per hour and adding 1.5% (.31 cents) to the rate. The additional 1.5% includes .5% for completion of FF I training and 1.0% for completion of FF II training. A captain who has completed FF II and paramedic training would receive $22.63 per hour; $21.86 base pay plus an additional 3.5% (.77 cents).

In an effort to recognize and award personnel for longevity with the department, personnel receive a stipend for every five years of service. As indicated in Table 2, a firefighter with 10 years of service would receive .50 cents for each emergency response he or she attended in the previous five-year period. To illustrate, if a firefighter responded to 84 runs during that period, he or she would receive $42.00. At the 20-year service mark, a firefighter would receive $1.00 for each run made during the previous five years.

Firefighter Retention	
Years of Service	**Stipend**
5	$ .25
10	$ .50
15	$ .75
20	$1.00
25	$1.25
30	$1.50
35	$1.75
40	$2.00
45	$2.25
50	$2.50

Table 2: Firefighter retention stipend schedule

Personnel who are scheduled for on-station shifts (part-time personnel) have a pay scale based on EMT certification levels. All personnel who are eligible to work a shift have FF I certification. The part-time pay scale is listed in Table 3.

Part-time Pay Scale	
Training level/ Rank	**Rate**
Orientation	$14.87
EMT	$17.10
AEMT	$17.76
Paramedic	$19.95
Lieutenant	Base* + .25
Captain	Base* + .50
District Chief	Base* + .50
Deputy Chief	Base* + .75
Chief	0

*Base rate come from the pay scale in Table 1

Table 3: NFD part-time pay scale

The deputy chief has numerous administrative assignments. He is limited to 20 hours of administrative work each week, which does not include emergency responses or scheduled training sessions. Administrative duties are paid at the hourly base rate from the POC pay scale in Table 1. The fire chief receives an annual salary of $58,631 with an expectation of a minimum of 25 hours of work weekly, plus after hour emergency response as may be needed. The fire chief receives no additional compensation or benefits.

Twenty-two of 41 personnel have either full-time or part-time firefighting or related positions with other agencies. Ten personnel are employed in a full-time capacity and five are employed in a part-time capacity with another agency in the region. Three are employed at one of the region's refineries in an industrial firefighting capacity and four are employed with a private EMS company. Of the five who have part-time status with another agency, one is employed by Rossford Fire Department and one by Lake Township Fire Department.

Hiring

The hiring process for new members is a robust, multiple step process. Once an application is received, the district chief or captain (depending on which station the applicant would be assigned) conducts an initial interview. After the initial screening, the applicant is interviewed by the fire chief. The next step is a reading comprehension test (obtained from the local career center). This is followed by a physical ability test administered by the department and then a background check, which is conducted by the local police department. The applicant is then tendered a tentative offer of employment pending completion of a medical examination and drug screen. The new hire physical and drug screen is completed at St. Charles Occupational Health at a cost of $680. The mayor makes the formal appointment upon the recommendation of the fire chief.

The department offers incumbent personnel annual health care screenings and testing. Bio-Care of Holt, MI offers on-site medical testing services. Personnel are required to complete a pulmonary function test, hearing test, and self-contained breathing apparatus facepiece fit-test

annually. The pulmonary function test and facepiece fit-test qualifies the firefighter to wear a respirator in a hazardous environment, meeting state requirements. Personnel can, at their option, expand the medical services provided to include a full physical examination including 12-lead EKG cardiac screening and some cancer screenings.

Once the employee is hired, they serve a one-year probationary period. The new employee is evaluated every three months during the probationary period by the officers assigned with a formal recommendation to the fire chief at the completion of the probationary period. The fire chief then recommends to the mayor for a permanent appointment of the employee. During this period, the employee completes an orientation, which includes an organized mentoring process under the supervision of a lieutenant and other senior firefighters. The new firefighter completes the Recruit Training Handbook, a comprehensive and organized guide and checklist. Minimum requirements for POC personnel include:

- 18 years of age
- High School Diploma or GED
- Resident of Northwood
- Obtain Volunteer Firefighter certification within 1st year of employment
- Obtain EMT certification within 2nd year of employment
- Obtain FF I certification within 2nd year of employment.

Part-time personnel may be a direct hire or come from the POC roster. Minimum requirements for part-time personnel include:

- Possess FF I or FF II certification
- Possess EMT, AEMT or Paramedic certification
- Be insurable by the city's insurance carrier
- City residency not required.

Service Demands

Over the past 10 years, the department's overall service demand has steadily increased. In 2012, the department responded to 701 calls for service. In 2021, that number had increased to 1,083, which is a 54% increase in service demand. Note: a call for service is an incident count. If multiple companies respond to a fire, it counts as one incident or call for service. NFD's calls for service over the past 10 years are displayed graphically in Figure 4.

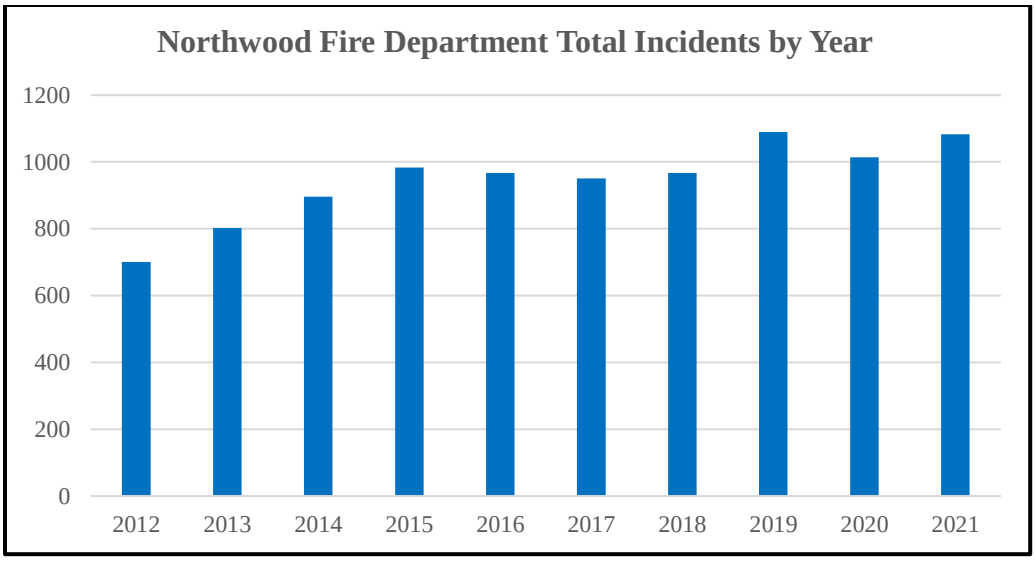


Figure 4: NFD's 10-year incident response history

During this 10-year reporting period, fire responses increased 50%. During this same 10-year period, EMS responses increased 55%. Figure 5 is a comparison of fire and EMS responses experienced by NFD from 2012 through 2021.

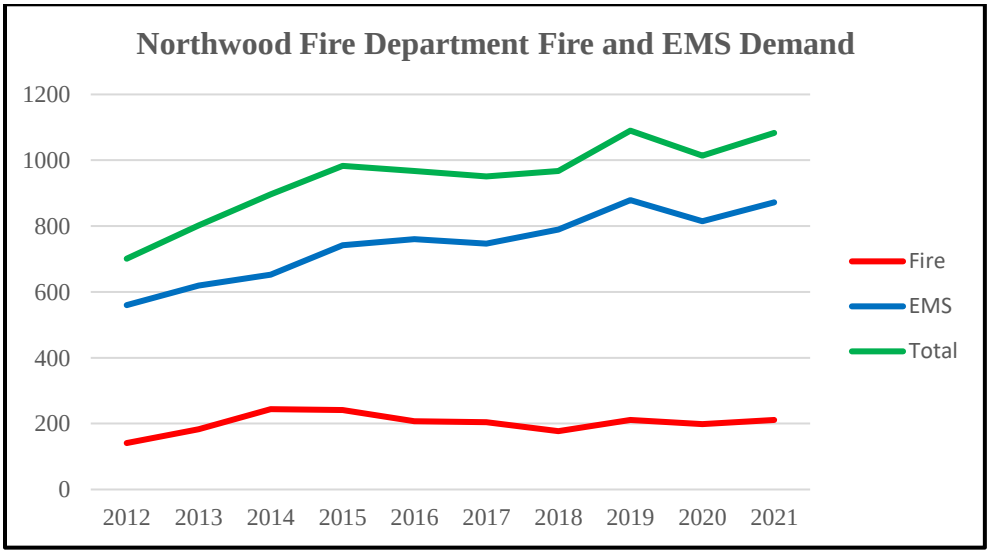


Figure 5: NFD's 10-year incident response trends

For the purposes of this report, fire responses include building, auto, and grass fires, as well as fire alarms, rescues, carbon monoxide calls, service calls, and other non-EMS responses. Also included in the total calls for service are mutual-aid responses. NFD has mutual-aid agreements with surrounding departments, achieved with single or countywide contractual agreements. Northwood is party to the Wood County and Ottawa County mutual-aid agreements and also has a mutual-aid agreement with the Ohio Air National Guard 180th Fighter Wing located at the Toledo Express Airport in western Lucas County. NFD also has automatic mutual-aid agreements with Rossford, Lake Township, and

Perrysburg Township Fire Departments, and Allen-Clay Joint Fire District, located in neighboring Ottawa County.

Table 4 displays the fire and EMS responses within the city and mutual aid responses for the past five years. In the table, MA refers to mutual-aid responses and AMR refers to an automatic mutual response.

	Fire City	Fire MA	Fire AMR	Fire Total	EMS City	EMS MA	EMS Total	Total Calls
2017	163	8	33	204	690	57	747	951
2018	134	6	37	177	730	60	790	967
2019	155	7	49	211	760	119	879	1,090
2020	151	5	43	199	746	69	815	1,014
2021	138	2	71	211	807	65	872	1,083

Table 4: NFD's five-year mutual-aid response history

NFD also received mutual-aid and AMR assistance. Table 5 displays the number of mutual-aid responses the department received over the past five years.

	Fire MA	Fire AMR	EMS MA	Total MA
2017	4	13	24	41
2018	2	7	29	38
2019	2	8	15	25
2020	4	11	13	28
2021	3	15	29	47

Table 5: NFD's five-year mutual-aid received history

Automatic mutual-aid response or automatic mutual response (AMR) is assistance dispatched automatically by a formal contractual agreement or an informal agreement between two communities or fire districts to all first alarm structural fires, including automatic alarms, or to specific target hazards. This differs from traditional mutual-aid response, which is requested by a department on an as-needed basis. AMR is prearranged and is typically seamless with modern computer-aided dispatch systems.

The fire loss recorded for the city has fluctuated over the past five years; however, this is not uncommon. Fire loss is difficult to predict and one large-loss event can skew any statistical analysis. The recorded fire loss in 2017 was $553,100 and in 2021, the recorded loss was $224,500. Most likely due to the economic impact of the COVID-19 pandemic, the recorded loss in 2020 was $45,800.

Technical Search and Rescue

Technical search and rescue is a term used to describe special response situations including confined space search and rescue, rope rescue, trench rescue, swift-water search and rescue, surface water search and rescue, ice search and rescue, vehicle rescue, machinery rescue, structural collapse search and rescue, and wilderness search and rescue. Technical search and rescue incidents are referred to as high-risk, low-frequency events that are dangerous to mitigate and involve a special set of skills, procedures, and equipment for each rescue situation. It is

often very costly to implement and maintain proficiency in each technical response capability.

Due to the complexity and uniqueness of technical rescue operations, the National Fire Protection Association (NFPA) has developed specific operational levels for responders. NFPA 1670 *Standard on Operations and Training for Technical Search and Rescue Incidents* requires written operational procedures consistent with the following operational levels or response capability for each technical rescue discipline commonly encountered by a response agency:

- Awareness Level – this level represents the minimum capability of organizations that provide response to technical search and rescue incidents.

- Operations Level – this level represents the capability of organizations to respond to technical search and rescue incidents and to identify hazards, use equipment, and apply limited techniques specified in NFPA 1670 to support and participate in technical search and rescue incidents.

- Technician Level – this level represents the capability of organizations to respond to technical search and rescue incidents and to identify hazards, use equipment, and apply advanced techniques specified in NFPA 1670 necessary to coordinate, perform, and supervise technical search and rescue incidents.

The National Fire Protection Association (NFPA) is a global self-funded nonprofit organization whose mission is to reduce death, injury and economic loss due to fire, electrical and related hazards. In addition to research and training, NFPA has developed over 300 codes and standards through a consensus process and involvement of all disciplines in a particular subject area. NFPA standards are followed almost universally and establish the criteria from which fire apparatus are built and personal safety equipment is designed and manufactured. The most universally recognized standard is NFPA 70, which is the National Electric Code and adopted in all 50 states.

While a formal technical rescue assessment was not performed, the department's response capability in each technical rescue response area was reviewed.

Swift-Water Rescue – these incidents involve the rescue of a victim(s) from fast moving water such as a river or other large stream. Of special concern are low-head dams, which can create dangerous currents, especially when river water levels are elevated or during flood stage. While there are several tributaries and watershed streams, there are no rivers and no low-head dams within the department's response area.

Surface-Water and Ice Rescue – these incidents involve the rescue of a victim(s) from a non-moving body of water such as ponds, quarries, or lakes. During winter, these types of incidents could involve surface ice. Each rescue involves a specific set of equipment and operating

procedures. The department has some ice rescue capability including equipment, but no specific response procedure or regular training in this area.

Confined Space Rescue – includes incidents in which victims are trapped within an area that qualifies as a confined space. A confined space may be found in agricultural, industrial, and other settings as defined by the Occupational Safety and Health Administration (OSHA). The department has some members with awareness level training but no confined space rescue equipment and no specific response procedure. If an incident occurs, Toledo Fire-Rescue Department would be called for assistance. The Toledo unit that would respond is Rescue 6, which is located only a few miles from Northwood.

Rope Rescue – includes incidents that are high-angle (elevated) or below grade and require the use of rope rescue systems to reach and rescue victims. A rope rescue incident could be part of a confined space incident due to the location of the victim. The department does not have rope rescue capability. If an incident occurs, Toledo Fire-Rescue Department would be called for assistance.

Trench Rescue – these incidents are also referred to as trench "cave-in" incidents and involve an excavation trench or underground cave-in that traps a victim(s). The department does not have trench rescue capability. If an incident occurs, Toledo Fire-Rescue Department would be called for assistance.

Structural Collapse Search and Rescue – these incidents are often associated with large-scale urban search and rescue operations following natural occurrences such as tornadoes, earthquakes, etc. NFD will respond to an incident where structural collapse or instability will have to be managed. Examples of incidents where structural collapse has to be managed include: vehicles or aircraft versus buildings, unsafe structures as a result of a gas explosion or structure fire, building construction or renovation failures, or natural forces related to weather (e.g., rain or snow accumulations on roofs, tornadoes, etc.). In managing these incidents, it is often necessary to push, pull, cut, breach, lift, or tunnel through the materials that make up the collapsed structure. If an incident occurs, Toledo Fire-Rescue Department would be called for assistance.

In addition to the single-point response described above, multiple-point responses that are spread out over a larger area or involve many locations will require a larger resource pool, including outside agency support, large-scale incident management support, and technical expertise. Ohio Region 1 Strike Team, whose operating base is Toledo Fire-Rescue, can be requested to provide assistance.

Vehicle Rescue – these incidents involve removing trapped victims as a result of a motor vehicle accident. Fire departments routinely respond to motor vehicle accidents that result in an injury to one or more victims. Some of these victims may be trapped and require the use of specialized equipment carried by the department such as hydraulic-powered rescue tools, air bags, etc., to disentangle the victim for removal. NFD has the necessary equipment and personnel are trained

in motor vehicle rescue (sometimes called auto extrication) and regularly conduct hands-on training drills.

Hazardous Materials – NFD personnel are trained in hazardous materials response to the awareness level with several members trained to the operations and technician level. Operations level, as identified in NFPA 472 *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*, means that personnel have the training and equipment to identify hazardous materials presence through various recognition factors such as placards and labels, container shapes and sizes, and hazardous material sites in the response area. They also have the ability and equipment to undertake defensive type of actions and low-risk offensive operations such as plugging, patching, diking, and the placement of booms and absorbent pads and other containment actions that help control or mitigate the incident. More advanced offensive operations that require the use of level "A" (completely encapsulated protective equipment) or acid splash suits require a technician level response.

The department carries spill equipment to handle small fuel spills such as gasoline, diesel fuel, etc. Equipment and supplies include equipment to plug or control liquid releases, and clean-up equipment such as booms, absorbent pads, and granular absorbent. In the event of a large spill or significant release, NFD would request assistance from the Perrysburg Township Fire Department's Hazardous Materials Response Team. Rossford Fire Department also has a spill trailer with a variety of equipment that can be called for assistance. NFD has a specific response procedure for hazardous materials incidents and provides hazardous materials in-service training twice a year.

Fire Prevention and Public Education

The civilian casualty experience in Northwood is good. Over the past five years, NFD recorded one fatality and only five civilian injuries resulting from exposure to fire by-products such as smoke or heat, or injuries received while attempting to escape from a fire.

Inspections

The department has a coordinated effort to perform fire safety inspections in commercial, assembly and industrial occupancies. The goal is to inspect all commercial or non-residential occupancies annually. Inspections also are performed for new construction projects. Inspections are performed by one of the department's 11 certified fire-safety inspectors or six certified hazard-recognition officers. The department's inspection history for the past five years is shown in Table 6. There were no inspections conducted in 2020 and 2021 due to COVID-19 restrictions and retail closings.

Year	Inspections
2017	189
2018	181
2019	219
2020	0
2021	0

Table 6: NFD's five-year inspection history

The city has adopted by ordinance the 2017 version of the Ohio Fire Code with amendments. These rules and regulations provide guidance and support for code enforcement activities. The department considers their working relationship with the Wood County Building Department to be good. The fire chief conducts plan reviews and provides input on new business and commercial construction projects.

The department has an active public education and fire prevention effort, although specific data on the number of programs and attendees is not tracked. In addition to fire extinguisher training for businesses and special groups, the department provides fire-safety education programming in the schools including pre-schools and day care centers. NFD provides cardiopulmonary resuscitation (CPR) classes, recently training 131 high school teachers and staff members. The department also has a smoke detector and carbon monoxide detector distribution program for eligible residents. The department has safety information available on their webpage and Facebook page

As they have for many years, the department participates in an annual Safety Town for young children in cooperation with the Northwood Police Department, and delivers gifts to children and shut-ins during the Christmas season.

NFD conducts cause and origin of all fires that occur in the city. If a more in-depth investigation is necessary, the State Fire Marshal's office is called to lead the investigation, assisted by a detective from the Northwood Police Department and NFD personnel.

Insurance Services Office

The Insurance Services Office, Inc. (ISO) is the leading supplier of statistical, underwriting, and actuarial information for the property/casualty insurance industry. ISO conducts field evaluations to rate communities and their relative ability to provide fire protection and mitigate fire risk. This evaluation allows ISO to determine and publish the Public Protection Classification (PPC). The published classification is based on a scale of 1 through 10, with 1 being the highest rating and 10 indicating that a community's fire suppression program does not meet ISO's minimum criteria. The PPC for Northwood, published on March 1, 2020, is 04/4Y.

How the PPC for each community affects business and homeowners can be somewhat complicated because each insurance underwriter is free to utilize the information as they deem appropriate. Many underwriters consider properties over five miles from a recognized fire station to receive a 10 PPC and therefore would be subject to higher premium rates for coverage. Northwood businesses and residents who are located more than 1,000 feet from a fire hydrant but not over five road miles from the fire station receive a rating of 4Y (formerly 8B). Those located less than 1,000 feet from a hydrant receive a 4 classification.

The PPC program evaluates communities according to a uniform set of criteria defined in the *Fire Suppression Rating Schedule*. Using the rating schedule, ISO evaluates the fire suppression capabilities of each community in three major areas:

- Emergency Communications. This review accounts for 10% of the total classification. This section reviews the facilities provided for the general public to report fires and for the operator(s) on duty at the communication center to dispatch fire department companies to fires. Northwood received 7.44 points credit out of a total maximum credit of 10.
- Fire Department. This review accounts for 50% of the total classification and focuses upon engine and ladder-service companies, distribution of fire stations and fire companies, equipment carried on apparatus, pumping capacity, training, and available firefighters. Northwood received 28.12 points credit out of a total maximum credit of 50.00. This included 6.66 points credit out of a possible 10 points for deployment, 3.58 points credit out of a possible 15 points for on-duty company personnel, and 5.31points credit out of a possible 9 points for training.
- Water Supply System. This review accounts for 40% of the total classification. This component examines the water supply a community uses for fire suppression including water main size, distribution, and storage system. Also reviewed are hydrant size, type, and installation as well as the inspection frequency, maintenance, and condition of fire hydrants. Northwood received 31.84 points credit out of a total maximum credit of 40.00.

An additional factor now evaluated is the community's community risk reduction efforts, in which fire prevention, fire safety education, and fire investigations are evaluated. The inclusion of this in the evaluation process provides recognition for those communities that employ effective fire prevention practices and allows for extra points in the grading process. Northwood received 3.96 additional evaluation points out of a total maximum credit of 5.50

The notification letter and summary report from ISO advised the city's PPC should serve as part of any planning document for future city development and fire safety protection improvement considerations as it relates to city residents.

Training

Firefighting and the delivery of pre-hospital EMS is regarded as a type of professional practice and is regulated at the state level. In Ohio, certificates to practice are required and issued for both areas at several different level of professional practice. The applicable agency is the Ohio Division of EMS. Ohio Revised Code (ORC) §4765.30 and Ohio Administrative Code (OAC) §3737 govern training requirements. Ohio training standards and level of certifications are found in Appendix A.

To meet state requirements for continuing education, the department conducts training each Monday with a morning and evening session to meet the needs of the department and accommodate the combination department configuration. One drill each month is dedicated to EMS continuing education. The training schedule with topic is posted every two months. Members are required to attend two training sessions per month, which exceeds state training requirements. NFD has identified core competencies that all personnel must demonstrate on-going proficiency. Core competencies are tested on a regular basis within the posted training schedule. Examples include self-contained breathing apparatus (SCBA) use, pump operations, use of auto extrication equipment, etc.

Several members of NFD are employed by other area fire departments, either in a part-time or full-time capacity. Documented training received by these employees at these other departments are counted for Northwood training.

Emergency vehicle driver's training is provided annually for all personnel. Classroom review is augmented with a hands-on driving obstacle course, which is conducted at the Owens Community College driving obstacle pad. Live fire training facilities at Owens are also used by NFD on a scheduled basis.

Personnel receive hazardous materials training twice each year. Most NFD personnel are trained to the awareness level, although some have operations or technician level training.
NFD officers obtain advanced training for their supervisory expectations and responsibilities through outside agencies. All department officers have received training sufficient to meet the provisions of NFPA 1021 *Fire Officer Professional Qualifications,* Level I.

EMS delivery is guided by the department's EMS field protocol. NFD is a member of the Northwest Ohio EMS Consortium. Working together, member departments operate under one field protocol. This is a tremendous benefit for departments that may respond to a large incident and to those personnel who work at more than one department in the region. As a member of the consortium, NFD personnel must pass a protocol review test annually and skill-check offs bi-annually. With a skill-check off, personnel, working within their scope of practice, must demonstrate proficiency with manipulative skills including intravenous (IV) therapy, endotracheal intubation and airway management, spinal immobilization, etc. The medical director is Stephen Zohn, M.D.

NFD utilizes the Fire Rescue Academy software package for training content and records. They have an on-site training room supported by audio-visual equipment at both stations. They have bay, ramp, and yard space for hands-on training.

The department provided a record of employee training attendance for fire and EMS topics and hours for 2021 in the formats configured by the Fire Rescue software package. The format of the records made it cumbersome to conduct analysis of compliance with department standards for attendance by a member and project such analysis to state continuing education requirements. However, the review of the records provided indicate substantial compliance with department requirements for training attendance. There were 34 employees in the 2021 record report with an average attendance of 54 hours of each member. A review of topics indicates an adequate diversity of fire and EMS related topics.

Risk Analysis

The concept of community risk analysis is an important tool in evaluating and planning for department services. Understanding the risk a community faces from a fire or rescue perspective, as well as some of the other natural, technological, and human-caused risks in the community, helps lay the groundwork for determining service objectives and the resources necessary to provide emergency services to the community. The community risk assessment (CRA) tool was used to assess the property risk within the city.

The CRA process involved performing a coordinated survey of every "target hazard" property in the department's response area. A target hazard is generally described as any large manufacturing or commercial property that typically requires a larger number of resources than is normally deployed for residential and other common types of occupancies. Target hazards also would include buildings of public assembly of 100 or more people and apartment buildings of 12 units or more. Schools, hospitals, nursing homes, and larger industrial complexes that may contain high-hazard processes or hazardous materials on site would be included.

The master target hazard file supplied by the department was used to identify, then survey and document the risk imposed by each property. This task was completed by NFD personnel upon receiving training from the assessment team. The properties were assessed for the risk posed for each of the following elements:

- Life hazard
- Community impact
- Hazard index
- Water supply
- Building usage
- Building construction
- Number of stories
- Square footage

Each of the areas described received a rating score from 1 to 3, with 1 equating to low risk or impact and 3 representing high risk or high impact. Each address was provided with a final CRA rating from 0-9 for the lowest risk properties to 21-24 for the highest risk (based on the eight rated categories). The scores were reviewed and the following levels of identified risk were classified.

Risk	CRA Score
Maximum ……..	21-24
Significant …….....	16-20
Moderate …….....	10-15
Low …….....	0-9

The risk analysis covered 93 target hazards. There were no occupancies that rated a maximum risk. However, 30 occupancies rated a significant risk and 62 occupancies were rated a moderate risk. The risk profile is typical for a community of this size.

Of the significant risk properties, one handles and stores hazardous materials on site; Whitaker Finishing, 2707 Tracy Road, is a specialized metal finishing and plating business. This facility deals with a variety of acids and metal finishing compounds.

Parkcliffe of Northwood is an assisted living and memory care occupancy with a three-building complex located at 3055-3075 East Plaza Boulevard. The Northwood Local School system has two buildings located on its Lemoyne Road campus. Although identified as significant risk properties, schools always pose a special challenge due to their size and number of occupants. Also located in the city are nine churches of various sizes and three motels/hotels.

Response Considerations

In fire suppression and EMS response there are several recognized safety and response standards or guidelines that are considered when analyzing emergency service delivery. NFPA 1500 *Standard on Fire Department Occupational Safety and Health* is the safety standard for the fire and EMS service and deals with all aspects of fire department operational safety. Major components of the standard include personnel, apparatus, equipment, and incident management. The topics have general performance objectives, but the specific topic is generally more formally addressed in its own specific standard. Appendix B in NFPA 1500 contains a checklist that can be useful for departments to evaluate their overall safety and health program. While NFPA 1500 is non-binding, the OAC specifically addresses many aspects of firefighting safety standards and firefighting equipment.

OSHA has established a national standard for fire ground staffing as it relates to interior firefighting operations. Although the directive is very detailed, it essentially states that before two properly trained and equipped firefighters can enter a structural fire there must be at least two or more properly trained and equipped firefighters ready to replace, rescue or assist the

initial entry firefighters. This standard is often referred to as the "2-in, 2-out" rule. This rule also is listed in OAC §4123:1-2, which applies to firefighting operations in Ohio.

NFPA 1561 *Standard on Emergency Service Incident Management System* also has some relevance. It states that an effective span of control shall be determined by the ability of each supervisory position to monitor the activities of assigned subordinates. Span of control is a term to describe the number of workers that a supervisor can effectively manage. The range of span of control is considered to be three to seven, with an optimum of five. However, span of control is determined by the degree of complexity or danger of the task or activity. For example, a serious auto accident involving a difficult extrication procedure may require a span of control of three, while an officer may be able to effectively manage 10 water tenders (tankers) operating in a water shuttle at a rural fire.

Another critical factor in meeting service expectations is assuring that response crews are capable of performing the required tasks on arrival. The dispatching of a specific response with a minimum crew assignment is a concept that is widely supported by fire service literature and industry best practices. The NFPA's *Fire Protection Handbook* provides recommendations for the minimum response to various structures. Table 7 depicts those recommendations.

Structure Type	Minimum Response
High-hazard occupancies Schools, hospitals, nursing homes, explosives plants, refineries, high-rise buildings, and other high life hazard or large fire potential occupancies.	At least 4 pumpers, 2 ladder trucks (or combination apparatus with equivalent capabilities), 2 chief officers, and other specialized apparatus as may be needed to cope with the combustible involved, not fewer than 24 fire fighters and 2 chief officers. One or more safety officers and a rapid intervention team(s) are also necessary.
Medium-hazard occupancies Apartments, offices, mercantile and industrial occupancies not normally requiring extensive rescue or fire-fighting forces.	At least 3 pumpers, 1 ladder truck (or combination apparatus with equivalent capabilities), 1 chief officer, and other specialized apparatus as may be needed or available; not fewer than 15 fire fighters and 1 chief officer, plus a safety officer and a rapid intervention team.
Low-hazard occupancies One-, two-, or three-family dwellings and scattered small businesses and industrial occupancies.	At least 2 pumpers, 1 ladder truck (or combination apparatus with equivalent capabilities), 1 chief officer, and other specialized apparatus as may be needed or available; not fewer than 14 fire fighters and 1 chief officer, plus a safety officer and a rapid intervention team.
Rural operations Scattered dwellings, small businesses, and farm buildings.	At least 1 pumper with a large water tank (500 gal or more), one mobile water supply apparatus (1,000 gal or larger), and such other specialized apparatus as may be necessary to perform effective initial fire-fighting operations; at least 12 fire fighters and 1 chief officer, plus a safety officer and a rapid intervention team.
Additional alarms	At least the equivalent of that required for rural operations for second alarms. This may involve the immediate use of mutual-aid companies until local forces can be supplemented with additional off-duty personnel.

Table 7: NFPA recommended minimum response resources based on occupancy hazard type

NFD has written procedures for dispatching initial companies as well as specific actions and assignments for the first-arriving engine company. The department also has developed alarm assignments, which includes AMR companies, and greater alarm assignments, all based on the location of the incident within the city. For management and pre-planning purposes, the department has created two response districts within the city. District 1 includes the western part of the city and District 2 includes the central and eastern areas of the city. For example, for a structure fire response located in District 1, NFD units Engine 82, Engine 83, Truck 83, and Medic 80 would be dispatched, along with Rossford Engine 29 and Perrysburg Township Engine 74. For a structure fire located in District 2, Lake Township Engine 27 and an engine from Allen-Clay Joint Fire District would be dispatched along with NFD units. In areas of District 2 with no hydrants, Lake Township Tanker 27

would also be dispatched. This is good planning and gets needed resources on the scene quicker to affect a positive outcome.

Response Performance

Response goals are a local decision and are based on a variety of factors. Some of those factors include demographics and size of the response area, risk, demand volume, and public expectation. A number of efforts have been made to develop a consensus standard for response time, unit staffing and deployment of resources. While there is no one consensus standard, there are several that provide guidance.

ISO provides some guidelines, but those are singularly focused on travel distance. For full credit, ISO recommends that all residential and commercial properties within NFD's service area have a first-due engine company within one and a half road miles and a ladder-service company within two and a half road miles.

NFPA 1710 is the *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments.* The standard outlines criteria that address functions and objectives of fire department emergency service delivery, response capabilities, and resources.

The Commission or Fire Accreditation International, which is part of the Center for Public Safety Excellence (CFAI), publishes criteria in their *Standards of Cover*. CFAI criterion refers to NFPA 1710 for communities that have personnel on-station, regardless of the personnel are full-time or part-time, or the community is suburban or urban in nature.

Based on NFPA 1710 criteria, NFD should meet the following response time objective: for 90% of all fire incidents, the first-due unit shall arrive within 7 minutes, 06 seconds total response time. This response objective includes 106 seconds (1:46) for call processing at the communication center, 80 seconds (1:20) for turnout, and 240 seconds (4:00) for travel time. This response time objective begins when the 9-1-1 call is received at the communication center. Time requirements for EMS calls are comparable to fire incidents and are based on research conducted on pre-hospital delivery of medical care and patient outcome and survivability. The purpose of a quick response, especially in the most critical situation (cardiac arrest) is that the brain, devoid of oxygen and circulation, begins to die within four to six minutes. Interventions include early CPR and electrical defibrillation.

For medical emergencies, a prompt response is needed to relieve suffering and save lives, but few calls for service are true life or death emergencies. Again, a reasonable service goal is to be on scene soon enough to: 1) assess patients and prioritize to prevent death and disability; 2) intervene successfully in life-threatening emergencies; and 3) stabilize patients to prevent additional suffering. The response time objective for EMS incidents includes for 106 seconds (1:46) for call processing, 60 seconds (1:00) for turnout, and 240 seconds (4:00) for travel time.

The total response time is 6:46 minutes for 90% of the incidents.

The published response criteria are based on national fire behavior research. There also is information on EMS response in relationship to patient outcomes. This research and other detailed information can be reviewed in Appendix B.

NFD has a stated goal of "two-minute chute time", which means the goal is to have the first unit receive the dispatch and leave the station enroute to the call within two minutes. However, there are no other stated response performance objectives or goals.

When notified of an EMS incident, the two-person crew on duty at Station 82 responds in a medic unit to the location of the emergency. If additional personnel are needed for patient treatment or lifting assistance, POC respond to the station and then to the scene with the appropriate vehicle. Some POC personnel may also respond directly to the scene as may be appropriate.

When notified of a fire incident, the two-person crew on duty at Station 82 responds to the incident in the mini-pumper. POC personnel respond from home or their place of employment to their respective station, then respond to the scene in the apparatus assigned to the call by dispatch, depending on the location of the incident. If the incident is a reported structure fire the AMR companies pre-determined for the location are also dispatched.

Call Processing Time

Call processing time is a component of the communication system. NFD is served by the Northwood Communications Center. Operated by the Northwood Police Department, the communications center serves as a public safety answering point (PSAP). A 9-1-1 call originating in Northwood and reported by traditional telephone "land line" goes to the communications center and is then processed according to the type of emergency. The dispatcher verifies the location, immediate caller information, and nature of the emergency. The location of the call and the emergency response information appears on a screen in front of the dispatcher providing the necessary information to notify and dispatch the appropriate emergency response equipment and personnel. This database and software are commonly referred to as a computer-aided dispatch (CAD) system. An emergency reported by cellular phone may be received by the Wood County Communications Center and then transferred to Northwood.

Determining an acceptable amount of time to process an emergency call can be difficult because communication center systems vary from jurisdiction to jurisdiction. NFPA 1221 *Standard on Emergency Services Communications Systems* establishes various benchmarks for call handling depending on the system, type of call and level of caller assistance provided. NFPA 1710 also establishes benchmarks for call processing based on objectives listed in NFPA 1221. For fire and EMS calls, emergency call processing and dispatching shall be completed within 106 seconds (1:46) for at least 95% of the alarms. This call processing criteria is adopted by CFAI

and included in the criteria listed in NFPA 1710 and NFPA 1221.

Note: The reader may note different call processing time benchmarks when comparing Lake Township and Rossford response data. Northwood communication center personnel are not trained in nor do they have the emergency medical dispatch (EMD) software, which permits dispatchers to provide emergency care instructions over the phone to callers. If the communications center had EMD capability, the call processing time benchmark is longer.

Turnout Time

Turnout time is measured from the time personnel are "toned out" or notified for an emergency response to the time the first unit marks enroute to the call. Turnout time is a measurement used for personnel who are typically "in-station". The turnout time benchmark is 80 seconds (1:20) for fire calls and 60 seconds (1:00) for EMS calls.

Travel time

Travel time is the time it takes for dispatched response units to arrive on scene at the emergency. Travel time is generally considered to encompass the distance and time traveled from the fire station housing the apparatus until it arrives on scene at the location of the emergency. However, several factors can affect travel time. Winter weather conditions as well as localized flooding can affect travel time during certain times of the year. Traffic patterns on heavily traveled roadways, especially during peak travel hours can affect the emergency response. A response could also be impacted by a blocked rail crossing.

Travel time and subsequently overall response time can be affected by the location of the fire station. Northwood operates from two stations, but only Station 82 is staffed. Those areas farthest from Station 82 will have longer travel times.

Another problem that can increase travel time and ultimately responder response time is receiving multiple calls for services, also referred to as "overlapping" calls. When simultaneous emergencies occur and adequate resources are not available to respond, a condition occurs that is referred to as "call stacking." A component to call stacking is that at times units may need to respond from mutual-aid departments to provide the quickest and most reliable response to the incident. Clearly, this would lengthen the travel time of the response unit because of the unavailability of the first response units in the district. This commonly occurs with EMS incidents. Over the past five years, NFD has experienced a significant number of at least two or more overlapping EMS calls. In 2017, there were 64 occurrences, 148 in 2018, 176 in 2019, 84 in 2020 and 106 in 2021.

Data Analysis

Data generated during the reporting period of January 1, 2020 through December 31, 2021 was analyzed to determine response performance. The data set included fire responses and EMS responses coded as an emergency response. Responses that were coded as non-emergency responses (no lights and sirens) were not included in the analysis. False alarm responses where

the responding units were cancelled before arrival and mutual-aid responses were also excluded from the data set.

It is common for many organizations to use average response times in determining response performance. However, the use of averages and median measurements does not provide a true indication of performance. One or two "outliers" may adversely affect the response analysis, leading management and residents to an inaccurate and at times, unfair service expectation. NFPA and CFAI have recognized the use of percentiles as the most accurate method to analyze and evaluate response performance. Tables 8 and 9 display the department's overall response performance for fire and EMS responses within the city when compared to NFPA response criteria. For fire responses, the target time benchmark is 95% for call handling and 90% for turnout time, travel time, and total response time. Meeting the target-time benchmark for at least 70% of the incidents is often considered the minimum performance goal. The percentage column shows the actual percentage the department is meeting the target time objective.

Element	Target (minutes)	Percentage
Call Processing Time	1:46	76%
Turnout Time	1:20	36%
Travel Time	4:00	43%
Total Response Time	7:06	37%

Table 8: NFD's fire incident response performance

For EMS responses, the target-time benchmark is 99% for call handling and 90% for turnout time, travel time, and overall response time. Meeting the target-time benchmark for at least 70% of the responses is often considered the baseline or threshold measurement

Element	Target (minutes)	Percentage
Call Processing Time	1:46	80%
Turnout Time	1:00	39%
Travel Time	4:00	50%
Total Response Time	6:46	44%

Table 9: NFD's EMS incident response performance

The response data for total fire response time indicates a performance gap, meeting the performance benchmark 37% of the time. The total EMS response time shows the department is meeting the performance benchmark 44% of the time. The EMS turnout performance benchmark is being met 39% of the time.

NFD has the city divided into two response districts for incident response planning and data management purposes. District 1 includes the western part of the city and District 2 includes the central and eastern areas of the city. Station 83 is located in District 1 and Station 82 is located in District 2. Station 82 is where the part-time personnel are deployed and provide the first-due

response citywide. Tables 10 and 11 display the travel and total response times for fire and EMS response located in each district.

Element	District	Target	Percentage
Travel Time	1	4:00	35%
Total Response Time	1	7:06	28%
Travel Time	2	4:00	67%
Total Response Time	2	7:06	63%

Table 10: NFD's fire response performance by response district

Element	District	Target	Percentage
Travel Time	1	4:00	27%
Total Response Time	1	7:00	27%
Travel Time	2	4:00	70%
Total Response Time	2	7:00	66%

Table 11: NFD's EMS response performance by response district

A key aspect of the response performance is the number of personnel available to respond to emergency calls. NFD addressed this in part by adding part-time personnel around-the-clock to improve response time and reliability, primarily for EMS. However, the department's fire response is heavily dependent and based on POC availability and response, supplemented by the on-duty part-time personnel and AMR companies. For fire responses, the assessment team analyzed the POC response history for 2020 and 2021, which is displayed in Figure 6. The department responded with six to 10 personnel 51% of the time and 11 personnel or more 25% of the time. Twenty-four percent of the responses had five or fewer personnel respond.

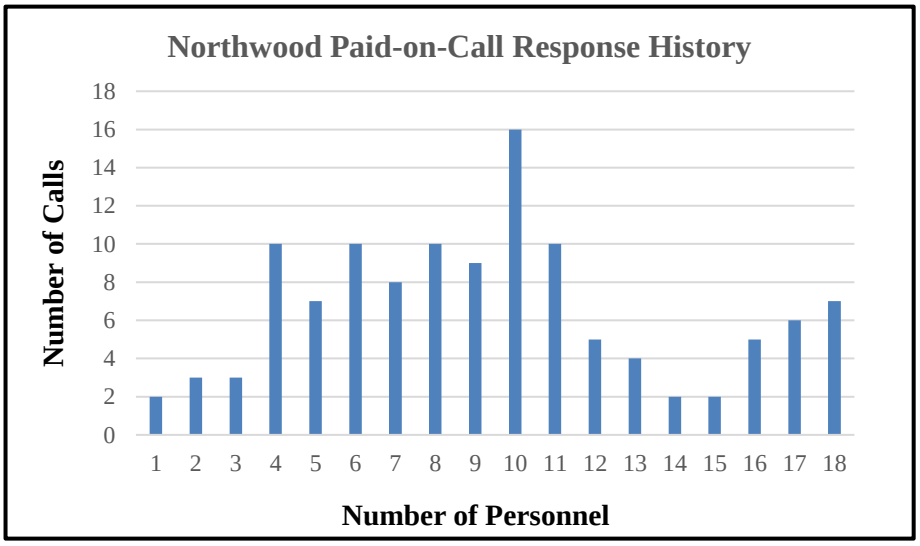


Figure 6: NFD's POC response history 2020-2021

Facilities

NFD operates from two fire station facilities. Station 82 is located at 6000 Wales Road and Station 83 is located at 2100 Tracy Road in Northwood. Station numbers were designated some years ago when the departments in northern Wood County transitioned to the Lucas County radio system. NFD refers to Station 82 as Station 2 and Station 83 as Station 1. When referenced in this report, the countywide station number will be used.

Station 82

Overall, the station is in good condition, having been originally constructed on the current site in the mid-1950s. The station sits on a flat property that it shares with other municipal services, such that there are multiple areas of paved surface and parking lots available for use by the fire department for training, staging, etc. The front of the building sits well off Wales Road for more than adequate room to position apparatus out of the building and on the front ramp. There are good sight lines for emergency equipment exiting the station.

The station does not preclude handicap access but is not equipped with special handicap conveniences such as power assisted exterior and interior door opening and counter clearances consistent with full handicap access. The building is normally locked; all personnel make entry into the building using a code-entry lock system. The building exterior is monitored by a security camera.

Station 82

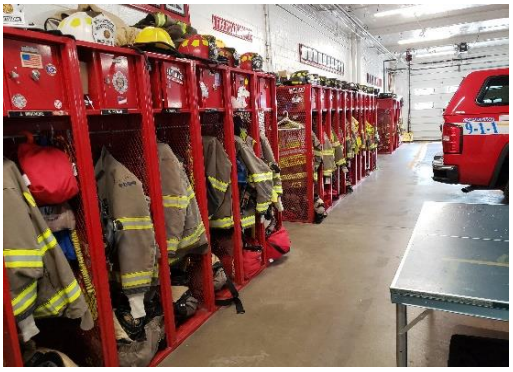
Three apparatus bays face the "front" of the station. There are three additional bay exits at right angles to these three, on what is the east side of the station/municipal complex. The bays are accessed in one direction, from the front or east side ramps. Three of the overhead doors are 14 feet (ft.) x 12 ft. with the other three overhead doors 12 ft. x 12 ft. The doors are equipped with emergency releases enabling manual operation in the event of an electrical or mechanical failure. There are no emergency indicators installed on bay doors that would warn when a door is not

fully raised.

In addition to the apparatus, the bays contain hose, breathing air equipment, cleaning supplies, personal protective equipment (PPE) racks, and other associated small equipment for which there is some designed or appropriate storage space. There is a "Plymo-Vent" diesel exhaust source-capture system installed for each bay. The lighting in the bay work areas is sufficient for routine activities such as apparatus checks and building cleaning and maintenance. The bay floor is partially covered by floor drains that meet current standards for fuel spillage containment. The bays are clean and well organized. What seemed evident during the inspection of the bay area is a positive effort to address the operations of a fire department intended to meet modern standards.

Firefighter PPE is stored for quick response by personnel on racks on the apparatus floor but are exposed to ultraviolet light. There is no provision for emergency decontamination of personnel, equipment, or PPE. There is an "extractor" type washer for cleaning of PPE and a separate residential-grade washer and dryer in the station.

The department's breathing air compressor, two-cylinder containment fill station, and four-cylinder cascade fill assembly are located in the apparatus bay area. While there is no provision for intake of outside air, the intake side of compressor is monitored by a carbon monoxide detector and warning system.



PPE Storage Racks

Air Compressor and Cascade System

EMS storage and inventory control efforts are evident. Controlled substances are under a "double lock" condition. Pharmaceuticals and special EMS equipment is "dispensed" by a coded/audited system. Contaminated biohazard materials are accumulated for disposal in an area of the bay.

The station currently houses two part-time personnel around-the-clock. It also serves as department headquarters with administrative offices including the fire chief. There is adequate administrative office and work space for office functions and professional work environment. There also is direct access from the office area to the city administration portion of the building.

Space for maintaining around-the-clock staffing and support is sufficient with modern practice of

staffed fire stations. The kitchen and dining area have sufficient space and the cooking equipment is protected with an automatic suppression system. The restroom facilities are not gender specific but are effectively gender neutral by department regulation. However, personal locker storage for employees is minimal.

A dayroom is located off of the bay area which also doubles as a training room. There also is a radio/alarm room that is equipped appropriately.

The building has a basement area that is used by both the fire department and police department for training. There is a large designated exercise area on the basement level with fitness equipment visible during site visit. The basement is more than adequate to serve as a storm shelter for employees.

The building is not protected by fire detection and alarm or entry alarms. The living quarters are protected by carbon monoxide (CO) detectors. A diesel-fueled emergency generator with automatic transfer switch provides power for the entire station if electrical power is lost. There was no intent to inspect, evaluate, opine, or recommend building infrastructure features (electrical, plumbing, heating, etc.) and their conditions.

Station 83

Station 83 is located at 2100 Tracy Road, on the west side of Northwood. Construction on the station was completed in 2006. The station sits on a flat property that it shares with a municipal park area, such that there are multiple areas of paved surface and parking lots available for use by the fire department for training, staging, etc. The front of the building sits well off Tracy Road for more than adequate room to position apparatus out of the building and on the front ramp. There are good sight lines for emergency equipment exiting the station. The rear of the fire station parking lot is lined with trees, separating it from a large retention basin.

Station 83

This station serves as a traditional volunteer station and does not have personnel scheduled on-

station. Upon receiving notification of an emergency, personnel respond to the station from their home or their place of employment, then respond to the emergency with the appropriate apparatus or equipment.

The building is normally locked; all personnel make entry into the building using a code-entry lock system. The building exterior is monitored by security cameras that are monitored by the Northwood Communication Center. The building and equipment are not protected by fire detection and alarm or entry alarms. The station does not preclude handicap access but is not equipped with special handicap conveniences such as power assisted exterior and interior door opening and counter clearances consistent with full handicap access.

The station contains four apparatus bays, three of which are configured for "drive thru". The bay doors are 14 ft. x 12 ft. and are equipped with emergency releases enabling manual operation in the event of an electrical or mechanical failure. There are no indicators installed on bay doors that would warn a door is not fully raised.

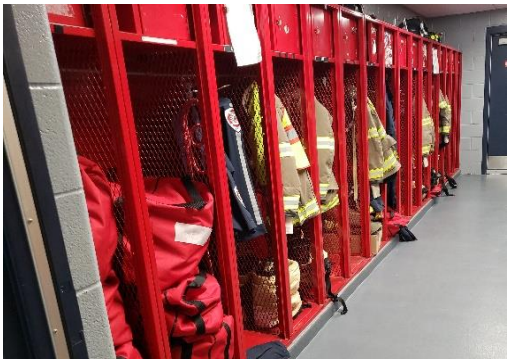
In addition to the apparatus, the bays contain hose, breathing air equipment, cleaning supplies, and other associated small equipment for which there is designed or appropriate storage space. Diesel exhaust and bay air quality is managed by exhaust fans that activate with carbon monoxide sensors located strategically in the apparatus bay. The lighting in the bay work areas is sufficient for routine activities such as apparatus checks and building cleaning and maintenance. The bay floor has trench-style floor drains that meet current standards for fuel spillage containment and are positioned along the apparatus midlines to facilitate floor drying. The bays are clean and well organized. What seemed evident during the inspection of the station is a positive effort to address the operations of a fire department intended to meet modern standards.

Firefighter PPE is stored for quick response by personnel on racks in the gear storage room. There are provisions for emergency decontamination of personnel in the station. There is an extractor-type washer for cleaning of PPE and a residential-grade clothes washer and dryer. A breathing air compressor, two-cylinder containment fill station, and four-cylinder cascade fill assembly are located in a designated room off of the apparatus bay area. While there is no provision for intake of outside air, the intake side of compressor is monitored by a carbon monoxide detector and warning system.

EMS storage and inventory control efforts are evident. Controlled substances are under a "double lock" condition. Contaminated bio-hazard materials are accumulated for disposal in an area of the bay.

There is adequate administrative office and work space. A radio/alarm room is located in the office area and is equipped appropriately. The station has sufficient space and is equipped for future in-station staffing if needed. This includes a dormitory area and dayroom. The kitchen and dining area also have sufficient space and the cooking equipment is protected with an

automatic suppression system. The restroom facilities are not gender specific but are effectively gender neutral by department regulation. However, personal locker storage for employees is minimal.



PPE Storage Racks

Kitchen and Dining Area

The mezzanine level of the office area features a training room, which has audio-visual capability. There also is a large space dedicated as an exercise area with fitness equipment. The building is not protected by fire detection and alarm or entry alarms; however, the living area is protected by CO detectors. A natural gas-fueled emergency generator with automatic transfer switch provides power for the entire station if electrical power is lost. There was no intent to inspect, evaluate, opine, or recommend building infrastructure features (electrical, plumbing, heating, etc.) and their conditions.

Apparatus and Equipment

Overall, the department's fleet and equipment appear to be in good condition and well-maintained. The corresponding maintenance records and equipment inventory were reviewed by the assessment team during the site visit. The fleet consists of three engines (sometimes referred to as pumpers), an aerial ladder, three ambulances, two staff vehicles, and a utility vehicle. All fire apparatus appears to be equipped to NFPA 1901 *Standard on Automotive Fire Apparatus* and ISO standards. The following is a brief description of each piece of apparatus and equipment.

Mini-Pumper 82 is a 2005 KME mini-pumper with a 500 gallons-per-minute (GPM) pump and carries 300 gallons of water. It is equipped with the necessary hose and loose equipment as required by NFPA 1901. It also carries some hazardous materials mitigation equipment and an automatic external defibrillator (AED). This unit has 35,747 miles and is in fair condition.

Engine 82 is a 2001 KME 1,500 GPM pumper and carries 750 gallons of water. It is equipped with the necessary hose and loose equipment as required by NFPA 1901. It also carries a combi-tool rescue kit for special rescue situations and an AED. This unit has 19,215 miles and is in good condition.

Tower 83 is a 2009 KME 102 ft. aerial ladder platform. It has a 2,000 GPM pump and carries 300 gallons of water. It is equipped with the necessary hose, tools and equipment as required by NFPA 1901. This unit also carries hydraulic-powered extrication equipment. It has 9,507 miles and is in good to very good condition.

Engine 83 is a 2017 Pierce pumper with a 1,500 GPM pump and carries 1,000 gallons of water. It is equipped with the necessary hose and equipment required by NFPA 1901. It is equipped with a 30-gallon Class A onboard foam system and carries extrication equipment and rescue air bags. This unit has 7,957 miles and is in very good condition.

Medic 82 is a 2015 AEV Type III medium-duty modular ambulance on a Chevrolet chassis. This unit is configured and equipped to deliver ALS level care and transport service including a Zoll cardiac monitor/defibrillator and a patient power-load system. It also carries two SCBA units. This unit has 71,119 miles and is in very good condition.

Medic 83 is a 1998 Horton Type III medium-duty modular ambulance on a Ford chassis. This unit is configured and equipped to deliver ALS level care and transport service including a Zoll cardiac monitor/defibrillator and a patient power-load system. It also carries two SCBA units. This unit has 60,874 miles and is fair condition.

Medic 80 is a 2021 Braun Type I medium-duty modular ambulance on Ford F-550 chassis. This unit is configured and equipped to deliver ALS level care and transport service including a Zoll cardiac monitor/defibrillator and a patient power-load system. It also carries two SCBA units. This unit has 17,860 miles and is in very good condition.

Utility 82 is a 2018 GMC crew-cab pick-up truck. It serves as a utility vehicle and carries an AED and other medical support equipment. This unit has 14,700 miles and is in good condition.

Utility 83 is a 2006 Ford Expedition sport utility vehicle (SUV) used as a station vehicle. It carries an EMS first-in bag and a Zoll cardiac monitor/defibrillator. The unit has 92,622 miles with visible rust and corrosion. It is in fair condition.

Command 82 is a 2021 Chevrolet Tahoe SUV used as a staff and command vehicle. It is equipped with radios that allow communication on multiple radio channels, reference material, and incident management boards. The vehicle is designed to serve as a command post at major incidents. It has 4,312 miles and is in excellent condition.

Command 83 is a 2014 Chevrolet Tahoe SUV used as a staff and command vehicle. It is equipped with radios that allow communication on multiple radio channels, reference material, and incident management boards. The vehicle is designed to serve as a command post at major incidents. It has 38,192 miles and is in good condition.

NFD has a 15-year capital replacement plan that is updated regularly to adjust for inflation and operational needs. The department rotates ambulance units from front-line service to back-up and reserve to extend the service life of the units, which results in a planned 15-year replacement cycle. However, some of the ambulance replacements have been pushed back due to a reduction in city revenue, related in part to the COVID-19 pandemic. Medic 83 is next to be replaced (scheduled for 2022) and Medic 82's replacement has been pushed back, replacement date to be determined. Medic 80 was replaced in 2021 and acquired with lease purchase agreement. Those annual debts service payment will conclude in 2024. A shortened five-year version of the capital replacement plan is displayed in Table 12.

Unit	Type	Year	Replaced After	2023	2024	2025	2026	2027
CH82	SUV	2021	15 Years					
CH83	SUV	2015	15 Years					
U83	SUV	2005	15 Years					
E83	Engine	2017	25 Years					
T83	Tower	2009	25 Years					
M83	Medic	1998	15 Years					
MP82	Mini-Pumper	2005	25 Years					
M80	Medic	2021	15 Years					
U82	Pick-Up	2018	15 Years					
E82	Engine	2001	25 Years				$800,000	
M82	Medic	2015	15 Years					
Annual Totals							$800,000	

Table 12: NFD's capital replacement plan 2023-2027

Equipment Maintenance and Self-contained Breathing Apparatus

NFD currently uses Scott 30-minute, 5,500 psi SCBA units. The entire inventory of 28 SCBA have been in service for eight years and are in very good condition. There is an SCBA unit for each riding position in all apparatus and ambulances. There are spare cylinders for each of the units, which are carried on the apparatus. The current respiratory protection program includes annual facepiece qualitative fit testing. Personnel receive an annual pulmonary function test (as described on pages 8-9) and medical clearance to use a respirator as outlined in §4123:1-21-02 [P] [3] OAC. SCBA annual flow testing is conducted by Atlantic Emergency Solutions (formerly Finley Fire Equipment of McConnelsville, OH). However, the maintenance records for the respiratory protection program (flow testing, repair and fit-testing) were not available at the time of the site visit.

The department uses two 6,000 psi Bauer breathing air compressor and cascade air-filling systems, one at each station. The department contracts with a qualified agency to inspect and maintain the compressors on a regular basis including air quality testing.

Annual pump testing is conducted by Atlantic Emergency Solutions of Findlay, OH in accordance with NFPA standards. Testing documentation is maintained. Every four years, the department should consider expanding pump testing to include non-destructive apparatus frame inspection and analysis. This testing looks for early signs of cracks, delamination, and corrosion of frame rails, supports, and tire rims. This helps assure safe and proper operation of apparatus during an emergency response.

Ground ladders and the aerial are inspected and tested annually by Consolidated Fleet Services of Searcy, AK. However, records were not available at the time of the site visit. NFPA

compliant hose testing was reported to be conducted annually. A qualified contractor is employed for this testing; however, records were not available at time of site visit.

Personal Protective Equipment (PPE)

The majority of the department's structural firefighting PPE is manufactured by Globe. In general, the gear is in good to very good condition. At Station 83, the PPE is stored in open metal racks in a designated room off of the apparatus bay. Exhaust fans in the apparatus bay area activates when CO sensors located strategically in the apparatus bay sense a predetermined level of CO. This system potentially exposes the PPE to the accumulation of diesel exhaust fumes and particulates generated when vehicles are started or driven in or backed-in the station. At Station 82, the PPE is stored in open metal racks located at the rear of the apparatus bay; however, the station is equipped with a diesel exhaust-capture system which eliminates this PPE exposure. However, PPE is exposed to ultraviolet light during different times of the day. This exposure can cause premature degradation of the PPE's protective qualities.

There is a department program to regularly inspect and repair PPE. There is a replacement schedule for the PPE such that every member might eventually have two sets of gear as a goal. Since the department's roster consists of part-time and POC personnel, a stock of used PPE is maintained to initially outfit new members.

Communications

NFD is dispatched by the Northwood Police Department Communication Center, which serves as a both a primary and secondary PSAP. If a 9-1-1 call originates in Northwood and is reported via standard telephone land-line, the call is received by the Northwood Communication Center. If a 9-1-1- call is made by cellular phone, the call is received by the Wood County Sheriff's Communication Center located in Bowling Green. After confirming the location and type of call, the caller is transferred to the Northwood Communication Center for handling. The *Alert Public Safety Solutions* CAD software package is used by the communication center to facilitate dispatching and automatic response and multiple-alarm assignments.

NFD along with four other departments in northern Wood County (Lake Township, Perrysburg, Perrysburg Township, and Rossford) operates on an 800 MHz trunked system. This Motorola-based system is affiliated with the Lucas County system. The department is initially dispatched or notified using an 800 MHz paging tone out that activates alert receivers in the fire station and pagers carried by personnel. Personnel can also receive notification of an emergency call if they have the *IamResponding* App on their personal cellular phone. In addition to mobile radios, the department has enough inventory to equip each on-scene firefighter with a portable radio. All five departments have interoperability with multiple channels and talk groups.

Administrative Policies and Standard Operating Procedures

The department is subscribed to Lexipol LLC, for their administrative policies and standard operating procedures (SOPs). The policy manual covers a variety of topics including drug- and alcohol-free workplace, protected health information (HIPAA), family and medical leave, harassment, etc. The department also has policies on hiring, medical examinations, and other topics.

The procedures manual includes written procedures for incident management, mutual-aid response, drug box checks and inventory, and Mayday. The department follows countywide procedures for accountability and rapid intervention team (RIT). A number of daily operational areas were addressed, including chain of command, job descriptions, and internet use.

Lake Township

Lake Township is located in northeastern Wood County. It is bordered by the city of Northwood on the north, Troy Township on the south, and Perrysburg Township on the west. Lake Township's eastern border is the Ottawa County line. The township has a unique blend of residential, agricultural, manufacturing, transportation, and industrial components. Lake Township encompasses an area of 34.8 square miles, which includes the villages of Walbridge and Millbury. Figure 7 is a map of Lake Township.

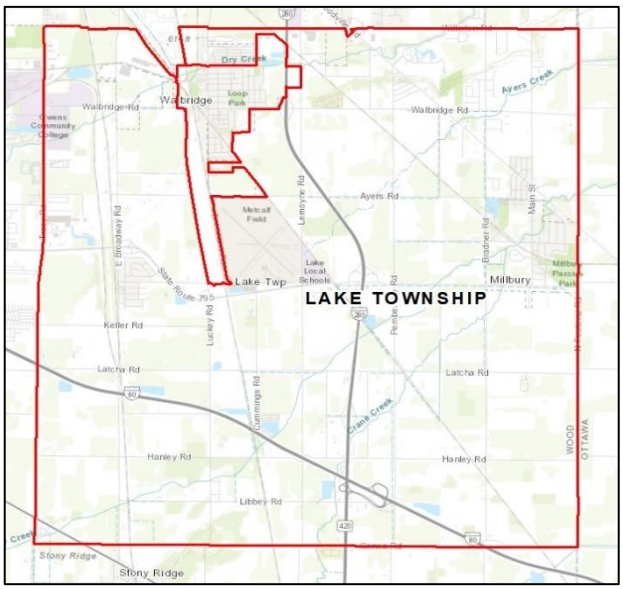


Figure 7: Map of Lake Township

The township has a mix of low- and medium-density residential development, light industrial development, farmland, and open green space. There are 12 active subdivisions totaling 808 lots. These subdivisions are a varied mix of starter homes, young urban professional and elderly housing. The village of Millbury also has four active subdivisions totaling over 100 lots. In

addition to the new subdivisions, several well established and maintained older subdivisions exist in the township and the villages of Millbury and Walbridge. There are also three manufactured home parks totaling 612 permanent and 50 temporary lots.

The township is considered a major transportation hub for commuter and commercial traffic including rail, air, and highway systems. CSX and Norfolk Southern rail lines run through the township, including spur lines to local industry and to Walbridge Yard and Stanley Yard, two large classification rail yards located just outside Walbridge. The Toledo Executive Airport (formerly known as Metcalf Airport) is located on State Route 795 just north of the township administration building. Major roadways in the township include Interstate-280, the Ohio Turnpike (Interstate-80/90), State Route 795, State Route 579, State Route 163, and State Route 51. There are six large truck stops located in the vicinity of the Ohio Turnpike interchange at Interstate-280 and State Route 420.

Lake Township is a township form of government as outlined in the Ohio Constitution. The township is governed by a three-member board of trustees elected to staggered four-year terms. There also is an elected fiscal officer and an appointed township administrator, who oversees daily operations of the township.

Demographics

According to the most recent published U.S. Census data, the township's population in 2020 was 15,554, which includes Millbury (1,193), Walbridge (3,011), and 11,350 in the unincorporated areas of the township. In total, the current population is 87% white, 6% Hispanic or Latino, and 1% Black; other ethnicities make up 6% of the population. Citizens over the age of 65 account for 22% of the population and children under five years of age account for 7% of the population.[2] The township has a population density of 442 people per square mile.

Growth

Lake Township is well situated to support its existing commercial/industrial growth and future expansion as identified in the 2017 *Wood County Planning Commission – Future Land Use Plan.* The northern portion of the township is designated as an area for reinvestment priority and the southern portion of the township is identified as having a large area for infrastructure availability to open land spaces. These specific areas have benefited from current surface transportation systems; Interstate 280 and State Routes 579 and 51 located in the north portion of the township and Interstate-80/90 (Ohio Turnpike) that transverse the southern section of the township.

A number of companies have located in the township recognizing the many attributes necessary for successful business/industrial operations. These include companies as the Norfolk Southern

[2] U.S. Census 2020

and CSX rail yards, Cleveland Cliffs Tubular Components, The Cliffs Alpha Pipe & Tube Inc., Jones Hamilton, an employee-owned chemical company as well as major trucking companies such as Nagle Trucking and Service and Tri State Expedited Shipping. First Solar has two facilities totaling over 4 million square feet of space. Future expansion is planned adding an estimated 1,000 employees. As the township anticipates additional residential and commercial development, the Wood County Planning Commission's land use plan coupled with development of a township land use planning document

t should assure orderly growth for the foreseeable future while enabling the township to develop resources necessary for governmental services in an efficient manner.

Fire and Emergency Services

The Lake Township Fire Department (LTFD) serves Lake Township, which includes the villages of Walbridge and Millbury. The department operates from three fire stations and provides fire protection, EMS, and fire prevention and public education services to the community. The EMS is an ALS level and transport service.

LTFD was formed on the first of June 1991 by the merger of the Walbridge - Lake Fire Department and Millbury Fire Department. With the merger, the fire department's staffing and equipment doubled. This was necessary with the growth in population and businesses in the township. For many years EMS was provided by a contracted private agency until April of 2018 when the fire department began providing EMS.

Funding

The fire department is funded like all other Ohio townships with fire and EMS levies using millage against real property within the entire township including the villages of Walbridge and Millbury. There are currently four levies; an ambulance and EMS .80-mill continuous levy passed by voters in 1990; a fire and EMS 2.0-mill continuous levy passed in 1990; an ambulance and EMS 1.0-mill levy passed in 2017; and a 1.0-mill, five-year fire levy passed in 2020. The County Auditor's office estimated 2021 real-estate tax rate payment due in 2022 at $936,781. The township's permanent appropriations budget for 2022 for fire and EMS services was set at $1,460,580. This includes revenue from EMS billing for patients treated and transported to a hospital as well as carryover dollars from 2021.

The township contracts with Great Lakes Billing of Cleveland to manage and process all EMS billing for the fire department. The township has a "soft-bill" policy for township residents and "hard-bill" policy for non-residents. Non-collectible and past due EMS accounts are turned over to the Ohio State Attorney General's office for collection. EMS revenue in 2021 was $243,000. Great Lakes Billing routinely reviews the fee structure and make recommendations in maintaining rates consistent with EMS industry standards and Medicare requirements.

Although the fire chief has developed a long-term apparatus and ambulance replacement plan, the township does not carry a dedicated capital improvement fund for the fire department, thus requiring the township to specifically address major fire department capital funding needs at the time such purchases are anticipated. The fire department has availed itself to prudent use of tax dollars as demonstrated by electing to re-chassis ambulances and use local manufacturers in building tanker apparatus, where practical. Based on the increasing service demands for EMS, the department anticipates a more aggressive modification or replacement 10-year plan for upgrading ambulance units.

Staffing

The department is a combination organization with a current roster of 54 uniformed personnel. This includes, full-time, part-time, and volunteer personnel. The volunteer personnel are POC in which they receive an hourly rate for each emergency response and training session attended. The part-time personnel are scheduled to work an assigned shift and staff Station 26. The department has two EMS certified personnel around-the-clock to staff and respond the department's primary ambulance unit; at least one on-duty is required to have paramedic certification.

Part-time schedules are organized into 12-hour or 24-hour shifts per day. The department strives for some flexibility in scheduling in order to maximize the availability of personnel. Part-time personnel must schedule a minimum of 24 hours monthly; there is no maximum hours established by policy. Personnel receive overtime for hours worked exceeding 80 hours in a two-week pay period. Additionally, if a call-off occurs (such as a firefighter becoming ill prior to the start of the shift), the department pays overtime to fill the position. In 2021, the department had 250 hours where a part-time member was not scheduled to work. When these short shifts occurred, the positions were filled by either the full-time captain or deputy chief. At no time did the department work short staffing the ambulance.

The current roster includes the fire chief, two deputy chiefs, three captains, two lieutenants, 42 firefighters and EMS personnel, and four personnel who are in training. The fire chief, one deputy chief, and one captain are full-time employees. The full-time deputy chief manages and oversees EMS, and the full-time captain oversees training and fire prevention. The volunteer deputy chief oversees fire operations. Two volunteer captain and two volunteer lieutenant positions are currently vacant. Forty-six of the department's personnel are dual-certified. This includes 10 who are FF II and paramedic certified, 18 who are FF II and EMT certified, four who are FF II and AEMT certified, seven who are FF I and EMT certified, and four who are FF I and paramedic certified. Two personnel are FF I certified, two who are paramedic certified, and two who are EMT-only certified. Four personnel are currently in training. A chart depicting the current organizational structure is shown in Figure 8.

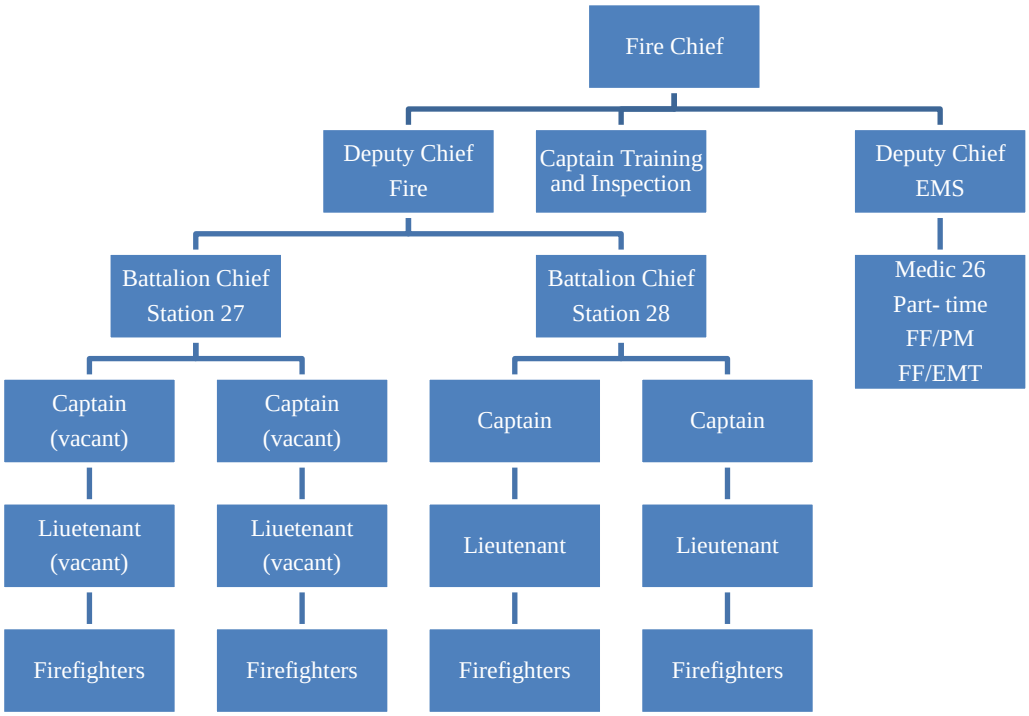


Figure 8: LTFD organizational chart

POC personnel receive an hourly rate based on a point system, which is paid quarterly. Points are earned for emergency incident response, training, fire prevention activities, and other scheduled department events. One point is earned for each hour of activity. Personnel who respond to the station for an emergency response that is canceled prior to arrival earn one point. The rate paid for each point earned is based on the individual's firefighter and EMS certification level or rank. The current pay rate for POC personnel is listed in Table 13.

Paid-on-Call Pay Rate	
Certification/Rank	**Rate**
Firefighter I certification	$11.35
Firefighter II certification	$11.65
Battalion Chief	$16.81

Table 13: LTFD's POC pay scale

To illustrate, a firefighter/EMT who has obtained FF II certification earns 42 points in the first quarter of the year. That firefighter would receive payment of $489.30 (42 x $11.65). Personnel who are scheduled for on-station shifts (part-time personnel) have a pay scale based on EMS certification levels. Most part-time personnel are dual-certified as a firefighter, although some may only be certified as a paramedic. The part-time pay scale is listed in Table 14.

Part-time Pay Scale	
Training Level	**Rate**
FF/EMT	$16.50
FF/ Paramedic	$19.47
Paramedic	$19.47

Table 14: LTFD's part-time pay scale

The three full-time positions all receive an annual salary plus fringe benefits typically associated with public service positions. The fire chief receives an annual salary of $76,000 and four weeks of vacation. The deputy chief receives an annual salary of $65,000 and two weeks of vacation. The captain receives an annual salary of $58,000 and two weeks of vacation. All positions receive health care, which includes a dental and vision plan, and sick leave as outlined by state law. All positions are in the Ohio Police and Fire Pension System as required by state law.

Twenty-seven of 54 LTFD personnel have either full-time or part-time firefighting positions with other agencies. Eleven personnel are employed in a full-time capacity and 16 are employed in a part-time capacity with another agency in the region. Of the 16 who have part-time status with another agency, five are employed by Rossford Fire Department and one by NFD.

Hiring

The department is always looking for qualified individuals to apply for a position. Employment applications can be obtained on the fire department's web page or at the township administration building. Individuals with no previous experience may apply and if hired, are provided training to meet the department's minimum requirements, which is FF I and EMT certification.

The minimum requirements for POC positions include:

- 18 years of age
- High school diploma or GED
- Valid Ohio operator's license
- Township resident

Once an application is received and reviewed, the deputy chief and a battalion chief will conduct an interview and the applicant is informed of the hiring process and training requirements. The applicant is assigned to either Station 27 or Station 28, depending on the location of their residence.

The applicant is sent to the Wood County Sheriff's Office for fingerprinting and subsequent criminal history check. A physical agility test is administered in-house. Once he or she has successfully completed the physical agility test, they must pass a medical examination, including cardiac stress test, and a drug screen. The fire chief then recommends appointment of the applicant as a probationary member to the Board of Trustees, who make the appointment by resolution.

New hires serve an 18-month probationary period. The battalion chief of the station the probationary firefighter is assigned is responsible to monitor their progress in the training programs. Prior to the applicant entering the required training programs, they must successfully complete reading comprehension and associated skills testing required by the educational institution they are attending. While attending classes the probationary firefighter may participate in department training drills, respond to fire calls and, with permission, ride on a medic unit as an "extra" hand or observer.

After successful completion of required training, the probationary firefighter is considered an active volunteer and permitted to assume full duties. No future action is taken by the township after the new employee has completed their probationary requirements. There is no formal evaluation or orientation completed during the probationary period.

Part-time personnel may be a direct hire or come from the POC roster. Minimum requirements for part-time personnel include:

- Possess FF I certification
- Possess EMT or paramedic certification
- Valid Ohio operator's license
- High school diploma or GED

Upon receiving an application, the deputy chief of fire conducts an initial interview, who makes a recommendation to the fire chief. The applicant's background and certifications are verified. If approved by the fire chief, he will recommend hiring to the Board of Trustees. Once the applicant is hired, they serve a one-year probation period. During this probationary period, they are expected to become familiar with the department's operations and protocols. There is no formal evaluation or orientation completed during the probationary period.

The department and township should consider development of a policy to memorialize the department's hiring process. This should cover employment requirements, interviews, background checks, conditional offers of employment, pre-employment medical examinations, and drug screens. Although a medical examination is mandatory of all prospective applicants, the department only requires the applicant attending firefighting and EMS certification courses to complete and furnish results of a medical examination. The township should assure its hiring practices meet the requirements set forth in §505.38 (2) ORC that states; "not more than 60 days prior to receiving a fire department appointment, the applicant has passed a physical examination established for firefighters. The township and the local volunteer firefighters' dependents fund board, prior to the township's official hiring, shall have received a copy of the report verifying the person meets the physical requirements for firefighter functions. The cost for the physical shall be paid for by the township."

Service Demands

Over the past eight years, the total calls for service have steadily increased. For example, the department responded to 934 calls in 2014 and 1,608 calls in 2021. Overall, the department experienced a 72% increase in total calls for service during the eight-year period of 2014 through 2021. If multiple fire companies respond to a fire, it counts as one incident or call for service. LTFD's total calls for service are displayed graphically in Figure 9. Note: call data for 2012 and 2013 was not available due to a previous software system failure.

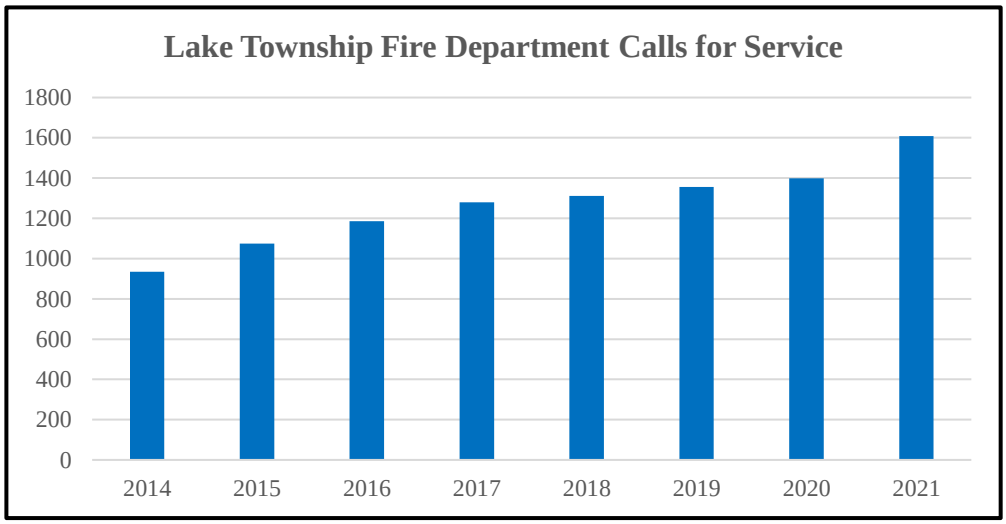


Figure 9: LTFD's eight-year incident response history

During this eight-year period, fire responses increased 21% while EMS response increased 89%. Figure 10 shows a comparison of fire and EMS demand from 2014 to 2021.

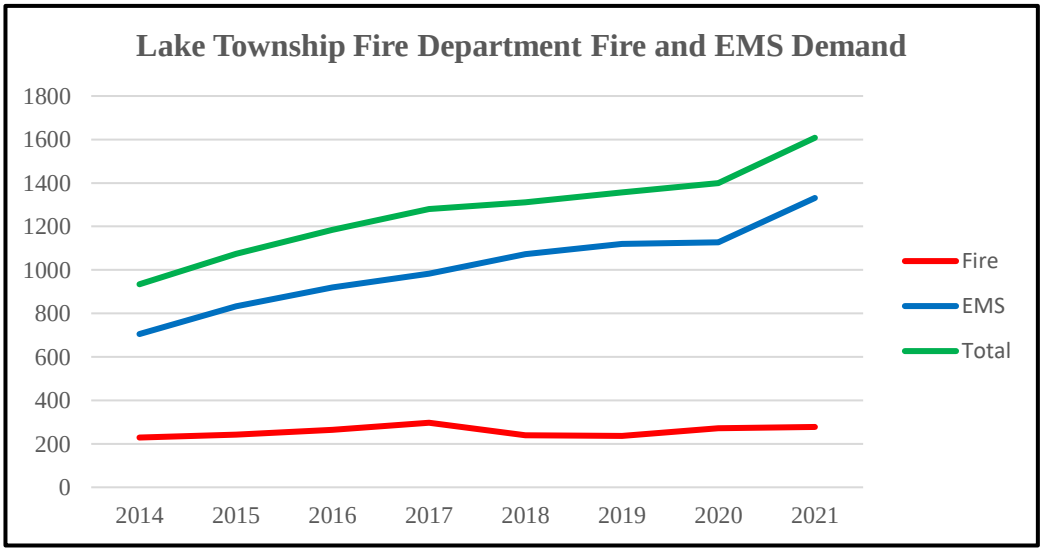


Figure 10: LTFD's eight-year incident response trends

For the purposes of this report, fire responses include building, auto, and grass fires, as well as fire alarms, rescues, carbon monoxide calls, service calls, and other non-EMS responses. Also included in the total calls for service are mutual-aid responses. LTFD has mutual-aid agreements with surrounding departments as a party to the Wood County mutual-aid agreement and AMR agreements with NFD and Allen-Clay Joint Fire District, located in Ottawa County.

Table 15 displays the fire and EMS responses within the township, mutual-aid and AMR responses for the past five years. In the table, MA refers to mutual-aid responses and AMR refers to an automatic mutual response.

	Fire Twp.	Fire MA	Fire AMR	Fire Total	EMS Twp.	EMS MA	EMS Total	Total Calls
2017	273	6	18	297	972	11	983	1,280
2018	226	6	7	239	1,045	27	1,072	1,311
2019	224	7	5	236	1,106	14	1,120	1,356
2020	257	10	5	272	1,108	19	1,127	1,399
2021	261	5	11	277	1,308	23	1,331	1,608

Table 15: LTFD's five-year mutual-aid response history

Table 16 displays the number of mutual-aid and AMR responses the department received over the past five years.

	Fire MA	Fire AMR	EMS MA	Total MA
2017	4	11	7	22
2018	8	8	22	38
2019	4	19	24	47
2020	4	13	23	40
2021	3	15	37	55

Table 16: LTFD's five-year mutual aid received history

The fire loss recorded for the township has been steady over the past five years (2017-2021), averaging $469,240 in loss annually. Residential fire loss accounts for 71% of the total loss annually. The total recorded fire loss in 2017 was $519,500 and $410,300 in 2021. Recorded fire loss is difficult to predict as one large-loss event can skew any statistical analysis.

Technical Rescue

Technical search and rescue were described in detail on pages 16-18 as part of the review of NFD. While a formal technical rescue assessment was not performed, LTFD's response capability in each technical rescue response area was reviewed.

Swift-Water Rescue – these incidents involve the rescue of a victim(s) from fast moving water such as a river or other large stream. Of special concern are low-head dams, which can create dangerous currents, especially when river water levels are elevated or during flood stage. While there are several tributaries and watershed streams, there are no rivers and no low-head dams

within the department's response area. The department has some equipment including personal flotation devices and rope throw bags. However, the department has no specific response procedure and no department-wide training for this type of rescue situation. Toledo Fire-Rescue Department, which has swift-water rescue capability, would be called for assistance if an incident would occur.

Surface-Water and Ice Rescue – these incidents involve the rescue of a victim(s) from a non-moving body of water such as ponds, quarries, or lakes. During winter, these types of incidents could involve surface ice. Each rescue involves a specific set of equipment and operating procedures. The department does not have surface-water or ice rescue equipment and no specific response procedure. If an incident occurs, Toledo Fire-Rescue Department would be called for assistance.

Confined Space Rescue – includes incidents in which victims are trapped within an area that qualifies as a confined space. A confined space may be found in agricultural, industrial, and other settings as defined by the OSHA. The department has no confined space rescue equipment and no specific response procedure. If an incident occurs, Toledo Fire-Rescue Department would be called for assistance.

Rope Rescue – includes incidents that are high-angle (elevated) or below grade and require the use of rope rescue systems to reach and rescue victims. A rope rescue incident could be part of a confined space incident due to the location of the victim. The department has some basic rope rescue equipment but no specific response procedure. If an incident occurs, Toledo Fire-Rescue Department would be called for assistance.

Trench Rescue – these incidents are also referred to as trench "cave-in" incidents and involve an excavation trench or underground cave-in that traps a victim(s). The department does not have trench rescue capability. If an incident occurs, Toledo Fire-Rescue Department would be called for assistance.

Structural Collapse Search and Rescue – these incidents are often associated with large-scale urban search and rescue operations following natural occurrences such as tornadoes, earthquakes, etc. LTFD will respond to an incident where structural collapse or instability will have to be managed. Examples of incidents where structural collapse has to be managed include: vehicles or aircraft versus buildings, unsafe structures as a result of a gas explosion or structure fire, building construction or renovation failures, or natural forces related to weather (e.g., rain or snow accumulations on roofs, tornadoes, etc.). In managing these incidents, it is often necessary to push, pull, cut, breach, lift, or tunnel through the materials that make up the collapsed structure. If an incident occurs, Toledo Fire-Rescue Department would be called for assistance. In addition to the single-point response described above, multiple-point responses that are spread out over a larger area or involve many locations will require a larger resource pool, including outside agency support, large-scale incident management support, and technical expertise. Ohio

Region 1 Strike Team, whose operating base is Toledo Fire-Rescue, can be requested to provide assistance.

Vehicle Rescue – these incidents involve removing trapped victims as a result of a motor vehicle accident. Fire departments routinely respond to motor vehicle accidents that result in an injury to one or more victims. Some of these victims may be trapped and require the use of specialized equipment carried by the department such as hydraulic-powered rescue tools, air bags, etc., to disentangle the victim for removal. LTFD has the necessary equipment and personnel are trained in motor vehicle rescue (sometimes called auto extrication) and regularly conduct hands-on training drills.

Hazardous Materials – Most LTFD personnel are trained in hazardous materials response at the awareness and operations level. Some personnel are trained to the technician level, although the exact number of personnel with each certification level was not available. Operations level, as identified in NFPA 472 *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*, means that personnel have the training and equipment to identify hazardous materials presence through various recognition factors such as placards and labels, container shapes and sizes, and hazardous material sites in the response area. They also have the ability and equipment to undertake defensive type of actions and low-risk offensive operations such as plugging, patching, diking, and the placement of booms and absorbent pads and other containment actions that help control or mitigate the incident. More advanced offensive operations that require the use of level "A" (completely encapsulated protective equipment) or acid splash suits require a technician level response.

The department carries some spill equipment on the engines to handle small fuel spills such as gasoline, diesel fuel, etc. The department also has a hazardous materials trailer that has an inventory of equipment and supplies including equipment to plug or control liquid releases, and clean-up equipment such as booms, absorbent pads, and granular absorbent. In the event of a large spill or significant release, LTFD would request assistance from the Perrysburg Township Fire Department's Hazardous Materials Response Team. Toledo Fire-Rescue Department's Hazardous Materials Response Team could also be called to assist.

Airport Response – while not part of technical rescue, airport crash and rescue firefighting response is provided by LTFD for the Toledo Executive Airport. It is a Federal Aviation Administration designated reliever to the Toledo Express Airport located in western Lucas County. Operated by the Toledo – Lucas County Port Authority, the airport averages 258 arrivals and departures daily, serving primarily executive, small corporate and recreational aircraft.[3] The department has two surplus airport crash vehicles, which carry special foam and extinguishing agents.

[3] www.airnav.gov

Fire Prevention and Public Education

Under the direction of the fire chief and fire prevention captain, fire inspections are routinely performed following the Ohio Fire Code, which has been adopted by the township. As noted previously, the fire prevention officer is a full-time captain position, with responsibilities to coordinate and conduct fire inspections as well as maintain all applicable records. He also serves as the department's training officer. The fire chief, deputy chief of EMS, deputy chief of operations, and the captain are state certified fire-safety inspectors. Three additional POC members and one part-time member are also certified as a fire-safety inspector, but due to their regular career jobs are normally not available to assume continued roles for inspections. Routinely, the captain conducts school inspections and fire drills, and he or the fire chief assume the inspections for foster home and day-care facilities. During the past three years, the department has averaged 30 inspections annually. The department uses *Emergency Reporting* software program on an iPad that permits the inspector to routinely transfer inspection data to the department's *I am Responding* software program, which enables personnel to access critical points or pre-plan information related to a structure during an active fire response.

The department enjoys a positive working relationship with their zoning department but currently there are no coordinated codes existing between them. The Wood County Building Department oversees the issuance of commercial building permits and site inspection, and provides LTFD the opportunity to review site plans and provide comments. Plan reviews are performed by the fire chief and fire prevention captain. The building department also coordinates site inspections with the department during the construction phase to assure the fire department is current on construction progress, issues, and code compliance.

Basic cause and origin fire investigations are performed by the fire chief or fire prevention captain. If there is a suspicious fire, the Lake Township Police Department or Wood County Sheriff's Office may be called to assist, securing any evidence initially discovered. The State Fire Marshal's Office can also be requested for assistance.

LTFD provides a wide array of safety educational programs to the general public including CPR, fire extinguisher operations and home safety. OSHA-related safety programs are also offered to local businesses upon request. As a means to strengthen community use of smoke detectors, the department has an active smoke detector awareness messaging program combined with a smoke detector distribution program, which includes installation to qualified homes. The fire prevention captain and a number of department vehicles carry new smoke detectors that can be given out to those in need or replace a malfunctioning unit when found. The Lake Township Firefighters Association owns a safety trailer and conducts public-safety awareness programs as opportunities occur. Routinely, the department conducts five public events each year plus support to classroom teachers during Fire Prevention Week.

Continual educational opportunities are provided on both the department and township Facebook

pages. These cover current safety awareness issues, scheduled community support activities, and numerous ways the public may contact the department for additional information.

During the past five years, the department has experienced three civilian fire fatalities and five civilian injuries. All three fatalities were a result of a serious motor vehicle accident. No firefighter deaths occurred during this period and only three personnel sustained injuries during active firefighting activities.

Insurance Services Office

As described previously, ISO is the leading supplier of statistical, underwriting, and actuarial information for the property/casualty insurance industry. ISO conducts field evaluations in an effort to rate communities and their relative ability to provide fire protection and mitigate fire risk. The PPC rating for the Lake Township service area is 04/4Y. The most recent evaluation available for review was February, 2020.

Most underwriters in Ohio utilize what is called in the industry, the "suburban rule." What this means is businesses and residents in the township area who are located within five miles of a fire station receive a rating of 4, which can be used by insurance carriers to determine rates for casualty insurance. Those businesses and residents located more than five miles from a fire station receive a less favorable rating.

The PPC program evaluates the fire suppression capabilities of each community in three major areas according to criteria defined in the *Fire Suppression Rating Schedule:*

- Receiving and Handling Fire Alarms. This review accounts for 10% of the total classification. This section reviews the facilities provided for the general public to report fires and for the operator(s) on duty at the communication center to dispatch fire department companies to fires. Lake Township received 6.28 points credit out of a total maximum credit of 10.00.

- Fire Department. This review accounts for 50% of the total classification and focuses upon engine and ladder-service companies, distribution of fire stations and fire companies, equipment carried on apparatus, pumping capacity, training, and available firefighters. Lake Township received 26.85 points credit out of a total maximum credit of 50.00. This included 1.18 points credit out of a possible 3.02 points for distribution of engines and ladder companies, 3.95 points credit out of a possible total 15 points for company personnel and 3.20 points credit out of a possible 9.00 points for training.

- Water Supply System. This review accounts for 40% of the total classification. This component examines the water supply a community uses for fire suppression including water main size, distribution, and storage system. Also reviewed are hydrant size, type, and installation as well as the inspection frequency, maintenance, and condition of fire

hydrants. Lake Township received 29.45 points credit out of a total maximum credit of 40.00.

Training

As noted previously, certifications are required by the state of Ohio to deliver firefighting and pre-hospital emergency medical care, as both are considered a professional service. LTFD is charted by the Ohio Division of EMS as an approved training site, allowing for the issuance of continuing education credits for training provided by the department.

The department conducts training each Tuesday evening. The first two Tuesdays of the month are dedicated to fire operations training, the third Tuesday of the month is EMS training, and the fourth Tuesday is dedicated to a current topic. For those months that contain a fifth Tuesday, the department schedules specialized training such the emergency vehicle operator course (EVOC) training or live fire or fire tower drills at Owens Technical College.

Weekly training sessions, which are approved by the fire chief, are posted by the training captain on the department's *I am Responding* software program. The training schedules are accessible on each station's monitor and all department desktop computer screens. Every training session is open to all members to attend.

Regularly scheduled training sessions are held at Station 28, which has a large, dedicated multi-functional training room with movable tables and chairs, supporting computer hardware and projector, and training aids as well as storage space for training materials. In addition, the department conducts a daily repeating two-week-long specific topic class at Station 26 that may consist of classroom presentation or practical exercises. The purpose of repeating the class is to assure those working the duty shift have an opportunity to attend the class. POC members who cannot attend some Tuesday night training sessions may also attend these make-up sessions.

Personnel desiring to attend other training programs or events outside the department may submit a request to the fire chief for approval. Several members of LTFD are employed by other area fire departments, either in a part-time or full-time capacity. Documented training received by these employees at these departments is accepted for LTFD training.

EVOC training is provided annually for all personnel. Classroom review is augmented with a hands-on driving obstacle course.

Officer job descriptions require completion of Fire Officer I and II training, depending on the rank. Personnel receive initial fire officer training off-site at vocational institutions or on-line. There is no dedicated ongoing officer development training scheduled.

EMS delivery is guided by the department's EMS field protocol. LTFD is a member of the Northwest Ohio EMS Consortium. Working together, member departments operate under one field protocol. This is a tremendous benefit for departments that may respond to a large incident

and to those personnel who work at more than one department in the region. As a member of the consortium, LTFD personnel must pass a protocol review test annually and skills evaluation bi-annually. With a skill evaluation, personnel, working within their scope of practice, must demonstrate proficiency with manipulative skills including IV therapy, endotracheal intubation and airway management, spinal immobilization, etc. The medical director is Stephen Zohn, M.D.

EMS training is scheduled by the training captain and coordinated with the department's training committee and medical director. Training topics can include current topics as well as those recommended by National Registry. Instruction is delivered by in-house instructors and outside special topic instructors including Dr. Zohn. Personnel may also obtain continuing education hours from programs offered by the Northwest Ohio EMS Consortium or other training available in the region.

The department has six certified firefighting instructors, one assistant fire instructor, three EMS instructors, four EMS special topic instructors, and one EVOC instructor. The six firefighting instructors are also live burn training instructor certified. The department provides instructors the opportunity to participate in training activities, including delivering 10 hours of instruction every three years. Required continuing education hours for instructors is available on-line or in-person courses at local vocational and educational institutions.

The training records for the department, upon review, were found well maintained, documented and current through the use of an Excel spreadsheet designed to record annual attendance on all personnel, and included the specific class, date and activity level attended. The system maintains total hours earned by individuals during the year but did not specifically separate their total hours for fire or EMS classification. Training hours earned elsewhere may be submitted to the training captain or fire chief and, upon acceptance, be included on the individual's training document. The system provides easy review of individual activities and overall total hours attained for the year.

The department is currently developing a field training manual intended to provide guidance for newly hired personnel during their orientation period. This will include information on department operations and a core competency check list. This will ensure personnel have demonstrated core skills and understanding of department operations and procedures. In addition, a pending goal is the establishment of officer development training to assist those in leadership roles an understanding of positive methods used in guiding firefighters in their daily functions.

Risk Assessment

The department has identified 63 "target hazards" within their response district that would create special challenges to control in a timely and efficient manner. Target hazards are normally beyond the customary risk encountered by fire departments and typically can require a larger

number of resources than provided for residential and other common types of occupancies or situations. Target hazards could also include natural and human-caused hazards such as railroads, interstates, underground pipelines, rivers, ponds, or any other element that may affect response of fire resources.

While the unincorporated township area is primarily rural in nature, there has been recent growth with a mixture of commercial and light industrial development. Of the total occupancies analyzed, one was rated a maximum risk, 44 were rated a significant risk and 18 were rated a moderate risk.

Owens Lake Commons, an apartment complex located at 6657 Owens Lake Drive was rated a maximum risk. The complex consists of eight buildings that are 2-or 3-story; two of the buildings are protected with an automatic fire suppression system.

Of the significant risk properties, there are three that handle or store significant amounts of hazardous materials:

- Jones Hamilton, 30354 Tracy Road, is an industrial chemical manufacturer. This facility deals primarily with acids.
- Lyden Oil, 30692 Tracy Road, is a local and regional distributor of automotive, industrial, and agricultural lubricants and chemicals.
- Univar, 30450 Tracy Road, is an industrial chemical warehouse.

Also located within the township are three apartment complexes, each with eight or more 2-story buildings, 19 churches, seven truck stops, and one 400-lot mobile home park. The Lake Local School District has three buildings located at their Lemoyne Campus. Although identified as significant risk properties, schools always pose a special challenge due to their size and number of occupants.

The Toledo Executive Airport is located at 28331 Lemoyne Road. This facility handles small executive jet aircraft and private recreational aircraft.

Response Considerations

Recognized safety and response standards and guidelines that are considered when analyzing fire protection services were previously discussed and identified on pages 19-20. Those include NFPA 1500 *Standard on Fire Department Occupational Safety, Health, and Wellness Program*, §4123:1-2 OAC, which applies to firefighting operations in Ohio, and NFPA 1561 *Standard on Emergency Services Incident Management System and Command Safety*. The NFPA's *Fire Protection Handbook* provides recommendations for the minimum response to various structures. Those recommendations are repeated in Table 17.

STRUCTURE TYPE	MINIMUM RESPONSE
High-hazard occupancies Schools, hospitals, nursing homes, explosives plants, refineries, high-rise buildings, and other high life hazard or large fire potential occupancies.	At least 4 pumpers, 2 ladder trucks (or combination apparatus with equivalent capabilities), 2 chief officers, and other specialized apparatus as may be needed to cope with the combustible involved, not fewer than 24 firefighters and 2 chief officers. One or more safety officers and a rapid intervention team(s) are also necessary.
Medium-hazard occupancies Apartments, offices, mercantile and industrial occupancies not normally requiring extensive rescue or fire-fighting forces.	At least 3 pumpers, 1 ladder truck (or combination apparatus with equivalent capabilities), 1 chief officer, and other specialized apparatus as may be needed or available; not fewer than 15 firefighters and 1 chief officer, plus a safety officer and a rapid intervention team.
Low-hazard occupancies One-, two-, or three-family dwellings and scattered small businesses and industrial occupancies.	At least 2 pumpers, 1 ladder truck (or combination apparatus with equivalent capabilities), 1 chief officer, and other specialized apparatus as may be needed or available; not fewer than 14 firefighters and 1 chief officer, plus a safety officer and a rapid intervention team.
Rural operations Scattered dwellings, small businesses, and farm buildings.	At least 1 pumper with a large water tank (500 gal or more), one mobile water supply apparatus (1,000 gal or larger), and such other specialized apparatus as may be necessary to perform effective initial firefighting operations; at least 12 firefighters and 1 chief officer, plus a safety officer and a rapid intervention team.
Additional alarms	At least the equivalent of that required for rural operations for second alarms. This may involve the immediate use of mutual-aid companies until local forces can be supplemented with additional off-duty personnel.

Table 17: NFPA recommended minimum response resources based on occupancy hazard type

LTFD has AMR agreements with NFD and neighboring Allen-Clay Fire District for response to structure fire incidents. This helps get additional resources on the scene quicker for structural fire incidents.

Response Performance

Response performance was described on pages 27-29. Factors affecting local response goals include demographics, risk, size of the response area, demand volume, and public expectation. Lake Township currently does not have a stated response performance goal. Therefore, national

response criteria will be used to determine the department's baseline performance.

NFPA 1720 *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Department,* provides criteria that address functions and objectives of fire department emergency service delivery, response capabilities, and resources. NFPA 1720 is the applicable standard since LTFD's fire response is primarily a volunteer (POC) agency.

NFPA 1720 outlines response criteria for various types of areas or response zones: urban, suburban, rural, and remote. The type of response zone is based on the density of the population. Lake Township is considered a rural area with a population of density of 442 people per square mile.

Based on NFPA 1720, LTFD should meet the following response time objective: for 80% of all fire incidents, the agency should respond to the scene within 14 minutes with at least six personnel. Firefighters responding with mutual-aid companies can be counted in this six-person objective. Responder response time is measured from the time of first alerting by dispatch to the time elapsed when apparatus and personnel arrive on the scene. The published response criteria are based on national fire behavior research. This research and other information can be reviewed in Appendix B.

When notified of a fire incident, the two-person crew on-duty at Station 26 responds to the incident in the medic unit and provides size-up and performs exterior firefighting duties to assist the POC responding to the scene. However, their primary responsibility is to be available to handle EMS emergencies. The primary fire response is the POC personnel, who respond from home or their place of employment to their respective station, then respond to the scene in the apparatus assigned to the call by dispatch, depending on the location of the incident. If the incident is a reported structure fire or fire alarm, the AMR companies predetermined for the location are also dispatched. If the call occurs during daytime hours, the full-time personnel also respond as available for firefighting tasks and incident management. They also respond to fire incidents and other emergencies after hours as well, as may be needed. It is important to note that according the fire administration the on-duty medic crew's involvement in firefighting operations has been increasing as the number of POC personnel who are available to respond has declined.

To analyze EMS performance, the criteria outlined in NFPA 1710 is applicable, since LTFD has personnel on-station to respond to EMS incidents. To briefly review, total response time includes call handling, turnout, and travel times. For example, Wood County dispatchers are trained in EMD, which is an enhanced service to the public. EMD is where a properly trained dispatcher can provide medical assistance instructions to a 9-1-1 caller who is requesting emergency help. Examples would be bleeding control, emergency breathing and CPR instructions. With this enhanced level of service, EMS call processing and dispatching shall be

completed within 120 seconds (2:00) 99% of the time.

Turnout time is a measurement for those personnel on-station. The turnout time benchmark is 60 seconds (1:00 minute) for EMS calls. The travel time benchmark is 240 seconds (4:00 minutes). The total response time benchmark for EMS incidents is 7:00 minutes.

When notified of an EMS incident, the two-person crew on-duty at Station 26 responds in a medic unit to the location of the emergency. If additional personnel are needed for patient treatment or lifting assistance, POC respond to the station and then to the scene with the appropriate vehicle. Another example would be a motor vehicle accident with injury. These types of incidents require a medic unit and rescue-engine. Some POC personnel may also respond directly to the scene as may be appropriate.

Table 18 displays the department's overall response performance for EMS responses. The percentage column identifies the frequency the department meets the target-time benchmark. Meeting the target-time benchmark for at least 70% of the responses is often considered the minimum performance goal.

Element	Target	Percentage
Call processing time	2:00	79%
Turnout time	1:00	22%
Travel time	4:00	32%
Total response time	7:00	28%

Table 18: LTFD's EMS incident response performance

The EMS travel and total response time show a performance gap, meeting the travel time benchmark 32% of the time and 28% of the time for total response time. However, it should be repeated that EMS response performance standards are not adjusted for the type of community served. Lake Township is serving a large area (34.8 sq. mi.), with much of the area considered rural. Therefore, the response performance as displayed is not surprising given the large area served. The turnout time also shows a performance gap.

Table 19 displays the department's fire response performance. The target performance is 14:00 minutes for 80% of the incidents in the township.

Element	Target	Percentage
Total response time	14:00	68%

Table 19: LTFD's fire incident response performance

The department is meeting the 14-minute response time 68% of the time. However, 32% or almost a third of the department's calls had a total response time ranging from 15 minutes to 35 minutes. Of those responses that met the response time benchmark, the department responded with six or more personnel 69% of the time. For 31% of those responses, there were five or less personnel responding. A breakdown of the POC response history for 2020 and 2021 is displayed

in Figure 11 and includes all fire responses.

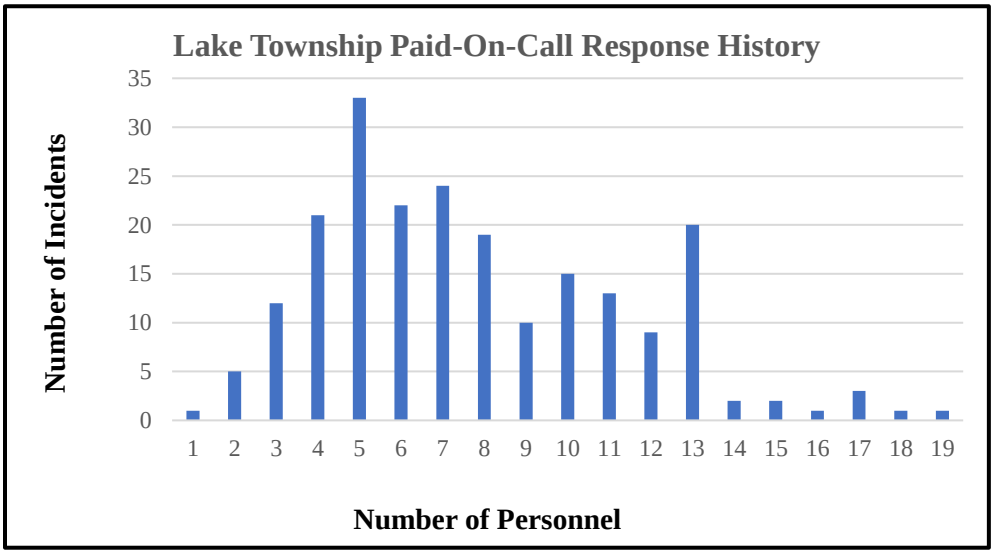


Figure 11: LTFD's POC response history 2020-2021

Fire Station Facilities

LTFD operates from three fire station facilities located in the southern, northern, and western areas of the township. Station 26 is located at 27975 Cummings Road. Station 27 is located at 4505 East Union Road and Station 28 is located at 1911 Ayers Road in Millbury. Station numbers are assigned by a countywide station numbering system for communications and identification.

Station 26

The facility was constructed in 2011 after a tornado destroyed the original building and is in excellent condition. The building is a shared facility, housing the township administration offices and police department. The fire department area has 1,950 sq. ft. of space; 1,350 sq. ft. of apparatus floor space, and 600 sq. ft. for living quarters and offices. The building has masonry (brick veneer) exterior walls with a wood-trussed peaked roof assembly with metal roof. The rear exterior wall of the building has masonry block.

There are three publicly accessible emergency phones or alarm boxes on the building exterior; at the main entrance, the police department front door, and the entrance door to the deputy chief's office. These devices allow a citizen stopping at the station to report an emergency.

Accessibility for handicapped individuals is possible (with assistance) at the front entrance door. The front entrance door is locked; personnel make entry into the building using a code-entry lock system.

Station 26

The rear of the building sets approximately 230 ft. from the roadway with access from a full-width concrete pad. The two overhead doors are 8 ft. x 10 ft., with emergency releases enabling manual operation in the event of a mechanical failure or loss of power. There are no emergency indicators installed on bay doors that would warn a door is not fully raised. The bay doors are protected by bollards.

The bays were clean, floors safety marked. The bay floor has 3-inch circular floor drains for all apparatus locations that drain to the exterior of the building. The drains have grease interceptors to capture dripping oil, fuel, and other potential contaminants. There is adequate storage space in this station, although some tools and equipment are stored on the apparatus bay floor. There is no diesel exhaust capture and removal system in the apparatus bay.

Along the east wall in the apparatus bay is a secured storage area for medical oxygen cylinders used on the department's EMS units. Portable oxygen cylinders are stored in a protected cart. There is a residential-grade washer and dryer dedicated for routine cleaning and decontamination of small equipment or PPE. This includes the cleaning of items in contact with blood and other infectious body fluids, referred to as bloodborne pathogens. A utility "slop" sink located in the apparatus bay is used for general cleaning purposes as well as cleaning contaminated equipment. This station houses an ambulance (medic unit) and a utility vehicle. The ambulance is staffed around-the-clock by a two-person crew. It also serves as the department headquarters with administrative offices for the fire chief and deputy chief.

The living space in the station is well-designed, providing ample space for a dayroom. In the dayroom are two recliners, a small workstation for report writing, a dining table, and kitchen appropriately sized for the current staffing level. There are two private sleeping quarters for the on-duty crew. Each sleeping quarter is equipped with a twin-size bed and a desk to store their personal belongings. Across from the sleeping area is a full restroom with shower that is

considered gender neutral. There is no dedicated training room, but at times the trustee meeting room has been utilized for training large groups of people. There also is a storage room.
The living quarters and office areas are protected by electric (hard-wired) smoke detectors. The detectors are monitored by a private company off-site, which notifies the communications center if an activation occurs. There are carbon monoxide detectors in the kitchen area. The entire building is protected by an automatic fire sprinkler system.

Dayroom

Kitchen

The facility has a 125-kW diesel-fueled generator that can supply the entire building in the event of electric power failure. It is equipped with an automatic transfer switch that enables the generator to start automatically and transfer key building circuits anytime power is lost. The generator is tested annually and programmed to start and run on a weekly basis.

Station 27

The station was built in 1973 and at one time housed the Lake Township Police Department on the second level. The station is currently staffed by POC personnel; no personnel are scheduled to be on-station. The station houses one rescue-engine, one tanker, one brush truck, one reserve engine, one medic unit, and a portable light and generator trailer.

The station is situated facing north on East Union Street on a rectangle shaped parcel of land. The front of the building sets 65 ft. from the roadway and has a 14 ft. wide concrete apron, with adequate room for emergency units leaving on a response to view oncoming traffic. At the rear of the property is open space that is used for hose handling drills. There appears to be adequate room on the parcel to expand the building footprint if needed in the future.

The building features concrete block construction with brick veneer and has approximately 12,900 sq. ft. of space; a 4,200 sq. ft. apparatus bay and 8,700 sq. ft. for offices and living areas. The front entrance door is kept locked; personnel make entry into the building using a coded-entry key system.

Station 27

There is no publicly accessible emergency phone or alarm box on the building exterior if an individual would stop at the station to report an emergency. Accessibility for handicapped individuals is possible (with assistance) at the front entrance door; however, the building is not designed for or equipped with special handicap appliances for door opening, and interior door and counter clearances consistent with full handicap access.

There are four bays facing north that empty onto the front apron. Three are back-in bays and one is a drive-thru bay. There are two bays facing south, one for the drive-thru bay and one that serves as back-in bay for a reserve apparatus. The overhead doors are 14 ft. x 10 ft., with emergency releases enabling manual operation in the event of a mechanical failure or power failure. There are no emergency indicators installed on bay doors that would warn a door is not fully raised. There are motion detectors on each door which would stop operation if a vehicle or person were under the door as it was coming down. There are drop down electric and air hose reels in each bay. The bay doors are not protected by bollards.

The bays were clean, and the floors safety marked. The bay floor has 3-inch circular floor drains for all apparatus locations that drain to the exterior of the building. The drains have grease interceptors to capture dripping oil, fuel, and other potential contaminants. This station appears to have adequate storage space. There are storage racks along the east wall in the apparatus bay. In the southern end of the bays is a storage room that is open at both ends where firefighters store their protective gear (PPE) in individual racks. There is a fold-down stair that allows access to the top of the room to store miscellaneous equipment. There is no diesel exhaust capture and removal system in the apparatus bay nor are the department's apparatus equipped with diesel-exhaust filter systems.

There is a residential-grade clothes dryer and an extractor washer for turnout gear in the apparatus bay. Adjacent to the extractor is a stainless steel three-hole utility tub for decontamination of equipment. Cleaners and solvents are stored on shelves in this area.

In the bay near the northwest door is a monitor that displays the *I am Responding* program status board. When personnel arrive at the station for a response, they can look at the monitor and verify the incident location, note pre-plan information and hydrant locations, and identify other personnel who are responding to the call.

The living area of the station has offices, storage, restrooms, and kitchen area. The dayroom has recliners, sofas, and television. There is a watch room adjacent to the dayroom where there is a workstation for report writing and a base station radio. There is a large recreation room that has tables and chairs, a pool table and television entertainment system. This room is also used for training sessions.

The large kitchen area has a dining table and residential-grade appliances; however, there is no automatic suppression system above the electric range. There are inadequate shower facilities for personnel. There are men's and women's restrooms; however, there is only one shower, which is located in the men's restroom. There are no dormitory rooms or lockers for personnel.

There is a storage room and offices for the deputy chief and captain. The second-floor office space that was formerly used by the police department is used primarily for storage and is accessed through a hallway off of the first-floor main aisle. There is a large open area on the northwest corner used as an exercise area for personnel.

The living and administrative areas are heated by a natural gas-fueled forced-air furnace and air conditioner. There is no outside make-up air used in the operation of the system. The dayroom and office areas are protected by single-station smoke detectors and carbon monoxide detectors in first-floor hallway. These devices are not connected to a monitoring station.

Dayroom

Watch Office

The facility has a 15-kW diesel-fueled generator and light plant on a trailer that can supply a portion of the building in the event of electric power failure. If power is lost to the building, the trailer is moved to the rear of the station and connected to an outside receptacle, which connects to a transfer switch that will supply an electrical feed. Personnel are trained on a monthly basis on the operation of this unit. The unit can also be transported to an incident if needed for any

lighting or electrical needs.

While the facility lacks some of the space and building systems for 24-hour staffing, it does have potential to allow staffing in the future, if the second floor can be remodeled for living quarters.

Station 28

The facility was constructed in 2002 and designed as a volunteer fire and EMS station. The station continues to serve as a volunteer station; no personnel are scheduled to be on-station.

It is the situated on the northern edge of a 21.87-acre parcel of land owned by township. Youth sports fields and a park are located on the remaining area of the parcel. This township-owned land would provide ample space for future expansion of the station if needed.

Station 28

The front of the station faces north, with the concrete apron emptying onto Ayers Road with adequate room for emergency units leaving on a response to view oncoming traffic. Single-family homes are situated on one-acre lots immediately across from the station; staff reports no difficulty entering or exiting the station during emergency responses.

The building has a footprint of 14,900 sq. ft.; a 10,000 sq. ft. apparatus bay area and 4,900 sq. ft. for administrative offices and living areas. The building has masonry (cement block) exterior walls with brick veneer and trussed-roof assembly with two pitched metal roofs. The interior walls are painted cement block. Entrance doors are located on all sides of the facility and locked at all times; personnel make entry into the building using a coded-entry key system. It was noted that some entry doors have rust damage at the door bottoms. An emergency exterior phone box is mounted by the entrance door to the administrative section of the building. This allows citizens stopping at the station to report an emergency. Accessibility for handicapped individuals is possible (with assistance) at the front entrance door; however, the building is not designed or equipped with special handicap appliances for door opening, and interior door and counter clearances consistent with full handicap access.

There are six-bays that empty onto the concrete front apron. The bays are 80 ft. in depth (which

permits two vehicles in each bay) with overhead doors at the front and rear of the building. All overhead doors are 14 ft. x 14 ft. and are equipped with emergency door releases enabling manual operation in the event of a mechanical failure or loss of power. They also are equipped with sensors designed to reverse a door closing if a vehicle or person is present in the door opening. The bay doors and openings are protected by interior and exterior bollards, some of which showed signs of rust and corrosion. The rear of the station has a concrete apron and blacktop parking areas on the west, east, and south side of the building.

The bays were clean and safety marked with specific colors for designated parking areas and travel or work zones. All bays have narrow trench drains running the center length of each apparatus position and attached to an oil and water separator-collector system. There is no diesel exhaust capture and removal system in the apparatus bay nor are the department's apparatus equipped with diesel-exhaust filter systems. However, a three-zone carbon monoxide monitoring and alarm system is installed in the bay area. This system monitors carbon monoxide levels and activates wall-mounted exhaust fans installed in the west bay wall when pre-determined concentration levels are detected.

The bay area is well designed for apparatus, providing ample space for work areas for personnel as well as permitting easy movement to and around apparatus and equipment. However, it lacks sufficient storage rooms or designated spaces that would permit organizing supplies, firefighting equipment, or associated equipment to protect items from possible damage from exposure to vapors, fumes, water, or other contaminants.

The west interior bay wall is an open storage space containing a work air compressor, work bench, tools, wall cabinets, shelving, and other supplies. The northeast bay wall has a monitor that displays the *I am Responding* program status board. When personnel arrive at the station for a response, they can look at the monitor and verify the incident location, note pre-plan information and hydrant locations, and identify other personnel who are responding to the call. The northwest corner of the bays contains a nitrogen cylinder storage area, which is properly marked and secured. Nitrogen is used to recharge the Purple-K extinguishment system carried on the department's airport crash units.

A small mezzanine is constructed above the two doors from the administrative section and contains the building's utilities control panels and heating, air conditioning, and ventilation (HVAC) systems. The building telephone system has an uninterrupted power supply (UPS) back-up that ensures continuation of service in the event of power interruption or the starting of the emergency generator.

Immediately below this section is a storage area for individual PPE, which is stored in open, vented metal lockers with a top shelf for helmets. This is an offset, open block wall area along the east bay which potentially exposes the equipment to diesel exhaust vapors and fumes from the apparatus bay. Against the back side of this wall additional storage is arranged and extends

to the back of the building. This open storage area contains EMS-related supplies and equipment and a floor storage rack containing firefighting foam and fire extinguishers. It transitions to the storage of cleaning solvents and equipment.

Also, in this area is an extractor for the cleaning of contaminated items and PPE, a residential-grade dryer, commercial-grade ice machine, and utility (slop) sink. The utility sink and immediate area is considered the decontamination area if needed. However, no floor recover system is installed for isolation or containment of water and fluid run-off. Any need to address biohazard waste is done at Station 26 or at the hospital.

Mezzanine Area

East wall- utility sink, cleaning supplies

The administrative section of the building is designed with an "H" hallway using an east and west design permitting ease in movement between contact points in this section as well as rapid access to the apparatus bay. This area has a watch room, which has radio equipment and space for report writing and storage cabinets. There are four offices with appropriate space for working areas; one for the fire chief and one for the station battalion chief and training captain. The fourth office is used for storage.

The facility also has a conference room to accommodate four personnel and a training room. The training room has tables and chairs for a classroom setting and is equipped with the necessary audio-visual and electronic equipment. It also has storage space and has the capability for multiple telephone connections, which are used if the room is used as a back-up emergency operations center in conjunction with the Wood County Emergency Management Agency.

The dayroom and kitchen area are a multi-use room design. The dayroom has two recliners, a sofa, wall-mounted television, and exercise bike. The open, rear portion of the area has a kitchen with refrigerator, dining table for eight, and a residential-grade range with an automatic suppression system. There are both men's and women's restrooms including showers and lockers. While there is no dormitory area or space for 24-hour staffing, there is room to expand the building footprint for future needs.

There are two entrance doors from the administration and dayroom area leading to the apparatus bay. However, there is no step down or tapered apparatus floor away from these access doors to prevent the back flow of water, or exhaust vapors or fumes into the administration and living

areas of the building. In addition, the current HVAC system for the administration and living areas does not provide a positive pressure atmospheric condition or supplemented make-up air. This affects air circulation as well as the heating and cooling efficiency. It also allows vapors and fumes from a variety of sources to seep throughout the building and potentially affect personnel, wall surfaces, and electronic components. This is especially important since these exposures have been recently identified as creating serious health hazards for firefighters, especially as it relates to cancer.

The entire building is fully protected by an automatic fire sprinkler system. However, there are no smoke or carbon monoxide detectors in the living areas. The building has a 125-kW natural gas-fueled generator that can supply the entire building in the event of electric power failure. It is equipped with an automatic transfer switch that enables the generator to start automatically and transfer key building circuits anytime power is lost. The generator is tested annually and programmed to start and run on a weekly basis.

Note: Overall, the building is clean, well-maintained and shows the normal wear for a facility this age. The exterior walls were in good condition, showing no signs of settlement, spalling, or excessive deterioration. Both exterior concrete and blacktop sections are deteriorating with the blacktop having sufficient multiple crack locations enabling water to enter under the blacktop, potentially accelerating the deterioration process. Stress cracks are also occurring in different sections of the concrete areas, allowing water to enter below the concrete pad.

Cracks in Asphalt - West Parking Lot

Apparatus, Vehicles, and Equipment

The department's apparatus fleet consists of two engines (one as a reserve), one rescue-engine, one brush truck, two tankers, two airport crash trucks, and six staff vehicles. An overall general impression of the apparatus fleet is that it is well-maintained and appropriate in size to meet the department's needs. The average age of the fleet is 16-years old. The assessment team reviewed the maintenance inventories for each piece of apparatus and found them to be in order. All fire has an iPad tablet, which allows personnel to access the *I am Responding* software program to obtain additional incident scene information. The following is a brief description of each piece

of apparatus and equipment.

Engine 27 is a 1997 Ferrara pumper with a 1,250 GPM pump and carries 1,000 gallons of water. This vehicle is equipped with the necessary hose and loose equipment as required by NFPA 1901. This apparatus serves as the department's reserve engine. This vehicle has 29,088 miles and is in fair condition. It is housed at Station 27.

Rescue 27 is a 2016 Sutphen rescue-pumper with a 1,500 GPM pump and carries 1,500 gallons of water. This vehicle is equipped with the necessary hose and loose equipment as required by NFPA 1901. This unit carries hydraulic rescue tools, high-pressure air bags and other equipment for auto extrication and other rescue situations. This vehicle has 15,423 miles and is in good condition. It is housed at Station 27.

Tanker 27 is a 1999 Mack tanker (tender) with a 500 GPM pump and carries 3,000 gallons of water. This vehicle is equipped with the necessary hose and loose equipment as required by NFPA 1901, side "water chute" discharges and a portable drop tank that allows crews to provide a temporary water reservoir to sustain water application in lieu of hydrants in rural areas. This vehicle is in fair condition. It is housed at Station 27.

Engine 28 is a 2020 Rosenbauer pumper with a 1,500 GPM pump and carries 1,000 gallons of water. This vehicle is equipped with the necessary hose and loose equipment as required by NFPA 1901. This unit also carries hydraulic rescue tools and equipment. This vehicle has 6,419 miles and is in excellent condition. It is housed at Station 28.

Ladder 28 is a 2007 Rosenbauer 75 ft. rear-mount aerial ladder with a 2,000 GPM pump, a Class A foam system, and carries 410 gallons of water. This vehicle is equipped with the necessary hose and loose equipment as required by NFPA 1901. This vehicle has 22,228 miles and is in good condition. It is housed at Station 28.

Tanker 28 is a 1999 International Model 4900 tanker with a 250 GPM pump and carries 3,000 gallons of water. This vehicle is equipped with the necessary hose and loose equipment as required by NFPA 1901 as well as side "water chute" discharges. It carries a portable drop tank for use in rural areas. This vehicle has 8,716 miles and is in fair condition. It is housed at Station 28.

Aircraft 28 is a 1985 Oshkosh Model P-19 airport rescue and firefighting (ARFF) apparatus with a 900 GPM pump and carries 1,000 gallons of water. This unit was rebuilt in 2008. This unit carries 130 gallons of AFFF foam, 500 lbs. of Purple-K fire extinguishment agent, and has a 100 ft. foam hose reel and two water torrents that are controlled from the interior of the cab. This vehicle has 31,740 miles and is in fair condition. It is housed at Station 28.

Aircraft 27 is a 1986 Oshkosh Model P-19 ARFF apparatus with a 900 GPM pump and carries 1,000 gallons of water. This unit carries 130 gallons of AFFF foam and 500 lbs. of Purple-K fire extinguishment agent, a 100 ft. foam hose reel and two water torrents that are controlled from the interior of the cab. This unit is currently out of service with repairs scheduled later this year. This vehicle has 23,068 miles and is in fair condition. It is currently housed as Station 28.

Brush 27 is a 2008 GMC Model C4500 brush truck with a 150 GPM skid-mount pump and carries 230 gallons of water. It carries wildland firefighting tools and equipment and F500 foam. It is equipped with the necessary hose and loose equipment as required by NFPA 1901. This vehicle has 9,605 miles and is in fair condition. It is housed at Station 27.

Medic 26 is a 2019 Braun Type III modular ambulance on a Ford E450 chassis. It is configured and equipped to deliver ALS level care and transport service, including a LIFEPAK 15 heart monitor/defibrillator and a patient power-load system. The vehicle has 42,872 miles and is in good condition. This unit is the primary ambulance for Station 26, which is used by the on-duty part-time personnel.

Medic 27 is a 2006 Medix Type III modular ambulance on a Ford E450 chassis. It is configured and equipped to deliver ALS level care and transport service, including a LIFEPAK 15 heart monitor/defibrillator and a patient power-load system. The vehicle has 74,519 miles and is in good condition. It is housed at Station 27.

Medic 28 is a 2014 Traumahawk Type III modular ambulance on a Ford E450 chassis. It is configured and equipped to deliver ALS level care and transport service, including a LIFEPAK 15 heart monitor/defibrillator and patient power-load system. This vehicle has 116,258 miles and is in good condition. It is housed at Station 28.

Chief 26 is a 2021 Ford Explorer. This unit is assigned to the EMS deputy chief and is used as a first response apparatus on all calls. It carries EMS equipment, LIFEPAK 15 monitor, and a SCBA. This vehicle has 14,442 miles and is in excellent condition.

Utility 28 is a 2014 Chevrolet Ford F-250 pick-up truck. The vehicle is used as a utility apparatus assigned to the full-time captain. It carries some firefighting and EMS equipment and an AED. This vehicle has 29,806 miles and is in good condition. It is housed at Station 28

Chief 28 is a 2008 Chevrolet Tahoe. This unit is assigned to the deputy chief of fire. It carries EMS equipment, AED, and SCBA. This vehicle has 93,711 miles and is in good condition.

Chief 27 is a 2020 Dodge Durango. This unit is assigned to the fire chief and is used as a first response apparatus on all calls. It carries EMS equipment and an AED. This vehicle has 11,078 mile and is in excellent condition.

Utility 27 is a 2010 Chevrolet Suburban. The vehicle is used as a utility apparatus by the on-duty part-time crew at Station 26. It carries one SCBA and is configured and equipped to be used as a command post for larger incidents if needed. This vehicle has 154,257 miles and is in good condition.

Air Wagon 28 is a 1986 mobile trailer equipped with a Mako 5,000 psi breathing air compressor and two 5,000 psi storage cylinders. In the rear of the trailer is a two-cylinder fill station that is not compliant with requirements in *NFPA 1989 Standard on Breathing Air Quality for Emergency Services.* This unit is fair condition and is housed at Station 28.

Haz-Mat 28 is a 2003 15 ft. hazardous materials response trailer that carries spill containment equipment such as overpack drums, containment pools, absorbent pads, and pillows. This trailer is in fair condition and is housed at Station 28.

Fire Safety Trailer is a 2001 Surrey Model LT-1 30 ft. fire-safety education trailer. It is used to augment fire safety education for children and adults at special events and in the local schools during fire prevention week. The trailer was acquired through donations of local community businesses. The unit is in good condition and is housed at Station 28.

LTFD has a 20-year capital replacement plan that is updated regularly to adjust for operational needs. However, the township has no dedicated capital improvement fund that is funded incrementally to meet purchasing requirements. Funding for capital purchases must be addressed by the township at the time purchases are anticipated. The fire department has availed itself to prudent use of tax dollars as demonstrated by electing to re-chassis ambulances and use

local manufacturers in building tanker apparatus, where practical. However, the tankers may not meet existing or previous NFPA standards. This issue may need to be examined in the future to determine if replacement apparatus may be needed.

The department currently has new an ambulance on order to replace the 2006 model. There are plans to re-chassis the other two ambulances; the 2014 Traumahawk in 2024 and the 2019 Braun in 2029. An abbreviated 5-year version of the capital replacement plan is displayed in Table 20. The green colored cell indicates the planned year of replacement as no estimated cost has been determined.

Unit	Year	Type	2023	2024	2025	2026	2027
Engine 27	1997	Engine					
Rescue 27	2016	Rescue					
Tanker 27	1999	Tanker					
Engine 28	2020	Engine					
Ladder 28	2007	Ladder					
Tanker 28	1999	Tanker					
Brush 27	2008	Brush					
Medic 26	2019	Ambulance					
Medic 27	2006	Ambulance					
Medic 28	2014	Ambulance					
Utility 27	2010	SUV					
Utility 28	2014	Pick-up					
Chief 26	2021	SUV					
Chief 27	2020	SUV					
Chief 28	2008	SUV					

Table 20: LTFD's five-year apparatus replacement schedule

Equipment Maintenance and Self-Contained Breathing Apparatus

LTFD has 43 MSA Fire Hawk 30-minute, 4,500 psi SCBA units. There are spare cylinders for each of the units, which are carried on the apparatus. Each member is assigned a personal facepiece and completes annual facepiece qualitative fit-testing annually. Spare facepieces are carried on each apparatus. Annual medical clearance for personnel to wear and use a respirator in a hazardous environment (as outlined in the OAC) is currently not being performed. SCBA annual flow testing and facepiece fit-testing is conducted by Fire-Safety Services of Huntsville, OH. The SCBAs are considered in fair condition.

The department has a 5,000-psi breathing air compressor system and cascade air-filling system trailer (AW-28) at Fire Station 28. Pneumatic Engineering of Whitehouse, OH performs regular preventative maintenance on the unit including air quality testing. These records are appropriately recorded and maintained.

Hose testing is conducted by Waterway Hose Testing Company in accordance with NFPA 1962 *Standard for the Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances.* Hose testing records from 2019 were reviewed and found to be in order. However, the department did not conduct hose testing in 2020 and 2021 due to COVID-19 restrictions. Chief Moritz plans to conduct annual hose testing in 2022. Ground ladders and the aerial ladder are inspected and tested annually by Fallsway Emergency Equipment of Akron, OH. Records were reviewed and properly documented. Testing is conducted in accordance with NFPA 1932 *Standard on Use, Maintenance, and Service Testing of In-Service Fire Department Ground Ladders.*

Annual pump testing of department apparatus is also conducted by Fallsway Emergency Equipment. Testing was conducted in 2021 and the records were found to be in order. OAC §4123:1-21-04[M] [4] requires annual pump testing in accordance with NFPA recommendations. Every four years, the department should consider expanding pump testing to include non-destructive apparatus frame inspection and analysis. This testing looks for early signs of cracks, delamination, and corrosion of frame rails, supports, and tire rims. This helps assure safe and proper operation of apparatus during an emergency response. Routine maintenance is also performed in-house on the department's portable pump, power saws, and fans as well as portable generators, but is not documented.

Personal Protective Equipment

The department issues structural PPE to all their members. The department utilizes Globe and Lion Apparel protective turnout gear. The PPE is cleaned in-house utilizing the department's extractor located at Station 27. Each set of turnout gear is inspected on an annual basis. The department has a replacement cycle, purchasing 10 to 12 complete sets each year. Certified ANSI (American National Standards Institute) reflective vests for highway wear are provided for each seat position on apparatus.

Communications

LTFD is dispatched by the Wood County Sheriff's Office Communications Center. The communications center has an enhanced 9-1-1 system and utilizes Central Square One Solution CAD software package to facilitate dispatching, AMR, and multiple-alarm assignments. The department is initially dispatched or notified using an 800 MHz paging tone-out that activates alert receivers in the fire station and pagers carried by personnel. Personnel can also receive notification of an emergency call if they have the *IamResponding* App on their personal cellular phone. In addition to mobile radios, the department has enough inventory to equip each on-scene firefighter with a portable radio.

Emergency on-scene communications remain on the Wood County system. Lake Township's mutual-aid departments operate on either Wood County's system or the Lucas County system. All departments have interoperability with multiple channels and talk groups.

Administrative Policies and Standard Operating Procedures

The department is subscribed to Lexipol LLC, for their administrative policies and SOPs. The policies cover the primary areas of concern such as sexual harassment, discipline, and substance abuse. Policies also address personal conduct and prohibited activities.

The department has written procedures for incident management, apparatus placement, riding assignments, and radio usage. Although not listed with the SOPs, the department follows countywide procedures for accountability, Mayday, and RIT. The SOPs also includes the department's organizational mission, vision, and core values. A number of daily operational areas were addressed, including chain of command, training, and computer and internet use. Most of the procedures had an effective date of 2021. It does appear the procedures have been reviewed on a regular schedule to assure compliance with current operations and best practices.

City of Rossford

Rossford is located in northeastern Wood County. The city is unique in that the land area is two distinct areas connected by annexed roadway right-of-way along Interstate 75. The northern section (which is the original city area) is bordered by the Maumee River on the northwest, Northwood on the north and east, and Perrysburg Township on the southeast, south and west. The southern section (which was annexed in 1994 from Perrysburg Township) is bordered almost entirely by Perrysburg Township, with a small section on the northwest boundary bordered by the city of Perrysburg. The total city area spans 5.5 square miles.

The city has a mix of low- and medium-density residential development as well as light industrial development. Rossford has also experienced recent growth with the addition of hotels near Interstate-75, indoor sports and recreation facilities as well as commercial and retail development. Recreational amenities include several city parks and recreation center. The Rossford Marina, located on the Maumee River, provides residents and visitors access to the river and Lake Erie, and associated recreational activities. The Hollywood Casino-Toledo is located just north of the Rossford city limits, which brings frequent visitors into the area. Major employers in the city include Pilkington NSG, a glass manufacturer, Amazon Fulfillment Center, and the Rossford Village Exempted School System. Figure 12 is a map of the city

.

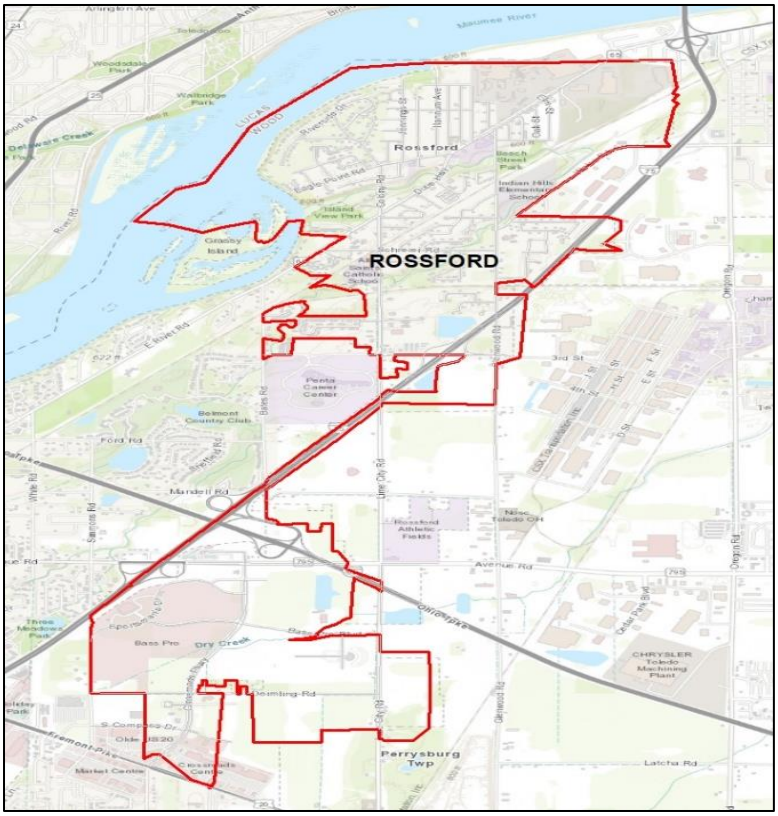


Figure 12: Map of Rossford

Major roadways in the area include State Route 65 (Superior Street) and State Route 795 (Avenue Road). Interstate-75 runs southwest to northeast along the western border of the southern section of the city and through portions of the northern section of the city. The Ohio Turnpike (Interstate-80/90) runs southeast to northwest along the southern border of the southern section of the city, with an interchange and toll booth at Interstate-75.

A CSX spur line runs through the city ending in neighboring Oregon. Additional spur lines run from this primary spur line to Stanley Yard, a rail classification yard located southeast of the city in Walbridge. According to Chief Drouard, trains can block crossings at Bates Road, Lime City Road and Glenwood Road.

The city is a home-rule municipality operating under its own charter as provided by the Ohio Constitution. The city is governed by a council – mayor form of government. The mayor is an elected position (4-year term) and seven council members elected to staggered 4-year terms. There also is an appointed city administrator who is responsible for developing and managing the city budget, overseeing service delivery to the public, and coordinating between the mayor, council, and department heads.

Demographics

According to the most recent published U.S. Census data, the city's population in 2020 was

6,299, which is a slight increase from the 2010 census of 6,293. The current population is 89% White, 2% Black, and 1% Asian; other ethnicities make up 8% of the population. Citizens over the age of 65 account for 20% of the population and children under five years of age account for 5% of the population. The median household income is $74, 010.[4] The city has a population density of 1,145 people per square mile.

Growth

Rossford appears well positioned for responsible growth and working to ensure economic health for the city. City officials describe the city as a bedroom community with a growing industrial and commercial sector. In 1994, the city annexed 662 acres from Perrysburg Township for future development. Other smaller annexations in this area followed in 1997, 1998, 1999, and 2000. This area, described previously as the south district, is zoned primarily for planned commercial and light industrial land use. The city has a joint economic development district established with Perrysburg Township. In the next five to six years, city officials expect industrial development to begin in the area south of Buck Road and east of Interstate-75. City infrastructure is in place to accommodate anticipated growth.

Fire and Emergency Services

The Rossford Fire Department (RFD) serves the city of Rossford. The department operates from one fire station and provides fire protection, EMS, fire prevention and public education services to the community. The EMS is an ALS level and transport service.

The department first started as a volunteer organization in 1915 and housed their equipment at the then Libby-Owens-Ford Glass Plant. The department continued to operate from that location until the current fire station was constructed in the mid-1950s. In 1970, the department began providing first-aid and EMS response with a used bread truck, with hospital transportation provided by a local funeral home. EMS was expanded in 1980 to include patient transport. The department began providing ALS level EMS care in 1994.

The fire chief's position became full-time in 1998 while maintaining a volunteer (POC) response model. To meet the increasing demand for services, in 2000 the department established part-time in-station staffing (two-personnel) 8:00 am to 4:00 pm Monday through Friday. This was expanded to seven days a week in early 2003. Later in 2003, the in-station staffing was expanded to 12 hours daily (8:00 am to 8:00 pm) seven days a week. This was expanded to two personnel around-the-clock in the last half of 2021.

Funding

The city of Rossford has a 2.25% income tax on earned income and business profits. Income tax revenue is the primary funding source for the city's general fund. The city's general fund is used

[4] U.S. Census 2020

to fund many basic services such as police, fire, and other functions and projects. Income tax revenue is also used to fund the city's capital improvement fund. The city also has a 1-mill levy for recreational purposes and 1-mill levy for operation of city parks. Both levies are five-year terms and expire in 2024.

The city currently has a 1-mill levy for fire personnel that was approved by the voters in 2019. This five-year levy expires in 2024 and is projected to generate $133,000 in 2022. This money helps support the in-station staffing. The city also has a 2.8-mill fire department capital improvement levy. This five-year levy expires in 2024 and is projected to generate $374,000 in 2022. Levy funds can be used for purchasing and maintaining apparatus, equipment, buildings, building sites, etc.

The city also receives revenue from EMS billing for patients treated and transported to a hospital. EMS billing revenue, which goes to the city's general fund, was $86,000 in 2020 and $146,000 in 2021. The city contracts with Cardinal Professional Services of Mansfield, OH to manage and process all billing for the fire department. The city has a "soft-bill" policy for city residents and "hard-bill" policy for non-residents.

The fire department's appropriated operating budget for 2021 was $598,770 with actual expenditures totaling $538,540. Expenditures for personnel accounted for 80% of the total expenditures, which includes Medicare, FICA, and BWC premiums.

The department also purchased several items with funds generated from the capital improvement levy. Items approved for purchase in 2021 included firefighting PPE ($30,000). A replacement ambulance ($227,175) was purchased with federal Coronavirus Aid, Relief, and Economic Security (CARES) Act funds received by the city. Although not listed in the city's final budget, the department requested purchase of a replacement aerial ladder truck estimated at $819,825. The purchase of the aerial ladder truck is dependent on a federal Assistant to Firefighters Grants (AFG) award. If received, the city's funding should be approximately 10% ($81,982) of the total cost.

Staffing

RFD is a combination department with a roster of 31 uniformed personnel. This includes volunteer members and those who work as "part-time". The volunteer personnel are actually POC in which they receive payment for each emergency response and training session attended. Nine POC personnel also serve as part-time firefighters in which they are scheduled to work a designated shift and staff the station. The department's goal is to staff two personnel around-the-clock. Both personnel are required to have EMT certification with the goal of having at least one with paramedic certification. Although the primary goal of part-time staffing is to have personnel on-station to respond to an EMS incident in a timely fashion, personnel on-station can also respond to a fire incident or service call with an engine.

Part-time schedules are organized into four 12-hour shifts per day. If a call-off occurs (such as a firefighter becoming ill prior to the start of the shift), the department attempts to fill the position or sometimes may work short. For example, in 2021, there were nine incidences where the department worked short with one firefighter on duty. There were also nine incidences when no personnel were on duty. The department attempts to limit part-time hours to 30 to 32 hours per week. However, personnel receive overtime rates for work in excess of 53 hours in one week or 212 hours in a 28-day work cycle.

The current roster includes the fire chief, assistant chief, two captains, four lieutenants, 22 firefighters, and one recruit firefighter. Nine personnel are part-time employees and the fire chief is the only full-time employee.

All of the department's personnel are dual-certified as a firefighter and EMT or paramedic. There are 11 personnel who are FF II and paramedic certified, nine personnel who are FF II and EMT certified, four personnel who are FF I and EMT certified, one person who is FF I and AEMT certified, four personnel who are volunteer firefighter and EMT certified, and one who is volunteer firefighter and paramedic certified. One new recruit is currently in training. An organizational chart depicting the department's current structure is displayed in Figure 13.

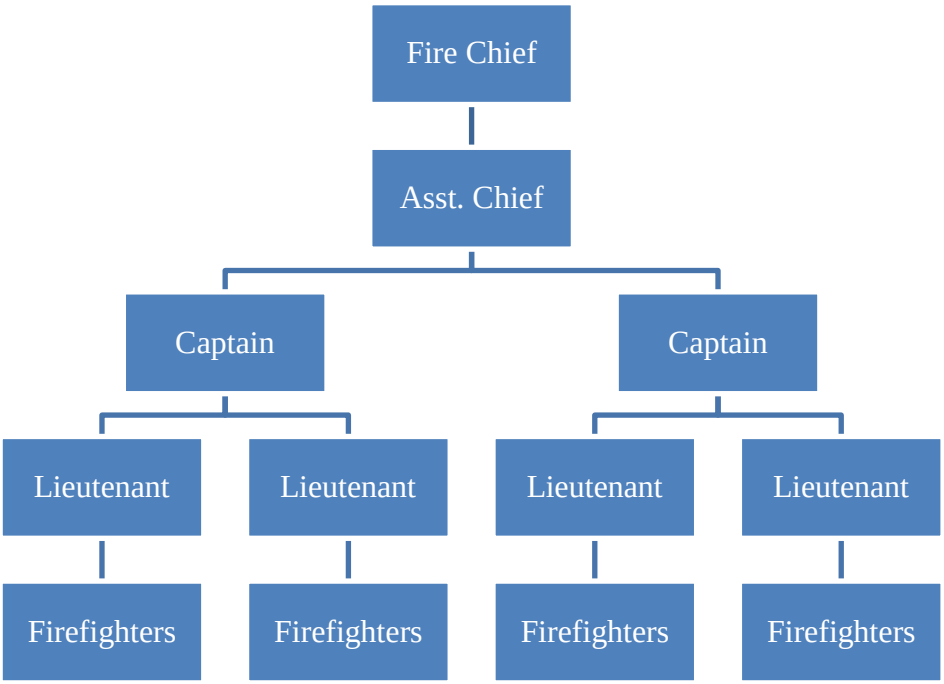


Figure 13: RFD's organizational chart

POC and part-time personnel receive an hourly rate for emergency responses, attending training sessions, and other special details that may be called by the fire chief or supervising officer. The hourly base rate is based on the individual's firefighter and EMS certification level. The base pay increases with completion of more advanced training and certification. The current pay rate is governed by a collective bargaining agreement (CBA) between the city and the International

Brotherhood of Electrical Workers Local Union 245 on behalf of the personnel of the Rossford Fire and Emergency Services. The fire chief and assistant fire chief are exempt from the CBA. The pay scale is listed in Table 21.

Pay Scale	
Classification	**Rate**
Lieutenant	$20.28
Record Lieutenant	$21.60
Captain	$21.60
Vol FF/EMT	$16.23
FF I/EMT	$16.92
FF II/EMT	$17.61
Vol FF/AEMT	$16.92
FF I/AEMT	$17.62
FF II/AEMT	$18.28
Vol FF/ Paramedic	$17.61
FF I/Paramedic	$18.28
FF II/Paramedic	$18.95

Table 21: RFD's POC & part-time pay scale

To illustrate, a firefighter/EMT who has obtained FF II and EMT certifications receives $17.61 per hour. Personnel who are scheduled for on-station shifts (part-time personnel) are paid based on the same pay scale.

In an effort to ensure a reliable response, particularly for EMS incidents, the department implemented an "on-call" program. POC members who are available can sign-up for an on-call schedule from 8:00 am to 8:00 pm (day shift) or 8:00 pm to 8:00 am (night shift); four-hour time blocks can also be scheduled to maximize personnel availability. Personnel who schedule for "on-call" must be available and respond to a call during these hours. Personnel receive $10.00 per hour for each hour of on-call; $15.00 per hour on recognized holidays. When personnel respond, they receive their normal hourly rate during the time they are committed to the emergency response in addition to the on-call pay. To illustrate, when an EMS call is received, the on-duty crew responds to the call with the ambulance unit. The on-call personnel respond to the station and then to the incident scene in a utility vehicle if needed or staff the station until released. Two personnel may sign-up for the day shift on-call schedule and up to three personnel for the night shift. The on-call system continues today to supplement on-station staffing. It should be noted that when an emergency tone-out is received, any department personnel may respond; the on-call system does not limit the response of available personnel.

The assistant chief is a part-time position and has numerous administrative assignments. He is limited to approximately 20 hours of administrative work each week, which does not include emergency responses or scheduled training sessions. The current pay rate for the assistant chief is $24.30 per hour. The fire chief is the department's only full-time employee and receives an annual salary of $84,032 plus health insurance, sick leave, and other fringe benefits typically associated with a public safety position. The fire chief is in the Ohio Public Employees

Retirement System.

Personnel may also earn paid-time-off (PTO) as outlined in the CBA. Personnel earn 4.6 hours of PTO for every 80 hours of work. PTO may be taken as sick leave or personal time, or in some cases paid out. While there is no maximum accumulation of PTO, 60 hours is the maximum hours that may be carried over from year-to-year.

Fifteen of 31 RFD personnel have either full-time or part-time firefighting positions with other agencies. Ten are employed as full-time firefighters in other departments. Three personnel are employed as a part-time firefighter by LTFD and one is employed as a part-time firefighter by NFD.

Hiring

Once an employee application is received, the applicant will interview with the fire chief and several of the department's officers. If the interview is successful, the applicant must pass a physical abilities test, which is administered by the department at the fire station. The department will also accept successful completion of the Firefighter Mile Test, which can be completed regionally at vocational schools or other institutions. Next, the applicant must pass a medical examination conducted by a physician of the applicant's choice with the cost of the examination borne by the applicant. After receiving results of the medical examination, the applicant is subject to a background investigation, which is conducted by the local police department. The applicant is then informed by the fire chief they are a member of the department. The mayor makes no formal appointment nor is any legislative action taken.

Once the employee is hired, they serve a one-year probationary period. During the period, the employee completes an orientation, which includes an organized mentoring process under the supervision of a lieutenant, who serves as a field training officer. The new firefighter completes the Orientation Handbook, a comprehensive and organized guide and checklist. The employee is evaluated during the probationary period with a formal written recommendation to the fire chief at the conclusion of the probationary period. However, there is no formal recommendation or notice to the city. Minimum requirements for new personnel include:

- 18 years of age
- High School Diploma or GED
- Resident of Rossford
- Obtain EMT certification within 1st year of employment
- Obtain Volunteer Firefighter certification upon completion of EMT training.

Once new personnel successfully complete the minimum training classes, they are reimbursed for class time (120 hours for EMT and 36 hours for firefighter) at the $16.23 per hour rate or the rate in effect at the time class begins. The costs of all required training classes are paid by the department.

Service Demands

Over the past 10 years, RFD has experienced a steady increase in calls for service. In 2012, the department responded to 762 calls for service. In 2021, that number had increased to 1,262, which is a 66% increase in service demand. There was a slight decrease in 2019 and 2020, which is most likely related to the COVID-19 pandemic. Note: a call for service is an incident count. If multiple companies respond to a fire, it counts as one incident or call for service. RFD's calls for service over the past 10 years is displayed graphically in Figure 14.

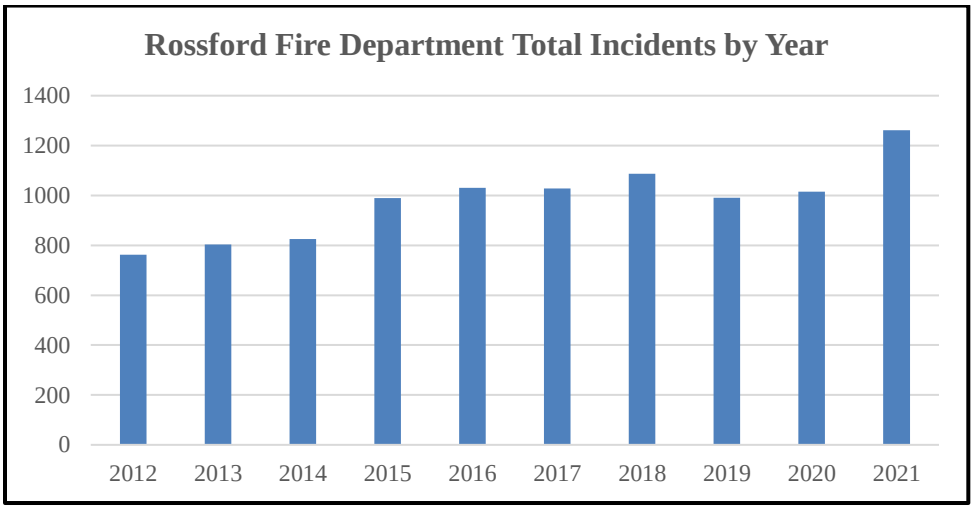


Figure 14: RFD's 10-year incident response history

During this 10-year reporting period, fire responses increased 71%. During this same 10-year period, EMS responses increased 64%. Figure 15 is a comparison of fire and EMS responses experienced by RFD from 2012 through 2021.

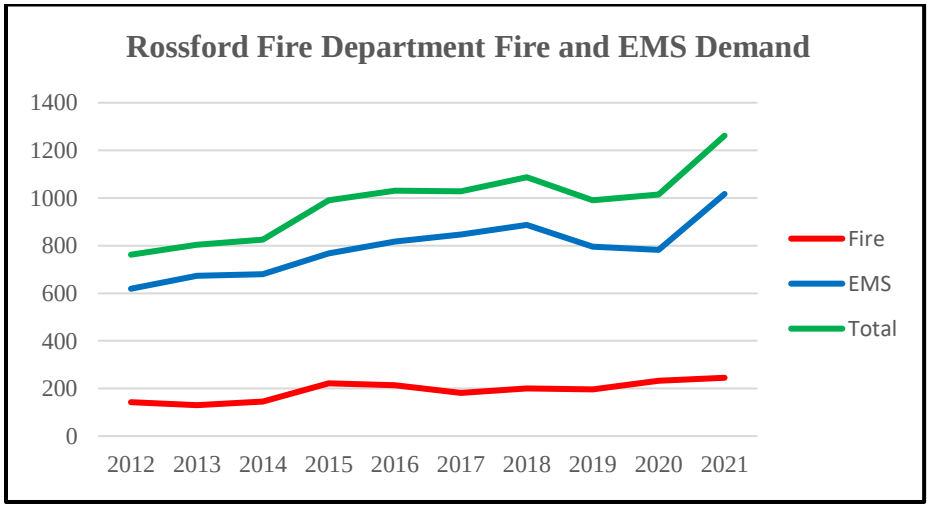


Figure 15: RFD's 10-year incident response trends

For the purposes of this report, fire responses include building, auto, and grass fires, as well as fire alarms, rescues, carbon monoxide calls, service calls, and other non-EMS responses. Also included in

the total calls for service are mutual-aid responses. RFD has mutual-aid agreements with surrounding departments as a party to the Wood County mutual-aid agreement. RFD also has AMR agreements with Perrysburg City Fire Department, Perrysburg Township Fire Department, NFD and LTFD.

Table 22 displays the fire responses within the city, mutual-aid, and AMR responses for the past three years. In the table, MA refers to mutual-aid responses and AMR refers to an automatic mutual response.

	Fire City	Fire MA	Fire AMR	Fire Total
2019	129	29	38	196
2020	169	20	44	233
2021	161	36	48	245

Table 22: RFD's three-year mutual-aid response history

RFD also received mutual-aid assistance. Table 23 displays the number of fire mutual-aid and AMR responses the department received over the past three years.

	Fire MA	Fire AMR	Total MA
2019	77	17	94
2020	51	14	65
2021	36	19	55

Table 23: RFD's three-year mutual-aid received history

The fire loss recorded for the city has been exceptional over the past five years. The recorded loss in 2020 was $11,100 and $4,050 in 2021. There was no loss to buildings or other structures and no loss recorded for the years 2017 and 2018.

Technical Search and Rescue

Technical search and rescue were described in detail on pages 16-18 as part of the review of NFD. While a formal technical rescue assessment was not performed, RFD's response capability in each technical rescue response area was reviewed.

Swift-Water Rescue – these incidents involve the rescue of a victim(s) from fast moving water such as a river or other large stream. Of special concern are low-head dams, which can create dangerous currents, especially when river water levels are elevated or during flood stage. Rossford borders the Maumee River and has boat access at the city's marina. The department has a boat with personal floatation devices, rope and other rescue equipment. The river does not have any low-head dams within the response area. While there is no specific response procedure, the department is prepared to assist individuals or boaters needing assistance on the river.

Surface-Water and Ice Rescue – these incidents involve the rescue of a victim(s) from a non-moving body of water such as ponds, quarries, or lakes. During winter, these types of incidents could involve surface ice. Each rescue involves a specific set of equipment and operating procedures. The department has ice rescue capability including equipment and response procedures.

Confined Space Rescue – includes incidents in which victims are trapped within an area that qualifies as a confined space. A confined space may be found in agricultural, industrial, and other settings as defined by OSHA. The department has some members with awareness level training but no confined space rescue equipment and no specific response procedure. If an incident occurs, Perrysburg Township Fire Department would be called for assistance.

Rope Rescue – includes incidents that are high-angle (elevated) or below grade and require the use of rope rescue systems to reach and rescue victims. A rope rescue incident could be part of a confined space incident due to the location of the victim. The department does not have rope rescue capability. If an incident occurs, Toledo Fire-Rescue Department would be called for assistance. The Toledo unit that would respond is Rescue 6, which is located only a few miles from Rossford.

Trench Rescue – these incidents are also referred to as trench "cave-in" incidents and involve an excavation trench or underground cave-in that traps a victim(s). The department does not have trench rescue capability. If an incident occurs, Toledo Fire-Rescue Department would be called for assistance.

Structural Collapse Search and Rescue – these incidents are often associated with large-scale urban search and rescue operations following natural occurrences such as tornadoes, earthquakes, etc. RFD will respond to an incident where structural collapse or instability will have to be managed. Examples of incidents where structural collapse has to be managed include: vehicles or aircraft versus buildings, unsafe structures as a result of a gas explosion or structure fire, building construction or renovation failures, or natural forces related to weather (e.g., rain or snow accumulations on roofs, tornadoes, etc.). In managing these incidents, it is often necessary to push, pull, cut, breach, lift, or tunnel through the materials that make up the collapsed structure. If an incident occurs, Toledo Fire-Rescue Department would be called for assistance.

In addition to the single-point response described above, multiple-point responses that are spread out over a larger area or involve many locations will require a larger resource pool, including outside agency support, large-scale incident management support, and technical expertise. Ohio Region 1 Strike Team, whose operating base is Toledo Fire-Rescue, can be requested to provide assistance.

Vehicle Rescue – these incidents involve removing trapped victims as a result of a motor vehicle accident. Fire departments routinely respond to motor vehicle accidents that result in an injury to one or more victims. Some of these victims may be trapped and require the use of specialized

equipment carried by the department such as hydraulic-powered rescue tools, air bags, etc., to disentangle the victim for removal. RFD has the necessary equipment and personnel are trained in motor vehicle rescue (sometimes called auto extrication) and regularly conduct hands-on training drills.

Hazardous Materials – RFD personnel are trained in hazardous materials response to the awareness level. The department carries spill equipment to handle small fuel spills such as gasoline, diesel fuel, etc. RFD also has a spill trailer with a variety of equipment and supplies including equipment to plug or control liquid releases, and clean-up equipment such as booms, absorbent pads, and granular absorbent. Toledo Fire-Rescue Department's Hazardous Materials Response Team would be called to assist for larger and more complex incidents. RFD has a general response procedure for hazardous materials incidents.

Fire Prevention and Public Education

The civilian casualty experience in Rossford is very good, which reflects the limited number of fires and the department's fire safety education efforts. Over the past five years, RFD recorded only one civilian fire injury resulting from exposure to fire byproducts such as smoke or heat, or injuries received while attempting to escape from a fire. There were no civilian fire fatalities.

Inspections

The department currently does not have a formal fire inspection program. Inspections are performed for new construction projects or upon request for foster home applicants, etc. This is reflected in the number of inspections completed over the past five years when only two to four inspections were completed annually. The exception was 2019 when a newly hired firefighter expressed an interest and with approval from Chief Drouard, completed 74 inspections of commercial properties. That employee has since left the department.

The city has adopted by ordinance the 2011 version of the Ohio Fire Code with amendments. These rules and regulations provide guidance and support for code enforcement activities. The department considers their working relationship with the Wood County Building Department to be good. The fire chief conducts plan reviews and provides input on new business and commercial construction projects.

Fire-Safety Education

The department has an active public education and fire prevention effort, although specific data on the number of programs and attendees is not tracked. In addition to fire extinguisher training for businesses and special groups, the department provides fire-safety education programming in the schools with the "Firefighter Phil" program. The department also provides home fire safety information and programming.

RFD has a smoke detector distribution program for any resident of the city. The department provides CPR training to interested groups and offers infant car seat installation. The department

has safety information available on their Facebook page and fire station tours and open burning regulations are available on the fire department's webpage, which is part of the city's website. As they have for many years, the department participates in an annual Safety Town for young children in cooperation with the Rossford Police Department, and participates in Halloween night and other community events during the year. These are opportunities for the department to share fire-safety education information with the public.

Fire Investigations

RFD conducts cause and origin of all fires that occur in the city. If a more in-depth investigation is necessary, the State Fire Marshal's office is called to lead the investigation.

Insurance Services Office

As described previously, ISO is the leading supplier of statistical, underwriting, and actuarial information for the property/casualty insurance industry. ISO conducts field evaluations in an effort to rate communities and their relative ability to provide fire protection and mitigate fire risk. The PPC rating for Rossford is 04/4X. The most recent evaluation available for review was August, 2019.

Most underwriters in Ohio utilize what is called in the industry, the "suburban rule." What this means is businesses and residents in the city who are located within five miles of a fire station receive a rating of 4, which can be used by insurance carriers to determine rates for casualty insurance. Those businesses and residents located more than five miles from a fire station receive a less favorable rating.

The PPC program evaluates the fire suppression capabilities of each community in three major areas according to criteria defined in the *Fire Suppression Rating Schedule:*

- Emergency Communications. This review accounts for 10% of the total classification. This section reviews the facilities provided for the general public to report fires and for the operator(s) on duty at the communication center to dispatch fire department companies to fires. Rossford received 6.29 points credit out of a total maximum credit of 10.
- Fire Department. This review accounts for 50% of the total classification and focuses upon engine and ladder-service companies, distribution of fire stations and fire companies, equipment carried on apparatus, pumping capacity, training, and available firefighters. Rossford received 25.70 points credit out of a total maximum credit of 50.00. This included 5.59 points credit out of a possible 10 points for deployment, 4.47 points credit out of a possible 15 points for on-duty company personnel, and 3.34 points credit out of a possible 9 points for training.
- Water Supply System. This review accounts for 40% of the total classification. This component examines the water supply a community uses for fire suppression including

water main size, distribution, and storage system. Also reviewed are hydrant size, type, and installation as well as the inspection frequency, maintenance, and condition of fire hydrants. Rossford received 34.13 points credit out of a total maximum credit of 40.00.

An additional factor now evaluated is the CRR section in which fire prevention, fire safety education and fire investigations are evaluated. The inclusion of this in the evaluation process provides recognition for those communities that employ effective fire prevention practices and allows for extra points in the grading process. Rossford received 3.83 additional evaluation points out of a total maximum credit of 5.50

The notification letter and summary report from ISO advised the city's PPC should serve as part of any planning document for future city development and fire safety protection improvement considerations as it relates to city residents.

Training

The department conducts three-hour training sessions each Monday evening from an annually developed training schedule (except the 5th Monday). This equates to four sessions each month; 12 training hours monthly or 36 training hours for each calendar quarter. The schedule and number of hours is designed to provide department members the opportunity to maintain skills and meet state continuing education hours for recertification.

The CBA previously mentioned has training requirements listed in Section 12.10 and addresses training, hours, records, and other related information. Personnel must attend 27 hours per quarter or three of the four scheduled training sessions each month. Up to 75% of the 27 hours in any quarter may be received from other departments or accredited training program with approval of the fire chief. Administrative policy #600 also lists the same training requirements.

RFD requires all personnel to obtain Volunteer Firefighter certification as the minimum training requirement. However, personnel are encouraged to complete FF I training. In addition to initial certification requirements, the on-boarding process involves mentorship and evaluation by department lieutenants utilizing a formal documentation process, with a recommendation for completion of the probationary period made by officers to the fire chief at end of first year.

Officers obtain advanced training for their supervisory expectations and responsibilities through outside agencies. All department officers have received training sufficient to meet the provisions of NFPA 1021 *Fire Officer Professional Qualifications*, including Fire Officer I and II training. RFD also uses the facilities at Owens Community College for live fire and hands-on training topics and exercises.

The department has a captain assigned to manage firefighting training and a captain assigned to manage EMS training, utilizing the collective efforts of a training committee. A review of the 2021 master schedule revealed a very comprehensive in-service training schedule. Topics

ranged from SCBA, search and vent-enter-isolate-search techniques, auto extrication, engine company operations, and use of the flashover simulator trailer. A diverse schedule of EMS topics was also included in the master schedule. Of concern is that department has minimally addressed driver training. There was also no evidence of incident management training on specific topics of Mayday and accountability, important when operating in a mutual aid environment.

EMS delivery is guided by the department's EMS field protocol. RFD is a member of the Northwest Ohio EMS Consortium. Working together, member departments operate under one field protocol. This is a tremendous benefit for departments that may respond to a large incident and to those personnel who work at more than one department in the region. RFD personnel train on invasive and other EMS skills bi-annually as part of their regular weekly training sessions. This includes demonstrating proficiency with manipulative skills including IV therapy, endotracheal intubation and airway management, spinal immobilization, etc. The medical director is Stephen Zohn, M.D.

Training records for department personnel, which included topics and number of hours, were reviewed. The review indicated substantial compliance with department requirement for both fire and EMS certifications for training attendance and thereby compliance with state recertification requirements.

Risk Assessment

Utilizing the CRA tool, the department performed a coordinated survey of 39 target hazard properties in the city. As a result, three properties were identified as a maximum risk and 26 were identified as a significant risk. These types of properties create special challenges to control in a timely and efficient manner. As outlined in detail on page 23, target hazards are normally beyond the customary risk encountered by fire departments and typically can require a larger number of resources than provided for residential and other common types of occupancies or situations. Target hazards could also include natural and human-caused hazards such as railroads, interstates, underground pipelines, rivers, ponds, or any other element that may affect response of fire resources.

Those identified as a maximum risk included:

- Camelot East Apartments located at 801-819 Glenwood Road. This 2-story, L-shaped apartment building has 61,600 sq. ft. of space and 72 units. This location has a limited water supply.
- Maumee Soccer Dome located at 9300 Bass Pro Boulevard. This 90,000 sq. ft. structure is the largest domed facility in Ohio.
- Amazon Fulfilment Center located at 27400 Crossroads Parkway. This 2.8 million sq. ft. facility has over 4,000 employees and operates around-the-clock. It has an automatic fire sprinkler system.

In addition to the maximum risk apartment building identified, there are five other apartment buildings and complexes in the city. Also located within the city are six churches and six motels, all rated as a significant risk.

The Rossford Exempted Village School District has two buildings within the city; the high school at 701 Superior Street and the elementary school at 28500 Glenwood Road. The All Saints Catholic School is located at 630 Lime City Road. Although identified as significant risk properties, schools always pose a special challenge due to their size and number of occupants.

Also rated a significant risk is the Pilkington NSG Glass Plant located at 140 Dixie Highway. This 173-acre site was established in 1898 as the Edward Ford Plate Glass Company and continues operation today with over 1.7 million sq. ft. of manufacturing and warehousing space in multiple buildings.

Response Considerations

Recognized safety and response standards and guidelines that are considered when analyzing fire protection services were previously discussed and identified on pages 20-21. Those include NFPA 1500 *Standard on Fire Department Occupational Safety, Health, and Wellness Program*, §4123:1-2 OAC, which applies to firefighting operations in Ohio, and NFPA 1561 *Standard on Emergency Services Incident Management System and Command Safety.*

The NFPA's *Fire Protection Handbook* provides recommendations for the minimum response to various structures. Those recommendations are repeated in Table 24.

STRUCTURE TYPE	MINIMUM RESPONSE
High-hazard occupancies Schools, hospitals, nursing homes, explosives plants, refineries, high-rise buildings, and other high life hazard or large fire potential occupancies.	At least 4 pumpers, 2 ladder trucks (or combination apparatus with equivalent capabilities), 2 chief officers, and other specialized apparatus as may be needed to cope with the combustible involved, not fewer than 24 firefighters and 2 chief officers. One or more safety officers and a rapid intervention team(s) are also necessary.
Medium-hazard occupancies Apartments, offices, mercantile and industrial occupancies not normally requiring extensive rescue or fire-fighting forces.	At least 3 pumpers, 1 ladder truck (or combination apparatus with equivalent capabilities), 1 chief officer, and other specialized apparatus as may be needed or available; not fewer than 15 firefighters and 1 chief officer, plus a safety officer and a rapid intervention team.
Low-hazard occupancies One-, two-, or three-family dwellings and scattered small businesses and industrial occupancies.	At least 2 pumpers, 1 ladder truck (or combination apparatus with equivalent capabilities), 1 chief officer, and other specialized apparatus as may be needed or available; not fewer than 14 firefighters and 1 chief officer, plus a safety officer and a rapid intervention team.
Rural operations Scattered dwellings, small businesses, and farm buildings.	At least 1 pumper with a large water tank (500 gal or more), one mobile water supply apparatus (1,000 gal or larger), and such other specialized apparatus as may be necessary to perform effective initial firefighting operations; at least 12 firefighters and 1 chief officer, plus a safety officer and a rapid intervention team.
Additional alarms	At least the equivalent of that required for rural operations for second alarms. This may involve the immediate use of mutual-aid companies until local forces can be supplemented with additional off-duty personnel.

Table 24: NFPA's recommended minimum response resources based on occupancy hazard type

The department has a written procedure for the order of response of apparatus to structure fires, fire alarms, auto fires, and motor vehicle accidents. For example, for a structure fire, the order of response is Engine 30, Tower 29, Engine 29, the first-out medic, and Utility 29. AMR responses are also included in the procedure.

RFD is a party to the Wood County mutual-aid agreement and also has a singular mutual-aid agreement with Toledo Fire-Rescue Department. RFD also has AMR agreements with NFD, Perrysburg Township Fire Department, Perrysburg City Fire Department, and Maumee Fire Department (for responses on the Ohio Turnpike).

Response Performance

Response performance was discussed in detail on pages 27-29. Factors affecting local response goals include demographics, risk, size of the response area, demand volume, and public expectation. Rossford currently does not have a stated response performance goal. Therefore, national response criteria will be used to determine the department's baseline performance. NFPA 1710 is the *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments.* The standard outlines criteria that address functions and objectives of fire department emergency service delivery, response capabilities, and resources.

CFAI, which is part of the Center for Public Safety Excellence, publishes criteria in their *Standards of Cover*. CFAI criterion refers to NFPA 1710 for communities that have personnel on-station, regardless of the personnel are full-time or part-time, or the community is suburban or urban in nature.

To briefly review, total response time includes call handling, turnout and travel times. Based on NFPA 1710 criteria, RFD should meet the following response time objective: for 90% of all fire incidents, the first-due unit shall arrive within 7 minutes, 06 seconds total response time. This response objective includes 106 seconds (1:46) for call processing at the communication center, 80 seconds (1:20) for turnout, and 240 seconds for travel time. This response time objective begins when the 9-1-1 call is received at the communication center.

The response time objective for EMS incidents includes 120 seconds (2:00) for call processing, 60 seconds (1:00) for turnout, and 240 seconds (4:00 minutes) for travel time. The total response time benchmark for EMS incidents is 7:00 minutes for 90% of the incidents.
RFD is served by the Wood County Communications Center. As noted previously in the Lake Township narrative, Wood County dispatchers are trained in EMD, which is an enhanced service to the public. EMD is where a properly trained dispatcher can provide medical assistance instructions to a 9-1-1 caller who is requesting emergency help. Examples would be bleeding control, emergency breathing and CPR instructions. With this enhanced level of service, EMS call processing and dispatching shall be completed within 120 seconds (2:00) 99% of the time. This call processing criteria is adopted by CFAI and included in the criteria listed in NFPA 1710.

Data Analysis

Data generated for 2021 was analyzed to determine response performance. The data set included fire responses and EMS responses coded as an emergency response. Responses that were coded as non-emergency responses (no lights and sirens) were not included in the analysis. False alarm responses where the responding units were cancelled before arrival and mutual-aid responses were also excluded from the data set.

NFPA and CFAI have recognized the use of percentiles as the most accurate method to analyze and evaluate response performance. Tables 25 and 26 display the department's overall response performance for fire and EMS responses within the city when compared to NFPA response criteria. For fire responses, the target time benchmark is 95% for call handling and 90% for turnout time, travel time and total response time. Meeting the target-time benchmark for at least 70% of the incidents is often considered the baseline threshold performance. The percentage column identified the actual percentage the department is meeting the target time objectives.

Element	Target (minutes)	Percentage
Call Processing Time	1:46	Undetermined
Turnout Time	1:20	42%
Travel Time	4:00	49%
Total Response Time	7:06	51%

Table 25: RFD's fire incident response performance

Element	Target (minutes)	Percentage
Call Processing Time	2:00	undetermined
Turnout Time	1:00	38%
Travel Time	4:00	72%
Total Response Time	7:00	72%

Table 26: RFD's EMS incident response performance

For both fire and EMS responses, almost all data entries had the time the call was received was the same as the time dispatched. Thus, the call handling time could not be determined. It was also worth noting that 16% of the EMS responses had the time enroute to the call and dispatch time listed as the same time. This appears to be high occurrence rate. The fire administration should consider auditing response data monthly to assure accurate response data is obtained from the dispatch center.

The response data for total fire response time indicates a performance gap, meeting the performance benchmark 51% of the time. The total EMS response time shows the department is meeting the performance benchmark 72% of the time. The EMS turnout performance benchmark is being met 38% of the time.

RFD has the city divided into two response districts for incident response planning and data management purposes. The north district includes the established northern portion of the city and the south district includes the area that was annexed in 2000. Tables 27 and 28 display the response times for fire and EMS response located in each district.

Element	District	Target	Percentage
Travel Time	North	4:00	81%
Total Response Time	North	7:06	77%
Travel Time	South	4:00	18%
Total Response Time	South	7:06	27%

Table 27: RFD's fire incident response performance by district

Element	District	Target	Percentage
Travel Time	North	4:00	88%
Total Response Time	North	7:00	84%
Travel Time	South	4:00	12%
Total Response Time	South	7:00	27%

Table 28: RFD's EMS incident response performance by district

The response data shows a significant performance gap for emergency responses to the city's south district. The travel time for fire responses met the four-minute benchmark 18% of the time and 12% of the time for EMS responses. The total travel time benchmark for both fire (7:06) and EMS (7:00) responses was achieved 27% of the time.

An additional aspect of the response performance is the number of personnel available to respond to emergency calls. RFD addressed this in part by adding part-time personnel around-the-clock to improve response time and reliability, as well as the on-call program. The addition of the on-duty part-time personnel has greatly improved the department's EMS response reliability and overall response performance. However, the department's fire response is heavily dependent and based on POC availability and response, supplemented by the on-duty part-time personnel and AMR companies. For fire responses, the assessment team analyzed the POC response for 2020 and 2021. The department responded with six to 10 personnel 36% of the time and 11 personnel or more 6% of the time. Fifty-eight percent of the responses had five or fewer personnel respond. The POC response history for 2020 and 2021 is displayed in Figure 16.

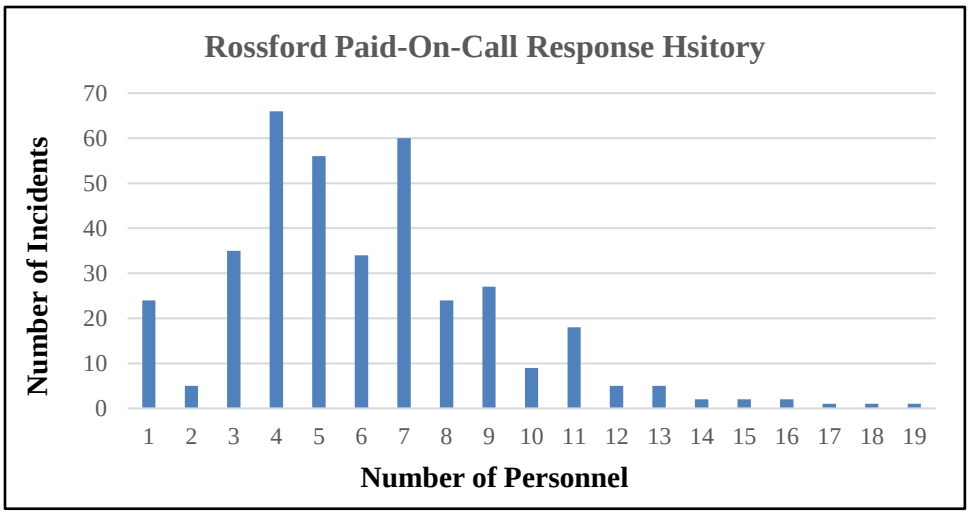


Figure 16: RFD's POC response history 2020-2021

Facilities

RFD operates from one station located at 133 Osborne Street. The fire station facility is a component of the city's government complex that includes the police department, service department, and city administration. The station is assigned a "Station 29" designator as part of an area-wide numbering system. There is a public library building that is adjacent on city land. The station is located near the center of the city's north district, but is approximately four road miles to the center of the city's south district, impacting emergency response travel time to the that area.

The front of the building sits well off Osborne Street for more than adequate room to position apparatus out of the building and on the front ramp. There are good sight lines for emergency equipment exiting the station.

Station 29

The building does not preclude handicap access but is not equipped with handicap special appliances for door opening and interior door and counter clearances consistent with full handicap access. The building is normally locked; personnel make entry into the building using a code-entry lock system. A portion of the building exterior is monitored by a security camera.

Overall, the station is in fair condition, having been originally constructed on the current site in the mid-1950s and undergoing significant remodeling in 1977 and 1984. The building was clean but showing signs of wear and deterioration. Space for maintaining 24-hour staffing and support is deficient with modern practices of staffed fire stations.

The building is of block construction with a brick veneer. As part of the remodeling, a second level was added to enable construction of a training classroom and a small kitchen. A flat roof covers the functional areas of the facility.

There are four back-in bays facing the front of the station. All bays are approximately 50 ft. deep x 14 ft. wide. Three of the overhead doors are 12 ft. high x 12 ft. with the fourth bay being 10 ft. x 10 ft. high. The doors are equipped with emergency releases enabling manual operation in the event of an electrical or mechanical failure. There are no emergency indicators installed on bay doors that would warn a door is not fully raised.

The bays were crowded with apparatus, hose, breathing air equipment, cleaning supplies, PPE racks, and other associated small equipment for which there is no designed or appropriate storage space. There is a "Plymo-Vent" diesel exhaust source capture system installed for each bay. The lighting in the bay work areas is sufficient for routine activities such as apparatus checks and building cleaning and maintenance. The bay floor has floor drains that empty through an oil-water separator for environmental protection. What seemed evident in an inspection of the bay area is a positive effort to address the operations of a fire department intended to meet modern standards while operating from an aged and minimally-sized building.

The department's breathing air compressor, two-cylinder containment fill station, and four-cylinder cascade fill assembly are located in the bay area. There is no provision for intake of outside air, but the intake side of compressor is monitored by a carbon monoxide detector and warning system.

New PPE sets are racked on the apparatus floor and exposed to ultraviolet light. There is no provision for emergency decontamination of personnel, equipment, or PPE. There is an "extractor" type washer for cleaning of PPE. There also is a residential-grade washer and dryer in the station.

Located on the first floor is a vestibule area, the chief's office, an alarm room, and an EMS supply storage room. There is minimal administrative office and work space. As an example, the fire chief and assistant chief share a small office designed for one occupant, leaving no room

to conduct private meetings or dealing with employees in a professional and confidential office environment. The first floor of the facility has minimal general storage areas or spaces. EMS storage and inventory control efforts are evident. Controlled substances are under a "double lock" condition. Contaminated supplies and other material deemed biohazard materials are accumulated and marked for disposal in an area of the bay.

The restroom facilities are minimal but effectively gender neutral by department regulation. There is a first-floor restroom with shower that is designated for female use. There is a second-floor restroom with shower that is designated for male use.

The second floor has a training room as well as a small kitchen. The training room is dual-purposed; it serves as a dayroom and as a dormitory area during the evening. However, use of the space as a dormitory area is marginally functional. The training room has recently been updated with technology access and audio-visual equipment. The kitchen has residential-grade equipment; however, the cooking area is not protected with an automatic suppression system.

Dormitory and Dayroom

Air Compressor and Cleaning Supply Storage

The building and equipment are not protected by fire detection and alarm or entry alarms; however, the living area is protected by carbon monoxide detectors. There is provision for emergency power to the station; its capacity was uncertain. There was no intent to inspect, evaluate, opine or recommend building infrastructure features (electrical, plumbing, HVAC, etc.) or their conditions.

The department has recently benefited from shared access to a remote building. It has been remodeled and outfitted as a very modern and effective classroom training facility with adequate access and parking. This promotes a learning environment for the weekly classroom training sessions.

There is no special area designated for exercise and fitness equipment; the limited equipment is used in the apparatus bays. Personal locker storage for employees is minimal.

Apparatus and Equipment

Overall, the department's fleet and equipment appear to be in good condition and well-maintained. The corresponding maintenance records and equipment inventory were reviewed by the assessment team during the site visit. The fleet consists of two engines (sometimes referred to as pumpers), one aerial ladder platform, two ambulances, one staff vehicle and a utility/multi-purpose response vehicle. All fire apparatus appears to be equipped to NFPA and ISO standards. The following is a brief description of each piece of apparatus and equipment.

Engine 29 is a 2009 KME rescue-pumper with a 1,250 GPM pump and carries 500 gallons of water. It is equipped with the necessary hose and loose equipment as required by NFPA 1901. It carries extrication tools and equipment for auto accidents and other rescue situations. It is also equipped with ALS level EMS equipment. This vehicle has 19,509 miles and is in good condition.

Engine 30 is a 2018 Ahrens Fox HME pumper with a 1,750 GPM pump and carries 500 gallons of water. It is equipped with the necessary hose and loose equipment as required by NFPA 1901. It also carries Class B foam, a RIT bag, and an AED. This vehicle has 9,970 miles and is in good condition.

Truck 29 is a 1995 Sutphen 100 ft. aerial platform. It was purchased used from the original owner. It has a 1,500 GPM pump and carries 300 gallons of water. It is equipped with the necessary hose and loose equipment as required by NFPA 1901. It also carries Class B foam and an AED. This vehicle has 9,418 miles and is in fair condition.

Medic 29 is 2014 Road Rescue Type III medium-duty modular ambulance on a Ford chassis. The chassis has been remounted with a 2007 modular box. This unit is configured and equipped to deliver ALS level care and transport service including a cardiac monitor/defibrillator and a patient power-load system. It also carries two SCBA units. This vehicle has 5,530 miles and is in very good condition.

Medic 30 is 2020 Road Rescue Type III medium-duty modular ambulance on a Ford chassis. This unit is configured and equipped to deliver ALS level care and transport service including a cardiac monitor/defibrillator and a patient power-load system. It also carries two SCBA units. This vehicle has 6,004 miles and is in excellent condition.

Utility 29 is a 2019 GMC 2500 pick-up truck. It carries four SCBA units, two extinguishers, an AED, basic tools, and some spill control equipment. This unit has 8,900 miles and is in good condition.

Chief 29 is a 2014 Chevrolet Tahoe staff vehicle. It is configured and equipped to be used as a command post for larger incidents if needed. This unit has 48,000 miles and is in very good condition

The department has a 15 ft. boat for emergency incidents on the river. It has a 35 hp motor and is transported by trailer. The boat is leased from the city of Perrysburg for a nominal fee.

The department has a 16 ft. dual-axle hazardous materials spill trailer. It carries a variety of equipment and supplies for handling a spill or release of a hazardous material.

There is no formal apparatus replacement schedule established.

Equipment Maintenance and Self-contained Breathing Apparatus

RFD currently is using MSA G1 30-minute, 4,500 psi SCBA. There are 25 units, which are carried for each riding position on the apparatus and ambulances, including spare cylinders. The SCBA inventory have been in service for a year (2021) and are in very good condition. The current respiratory protection program includes annual facepiece qualitative fit-testing. This is conducted by department personnel with equipment from Perrysburg Township Fire Department. Annual bench testing is conducted by Fire-Safety Services of Huntsville, OH, a qualified contract agency. However, maintenance and repair records were unavailable at the time of site visit. Annual medical clearance for personnel to wear and use a respirator in a hazardous environment (as outlined in the OAC) is currently not being performed.

The department uses a 4,500 psi Bauer breathing air compressor system and cascade air-filling system. Intake air for the compressor is drawn from ambient air in the bay in which the compressor is located, but is protected by a carbon monoxide sensor. The department contracts with Breathing Air Systems of Reynoldsburg, OH to service and maintain the compressor; this service includes air quality testing.

Annual pump testing is conducted by Ohio Cat Equipment of Perrysburg, OH in accordance with NFPA standards. Testing documentation is maintained. Every four years, pump testing should be expanded to include non-destructive frame inspection and analysis. This testing looks for early signs of cracks, delamination, and corrosion of frame rails, supports, and tire rims. This helps assure safe and proper operation of apparatus during an emergency response.

Ground ladders and the aerial are tested by Ohio Cat Equipment of Broadview Heights, OH. Ground ladders are tested biennially and the aerial is tested annually. Testing records were reviewed and found to be in order. NFPA compliant hose testing was reported to be conducted annually by department personnel. Testing records are maintained and appeared to be in order.

Personal Protective Equipment (PPE)

The majority of the department's structural firefighting PPE is manufactured by Globe. In general, the gear is in good to very good condition. The PPE is stored in open metal racks located on the bay floor, which provides easy access to the gear by personnel. However, if the diesel-exhaust capture system is not in use, it could expose the PPE to the accumulation of exhaust fumes and particulates generated when vehicles are started or backed into the station. However, the PPE is exposed to ultraviolet light during different times of the day.
There is a department program to regularly inspect and repair PPE. The department has implemented a 10-year replacement cycle for PPE. With proper care, the goal is for every member to eventually have two sets of PPE. In addition, a stock of used PPE is maintained to initially outfit new members.

Communications

Rossford is dispatched by the Wood County Sheriff's Office Communication Center and also serves as the primary PSAP for the citizens of Rossford. A CAD software package is used to facilitate dispatching and automatic response and multiple alarm assignments.
RFD along with four other departments in northern Wood County (Lake Township, Perrysburg, Perrysburg Township and Northwood) operates on an 800 MHz trunked system. This Motorola-based system is affiliated with the Lucas County system. Seamless interoperability is achieved with a radio tower site located in Wood County. The department is initially dispatched or notified using a VHF paging tone out that activates alert receivers in the fire station and pagers carried by personnel. Personnel can also receive notification of an emergency call if they have the *IamResponding* App on their personal cellular phone. After the initial dispatch, the host agency assumes responsibility for communications on the emergency scene.

In addition to mobile radios, the department has enough inventory to equip each on-scene firefighter with a portable radio. All five departments have interoperability with multiple channels and talk groups.

Administrative Policies and Standard Operating Procedures

The department is subscribed to Lexipol LLC, for their administrative policies and SOPs. The policy manual covers a variety of topics including drug- and alcohol-free workplace, HIPAA, family and medical leave, harassment, etc. The city personnel manual also has policies that address sexual harassment and drug-free workplace.

The procedures manual includes written procedures for incident management, mutual-aid response, drug box checks and inventory and Mayday. Although not listed with the SOPs, the department follows countywide procedures for accountability and RIT. A number of daily operational areas were addressed, including chain of command, job descriptions, internet use, compressor and air cascade operations, etc.

Creation of a Joint Fire and EMS District

The creation of joint fire and EMS districts has gained in popularity across Ohio in the last two decades. Under Ohio law, specifically §505.375 ORC, townships and municipal corporations may elect to create a joint district to deliver fire and ambulance services. There are several other options available, including the creation of a joint fire district (§505.371 ORC) or joint ambulance (EMS) district (§505.71 ORC). If a joint fire district is created, EMS operations are permitted, so either §505.375 ORC or §505.371 ORC is applicable in this study.

The benefits of forming any joint district include: 1) creating an equal tax base among all residents within the district area*; 2) participating entities having equal representation in management oversight; 3) improved service levels with increased resources; and 4) in some cases, cost savings with economy of scale and reduction in duplication of resources. *However, in almost all cases, if a joint fire and EMS district is created to address staffing issues to improve response performance and reliability, cost savings is seldom realized; in fact, the operating cost of the new district may be significantly higher than expected.*

Disadvantages of creating a joint fire and EMS district include: 1) loss of identity by department personnel and the community; 2) loss of fiscal and operational control by elected bodies; and 3) merging multiple organizations with differing cultures, equipment, and operational procedures can be difficult.

> *The common method of funding a joint district is a property tax against real estate for all properties within the district. If approved by the voters, all property owners pay the same millage rate. If other funding mechanisms are chosen, an equal tax base may not apply.

All three agencies, NFD, LTFD, and RFD are experiencing staffing issues similar to situations faced by other agencies around the state. While all three have part-time, in-station staffing, the availability and reliability of the POC personnel has declined, making it difficult at times to reliably assemble sufficient numbers of personnel for a fire response. Family obligations and some of the increased training requirements all affect each organization's ability to recruit and retain POC personnel. Overall, the time demands on the volunteer service are greater than ever, especially for providing EMS.

The part-time pool of personnel is also in the decline, as cities and townships vie to recruit full-time personnel, which in turn affects the number of part-time personnel which had traditionally

available for hire. As described previously, the agencies have experienced some short shifts over the past two years and compete for what is the often the same cadre of part-time personnel.

All three communities are also concerned with long-term sustainability of fire and emergency services delivery, as well as the associated cost of operations. In an effort to determine if the concept of a joint district is feasible, a joint fire and EMS district will be created conceptually to allow department members and elected officials to examine organizational structure, general operations, and the estimated cost of providing service delivery with this type of organization. For this study, the proposed joint fire and EMS district service area includes Lake Township and the cities of Northwood and Rossford.

The fire and EMS district, if formed, becomes an agency that will be serving a much larger entity than the three individual departments. The response area will encompass 48.7 square miles with a population estimated at 26,843. The fire and EMS district will have a combined 126 personnel and respond to approximately 4,000 calls for service annually. Table 29 shows the current demographics and resources of each entity and combined as one agency, including operating budgets, apparatus, and equipment.

	Northwood	Lake	Rossford	Total
Population	5,160	15,554	6,293	27,007
Area in sq. mi.	8.4	34.8	5.5	48.7
ISO Rating	4/4Y	4/4Y	4/4X	TBD
Operating Budget	$788,762	$1,460,580	$538,540	$2,787,882
Personnel	41	54	31	126
Total Calls	1,083	1,608	1,262	3,953
Engines/Rescue-Eng.	2	3	2	7
Ladders	1	1	1	3
Tankers	0	2	0	2
Medics	3	3	2	8
Grass/Mini-Pumper	1	1	0	2
Utility Vehicles	2	2	1	5
Staff Vehicles	2	3	1	6
Other Vehicles	0	2	0	2
Air Wagon	0	1	0	1

Table 29: proposed fire and EMS district facts

A map of the joint fire and EMS district, which includes the location of the existing fire stations, is displayed in Figure 17.

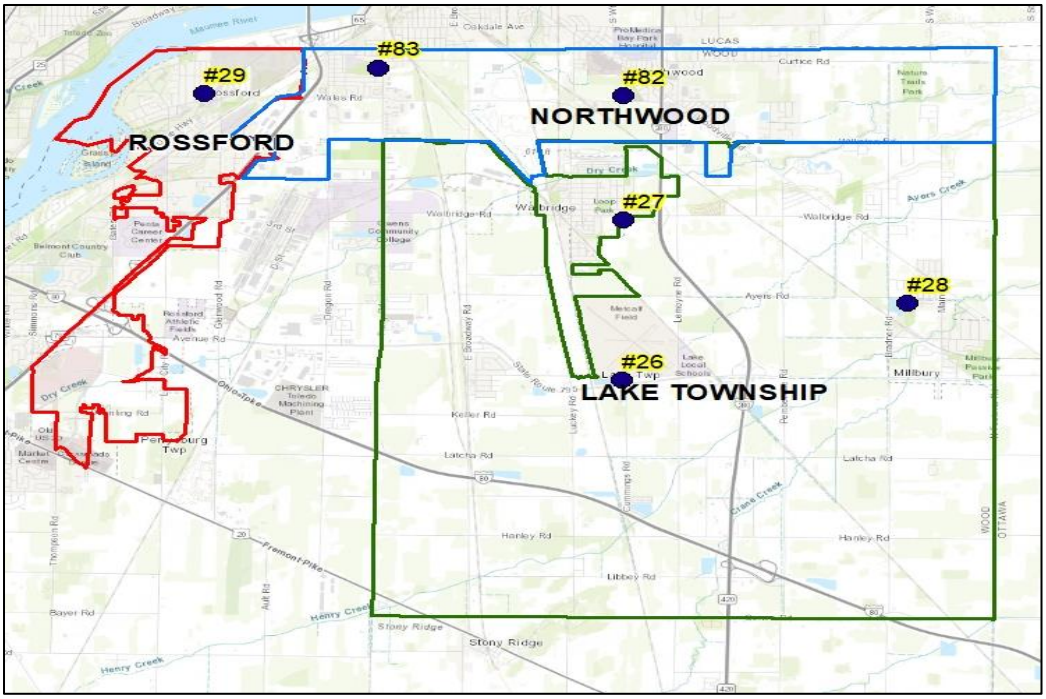


Figure 17: Map of conceptual fire district

Assets

One of the first steps in making a fire and EMS district functional is to configure apparatus and equipment. The governmental entities hold title to all of the apparatus and equipment as well as the fire station facilities and land. Normally, all apparatus, equipment and supplies currently owned and used by the three departments would be titled over to the joint fire and EMS district, including any apparatus loan or lease obligations. However, the three governmental entities can lease the fire and EMS apparatus and equipment to the joint fire and EMS district. This could be at no cost or a nominal lease annually for each piece of equipment. If the apparatus and equipment are transferred to the district, either now or in the future, the current estimated value of the asset should be determined and recorded. There is currently debt service on one of Northwood's ambulances, which will be retired in 2024. Debt service is expected to continue with the future delivery of an ambulance for Lake Township.

The fire station facilities could be handled in one of two ways. The buildings and land can be transferred to the joint fire and EMS district, or the fire and EMS district could lease the facilities from the township and cities. A lease arrangement may be the better option, at least initially, especially since Northwood Station 82 and Lake Township Station 26 are multi-use facilities, used by other government agencies. A nominal lease payment for use of the facility could be developed between the parties. A nominal lease payment was added to the projected operating budget. The lease and loan obligations would need to be addressed during the formation of the district.

For any apparatus, equipment, or facility where the ownership is transferred to the fire and EMS district, an appraisal of the current fair market value is necessary. As an example, agency A enters into the district with $5 million in assets, agency B enters into the district with $7 million in assets, and agency C enters into the district with $10 million in assets. This forms the foundation of the district. In later years, agency D wishes to enter into the district. What asset amount is appropriate to enter the district? In other words, the tax payers in agencies A, B and C should not be required to pay the cost of the necessary equipment and facilities for agency D should they be significantly less or with no assets. Likewise, if one of the original agencies decides to leave the district, they would only be entitled to the value of the assets brought into the district plus an equal share of assets acquired after the district was formed.

Capital Needs

The joint fire and EMS district, if formed, will face capital replacement and improvement needs in the future. If the joint fire and EMS district is not formed, the departments and communities will have similar but not identical future capital needs. Currently, NFD plans to replace an engine (Engine 82), and LTFD has plans to replace a tanker (Tanker 27), and one ambulance (Medic 26). RFD also could potentially replace their aerial ladder truck if a federal grant application is approved. However, once the district is formed and an operations and staffing plan is developed and implemented, a revised apparatus replacement plan should be developed.

For example, Rossford's aerial ladder truck (Ladder 29) is 27-years old. According to Chief Drouard, it is becoming less reliable and in need of frequent repair. While not approved for replacement in the city's capital budget, a federal AFG grant has been submitted to purchase a replacement apparatus. If the district is formed, the replacement of this apparatus may not be needed initially. Northwood's aerial platform (Truck 83) is deployed at Station 83, which is located at 2100 Tracy Road. Using calculations from *Google Earth*, this station is 1.20 road miles from Rossford's corporate line at Wales Road and I-75, traveling Wales Road. It is 2.30 miles from Rossford High School traveling Andrus Road, Oregon Road and Superior Street. It is possible that Truck 83 (along with Lake Township's Ladder 28) could serve the needs of the three communities in the joint fire and EMS district. This would need to be further studied once the district is formed and operating.

Another element in plan development is the number of ambulances that are needed in the fleet to meet service demands. Currently, there are eight ambulances between the three departments. This can most likely be reduced to six or five. For example, in the scenarios provided, there will be three front-line ambulances staffed and one to be maintained for POC personnel to staff and respond to multi-patient incidents, multiple calls, etc. Two could be kept as back-ups (used when one ambulance is out of service for maintenance, etc.) or for special events. This will reduce fleet size, reduce on-going maintenance and capital replacement costs, and reduce the number of heart monitors/defibrillators, etc.

The number of engines could also be studied to determine if the combined number of seven could be reduced by one. However, an engine is the primary fire component of any fire suppression system, and sufficient pumping capacity needs to be maintained for larger fires, multiple fire scenarios, and the impact of reduced pumping capacity on the ISO PPC. Apparatus also needs to be maintained for the efficient use and effectiveness of the POC personnel. Staff and utility vehicles also need to be included in the operational needs of the district to determine the number of vehicles needed and maintained.

> In developing the estimated operational budgets, the assessment team used six ambulances, six engines, two aerial ladder trucks, and five staff vehicles. This reduction in fleet (through apparatus retirement) will reduce some of the initial big-ticket capital costs and reduce preventive maintenance costs and unplanned repair costs.

The new joint fire and EMS district also needs to plan for facility upgrade, renovation, and possible replacement. As can be seen on the map on page 105, there are six fire stations to serve the district response area. However, when looking at the response area as a whole, there are fire stations that are not positioned strategically to deliver a timely response. For example, Station 26 is somewhat centrally located in Lake Township, but Station 27 is near Northwood's Station 82. Station 28 is located near the eastern boundary of the township, which results in an overlapping first-due response area with Station 26 and Station 27. Additionally, Station 26's current configuration cannot accommodate additional personnel on-station and there is no room for an engine to be deployed. Based on the staffing scenarios to be presented, the footprint of the facility would need to be expanded. The personnel could be deployed to another station, at least initially, but this would position the personnel in a less than ideal location.

Station 29 in Rossford is in the northcentral area of the city, built long before the large annexation previously described. The southern district of the city is currently underserved, with response times meeting performance goals 18% of the time. Station 29 should be able to accommodate two additional personnel in-station, but some minor renovation may be necessary. However, the larger issue is the need of an additional station to serve the southern district area, or relocate Station 29 so it is more centrally located. Another option for the fire and EMS district is to arrange an AMR agreement with neighboring Perrysburg Township, which has a fire station on Lime City Road near the city's southern border. This would be a short-term option until a facility plan can be completed.

The facility issue is rather complex. The best approach is to employ a consulting firm that has the software programming to integrate with GIS technology to determine the number of stations needed and the best location for maximum efficiency. This study should also include a more in-depth analysis of the current facilities to determine which can continue to be utilized. It is the assessment team's collective opinion that the district could be served with five fire stations if strategically sited. However, the number of stations is also impacted on the desired response performance goals of the citizens, elected officials, and district board members.

This assessment of the fire and EMS district's capital needs reinforces the need for a funded capital account. The cost of replacing apparatus and large equipment, facility renovation and replacement, etc., all require significant funding. However, not funding a capital account would result in a financial burden for the fire and EMS district in the near future. It is better to acquire the necessary funds up front instead of continuing to ask the taxpayer for money later. Otherwise, long-term planning becomes increasingly more difficult.

> A funded capital account is included in the estimated operational budget for the various scenarios. The capital amount was computed between 5% and 7% of the total budget amount, which is a common financial planning assumption.

Staffing

The staffing needs of the joint fire and EMS district are important, as this will establish the staffing model desired to meet response performance goals and funding necessary to support the staffing model. The staffing model must meet the response performance expectations of the communities for the joint district concept to be successful. The example scenarios were developed to maintain current EMS staffing, position the district to respond to overlapping EMS incidents, and bolster fire staffing for all communities. Two staffing options (Scenario #2 and Scenario #3) are presented to increase staffing levels, improve response performance and reliability, and to illustrate the flexibility the communities have in establishing a joint fire and EMS district.

The staffing scenarios include maintaining a POC force as a vital part of the joint district to respond to structure fires, technical rescue and hazardous materials incidents, and other significant incidents that may occur. However, the staffing scenarios presented provide sufficient personnel to handle the daily EMS demand, including those EMS incidents requiring additional personnel, and most motor vehicle accidents. This capability should reduce some of the stress on POC personnel of all three departments. Each scenario also includes appropriate administrative and management oversight for organizational efficiency.

<u>Staffing Scenario #1</u>
Staffing Scenario #1 will involve taking the existing staffing plans of all three agencies and simply converting the operation to a joint fire and EMS district. With Scenario #1 serving as the basis, two additional scenarios with various staffing configurations will be developed, using the base scenario for comparison. This should also provide all of the entities sufficient information to develop their own staffing scenarios if they feel something other than those offered as examples would work better.

This scenario provides two part-time personnel for in-station staffing 24-hours each day at Station 26 (Lake Twp.), Station 29 (Rossford), and Station 82 (Northwood). This is the same staffing currently provided in each community for a total of six personnel.

Station 26
2 Firefighter/Paramedics

Station 29
2 Firefighter/Paramedics

Station 82
2 Firefighter/Paramedics

Stations 27, 28 and 83 will continue to operate as POC stations. POC personnel would also continue to respond and deploy from Stations 29 and 82.

This scenario includes a full-time fire chief, full-time assistant chief, full-time training and EMS officer, and POC officers and firefighters. Also included is a fiscal officer position, as required by law. The fiscal officer's responsibilities include payroll, accounts payable, and other financial and personnel related functions.

With this staffing scenario, three front-line ambulances would be available for a response. If an ambulance responds to an EMS incident and needs assistance, several options would be possible: POC from the closest station could be toned out to respond, or the closest staffed station could respond. For motor vehicle accidents, the closest EMS unit would be dispatched and next closest staffed station would respond with an engine or heavy rescue. Again, the POC force could also be toned out to respond, just as is current practice.

If a fire call is received, the two closest staffed stations would be dispatched along with the POC personnel. The POC force would respond bringing additional engines and other equipment to the scene. A quick response to a structure fire is very important and allows the department to accomplish a quick knockdown on many fires, preventing fire escalation, or keeping the fire in check until the POC force can respond or AMR or mutual aid units arrive. However, it should be stressed that two personnel on the initial responding engine company will have limited fire attack and rescue (if needed) options until additional personnel arrive.

A simple organizational structure of the proposed joint fire and EMS district is depicted in Figure 18. The organizational structure does not address POC officer positions currently used by LTFD, NFD, or RFD. It is not the assessment team's position that they are unnecessary. On the contrary, these positions are very valuable to the joint fire and EMS district. However, since the command structure of the three agencies varies, the necessary rank structure for the joint fire and EMS district will need to be analyzed based on the staffing needs of the district. That analysis will need to be completed by the new district's board and fire chief to determine how those positions fit into the new agency's structure.

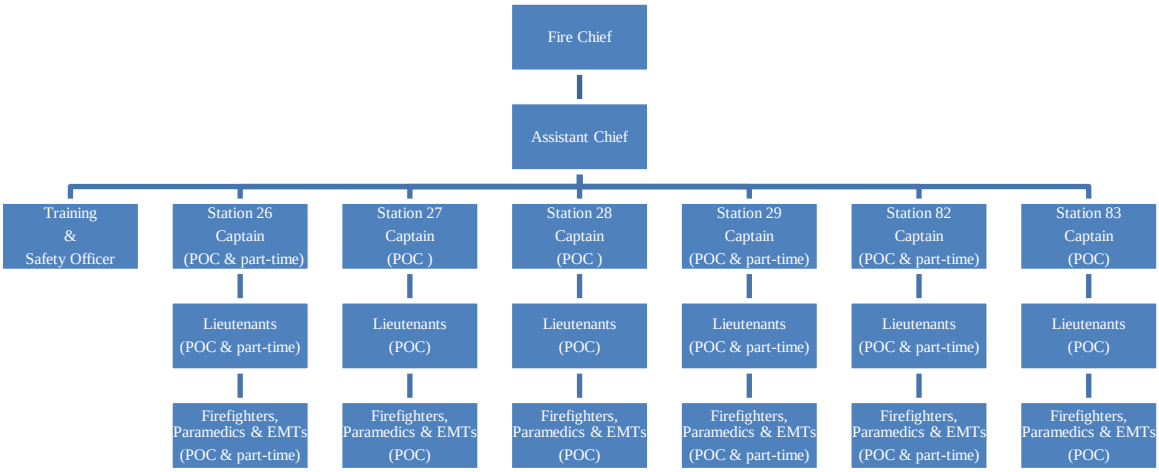


Figure 18: Scenario #1 organizational chart

Staffing Scenario #1 Estimated Budget

A projected budget was developed with information from the current operating budgets and expenditures of all three agencies. In addition, the acquisition of grant funds is not included in preparation of the budgets. Grants are typically competitive and reliance on grant funds could create financial difficulty for a new organization.

The following salary and wage assumptions were used in developing the projected budget:

- Fire Chief $105,000 (range used was $95,000 to $115,000)
- Assistant Chief $90,000
- Training & EMS Captain $80,000
- Firefighter/EMT/Paramedic $20.00 per hour (part-time and POC)
- Lieutenant $21.60 per hour (part-time and POC) *
- Captain $23.30 per hour (part-time and POC) *
- POC Payments $300,000 (continued payment per hour of activity)
- Health Insurance provided to full-time employees (based on $22,000 each)

*line officer rates are based on an 8% differential between ranks.

Note: Salaries and pay scales used were a compilation of those currently used by the three departments and personal interviews with area departments. It is understood that a dual-certified firefighter with paramedic certification should be paid at a higher rate than a dual-certified firefighter with EMT certification. However, since so many staffing combinations exist, which can literally change by the hour, a standard $20.00 per hour rate for part-time personnel is used for budget calculations. Overtime funding was not included in this budget estimate. Table 30 provides explanatory information of the accounts used in the development of the estimated budgets of all of the staffing scenarios. Figure 19 on page 112 shows the projected annual operating budget for Staffing Scenario #1.

Explanation of Non-Personnel Budget Accounts	
Insurance	Building, fleet, etc.
Utilities	Water/sewer; gas/electric; trash; telephones, which includes air cards for MDTs
Debt Service	Annual payments on apparatus purchase
Lease of Facilities	Self-explanatory
Building Maintenance	Repairs and maintenance of overhead doors, HVAC, building systems, roof, etc.
Fuel	Self-explanatory
Vehicle Maintenance	Scheduled preventative maintenance and repairs
Contractual Services-Testing	Pump, ladder, and hose testing, SCBA flow testing, cardiac monitor, air compressor and other preventative maintenance, computer repair, ESO software licensing and updates, medical exams, etc.
Equipment Maintenance	Repairs of equipment not covered by contract
Firefighter Gear	Self-explanatory
EMS/Fire Equipment	Purchase and replacement of non-capital equipment
Training	Initial training courses, transition courses, continuing education classes, advanced training classes
Dues	Membership in various associations, medical director salary, Lexipole fee
Uniforms	Self-explanatory
Miscellaneous	Purchases for unbudgeted items
Operating Miscellaneous Supplies	Expendable supplies, cleaning supplies, etc.
Office/Administrative Expense	Office supplies, copier contracts
EMS Supplies	Drugs and supplies for EMS service delivery
Miscellaneous	Self-explanatory

Table 30: Budget account explanations

Fire/EMS District Scenario #1 Estimated Budget	
Personnel	
Wages	$1,626,200
Taxes: FICA & Medicare	$88,754
Pension	$66,000
Workers' Comp	$24,393
Insurance	$66,000
Subtotal	$1,871,347
Contractual & Materials	
Insurance: Fleet, building, liability	$56,064
Utilities	$90,353
Debt Service	$58,690
Lease of Facilities	$7,200
Building Maintenance	$30,000
Fuel	$56,800
Vehicle Maintenance	$63,800
Contractual; maintenance & testing	$94,590
Equipment Maintenance	$10,000
Firefighter Gear	$48,000
EMS/Fire Equipment	$15,000
Training, Professional Development	$52,000
Dues & Subscriptions	$16,690
Uniforms	$17,387
Miscellaneous Expense	$10,000
Subtotal	$626,574
Supplies	
Operating & Miscellaneous Supplies	$15,000
Office/Administrative Expense	$11,000
EMS Supplies	$90,000
Miscellaneous Expense	$10,000
Subtotal	$126,000
Capital	
Capital Equipment	$160,000
Subtotal	$160,000
District Fiscal Office	
Salary	$40,000
Pension & Medicare	$6,180
Bonding/Auditing	$8,000
Subtotal	$54,180
Total Budget	**$2,838, 101**

Figure 19: Scenario #1 estimated budget

A revenue and expense worksheet are shown in Table 32. This worksheet assists in determining the revenue necessary to support the $2.8 million operational budget developed in Figure 19. The current combined valuation of each entity is shown in Table 31.[5]

	Combined Valuation	Revenue from 1-mill
Northwood	$153,031,500	$153,032
Lake Township	$280,967,890	$280,968
Rossford	$145,682,920	$145,683

Table 31: Current tax evaluations

	1.0 mill	4.50 mills	4.75 mills	5.0 mills
Northwood	$153,032	$688,644	$726,902	$765,160
Lake Twp.	$280,968	$1,264,356	$1,334,598	$1,404,840
Rossford	$145,683	$655,574	$691,994	$728,415
Total	$579,683	$2,608,574	$2,753,494	$2,898,415
Property Tax	$579,683	$2,608,574	$2,753,494	$2,898,415
Less 5% fee*	$28,984	$130,429	$137,675	$144,921
Net Collection	$550,699	$2,478,145	$2,615,820	$2,753,494
EMS Billing	$565,000	$565,000	$565,000	$565,000
Total Revenue	$1,115,699	$3,043,145	$3,180,820	$3,318,494
Est. Expenses	NA	$2,838,101	$2,838,101	$2,838,101
Over/Under	NA	$205,044	$342,719	$480,393

**tax collection; assessment fee and delinquencies*

Table 32: Scenario #1 revenue and expense worksheet

The revenue and expense worksheet indicates that a 4.5-mill, 4.75-mill or 5.0-mill levy along with EMS billing revenue will provide sufficient funds to operate the fire and EMS district. Funds collected in excess of expenses (as noted in the Over/Under row) provide carryover to the next budget cycle. Additionally, if other operational expenditures can be lowered, other operational efficiencies implemented, or periodic grant funds become available, some of the carryover funds can be added to the capital account (budgeted at $160,000 annually).

However, inflation and other market factors can increase operating expenses and can significantly impact the fire and EMS district's finances. This reality is not unlike the operation of any government entity or service. Some of these factors may be predictable while others cannot. COVID-19 pandemic is an example of a global event that can affect local government in a variety of ways.

The three-year operating budget example in Table 33 shows how the budget may be affected by inflation and the overall effect on finances. This can assist in determining revenue goals.

[5] Wood County Auditor's Office

Personnel costs are computed with a 3% annual increase and supplies and materials are computed assuming 5% increases. Note: the current Consumer Price Index is 8.3% (as of September 13, 2022). The average Consumer Price Index over the past 20 years is 2.70%.[6]

	Year 1	Year 2	Year 3
Personnel	$1,871,347	$1,927,487	$1,985,312
Contractual & Materials	$626,574	$657,903	$690,798
Supplies	$126,000	$132,300	$138,915
Capital	$160,000	$160,000	$160,000
Fiscal Office	$54,180	$54,180	$54,180
Total	$2,838,101	$2,931,870	$3,029,205

Table 33: Scenario #1 three-year operating budget with inflation

It is worth noting that the illustrative three-year operating budget in Table 33 may appear to show excessive increases in operating costs. Not all supplies and contractual needs will increase by 5% each and every year. Likewise, total personnel costs may not increase by 3% each and every year. However, the three-year operating budget does show the effect of increasing costs on a fixed revenue stream.

Using information from the estimated three-year operating budget Table 34 shows the effect of increased operating costs on carryover funds and the accumulation of reserves. Accumulation of reserves is part of good financing practices and can be used to supplement capital accounts.

	Year 1	Year 2	Year 3
4.5 mills			
Revenue	$3,043,145	$3,043,145	$3,043,145
Expense	$2,838,101	$2,931,870	$3,029,205
Net	$205,044	$111,275	$13,940
Reserve	$205,044	$316,319	$330,258
4.75 mills			
Revenue	$3,180,820	$3,180,820	$3,180,820
Expense	$2,838,101	$2,931,870	$3,029,205
Net	$342,719	$248,949	$151,615
Reserve	$342,719	$591,668	$743,283
5.0 mills			
Revenue	$3,318,494	$3,318,494	$3,318,494
Expense	$2,838,101	$2,931,870	$3,029,205
Net	$480,393	$386,624	$289,289
Reserve	$480,393	$867,017	$1,156,307

*accumulated reserves does not include investment income

Table 34: Scenario #1 accumulation of reserves

[6] U.S Bureau of Labor Statistics

Table 34 shows reserves of $330,258 after three years with a 4.5-mill levy. A 4.75-mill levy will have a projected carryover after three years of $591,668 and a 5.0-mill levy will have a projected carryover of just over $1.1 million. Carryover amounts coupled with budgeted capital funds allow the joint fire and EMS district board to plan for and purchase capital replacement items without going back to the voters for additional funding. As noted previously, a 15- to 20-year replacement plan will need to be developed by the new management team to assist long-term financial planning for the district.

Staffing Scenario #2

To improve staffing levels and response performance, a staffing option for the joint fire and EMS district is a combination of full-time and part-time shift personnel. Full-time shift personnel typically work a three-platoon system with what is commonly referred to as a 56-hour workweek. With this type of schedule, personnel on each of the three shifts work 24 hours on duty followed by 48 hours off duty.

This staffing scenario shown is based on four personnel (one full-time and three part-time) at Stations 26, 29 and 82 for total of 12 personnel on duty daily, plus a shift commander, for a total of 13 response personnel daily.

Each of the three stations will have one full-time lieutenant/paramedic and three part-time firefighter/paramedics. Note: some of the positions could be filled by a firefighter/EMT, as long as at least one position on the ambulance unit is a paramedic.

Station 26
1 Lieutenant (full-time)
3 Firefighter/Paramedics (part-time)*

Station 29
1 Lieutenant (full-time)
3 Firefighter/Paramedics (part-time)*

Station 82
1 Lieutenant (full-time)
3 Firefighter/Paramedics (part-time)*

1 Captain (full-time) as shift commander

Note: The lieutenants and captain would be dual certified as a firefighter/paramedic or firefighter/EMT.

*The personnel filling the part-time shifts may be only a part-time employee or also serve as POC personnel. Therefore, they may hold the rank of POC lieutenant, but still would be eligible to work as part-time firefighter/paramedic. Again, it is understood some personnel may be dual-certified as a firefighter/EMT.

In addition to the response personnel described, this scenario includes a full-time fire chief, full-time assistant chief, full-time training and EMS officer, full-time inspector, and POC officers and firefighters. Also included is a fiscal officer position, as required by law. This scenario also includes a part-time administrative assistant that will be needed for office and related functions. In addition to the four full-time administrative and staff positions, this staffing scenario requires 12 employees to fill the full-time shift positions around-the clock: nine lieutenants (one for each station for each of the three shifts) and three captains (one for each of the three shifts). Each shift would require nine part-time positions daily, three at each station. This would require 40 plus part-time firefighters (assuming part-time personnel work 12-hour shifts) to fill the shifts around-the-clock and limit the number of hours worked weekly in accordance with work restrictions of the Affordable Care Act[7], and handle call-offs and illnesses. Part-time personnel can also be used to fill full-time positions when a vacancy occurs such as illness or PTO. However, overtime pay may be needed to fill full-time positions or for call-ins to emergencies, etc., and is included in this budget.

The assessment team feels that a focused fire prevention and community risk-reduction effort will be needed. The new district will involve two cities, two villages and a growing township area. The district response area has 195 identified target hazards, 100 of which have been assessed and identified as a significant risk, plus other business occupancies that require fire-safety inspections on a regular basis. The assistant chief and inspector will be needed to handle all of the necessary activities including: plans review, fire-safety inspections, foster home inspections, systems testing, fire investigations, and public education programs. It is assumed that the duties of the assistant chief will be split between fire prevention and operations.

With this staffing scenario, three first-line ambulances would be available for a response. If an ambulance responds to an EMS incident and needs assistance, the other two personnel on duty from that station would respond immediately with an engine for lift assists or other EMS incidents requiring additional personnel. For motor vehicle accidents, the engine would respond with the ambulance. The POC force may be needed to respond, depending on the availability of the ambulance and engine at the other stations.

If a fire call is received, all four personnel could respond on the initial responding engine in the response district established and the second closest station would respond with the second engine, and the third station would respond with another engine (or ladder truck if needed) and ambulance. Note: there are various response scenarios that can be developed; this is just one example.

Having increased staffing levels on the initial responding engine greatly expands the fire attack options for personnel and enables the company to meet "2-in, 2-out" requirements. A second arriving company with four personnel greatly increases the capability of the department to

[7] Patient Protection & Affordable Care Act; US 124 Stat.119,2010

conduct search and rescue tasks as may be needed. The POC force would respond bringing additional engines and other equipment to the scene. A timely response to a structure fire is very important and allows the department to accomplish a quick knockdown on many fires, preventing fire escalation, or keeping the fire in check until the POC force can respond or AMR or mutual-aid units arrive.

This staffing plan provides personnel in-station and the ability to provide a timely response to emergency incidents described above, especially EMS incidents and auto accidents, which are the most common types of incidents. This should also reduce the reliance on POC response to minor incidents. This may help with future POC recruitment and retainment. A sample organizational structure of the proposed joint fire and EMS district with Staffing Scenario #2 is depicted in Figure 20. As noted with the previous organizational chart, the existing POC officer positions currently used by LTFD, NFD, or RFD are not addressed.

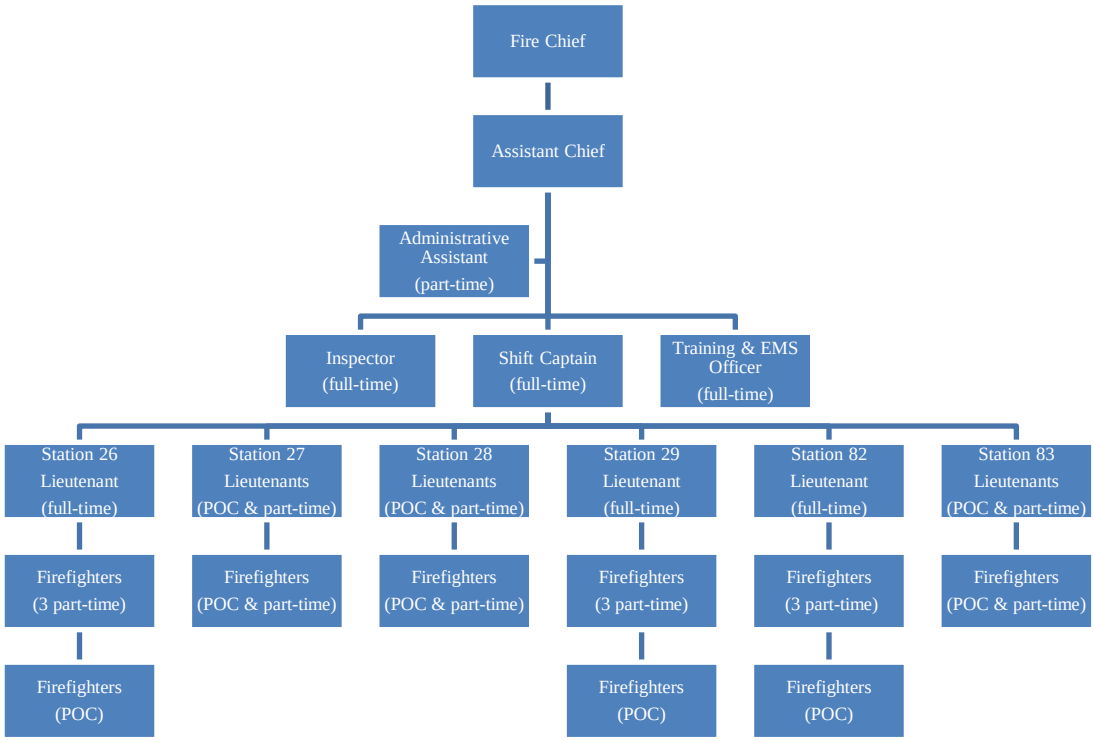


Figure 20: Scenario #2 organizational chart

Staffing Scenario #2 Estimated Budget

This estimated budget will notably have higher personnel costs. Other accounts were also increased to reflect the additional full-time employees, or in some cases, accounts were estimated at a lesser amount. The following salary and wage assumptions were used in developing the projected budgets:

- Fire Chief $105,000 (full-time)
- Assistant Chief (full-time) $90,000

- Training & EMS Captain (full-time) $80,000
- Shift Captain (full-time) $80,000
- Lieutenant (full-time) $70,000
- Inspector (full-time) $65,000
- Firefighter/EMT/Paramedic $20.00 per hour (part-time and POC)
- Lieutenant $21.60 per hour (part-time and POC) *
- Captain $23.30 per hour (part-time and POC) *
- POC Payments $230,000 (continued payment per hour of activity)
- Health Insurance provided to full-time employees (based on $22,000 each)
- Administrative Assistant $23,920 (part-time, 15 hours weekly)

  * line officer rates are based on an 8% differential between ranks.

The new employee costs (sometimes referred to as on-boarding costs) for 13 full-time employees (12 shift and one inspector) could be as high as $59,150 initially. This includes outfitting each new employee with uniforms, PPE, and a pre-employment medical (physical) examination. These new employee costs are not included in the estimated operating budget since it would be an initial one-time expense. Overtime ($25,000) was included to cover short shifts and vacancies.

Figure 21 shows the projected annual operating budget for Staffing Scenario #2 for the fire and EMS district.

Fire/EMS District Scenario #2 Estimated Budget	
Personnel	
Wages	$3,204,017
Taxes: FICA & Medicare	$170,513
Pension	$298,912
Workers Comp	$42,585
Insurance	$352,000
Overtime	$25,000
Subtotal	$4,093,027
Contractual & Materials	
Insurance: Fleet, building, liability	$56,064
Utilities	$90,353
Debt Service	$58,690
Lease of Facilities	$7,200
Building Maintenance	$30,000
Fuel	$56,800
Vehicle Maintenance	$63,800
Contractual; maintenance & testing	$98,290
Equipment Maintenance	$10,000
Firefighter Gear	$48,000
EMS/Fire Equipment	$15,000
Training, Professional Development	$52,000
Dues & Subscriptions	$16,690
Uniforms	$28,237
Miscellaneous Expense	$10,000
Subtotal	$641,124
Supplies	
Operating & Miscellaneous Supplies	$15,000
Office/Administrative Expense	$11,000
EMS Supplies	$90,000
Miscellaneous Expense	$10,000
Subtotal	$126,000
Capital	
Capital Equipment	$245,000
Subtotal	$245,000
District Fiscal Office	
Salary	$40,000
Pension & Medicare	$6,180
Bonding/Auditing	$8,000
Subtotal	$54,180
Total Budget	**$5,159,331**

Figure 21: Scenario #2 estimated budget

A revenue and expense worksheet are shown in Table 35. This worksheet assists in determining the revenue necessary to support the $5.1 million budget developed in Figure 21.

	1.0 mill	8.75 mills	8.90 mills	9.0 mills	9.15 mills
Northwood	$153,032	$1,339,030	$1,361,985	$1,377,288	$1,400,243
Lake Twp.	$280,968	$2,458,470	$2,500,615	$2,528,712	$1,332,999
Rossford	$145,683	$1,274,726	$1,296,579	$1,311,147	$2,570,857
Total	$579,683	$5,072,226	$5,159,179	$5,217,147	$5,304,099
Property Tax	$579,683	$5,072,226	$5,159,179	$5,217,147	$5,304,099
Less 5% fee*	$28,984	$253,611	$257,959	$260,857	$265,205
Net Collection	$550,699	$4,818,615	$4,901,220	$4,956,290	$5,038,894
EMS Billing	$565,000	$565,000	$565,000	$565,000	$565,000
Total Revenue	$1,115,699	$5,383,615	$5,466,220	$5,521,290	$5,603,894
Est. Expenses	NA	$5,159,331	$5,159,331	$5,159,331	$5,159,331
Over/Under	NA	$224,284	$306,889	$361,959	$444,563

*tax collection; assessment fee and delinquencies

Table 35: Scenario #2 revenue and expense worksheet

The revenue and expense worksheet indicates that an 8.75-mill, 8.9-mill or 9.0-mill levy along with EMS billing revenue will provide sufficient funds to operate the fire and EMS district. Funds collected in excess of expenses (as noted in the Over/Under row) provide carryover to the next budget cycle. Additionally, if other operational expenditures can be lowered, other operational efficiencies implemented, or periodic grant funds become available, some of the carryover funds can be added to the capital account (budgeted at $245,000 annually).

A sample three-year operating budget displayed in Table 36 shows how the budget may be expected to increase and the overall effect on finances. Personnel costs are computed with a 3% annual increase and supplies and materials are computed assuming 5% increases. Note: the current Consumer Price Index is 8.3% (as of September 13, 2022). The average Consumer Price Index over the past 20 years is 2.70%.[8]

As noted in Staffing Scenario #1, the illustrative three-year operating budget in Table 36 may appear to show excessive increases in operating costs. Not all supplies and contractual needs will increase by 5% each and every year. Likewise, total personnel costs may not increase by 3% each and every year. However, the three-year operating budget does show the effect of increasing costs on a fixed revenue stream.

[8] U.S. Bureau of Labor Statistics

	Year 1	Year 2	Year 3
Personnel	$4,093,027	$4,215,818	$4,342,292
Contractual & Materials	$641,124	$673,180	$706,839
Supplies	$126,000	$132,300	$138,915
Capital	$245,000	$245,000	$245,000
Fiscal Office	$54,180	$54,180	$54,180
Total	$5,159,331	$5,320,478	$5,487,227

Table 36: Scenario #2 three-year operating budget with inflation

Using information from the estimated three-year operating budget, Table 37 shows the effect of increased operating costs on carryover funds and the accumulation of reserves. Accumulation of reserves is vital for good financing practices and bolsters the capital improvement funds for future equipment replacement for fire apparatus and other capital equipment.

	Year 1	Year 2	Year 3
8.75 mills			
Revenue	$5,383,615	$5,383,615	$5,383,615
Expense	$5,159,331	$5,320,478	$5,487,227
Net	$224,284	$63,137	($103,612)
Reserve	$224,284	$287,421	$183,809
8.90 mills			
Revenue	$5,466,220	$5,466,220	$5,466,220
Expense	$5,159,331	$5,320,478	$5,487,227
Net	$306,889	$145,742	($21,007)
Reserve	$306,889	$452,631	$431,624
9.00 mills			
Revenue	$5,521,290	$5,521,290	$5,521,290
Expense	$5,159,331	$5,320,478	$5,487,227
Net	$361,959	$200,812	$34,063
Reserve	$361,959	$562,771	$596,834

*accumulated reserves does not include investment income

Table 37: Scenario #2 accumulation of reserves

Table 39 shows reserves of $431,624 after three years with an 8.90-mill levy and $596,834 after three years with a 9.0-mill levy. However, the third year of each levy shows a rapidly decreasing carryover amount. Carryover amounts coupled with the budgeted capital funds allow the joint fire and EMS district board to plan for and purchase capital replacement items without going back to the voters for additional funding. A 15- to 20-year replacement plan will need to be developed by the new management team to assist long-term financial planning for the district.

<u>Staffing Scenario #3</u>

This staffing option is similar to Staffing Scenario #2 and includes a combination of full-time

and part-time shift personnel. However, if the fire and EMS district is challenged recruiting and retaining part-time personnel, this scenario reduces the number of part-time positions in-station and replaces them with full-time positions. This staffing scenario is based on four personnel (two full-time and two part-time) at Stations 26, 29 and 82 for total of 12 personnel on duty daily, plus a shift commander, for a total of 13 response personnel daily.

Each of the three stations will have one full-time lieutenant/paramedic, one full-time firefighter/paramedic, and two part-time firefighter/paramedics. Note: some of the positions could be filled by a firefighter/EMT, as long as at least one position on the ambulance unit is a paramedic.

Station 26
1 Lieutenant (full-time)
1 Firefighter/Paramedic (full-time)
2 Firefighter/Paramedics (part-time)*

Station 29
1 Lieutenant (full-time)
1 Firefighter/Paramedic (full-time)
2 Firefighter/Paramedics (part-time)*

Station 82
1 Lieutenant (full-time)
1 Firefighter/Paramedic (full-time)
2 Firefighter/Paramedics (part-time)*

1 Captain (full-time) as shift commander

Note: The lieutenants and captain would be dual certified as a firefighter/paramedic or firefighter/EMT.

*The personnel filling the part-time shifts may be only a part-time employee or also serve as POC personnel. Therefore, they may hold the rank of POC lieutenant, but still would be eligible to work as part-time firefighter/paramedic. Again, it is understood some personnel may be dual-certified as a firefighter/EMT.

In addition to the response personnel described, this scenario includes a full-time fire chief, full-time assistant chief, full-time training and EMS officer, full-time inspector, and POC officers and firefighters. Also included is a fiscal officer position, as required by law, as well as a part-time administrative assistant that will be needed for office and related functions.

In addition to the four full-time administrative and staff positions, this staffing scenario requires 21 employees to fill the full-time shift positions around-the clock; nine lieutenants (one for each station for each of the three shifts), nine firefighters (one for each station for each of the three

shifts), and three captains (one for each of the three shifts). Each shift would require six part-time positions daily, two at each station. This would require 24 plus part-time firefighters (assuming part-time personnel work 12-hour shifts) to fill the shifts around-the-clock and limit the number of hours worked weekly in accordance with work restrictions of the Affordable Care Act[9], and handle call-offs and illnesses. Part-time personnel can also be used to fill full-time positions when a vacancy occurs such as illness or paid time off. However, overtime pay may be needed to fill full-time positions or for call-ins to emergencies, etc., and is included in this budget.

With this staffing scenario, three first-line ambulances would be available for a response. If an ambulance responds to an EMS incident and needs assistance, the other two personnel on duty from that station would respond immediately with an engine for lift assists or other EMS incidents requiring additional personnel. For motor vehicle accidents, the engine would respond with the ambulance. The POC force may be needed to respond, depending on the availability of the ambulance and engine at the other stations.

If a fire call is received, all four personnel could respond on the initial responding engine in the response district established and the second closest station would respond with the second engine, and the third station would respond with another engine (or ladder truck if needed) and ambulance. Note: there are various response scenarios that can be developed; this is just one example.

Having increased staffing levels on the initial responding engine greatly expands the fire attack options for personnel and enables the company to meet "2-in, 2-out" requirements. A second arriving company with four personnel greatly increases the capability of the department to conduct search and rescue tasks as may be needed. The POC force would respond bringing additional engines and other equipment to the scene. A timely response to a structure fire is very important and allows the department to accomplish a quick knockdown on many fires, preventing fire escalation, or keeping the fire in check until the POC force can respond or AMR or mutual-aid units arrive.

This staffing plan provides personnel in-station and the ability to provide a timely response to emergency incidents described above, especially EMS incidents and auto accidents, which are the most common types of incidents. This should also reduce the reliance on POC response to minor incidents. This may help with future POC recruitment and retainment. A sample organizational structure of the proposed joint fire and EMS district with Staffing Scenario #3 is depicted in Figure 22. As noted with the previous organizational chart, the existing POC officer positions currently used by LTFD, NFD, or RFD are not addressed.

[9] Patient Protection & Affordable Care Act; US 124 Stat.119,2010

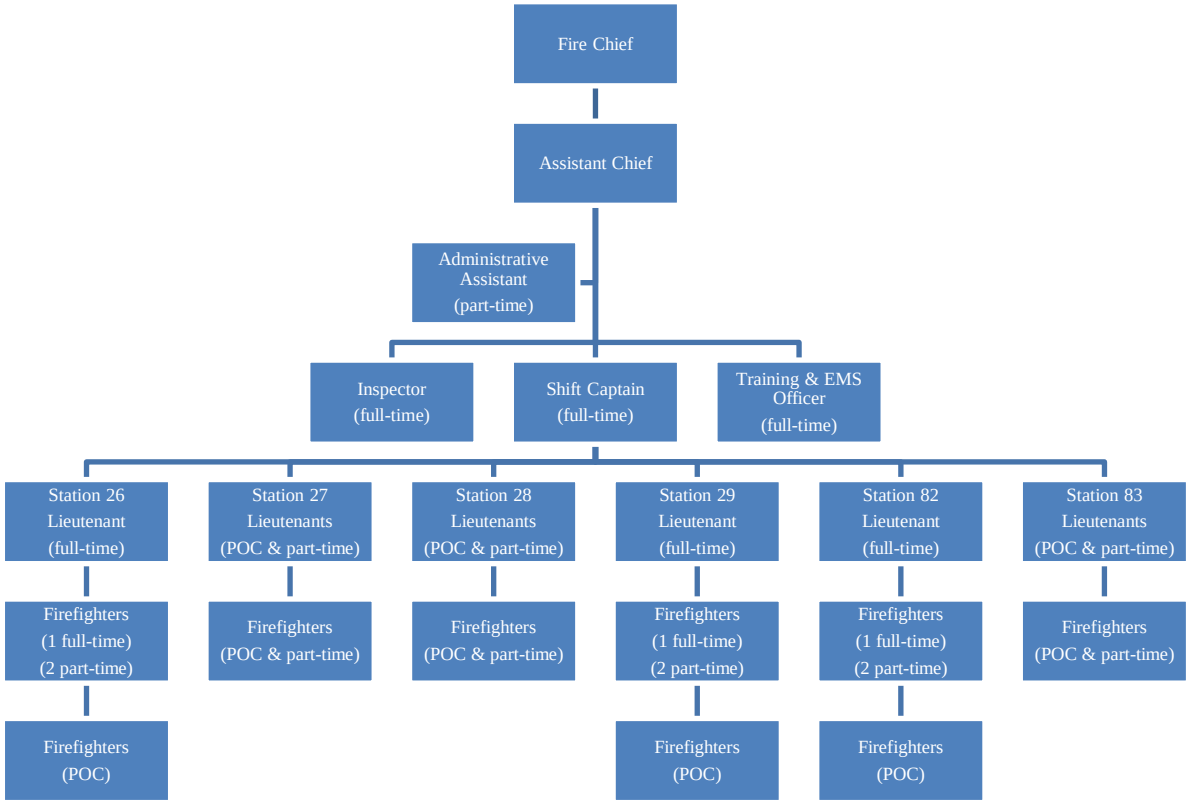


Figure 22: Scenario #3 organizational chart

Staffing Scenario #3 Estimated Budget

In addition to the increased personnel costs in the budget, other accounts were also increased to reflect the additional full-time employees, or in some cases accounts were estimated at a lesser amount. As stated previously, the acquisition of grant funds is not included in preparation of the budgets. Grants are typically competitive and reliance on grant funds could create financial difficulty for a new organization. The following salary and wage assumptions were used in developing the projected budgets:

- Fire Chief $105,000 (full-time)
- Assistant Chief (full-time) $90,000
- Training & EMS Captain (full-time) $80,000
- Shift Captain (full-time) $80,000
- Lieutenant (full-time) $70,000
- Firefighter (full-time) $60,000
- Inspector (full-time) $65,000
- Firefighter/EMT/Paramedic $20.00 per hour (part-time and POC)
- Lieutenant $21.60 per hour (part-time and POC) *
- Captain $23.30 per hour (part-time and POC) *

- POC Payments $250,000 (continued payment per hour of activity)
- Health Insurance provided to full-time employees (based on $22,000 each)
- Administrative Assistant $23,920 (part-time, 15 hours weekly)
  *line officer rates are based on an 8% differential between ranks.

The new employee costs for 22 full-time employees (21 shift and one inspector) could be as high as $100,100 initially. This includes outfitting each new employee with uniforms, PPE, and a pre-employment medical (physical) examination. These new employee costs are not included in the estimated operating budget since it would be an initial one-time expense. Overtime ($25,000) was included to cover short shifts and vacancies.

Figure 23 shows the projected annual operating budget for Staffing Scenario #3.

Fire/EMS District Scenario #3 Estimated Budget	
Personnel	
Wages	$3,049,140
Taxes: FICA & Medicare	$123,647
Pension	$422,512
Workers Comp	$45,737
Insurance	$550,000
Overtime	$25,000
Subtotal	$4,216,036
Contractual & Materials	
Insurance: fleet, building, liability	$56,064
Utilities	$90,353
Debt Service	$58,690
Lease of Facilities	$7,200
Building Maintenance	$26,000
Fuel	$56,800
Vehicle Maintenance	$74,300
Contractual services; testing	$98,290
Equipment Maintenance	$12,000
Firefighter Gear	$48,000
EMS/Fire Equipment	$15,000
Training & Professional Development	$52,000
Dues & Subscriptions	$16,690
Uniforms	$32,837
Miscellaneous Expense	$10,000
Subtotal	$654,224
Supplies	
Operating & Miscellaneous Supplies	$15,000
Office/Administrative Expense	$11,000
EMS Supplies	$90,000
Miscellaneous	$10,000
Subtotal	$126,000
Capital	
Capital Equipment	$250,000
Subtotal	$250,000
District Fiscal Office	
Salary	$40,000
Pension & Medicare	$6,180
Bonding/Auditing	$8,000
Subtotal	$54,180
Total Budget	**$5,300,440**

Figure 23: Scenario #3 estimated budget

A revenue and expense worksheet for Scenario #3 is shown in Table 38. This worksheet assists in determining the revenue necessary to support the $5.3 million budget developed in Figure 23.

	1.0 mill	9.0 mills	9.15 mills	9.25 mills	9.5 mills
Northwood	$153,032	$1,377,288	$1,400,243	$1,415,546	$1,453,804
Lake Twp.	$280,968	$2,528,712	$2,570,857	$2,598,954	$2,669,196
Rossford	$145,683	$1,311,147	$1,332,999	$1,347,568	$1,383,989
Total	$579,683	$5,217,147	$5,304,099	$5,362,068	$5,506,989
Property Tax	$579,683	$5,217,147	$5,304,099	$5,362,068	$5,506,989
Less 5% *	$28,984	$260,857	$265,205	$268,103	$275,349
Net Collection	$550,699	$4,956,290	$5,038,894	$5,093,964	$5,231,639
EMS Billing	$565,000	$565,000	$565,000	$565,000	$565,000
Total Revenue	$1,115,699	$5,521,290	$5,603,894	$5,658,964	$5,796,639
Est. Expenses	NA	$5,300,440	$5,300,440	$5,300,440	$5,300,440
Over/Under	NA	$220,850	$303,454	$358,524	$496,199

*tax collection; assessment fee and delinquencies

Table 38: Scenario #3 revenue and expense worksheet

The revenue and expense worksheet indicates that a 9.0-mill, 9.15-mill, 9.25-mill, and 9.5-mill levy along with EMS billing revenue will provide sufficient funds to operate the fire and EMS district. Funds collected in excess of expenses (as noted in the Over/Under row) provide carryover to the next budget cycle. Additionally, if other operational expenditures can be lowered, other operational efficiencies implemented, or periodic grant funds become available, some of the carryover funds can be added to the capital account (budgeted at $255,000 annually).

The three-year operating budget displayed in Table 39 shows how the budget may be expected to increase and the overall effect on finances. Personnel costs are computed with a 3% annual increase and supplies and materials are computed assuming 5% increases. Note: the current Consumer Price Index is 8.3% (as of September 13, 2022). The average Consumer Price Index over the past 20 years is 2.70%.[10]

As noted in Scenario #1 and Scenario #2, not all supplies and contractual needs will increase by 5% each and every year. Likewise, total personnel costs may not increase by 3% each and every year. However, the three-year operating budget does show the effect of increasing costs on a fixed revenue stream.

[10] U.S. Bureau of Labor Statistics

	Year 1	Year 2	Year 3
Personnel	$4,216,036	$4,342,517	$4,472,793
Contractual & Materials	$654,224	$686,935	$721,282
Supplies	$126,000	$132,300	$138,915
Capital	$250,000	$250,000	$250,000
Fiscal Office	$54,180	$54,180	$54,180
Total	$5,300,440	$5,465,932	$5,637,170

Table 39: Scenario #3 three-year operating budget with inflation

Using information from the estimated three-year operating budget Table 40 shows the effect of increased operating costs on the accumulation of reserves.

	Year 1	Year 2	Year 3
9.15 mills			
Revenue	$5,603,894	$5,603,894	$5,603,894
Expense	$5,300,440	$5,465,932	$5,637,170
Net	$303,454	$137,962	($33,276)
Reserve	$303,454	$441,416	$408,140
9.25 mills			
Revenue	$5,868,964	$5,879,244	$5,879,244
Expense	$5,300,440	$5,465,932	$5,637,170
Net	$358,524	$413,312	$242,074
Reserve	$358,524	$981,836	$1,223,910
9.5 mills			
Revenue	$5,796,639	$5,934,314	$5,934,314
Expense	$5,300,440	$5,465,932	$5,637,170
Net	$496,199	$468,382	$297,144
Reserve	$496,199	$964,581	$1,261,725

*accumulation of reserves does not include investment income

Table 40: Scenario #3 accumulation of reserves

Table 40 shows reserves of $408,140 after three years with a 9.15-mill levy. However, expenditures are greater than revenue ($33,276) at the end of Year 3. A 9.25-mill levy will have a projected reserve of just over $1.2 million. Carryover amounts coupled with the budgeted capital funds allow the joint fire and EMS district board to plan for and purchase capital replacement items without going back to the voters for additional funding. A 15- to 20-year replacement plan will need to be developed by the new management team to assist long-term financial planning for the district.

Funding Options

The most popular method of funding a joint fire and EMS district is a property tax levy against real estate. It provides the most equitable method in terms of all citizens within the fire and EMS

district paying the same rate, similar to a school district tax levy. However, other funding options are available that could be explored. For example, a formula could be developed that includes population and emergency incident volume in each area, Northwood, Lake Township, and Rossford. Once that formula is agreed upon, the operating expense of the district could be split between the three entities. With this option, if Northwood or Rossford choose to fund fire and EMS operations with a wage earner income tax, they could pay their joint fire and EMS district share annually. Lake Township will have to determine the amount of tax levy needed to fund their share, and seek voter approval accordingly.

Impact on ISO

With the creation of the new fire and EMS district response area, there should be no negative impact on the current PPC of Northwood, Rossford, or Lake Township. If on-duty staffing is increased and the response reliability of the joint fire and EMS district strengthened, the ISO field evaluation and subsequent classification rating may be improved.

Process to Proceed

The steps necessary to form a joint fire and EMS district are guided by the ORC. The Wood County Prosecutor's Office or other qualified legal counsel should be involved with the formation and preliminary functions of the joint fire and EMS district board.
The action steps necessary are as follows:

- The Northwood and Rossford City Councils and Lake Township Board of Trustees will need to adopt resolutions to form the joint fire and EMS district.

- Each of the three entities will be required to select one representative (a township trustee and council member) to the fire and EMS district board.

- The new fire and EMS district board will need to schedule meetings, select a chair, fiscal officer (or clerk), and other positions as needed. Once functioning, the board can operate similarly as a township. The three entities may consider providing initial funds to operate the fire and EMS board. For example, each entity may give $5,000 each to the fire and EMS district to establish a bank account, post office box, fiscal office supplies, etc. Note: the fiscal officer or clerk will be required to execute a bond, in the amount and with surety to be approved by the district board, and payable to the state of Ohio. It shall be deposited with the board chair, who shall certify it and file a copy of it with the county auditor (§505.375 ORC).

- The fire and EMS district board will need to select a fire chief.

- The fire and EMS district board will need to determine the start-up date for the new fire and EMS district and plan accordingly.

- The fire and EMS district board determines the millage needed to operate the district and takes the necessary steps to have the issue placed on the ballot. Other funding options can also be considered as previously described.

- Voters support new operating levy.

- The fire and EMS district management team and board prepares for operations to begin. Key areas of operation to address include administrative policies, operating procedures, pay scales, and hiring of personnel, etc.

- Vehicles and equipment from Northwood, Rossford, and Lake Township will need to be transferred to the new fire and EMS district unless leasing options are chosen.

- All existing NFD, LTFD, and RFD personnel will need to be appointed members of the new fire and EMS district.

- The new fire and EMS district begins operational response on designated date.

Other Key Issues

Existing Tax Levies

Whenever a joint district is formed, the question of the existing tax levies must be addressed. Lake Township currently has four tax levies that total 4.80 mills that fund fire and EMS operations: an ambulance and EMS .80-mill continuous levy; a fire and EMS 2.0-mill continuous levy; an ambulance and EMS 1.0-mill levy; and a 1.0-mill, five-year fire levy. RFD is funded by both general fund revenue from the city's 2.25% wage earner income tax and two tax levies. One levy is 1.0-mill and helps fund the department's in-station part-time staffing. The second levy is a 2.8-mill capital improvement levy. NFD is funded by general fund revenue from the city's 1.5% wage earner income tax. All three agencies receive revenue from EMS billing for patients transported to the hospital.

If the new joint district seeks a new tax levy to support operations and is approved, Lake Township and Rossford would cease collecting on their existing levies. This can be accomplished by resolution. However, that message to the electorate would be paramount for any levy campaign. Although this is a common practice, it should be verified with the county auditor. EMS billing can be continued by the new district by simply completing the necessary administrative changes with the third-party billing company selected.

Collective Bargaining Agreement

The city of Rossford currently has a CBA with fire personnel. The question is what happens to the CBA if the joint district is formed? In that RFD would cease to exist and all personnel must be appointed as an employee of the district, the CBA would at that point no longer have any standing. Thus, the new joint fire and EMS district board would not be bound by any part of the CBA. Note that this information is presented based on past experience of the OFCA and is not offered as legal advice or opinion.

Other Options

The formation of a joint fire and EMS district with three government entities, each with their own fire and EMS agency may seem to be daunting tasks. Each community is different with their own unique identity, citizenry, and long-term goals. Each fire and EMS agency are different with their own unique history and traditions, funding sources, and cultures. While the agencies operate differently, they do work well together and have adopted similar operating procedures for enhanced operational effectiveness when working together at emergency scenes.

However, there are still obstacles and issues to address in order to form and make the joint district concept work. If difficulties arise, or one community is hesitant to move forward, an option to consider is to create a joint fire and EMS district with two communities and agencies. For example, a joint district could be formed with Northwood and Lake Township, Northwood and Rossford, or Rossford and Lake Township. For illustrative purposes, a conceptual joint fire and EMS district will be developed with Lake Township and Northwood.

Staffing Scenario #4

Staffing Scenario #4 is a joint fire and EMS district involving Northwood and Lake Township and includes a combination of full-time and part-time shift personnel. The staffing scenario is based on four personnel (one full-time and three part-time) at Stations 26 and 82 for total of eight personnel, and provides in-station staffing 24 hours each day. One station will have a full-time lieutenant as a station officer and one station will have a full-time captain who will serve as the station officer and shift commander for the entire department. Note: some of the positions could be filled by a firefighter/EMT, as long as at least one position on the ambulance unit is a paramedic.

Other staffing options could also be examined, similar to those in Scenario #3, with two full-time and two part-time personnel at each station daily. This scenario includes a full-time fire chief, full-time assistant chief and a staff captain who will oversee training and EMS. It is assumed the assistant chief's duties will split between operations and fire safety inspections. Also included is a fiscal officer position, as required by law.

Station 26

1 Captain

3 Firefighter/Paramedics (or EMT)

Station 82
1 Lieutenant
3 Firefighter/Paramedics (or EMT)

Note: The captain and lieutenants would also be dual certified as a firefighter/paramedic or firefighter/EMT.

Stations 27, 28 and 83 will continue to operate as POC stations. POC personnel would also continue to respond and deploy from Stations 26 and 82.

The staffing levels are configured to provide sufficient personnel for EMS incidents (two front-line ambulances), motor vehicle accidents and other types of incidents. It also provides a good initial response for building fires and other more complex incidents. For example, if a fire call is received, all four personnel could respond on the initial responding engine and the second station would respond with the second engine and ambulance. Having increased staffing levels on the initial responding engine greatly expands the fire attack options for personnel and enables the company to meet "2-in, 2-out" requirements. A second arriving company with four personnel greatly increases the capability of the department to conduct search and rescue tasks as may be needed. The POC force would respond bringing additional engines and other equipment to the scene. A quick response to a structure fire is very important and allows the department to accomplish a quick knockdown on many fires, preventing fire escalation, or keeping the fire in check until the POC force can respond or AMR units arrive.

A simple organizational structure of the proposed joint fire and EMS district is depicted in Figure 24. As noted in the previous staffing scenarios, the organizational structure does not address POC officer positions currently used by LTFD or NFD.

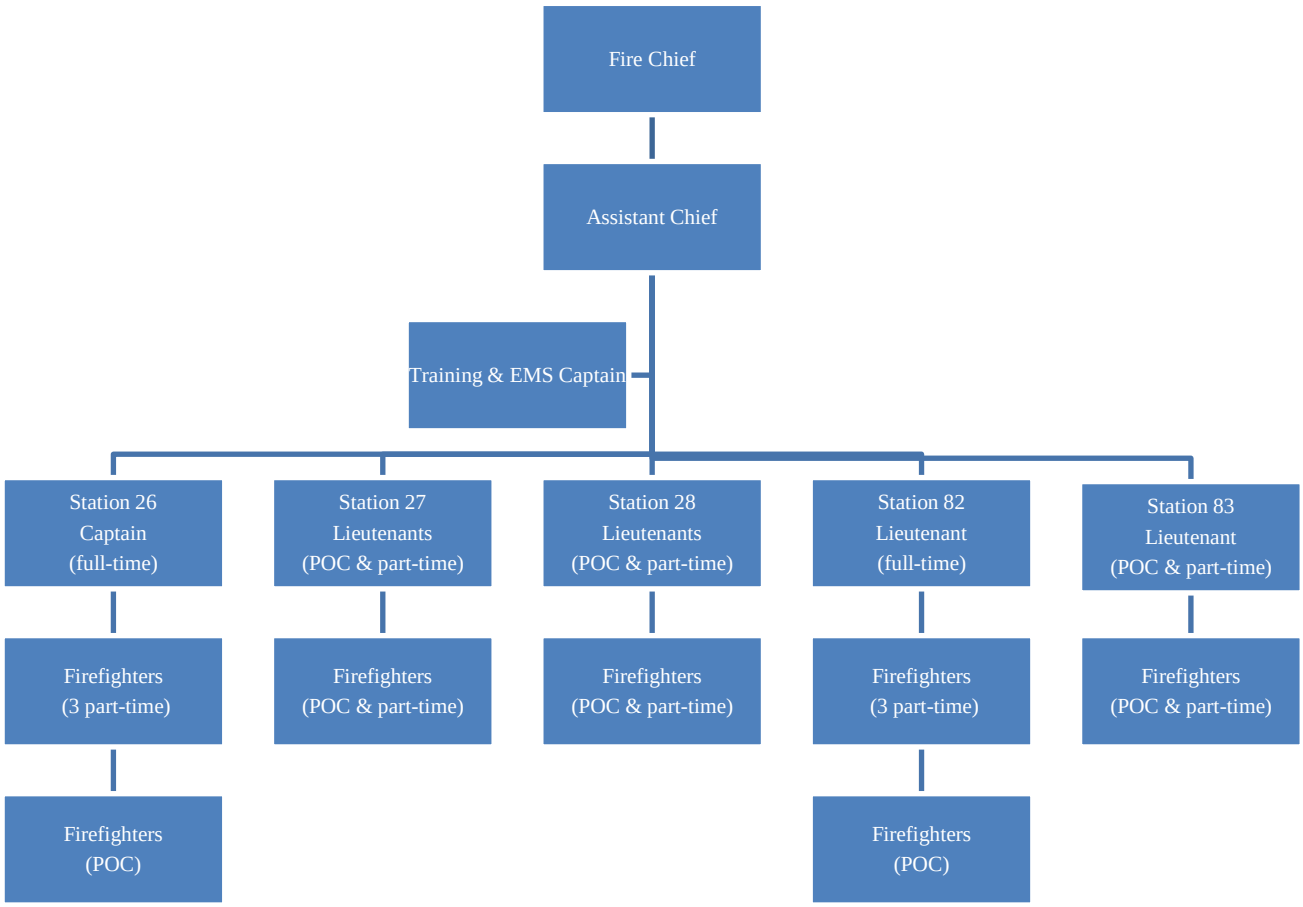


Figure 24: Scenario #4 organizational chart

Staffing Scenario #4 Estimated Budget

Estimated expenses were calculated to maintain current daily operations such as equipment maintenance and to defray equipment acquisition costs as well as dedicated funds for capital outlay. In addition to the increased wages in the budget, other accounts were also increased to reflect the additional full-time employees, or in some cases accounts were estimated at a lesser amount. As stated previously, the acquisition of grant funds is not included in preparation of the budgets. Grants are typically competitive and reliance on grant funds could create financial difficulty for a new organization. The following salary and wage assumptions were used in developing the projected budgets:

- Fire Chief $105,000 (full-time)
- Assistant Chief (full-time) $90,000
- Training & EMS Captain (full-time) $80,000
- Captain (full-time) $80,000
- Lieutenant (full-time) $70,000
- Firefighter/EMT/Paramedic $20.00 per hour (part-time and POC)

- Lieutenant $21.60 per hour (part-time and POC) *
- Captain $23.30 per hour (part-time and POC) *
- POC Payments $200,000 (continued payment per hour of activity)
- Health Insurance provided to full-time employees (based on $22,000 each)

  * line officer rates are based on an 8% differential between ranks.

Overtime was included to cover short shifts and call-ins.

Figure 25 shows the projected annual operating budget for Staffing Scenario #4.

Fire/EMS District Scenario #4 Estimated Budget	
Personnel	
Wages	$2,501,800
Taxes: FICA & Medicare	$146,438
Pension	$174,000
Workers Comp	$37,527
Insurance	$198,000
Overtime	$10,000
Subtotal	$3,067,765
Contractual & Materials	
Insurance: fleet, building, liability	$44,540
Utilities	$81,193
Debt Service	$58,690
Lease of Facilities	$6,000
Building Maintenance	$20,000
Fuel	$43,300
Vehicle Maintenance	$53,400
Contractual services; testing, maintenance contracts	$90,135
Equipment Maintenance	$10,000
Firefighter Gear	$38,400
EMS/Fire Equipment	$12,000
Training and Professional Development	$40,000
Dues & Subscriptions	$13,890
Uniforms	$15,784
Miscellaneous Expense	$10,000
Subtotal	$537,332
Supplies	
Operating & Miscellaneous Supplies	$8,000
Office/Administrative Expense	$7,500
EMS Supplies	$60,000
Miscellaneous expense	$10,000
Subtotal	$85,500
Capital	
Capital Equipment	$188,000
Subtotal	$188,000
District Fiscal Office	
Salary	$40,000
Pension & Medicare	$6,180
Bonding/Auditing	$8,000
Subtotal	$54,180
Total Budget	**$3,932,777**

Figure 25: Scenario #4 estimated budget

A revenue and expense worksheet for Scenario #4 is shown in Table 41. This worksheet assists in determining the revenue necessary to support the $3.2 million operational budget developed in Figure 25.

	1.0 mill	9.0 mills	9.15 mills	9.25 mills	9.50 mills
Northwood	$153,032	$1,377,288	$1,400,243	$1,415,546	$1,453,804
Lake Twp.	$280,968	$2,528,712	$2,570,857	$2,598,954	$2,669,196
Total	$434,000	$3,906,000	$3,971,100	$4,014,500	$4,123,000
Property Tax	$434,000	$3,906,000	$3,971,100	$4,014,500	$4,123,000
Less adm fee*	$21,700	$195,300	$198,555	$200,725	$206,150
Net Collection	$412,300	$3,710,700	$3,772,545	$3,813,775	$3,916,850
EMS Billing	$419,000	$419,000	$419,000	$419,000	$419,000
Total Revenue	$831,300	$4,129,700	$4,191,545	$4,232,775	$4,335,850
Est. Expenses	NA	$3,932,777	$3,932,777	$3,932,777	$3,932,777
Over/Under	NA	$196,923	$258,768	$299,998	$403,073

*tax collection; assessment fee and delinquencies

Table 41: Scenario #4 revenue and expense worksheet

The revenue and expense worksheet indicates that a 9.0-mill, 9.25-mill, 9.25-mill, and 9.50-mill levy along with EMS billing revenue will provide sufficient funds to operate the fire and EMS district. Funds collected in excess of expenses (as noted in the Over/Under row) provide carryover to the next budget cycle. Additionally, if other operational expenditures can be lowered, other operational efficiencies implemented, or periodic grant funds become available, some of the carryover funds can be added to the capital account (budgeted at $188,000 annually).

A three-year operating budget displayed in Table 42 shows how the budget may be expected to increase and the overall effect on finances. Personnel costs are computed with a 3% annual increase and supplies and materials are computed assuming 5% increases. Note: the current Consumer Price Index is 8.3% (as of September 13, 2022). The average Consumer Price Index over the past 20 years is 2.70%.[11]

As noted in the previous scenarios developed, not all supplies and contractual needs will increase by 5% each and every year. Likewise, total personnel costs may not increase by 3% each and every year. However, the three-year operating budget does show the effect of increasing costs on a fixed revenue stream.

[11] U.s Bureau of Labor Statistics

	Year 1	Year 2	Year 3
Personnel	$3,067,765	$3,159,798	$3,254,592
Contractual & Materials	$537,332	$564,199	$592,409
Supplies	$85,500	$89,775	$94,264
Capital	$188,000	$188,000	$188,000
Fiscal Office	$54,180	$54,180	$54,180
Total	$3,932,777	$4,055,952	$4,183,444

Table 42: Scenario #4 three-year operating budget with inflation

Using information from the estimated three-year operating budget showing the effect of inflation, Table 43 shows the effect of increased operating costs the accumulation of reserves.

	Year 1	Year 2	Year 3
9.15 mill			
Revenue	$4,191,545	$4,191,545	$4,191,545
Expense	$3,932,777	$4,055,952	$4,183,444
Net	$258,768	$135,593	$8,101
Reserve	$258,768	$394,361	$402,462
9.25 mill			
Revenue	$4,232,775	$4,232,775	$4,232,775
Expense	$3,932,777	$4,055,952	$4,183,444
Net	$299,998	$176,823	$49,331
Reserve	$299,998	$476,821	$526,152
9.50 mill			
Revenue	$4,335,850	$4,335,850	$4,335,850
Expense	$3,932,777	$4,055,952	$4,183,444
Net	$403,073	$279,898	$152,406
Reserve	$403,073	$682,971	$835,377

*accumulated reserves does not include investment income

Table 43: Scenario #4 accumulation of reserves

Table 43 shows reserves of $402,462 after three years with a 9.15-mill levy. A 9.25-mill levy will have a projected reserve of $526,152 and a 9.50-mill levy will have a projected reserve of $835,377. Carryover amounts coupled with the budgeted capital funds allow the joint fire and EMS district board to plan for and purchase capital replacement items without going back to the voters for additional funding. A 15- to 20-year replacement plan will need to be developed by the new management team to assist long-term financial planning for the district.

Impact on ISO

With the creation of a fire and EMS district with Northwood and Lake Township, there should be no negative impact on the current PPC's of the respective communities. With increased staffing levels and the response reliability of the joint fire and EMS district strengthened, the ISO

field evaluation and subsequent classification rating may be improved.

Process to Proceed

The steps necessary to form the joint fire and EMS district are the same as described on pages 129-130.

Summary

This study has provided several options in creating a joint fire and EMS district with the primary goal of improving response performance times and response reliability. Staffing Scenario #1 provided a baseline, with converting the three departments existing operations into a joint fire and EMS district. Options to add part-time and full-time personnel to staff three of the six stations, which would improve response reliability and strengthen response performance were also described. The staffing options demonstrate the financial impact of increasing staffing levels and are designed to provide the local entities flexibility in how the joint fire and EMS district should be developed. However, the focal point of any discussion on creating the joint district needs to be response performance goals. What are the expectations of the public? For example, if a response performance goal is to have an ambulance on scene of any EMS incident within 8 minutes, 30 seconds, then the staffing plan needs to be configured to meet that goal 80% to 90% of the time.

Of course, funding a joint fire and EMS district is also a focal point. The staffing options provided significantly increase the revenue needed to deliver fire and EMS services when compared to the existing funds expended. The staffing scenarios double the current staffing levels, significantly improving response reliability, and will improve response performance to many areas of the district.

If a new fire and EMS district is formed and for example, an 8.5 mill levy is passed, the property owner in Rossford will pay 4.7 mills more than the current 2.8 mills. Property owners in Lake Township will pay 3.70 mills more than the current 4.80 mills. As noted previously, the entities involved would cease collecting on their current levies. However, Northwood property owners would pay on a new 8.5 mill levy.

Wood County is scheduled for a property value reappraisal in 2023.[12] This will undoubtedly increase millage revenue. While the taxpayer will pay more for each mill approved, the total millage needed to operate the district may be reduced.

[12] Ohio Department of Taxation

Final Analysis

The purpose of this study was to determine if the creation of a joint fire and EMS district involving the city of Northwood, Lake Township, and the city of Rossford was a viable option for consideration. In this study, the existing service delivery was reviewed as well as existing service demands. Next, a new fire and EMS district was developed conceptually, including a projected operational budget and the necessary revenue needed to support operations. These items together provide the basis for officials to make their informed decisions.

After careful analysis and review, the assessment team has determined that it is feasible for the departments and the entities to form a joint fire and EMS district. While each department has their own identity and traditions, all three operate similarly, with part-time and POC personnel. They face similar risks in their respective communities and they have a good working relationship with each other and other departments in the area. With the proper leadership, the new organization should be successful.

As noted previously, there are several advantages to consider in forming a joint fire and EMS fire district. The joint fire and EMS district will result in an equitable tax base for all residents within the district response area. There will be an economy of scale that will reduce some of the operating expenditures, such as equipment and supplies. There will be improved operational efficiencies in staffing and training, and future apparatus purchases can be reduced, further reducing capital outlay and ongoing maintenance costs.

With departments across the state struggling to recruit part-time personnel to fill needed staffing positions, expanding the existing two-personnel in-station staffing currently employed by the three departments may be difficult. Staffing Scenario #3, with two full-time and two part-time personnel in each of the three stations will likely be the most probable scenario for the new district. This will provide four personnel in each of the three stations, plus a shift commander, for a total of 13 response personnel on-duty around-the-clock. This staffing scenario improves staffing levels at three stations, which will significantly improve response times and reliability.

It is understood that any staffing scenario that increases staffing and response reliability will require significantly more revenue. The annual operating expense of staffing scenarios are significant, but necessary if the staffing concerns are going to be addressed. The new joint fire and EMS district board, working together with the fire chief and management team, may determine a different staffing model that may meet the needs of the public. The taxation rates and work tables used in this study should provide the tools for the fire and EMS district board to analyze operational costs versus revenue.

The opportunity to start a new fire and EMS organization affords a chance to build a long-term funding structure that can provide the citizens and elected officials stability. It is the collective opinion of the assessment team that sufficient tax dollars must be sought to establish the district

and set it on the right footing – do it right and do it up front so that long-range financial and operational planning can be performed. However, in the end, the decision on the amount of taxation that may be supported by the voters will be a discussion and deliberation for the elected officials of the participating entities.

Some of the important issues that will need to be addressed by the new fire and EMS district board include planning for apparatus acquisition and funds needed to expand Station 26 for apparatus room space and additional living areas. Having sufficient accumulation of reserve funds will allow capital equipment replacement and also allow planning for facility upgrades as needed. Without sufficient reserve funds, capital equipment replacement and new equipment acquisition can become problematic. Many entities and organizations across the state have become reliant on grant funding, but these processes are normally highly competitive and the awarding of grant funds or the continued funding of the grant program at the federal level can never be assured.

Finally, it must be emphasized that the creation of a joint fire and EMS district will require considerable time and effort. As the projected budget and revenue analysis shows, the formation of a new district will not result in any initial cost savings, based on the amount of funds currently being expended. However, the new fire and EMS district will provide the residents and members of the fire department expanded in-station staffing and long-term stability. There may also be future opportunities for contracted services or expansion of the district, which may further stabilize the finances of the district.

The key issue for all those involved is determining the level of service desired by the public. It is recommended that an attempt to determine this service expectation be initiated before placing tax levies on the ballot.

Appendix A

In the state of Ohio, the Ohio Division of EMS is responsible for provider licensure, certifications, oversight, and enforcement of all the laws governing EMS and firefighting. There are four levels of EMS certification: Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), Advanced Emergency Medical Technician (AEMT), and Paramedic. Each level of EMS certification is based on the National EMS Scope of Practice, which has been incorporated into §4765.30 ORC [http://codes.ohio.gov/orc/4765].

EMR (formerly known as First Responder) certification is designed to provide basic emergency medical care and stabilization of a patient until a higher level of care arrives. Often, you will see fire departments who provide first response services utilizing EMRs. Becoming an EMR requires at least 48 hours of initial training and 15 hours of continuing education every three years. An EMT (formerly known as an EMT-Basic or EMT-B) requires a minimum of 150 hours of initial training and at least 40 hours of continuing education every three years. An AEMT (formerly known as an EMT-Intermediate or EMT-I) requires an additional 200 hours of training above that of an EMT and at least 60 hours of continuing education every three years. AEMTs are able to perform many advanced life support procedures and administer certain medications to patients. To advance to the paramedic (formerly known as an EMT-Paramedic or EMT-P) level, a person must possess EMT certification and is required to attend nearly 900 additional hours of clinical and didactic training, which allows them to perform additional life-saving procedures and administer additional medications. Examples of these procedures would be performing cardioversion, applying an external pacemaker, cardiac defibrillation (shocks to the heart) and advanced invasive procedures such as chest decompression and needle cricothyroidotomy. The paramedic must obtain 86 hours of continuing education every three years, which includes maintaining advanced cardiac life support (ACLS) certification offered through the American Heart Association or other sources.

In firefighting, training and certification has three distinct levels. Volunteer Firefighter is the basic level and is limited by law to 36 hours of initial training. It is the minimum level required to perform the duties of a volunteer firefighter. This level of training is also the minimum required by law to serve as a part-time firefighter unless additional training is required by the local fire agency.

The next level of firefighter training is FF I. This level requires an additional 104 hours of training beyond the volunteer course level. This level of training also requires the demonstration of competency in several areas such as proper use of SCBA. The highest level of training is FF II. This includes 240-260 hours of training in a variety of subject matter and the ability to demonstrate competency in several required areas. Full-time firefighters in Ohio are required by law to achieve certification at this level to work in their position. Fifty-four hours of continuing education every three years is required to maintain firefighter certification.

Appendix B

The Science of Fire and the Need for Rapid Response to Affect Positive Change

Because there is such a wide variation in the fire dynamics of each particular fire, it is imperative to find a common reference point, something that is common to all fires regardless of the risk-level of the structure, the material involved, or length of time the fire has burned. Such a reference point exists. Regardless of the speed of growth or length of burn time, all fires go through the same stages of growth. One stage in particular emerges as a very significant one because it marks a critical change in conditions; it is called *flashover*.

The flashover stage of a fire event marks a major turning point in fire conditions that increases the challenge to a fire department's resources. How and why this occurs is explained in the following descriptions of each stage of fire growth in a structural fire.

Incipient stage

The smoldering stage is the first stage of any fire. When heat is applied to a combustible material, the heat *oxidizes* the material's surface into combustible gases. The oxidation process is exothermic, meaning that the oxidation process itself produces heat. The heat from the oxidation raises the temperature of other materials, which increases the rate of oxidation and begins a chemical chain reaction of heat-release and burning.

A fire progresses from the smoldering phase immediately or slowly depending upon the fuel, nearby combustibles, and the surrounding air. For example, a bundle or stack of newspapers will smolder only a few seconds before progressing to the next stage, but a couch with a burning cigarette may continue smoldering for an hour or more.

Growth stage

When the temperature gets high enough visible flames can be seen. This is called the growth stage or open burning. The visible burning at this stage is still limited to the immediate area of origin. The combustion process continues to release more heat, which heats nearby objects to their ignition temperature and they begin burning.

Flashover/fully developed stage

Not all of the combustible gases are consumed in the growth stage. They rise and form a superheated gas layer on the ceiling that can quickly reach 1,500° F (Fahrenheit). As the volume of this gas layer increases, it begins to bank down to the floor, heating all combustibles regardless of their proximity to the burning object. The gas layer is mostly carbon monoxide so the absence of oxygen prevents the heated objects from bursting into flame.

Oxygen gets introduced into the space in two ways. There is often enough available oxygen near

floor level to start the open burning process when the gas layer reaches that level. Or, the high heat breaks a window and the incoming oxygen allows the burning to begin. It should be noted that the room becomes untenable long before flashover. Even though open flaming may not be present until everything reaches 500°F and oxygen is introduced, the room becomes untenable for human survival at 212°F.

When flashover occurs, everything in the room ignites into open flame at once. This instantaneous eruption into flame generates a tremendous amount of heat, smoke, and pressure with enough force to push beyond the room of origin through doors and windows. The combustion process then speeds up because it has an even greater amount of heat to move to unburned objects.

Flashover is a critical stage of fire growth for two reasons. First, no living thing in the room of origin will survive, so the chance of saving lives drops dramatically. Second, flashover creates a quantum jump in the rate of combustion and a significantly greater amount of water is needed to reduce the burning material below its ignition temperature. A fire that has reached flashover means that it is too late to save anyone in the room of origin, and a significant increase in staffing is required to handle the larger hose streams necessary to extinguish the fire. A post-flashover fire burns hotter and moves faster, compounding the search and rescue problems in the remainder of the structure at the same time that more firefighters are needed for fire attack. See the information in Table 44.

PRE-FLASHOVER	POST-FLASHOVER
Fire limited to room or area of origin Requires small attack lines	Fire spreads beyond room or origin Requires more or larger attack lines
Search and rescue efforts easier	Compounds search and rescue efforts
Requires fewer resources and can be handled by initial effective response force	Requires additional resources (companies)

Table 44: Pre-flashover and post-flashover firefighting comparison

It has long been known that the real killer in a structural fire is smoke, not the flame or heat. Smoke contains many toxic gases released as byproducts of the combustion process. Carbon monoxide is one of these gases and the most prevalent. Test fires in residential structures have demonstrated the production of carbon monoxide in measurable amounts after 3½ minutes from the ignition of the fire.

The primary objective of fire operations is to provide enough firefighters and equipment in a strategic location so that an effective response force can respond to and reach fire scenes to

mitigate the problem before flashover occurs. The "time-temperature curve" standard is based on data from NFPA and ISO that establishes that a typical point source of ignition in a residential house will flashover at some time between five and 30 minutes after ignition, turning a typical *room and contents* fire into a structural fire of some magnitude. The time-temperature curve illustrated in Figure 26 comes from research efforts of the NFPA on smoke alarms and other detection equipment (2004). The illustration demonstrates the relationship between time and how a fire grows.

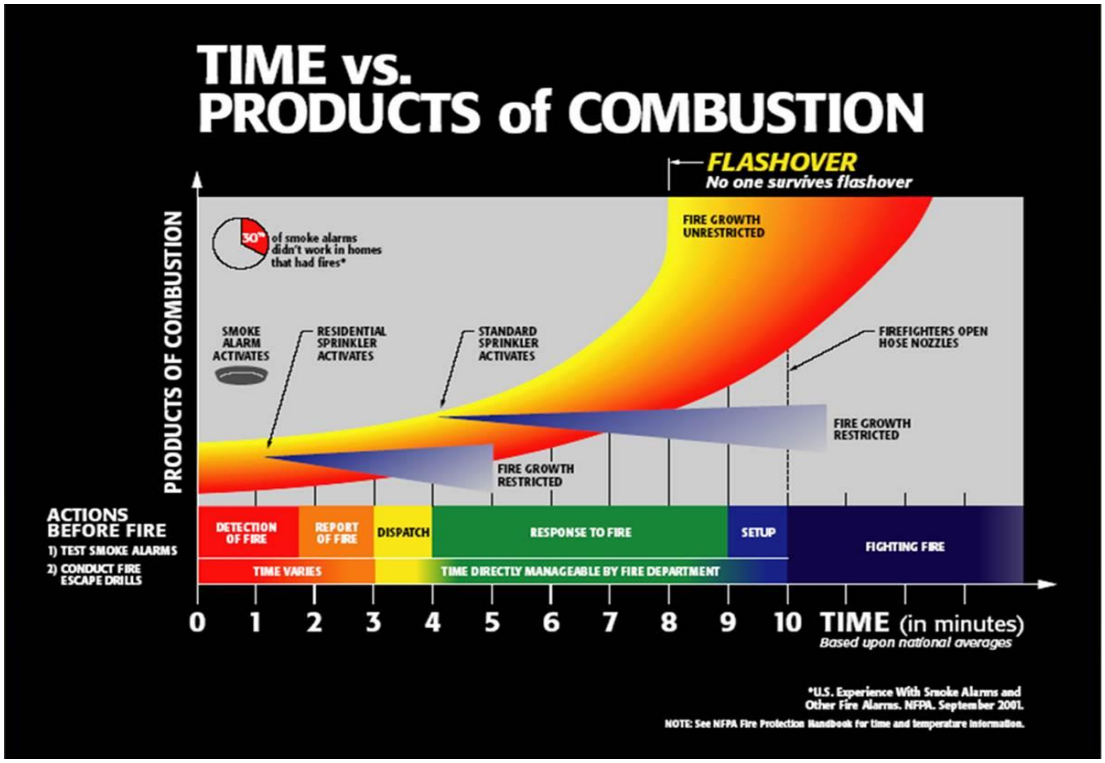


Figure 26: Time vs Products of Combustion

Time requirements for EMS calls are comparable to fire incidents. The purpose of a quick response, especially in the most critical situation (cardiac arrest), is that the brain, deprived of oxygen and circulation begins to die within four to six minutes. Brain damage is normally irreversible after 10 minutes. Interventions include early CPR and electrical defibrillation. Previous studies show the time to deliver a shock (called defibrillation) to the patient in cardiac arrest to be three to six minutes. Current guidelines from the American Heart Association plus additional guidelines from the American College of Emergency Physicians and the National Highway Traffic Safety Administration suggests a response time interval of not more than five minutes from alarm notification to scene arrival for responders capable of performing CPR and utilizing an AED.

An AED is a portable device that the first responder or trained civilian can use on a patient who is pulseless and not breathing. When the device is connected to the patient, it analyzes the

patient's heart rhythm and automatically delivers electric shocks to the patient if needed. Furthermore, guidelines provide for no more than a 10-minute response interval for providers capable of performing ALS level interventions, if that level of service is available. The importance of time of intervention in a cardiac arrest event is illustrated in Figure 27, which comes from the Arizona Heart Rhythm Center.

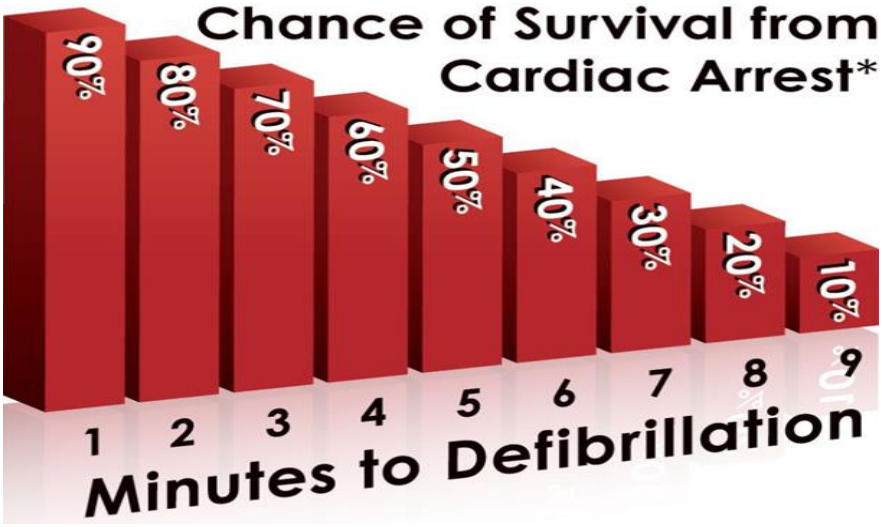


Figure 27: Survival from sudden cardiac arrest

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