2019-2023 Community Risk Reduction and Standard of Cover

Fire Department

EST 1808
CITY OF
DELAWARE
OHIO

Mayor – Carolyn K. Riggle

Vice Mayor – Kent Shafer

First Ward Councilman – Chris Jones

Second Ward Councilman – Lisa Keller

Third Ward Councilman – Jim Browning

Fourth Ward Councilman – Kyle Rohrer

Councilman At-Large – George Hellinger

City Manager – R. Thomas Homan

CITY OF DELAWARE 1831 FIRE DEPT.

John L. Donahue, Fire Chief

John Hall, Captain of Administration

Jim Oberle, Captain of Professional Development

Alan Matteson, Captain of EMS/Quality Assurance

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Introduction

Each day elected officials, city managers, and fire chiefs face decisions that relate to providing the communities emergency services including; fire protection, emergency medical services, technical rescue and hazardous materials. Today, more than ever, these leaders are faced with the pressure of being more effective and efficient in the service delivery. Local governments must justify increases in expenditures by explaining how the increases will directly improve service delivery. Until recently, the ability to quantify and qualify increases in fire related services has been difficult due to a lack of accepted methods. With the development of an assessment tool, the fire service can be evaluated.

In 1988, the International City/County Management Association (lCMA) and the International Association of Fire Chiefs (IAFC) committed to developing a voluntary national fire service accreditation system. The result of their efforts was a system by which local governments and fire departments could determine their risks and fire safety needs, evaluate their performance, and provide methods of improvement. Since 1988, the Commission on Fire Accreditation International and its parent, Center for Public Safety Excellence, has gained acceptance throughout the country.

A Standard of Cover requires "written policies and procedures that establish the distribution and concentration of fixed and mobile resources of an organization." In addition, based upon anticipated risk and workload, a written policy statement is developed that defines the service level for fire response, medical calls and for any other type of response the agency is expected to provide. This document describes the basis for the Delaware Fire Department's "Standard of Cover." The information provides current service analysis and serves as a guide for future growth. It details what drives emergency response objectives and describes the fire and non-fire risk in the community and how the Fire Department addresses those challenges.

In 2001, NFPA 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments was adopted by NFPA. This standard was the most prominent attempt to establish a fire service industry standard for the staffing of apparatus. The intent of this document was to apply a consistent and realistic approach towards the development of stated levels of response, while at the same time providing the needed justification for further development of the agency at hand.

This is Delaware Fire Department's second documented proactive assessment of the services provided. Prior to the establishment of the first Standard of Cover, the Department used reactive basic historical statistical information to provide the need assessment. When this historical information is coupled with a community's vulnerability to fire, emergency medical calls, transportation incidents, the potential release of hazardous materials, technical rescue and the threat of natural and manmade disaster responses, a complete risk assessment is created.

In order for the Standard of Cover to yield an accurate representation of potential risk, an assessment tool was needed to analyze the community. Research was conducted into several assessment tools. The Department decided to modify the Jacksonville Naval Air Station Fire Department (NASJAX) tool to assess the City of Delaware. Several studies were conducted utilizing the modified tool. After closer scrutiny, the Delaware Fire Department Risk Assessment Guide (Appendix A) was created and adopted by the Department. The Department began the task of performing a risk assessment profile on commercial and residential structures in the jurisdiction. Included with this was the utilization of the City's geographical information system (GIS) using the new Fire Department Data/GIS Technician. As the City continues to grow and develop, the standards presented in this document will be applied.

The Delaware Fire Department is committed to providing the most efficient and effective emergency services to the community. The components of this Standard of Cover will provide this department, our local government and the citizens of Delaware with vital information regarding the performance of our department and the risk and vulnerability our community faces.

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Executive Summary

The following document serves as a tool for evaluating the Standard of Cover (SOC) for the City of Delaware. The document was prepared using standardized methodology as adopted by the Center for Public Safety Excellence (CPSE) through its Commission on Fire Accreditation International (CFAI).

The document contains a multitude of sections and sub-sections that portrays a current analysis of the community that the Fire Department protects. Information included in the Standard of Cover includes a description of the community, fire department and government operations; a risk analysis of the City of Delaware that not only evaluates the structural fire risk in the community, but also evaluates the other risks that the fire department is tasked with managing. It further identifies the goals and objectives for managing these risks, describes the resources available to the Department to meet its goals and objectives, and discusses the methods used by the Department to measure its performance in meeting its goals and objectives.

This document is the collaborative work of both the command staff and line officers of the department. It is the intent of this document to give the reader an overview of the risks faced by the citizens, businesses and visitors of the City of Delaware, how the Delaware Fire Department has planned to manage those risks, and how well the Department carries out those plans.

The Delaware Fire Department has a long history dating back to 1831 when the department was first formed as a volunteer group of "minutemen" to provide fire protection throughout the Village of Delaware. The Delaware Fire Department is consistently working to achieve the highest level of professionalism and efficiency on behalf of those it serves. The department entered the Accreditation process in 2007 for the purpose of self-improvement and attaining international fire service accreditation. In their goal to pursue Accredited Agency status, the Delaware Fire Department has initiated the creation of this Standard of Cover.

Expectations

According to the International Association of Fire Chiefs "A Leadership Guide for Combination Fire Departments", the following are expectations that should be met by the fire department. The services provided by the fire department should reflect what the public desires and the taxpayers are willing to fund. In turn, the community should reasonably expect that:

- The taxpayers' money is spent in the best interests of firefighter and community safety,
- The fire department will provide the services that are needed to keep citizens safe,
- The fire department will respond in a timely manner,
- The firefighters who respond to an emergency are trained and experienced,
- Services will change to meet growing demand because of an increase in population.

The local government expects that:

- The fire chief will inform them of what their options are and what the consequences of their decisions will be,
- The fire department is a partnership with local government in community protection,
- The fire chief will manage the department in compliance with local, state and federal laws and regulations,
- The apparatus and equipment purchased will meet the needs of the public today and in the future,
- The fire department has mutual-aid agreements with other agencies and departments for those calls that require greater resources than the fire department has on-hand,
- The fire department is part of a regional response network for infrequent but important response situations such as hazardous materials response or technical rescues,
- The fire chief is accountable for the money they give to the fire department,
- The fire chief has a strategic plan for growth.

Through this Standard of Cover and its future and associated processes, the Delaware Fire Department hopes to meet these expectations.

Alignment with Goals, Standards and Fire Service Practices

This document is aligned with the Fire Department's Strategic Plan, the annual goals and objectives, the direction presented to the citizens of Delaware as part of the 2010 Fire Levy process, the 2018 community survey and the annual recommended budget presented to the City Manager and the City Manager's budget approved by City Council.

This document fulfills the Delaware Fire Department's community risk and disaster assessment requirements as outlined in the following standards:

- *NFPA 1600 – 2016 Ed., Standard on Disaster/Emergency Management and Business Continuity Programs,* §5.3 regarding risk assessment
- *NFPA 1710 – 2016 Ed., Standard for The Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public By Career Fire Departments,* §4.2 regarding community risk management

In addition, the fire service is widely responsible for emergency management functions and policy development in communities nationwide. Emergency management skills are required for completion of the National Fire Academy's Executive Fire Officer Program, which includes training and education on:

- Risk Assessment,
- Incident Documentation,
- Media/Political Considerations,
- Standards,
- Legal Mandates,
- Capability Assessment,
- Damage Assessment,
- Emergency Operations,
- Integrated Emergency Management System (IEMS),
- Multi-Agency Coordination Systems (MACS)
- Emergency Operations Center (EOC),
- Emergency Information Systems.

Section 1 - Community Baselines

The purpose of a Community Risk Assessment is to provide a complete evaluation of risks present within the jurisdiction. The data yielded provides agency administration and elected officials the ability to make an educated and calculated decision on the level of service they want from their fire and EMS services. Section 1 of this document provides an overview of the history, demographics, geography, response information and government infrastructure of the City of Delaware and the impact they have on emergency services.

Also reviewed in this section are the mission and vision statements of the fire department as they relate to the annual Strategic Plan document and the Standard of Cover.

Section 1.1 - Community History

Long before the City of Delaware came into existence, the Mingo and Shawnee Indian tribes lived in the area and settlements were established where the future town would develop.

In 1804, Moses Byxbe arrived in central Ohio from Berkshire County, Massachusetts. He had acquired a large number of land grants, which were part of the United States Military lands, given in payment to Revolutionary War soldiers. In the spring of 1808, Byxbe laid out a town on the east bank of the Olentangy River but a few days later changed his mind about the most suitable location and platted the town on the west bank.

On May 9, 1808, Byxbe filed or platted the, "plan of the town of Delaware," marking the real beginning of the present City of Delaware. Byxbe (1756-1826) was a man of exceptional energy, courage and drive who shaped the City of Delaware's future during its formative years. He accomplished a great deal in a little more than 20 years on the Ohio frontier – Delaware's founding and planning, growing a local economy, the enlistment of capable civic partners, and even an attempt to locate Ohio's capital in Delaware. The tough-mindedness that served Byxbe well in Delaware's early days also drew its share of detractors, but there is general agreement that Byxbe excelled at attracting high-caliber settlers who formed the basic population upon which Delaware was founded.

Following the War of 1812, settlers began arriving at a faster pace, including the parents of Rutherford B. Hayes, 19th President of the United States. Hayes was born in Delaware, and met his future wife, Lucy, at Ohio Wesleyan University. Ohio Wesleyan was founded in 1842 by Methodists seeking to establish a liberal arts college.

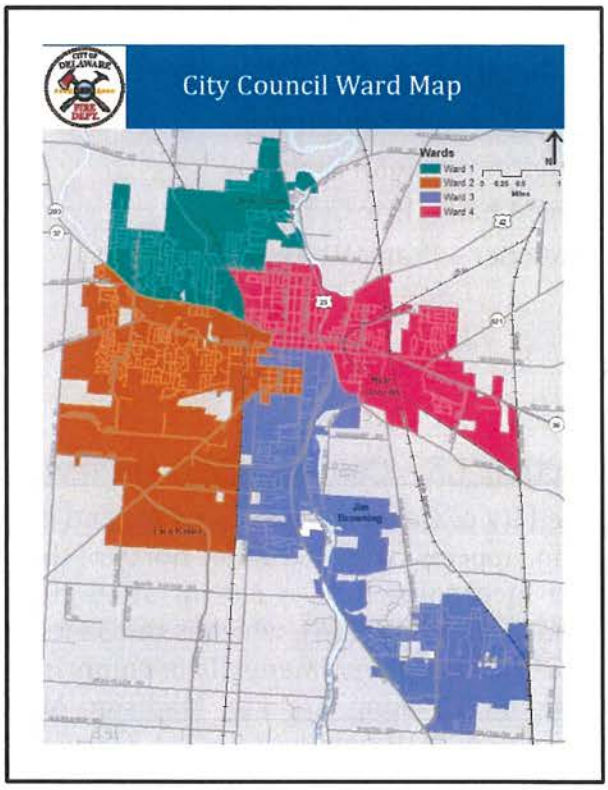
Prior to the Civil War, Delaware had Northern sympathies and abolitionists brought the Underground Railroad through the area. The local Africa Road owes its name to this era. Camp Delaware, a Civil War-era camp for soldiers was one of the few from which African-American soldiers deployed to fight for the Union. During and following the War, railroads played an important role in expanding the markets of Delaware. By 1900, Delaware had its own electric street railway, and an electric interurban rail connected the community with Columbus and Marion, located about 20 miles to the north.

In the modern era, residential and industrial development has flourished. The proximity to Columbus, as well as historic periods of growth and prosperity, has greatly influenced the Delaware economy. Its history has been carefully preserved in its many 19th century buildings and homes, its comfortable scale and "home town" pace of life.

Section 1.2 - City Governance Model

The City is governed and operated by its Charter, first adopted by the voters in 1951, and which has been, and may be, amended by the voters from time to time. The City is also subject to general laws applicable to all cities, known as the Ohio Revised Code. Under the Ohio Constitution, the City may exercise all powers of local self-government, and police powers to the extent not in conflict with applicable general laws. The Charter provides for a council-manager form of government.

Under Article I of the City Charter, the city operates within the corporate limits, known as the City of Delaware. The established corporate limits are modified through annexations that are requested by the property owner, approved by City Council and legally recorded by the County Auditor. The corporation limits are recorded through maps.



Legislative authority is vested in a seven-member Council, of whom three are elected at-large and four are elected from wards, for four-year terms. The Council fixes compensation of City officials and employees, and enacts ordinances and resolutions relating to the City services, tax levies, appropriating and borrowing money, licensing and regulating businesses and trades, and other municipal purposes. The presiding officer is the Mayor, who is elected by the City Council for a two-year term. The Mayor is the City's ceremonial and official

chief executive. The Mayor also appoints members to a number of boards and commissions. The Charter establishes certain administrative departments; the Council may establish divisions of those departments, and additional departments.

The City's chief executive and administrative officer is the City Manager, who is appointed by the Council to serve at its pleasure. The City Manager may be removed by a vote of four members of the Council. The City Manager appoints the directors of City Departments and authorizes the hiring and firing of all employees.

The Civil Service Commission is established by the City Charter and certifies the hiring process of all sworn positions within the fire department. This includes all firefighters, Lieutenants, Captains and the Fire Chief.

City Council

Mayor – Carolyn K. Riggle
Vice Mayor – Kent Shafer
First Ward Councilman – Chris Jones
Second Ward Councilman – Lisa Keller
Third Ward Councilman – Jim Browning
Fourth Ward Councilman – Kyle Rohrer
Councilman At-Large – George Hellinger
City Clerk – Elaine McCloskey

Civil Service Commission

Chairman – John Ripka
Vice-Chair – Eric Coss
Member – Frank Hickman

City Administration & Department Heads

City Manager – R. Thomas Homan
Assistant City Manager – Jackie Walker
Economic Development – Sean Hughes
Administrative Services – Jessica Feller
City Attorney/Law Dept. – Darren Shulman
Community Affairs – Lee Yoakum
Engineering/Public Works – Bill Ferrigno
Finance Director – Dean Stelzer
Fire Chief – John L. Donahue
Information Technology – Susie Daily
Municipal Court – Judge David Sunderman and Judge Mary Anne Hemmeter
Planning & Community Development – Dave Efland
Police Chief – Bruce Pijanowski
Public Utilities – Blake Jordan

Section 1.3 – Community Overview

The City of Delaware is located in (and is the County seat of) Delaware County in Central Ohio, approximately 25 miles north of the City of Columbus, Ohio. It was founded in 1808 and incorporated as a city in 1816. The City is in the Columbus, Ohio Metropolitan Statistical Area (MSA), which is the 32st largest MSA of 382 in the United States according to 2016 Census estimates. It is comprised of the seven counties of Delaware, Fairfield, Franklin, Hocking, Licking, Madison, Morrow, Perry, Pickaway and Union. The City's estimated 2019 population of 41,876 placed it as the largest city in the County. The City's

area is 19.4 square miles.
The City is served by diversified transportation facilities, including three U.S. highways, three State highways and interstate highway I-71 eight miles to the east of town. It is served by CSX and Norfolk Southern railroads. Delaware Municipal Airport provides facilities for general aviation and commercial service is available at Port Columbus International Airport located 20 miles southeast of the City. Public mass transit for the area is provided by the Delaware Area Transit Agency.

Banking and financial services are provided to the City area by local commercial banks and savings and loan institutions, and by local offices of major national commercial banks and savings and loan associations. Two daily newspapers and one weekly newspaper serve the City. The City is within the broadcast area of several television stations and AM and FM radio stations. Cable TV service, including educational, governmental and public access channels, is provided by Time Warner Cable and WOW Cable.

Ohio Wesleyan University, a private four-year liberal arts institution, is located in the City. Within commuting distance are several public and private two-year and four-year colleges and universities providing a wide range of educational facilities and opportunities. These include The Ohio State University, Franklin University, Capital University, Ohio Dominican College, Otterbein College, The Ohio State University Marion Branch, Columbus State Community College, and Marion Technical College.

The City is served by OhioHealth-Grady Memorial Hospital located in the City of Delaware. Delaware County has five freestanding emergency rooms. OhioHealth operates ERs in Lewis Center, Powell and Westerville. Mount Carmel Health operates in Lewis Center and Nationwide Children operates an ER in Lewis Center. In addition, several Columbus area hospitals, including Riverside, Grant, Mount Carmel, Ohio State Medical Center, and the James Cancer Research Hospital provide advanced health care options.

Delaware County is home to two state parks, Delaware State Park and Alum Creek State Park, both of which are within a few miles of the City. In addition the City maintains and operates over 420 acres of parkland. Cultural activities include the Central Ohio Symphony Orchestra which is based and conducts their concerts in Delaware, as well as music and theatre offerings by Ohio Wesleyan University. The Delaware County Cultural Arts Center is located in Delaware and the Delaware County Fairgrounds is home to The Little Brown Jug harness race. to The Little Brown Jug is one of harness racing's Triple Crown races. The main branch of the Delaware County Library is located in the City.

Section 1.4 - Delaware Fire Department Overview

The Delaware Fire Department was established in 1831 through the efforts of volunteer "minute men" throughout the Village of Delaware. In 1834 the Fire Department was organized by the City Council, and reorganized again in 1846 to form the original six fire association companies of:

- The Olentangy Engine Company

- The Neptune Hose Company
- The Rough and Ready Hook and Ladder Company
- The Protection Company
- The Washington Fire Company
- The Union Company

In 1858, W. Miller became the first Fire Chief for the Village of Delaware Fire Department. By 1870, the department had retained its first full-time employees to drive station fire apparatus. The Delaware Fire Department recorded its first major fire in 1910 at Delaware High School on West Winter Street with damage estimated at $49,000. The combination use of minute men and paid employees continued until the early 1960s when the department became fully staffed as a career fire department.

Prior to 1972, the department was located at City Hall and other various locations within the municipality. The current main station (Fire Station #301) which was built in 1972 is located in the heart of the Ohio Wesleyan University campus and houses the Fire Chief and other administrative offices. The second fire station (Fire Station #302) was built in 1997, and is located on Pittsburgh Drive in the southwest corner of the city. In 2013, the third fire station (Fire Station #303) began operation serving the City's northwest quadrant and is located at 1320 W Central Ave. In February 2019, the City's fourth fire station (Fire Station #304) was completed and began serving the City's southeast quadrant. This fire station is located at 821 Cheshire Rd. The department has grown to become a department of 64 firefighters with an administrative assistant and a Data/GIS Technician operating from four fire stations.

The City of Delaware Fire Department provides not only fire protection, but also advanced life support (ALS) paramedic service, hazardous material and rescue operations for the community. Equipped with a 100' ladder platform, 107' quint, four engines, a heavy rescue/hazardous materials unit, brush unit and four ALS ambulances, the department provides vigilant protection for its community. The Delaware Fire Department celebrated its 175th anniversary in 2006.

Section 1.5 - Fire Protection Class Rating

The Insurance Services Office (ISO) serves the insurance marketplace with statistical, actuarial, underwriting, and claims data, policy language, information about specific locations, fraud identification, and information for marketing, loss control and premium audit. Through their Public Protection Classification (PPC) program, ISO evaluates municipal fire protection efforts in communities throughout the United States. The Insurance Services Office PPC is no longer being used by all insurance companies, as some insurance

companies are using statistical information based on zip codes.

Insurance Services Office provides two primary support roles to the fire department in the area of hazard analysis and needs assessment. The Municipal Fire Suppression Rating Schedule evaluates three major areas of the fire department operation:

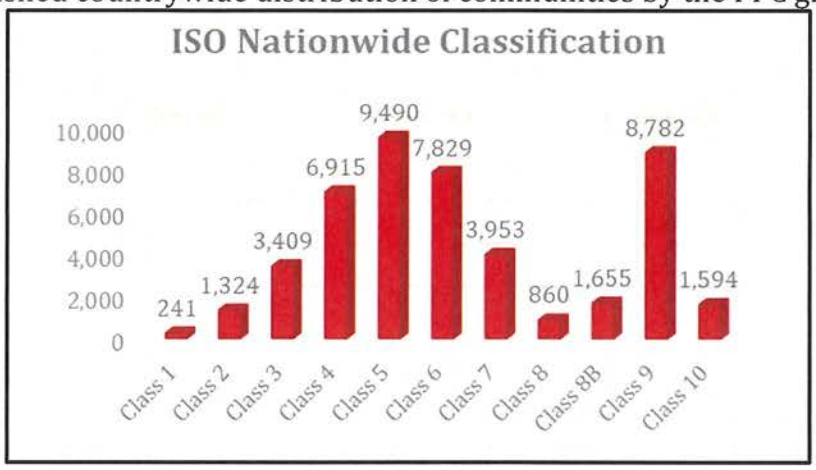
- Fire Department,
- Water Supply, and
- Receiving and Handling Fire Alarms.

When completed, the process provides an assessment of each area, complete with ratings which are translated into an insurance rate for the community. The process also facilitates the development of improvement statements, indicated deficiencies and needed improvement in the area of staffing, water supply, equipment, apparatus, pumping capacity, aerial capacity, etc.

The rating is based on a scale of Class 1 to Class 10 (Class 1 being the best). The lower the rating, the lower the insurance premium cost. The last such evaluation was conducted in 2018. Delaware Fire Department is rated a public protection Class 2 for insurance rating purposes and reflects that community fire suppression services are improving in the face of the demands of a changing environment.

Local Area Comparable	Hydrant Area/Non-Hydrant
Delaware Fire Department (effective August 1, 2018)	2
Genoa Township Fire Department	3/3X
Lancaster Fire Department	2
Liberty Township Fire Department	3/6
Marysville Fire Department	4
Newark Fire Department	3
Norwich Township Fire Department	2
Orange Township Fire Department	2
Tri-Township Fire District	4/4X
Washington Township Fire Department	1
Westerville Fire Department	2
Worthington Fire Department	4

The 2017 published countrywide distribution of communities by the PPC grade as follows:



Section 1.6 - Sampling of Major Fire Incidents in Delaware

Numerous significant fires have lit up the city's sky since the major high school fire of 1910. The largest was the Delta Plex fire in 1999 with an estimated damage of $5,000,000, Three years later, a significant fire occurred in the historical Bun's Restaurant with a reported loss of over $1,125,000. Below is a listing of the major fires since 2000 (greater than $250,000).

- March 4, 2002 — Bun's, 6 W. Winter St. — $1,125,000
- December 17, 2003 — DMI, 1076 Pittsburgh Dr. — $250,000
- July 25, 2009 — Delaware Hotel (Vacant), 351 S. Sandusky St. — $900,000
- November 26, 2009 — Delaware Paint Co., 32 Spring St. — $350,000
- September 11, 2010 — Downtown Fire (Former Rodman-Brown Funeral Home) 88 N. Sandusky St. — $2,000,000
- June 11, 2012 — Liberty Castings, 550 Liberty Rd. — $1,000,000
- January 5, 2013 — Residential Home, 301 W. Central Ave — $262,500
- March 8, 2016 — Calvary Church, 185 Lake St. — $300,000
- March 31, 2016 — Sam Dong, Pittsburgh Dr. — $400,000

Section 1.7 - Current Level of Service, Personnel and Staffing

An effective response force is the minimum staffing and equipment required to reach an emergency scene within a prescribed travel time. An effective response force should handle fires that occur shortly after they start and are within the maximum travel time for the full assignment of fire companies according to the structure's risk level. An effective response force for EMS incidents should occur shortly after the medical incident occurs and are within the maximum travel time for the full EMS assignment.

The community's ability to reduce to zero fire risk or zero medical risk is not realistic. The community must establish a level of protection based on the public desires and its financial ability. The Fire Department administration recommends that staffing and facility coverage be based on the most likely events that occur within the City and not based on the most severe risks. The Delaware Fire Department should deliver an effective response force for the most likely events that occur.

From the expected to the unexpected, the Delaware Fire Department provides the community with an all-hazards approach to customer needs. The agency is considered by the industry as a full-service provider of emergency and non-emergency services. All companies provide advanced life support services and all paramedic companies provide patient transport. Services are provided from four fixed locations (fire stations) which are strategically located throughout the community.

Daily, the Shift Captain is responsible for the assignment of personnel at all Fire Stations. Each shift is funded for 19 full-time firefighters; however with accrued leaves and hourly reduction days (Kelly Days), staffing is typically at a minimum of 15 on-duty personnel. In unusual situations, such as resignations and injury leave, staffing maybe reduced, although, this is a last resort. By contract with the IAFF Local 606, minimum staffing is permitted to be seven (7) firefighters. The Department also has a recall system in place when on-duty staffing falls below five (5) available on-duty personnel due to incidents.

Unit Type Amount	Staffing Assigned
Engine/Quint Company	3 (1 Lt. 2 FFs)
Ladder/Rescue Company	3 (1 Lt. 2 FFs)
Medic Company	2 (2 FF/Medics)
Shift Captain	1 (1 Captain)

Operations are currently handled by personnel working a traditional 24-hour shift, with 48-hours off, with an unpaid hourly reduction day every 27 days to avoid an automatic overtime cost. This equates to a 50-hour work week. In 2014, the Department began a 12-hour shift to staff additional vehicles when higher demands occur. With the opening of Station 304 and the limited amount of part-time employees, this additional unit is limited in its operation.

Section 1.8 - Existing Apparatus Resource Compliment

Each type of apparatus operated by the Delaware Fire Department fulfills a specific role. The quantity maintained is the minimum needed in order to provide the basic level of service to our community and the particular hazards encountered. While we recognize the acquisition and maintenance of fire department vehicles is expensive, the reduction of these vehicles will not lead to any cost savings, and may in fact, either cause additional burden upon the department's budget, or increase the risk for loss of property or life within our community.

Delaware Fire Department has established the following companies that are staffed and operated on a full time basis. All companies are equipped and staffed as paramedic or Advanced Life Support (ALS) units.

Unit Type Amount:

Fire Station 301 — *Company's*

Shift Captain 1

Engine Company 1

Medic Company 1

Quick Response Vehicle 1

(Based on Staffing)

Fire Station 302

Ladder/Heavy Rescue/Medic Company 1

(Ladder/Heavy Rescue/Medic are all cross staffed and available when in Station)

Fire Station 303

Engine/Medic Company 1

(Engine/Medic are all cross staffed and available when in Station)

Fire Station 304

Engine/Medic Company 1

(Engine/Medic are all cross staffed and available when in Station)

Apparatus Information - See Table Below

Vehicle	City ID	Purpose	Status	Current Location	Current Vehicle Year	2018 Replacement Cost	Front Line Useful Life
Ladder Truck	0660	Provides elevated access to building floors and roofs. Capable of flowing 2,000 gpm from the laddder. Responsible for search and rescue, ventialtion, securing utilites, overhaul operations.	In-Service	St 302	2012	$1,250,000	20
Engine #1	0014	Provides all-hazard response to incidents. This includes fire suppression, rescue, hazardous materials and EMS.	Reserve	St 303	1989	$776,134	15
Engine #2	0257		In-Service - Reserve	St 301	1997	$776,134	15
Engine #3	0388		In-Service	St 304	2001	$776,134	15
Engine #4	0688		In-Service	St 301	2013	$776,134	15
Quint #1	0862		In-Service	St 303	2017	$1,194,052	20
Medic #1	0680	Provides basic and advanced life support treatment and transportation.	In-Service	St 304	2012	$370,156	12
Medic #2	0762		In-Service	Rotation among the Station based on mileage	2016	$370,156	12
Medic #3	0763		In-Service		2016	$370,156	12
Medic #4	0764		In-Service		2016	$370,156	12
HazMat/Rescue	0474	Provides hazardous materials and technical rescue response.	In-Service	St 302	2005	$537,324	20
Chief Vehicle	0845	Staff Vehicle	In-Service	St 301	2017	$38,343	10
Asst Chief/Captain Vehicle	0708	Staff Vehicle	In-Service	St 301	2014	$38,343	10
Battalion	0724	Command Vehicle	In-Service	St 301	2014	$38,343	10
EMS301	0709	Quick Response	In-Service	St 301	2014	$38,343	10
Fire Inspector #1	0469	Staff Vehicle	In-Service	St 301	2006	$11,941	15
Fire Inspector #2	0550	Staff Vehicle	In-Service	St 301	2009	$11,941	5+
Fire Inspector #3	0570	Staff Vehicle	In-Service	St 301	2009	$11,941	5+
Utility Vehicle	0471	Multi-Purpose Vehicle, Transport trailers	In-Service	St 301	2006	$39,608	15
Utility Vehicle	0468	Multi-Purpose Vehicle, Transport trailers	In-Service	St 302	2006	$59,703	15
Station 301 Car	0645	Station Car	In-Service	St 301	2011	$11,941	5+
Station 302 Car	0646	Station Car	In-Service	St 302	2011	$11,941	5+
Station 303 Car	0647	Station Car	In-Service	St 303	2011	$11,941	5+

Section 1.9 - Request for Service (Call Volume Trend)

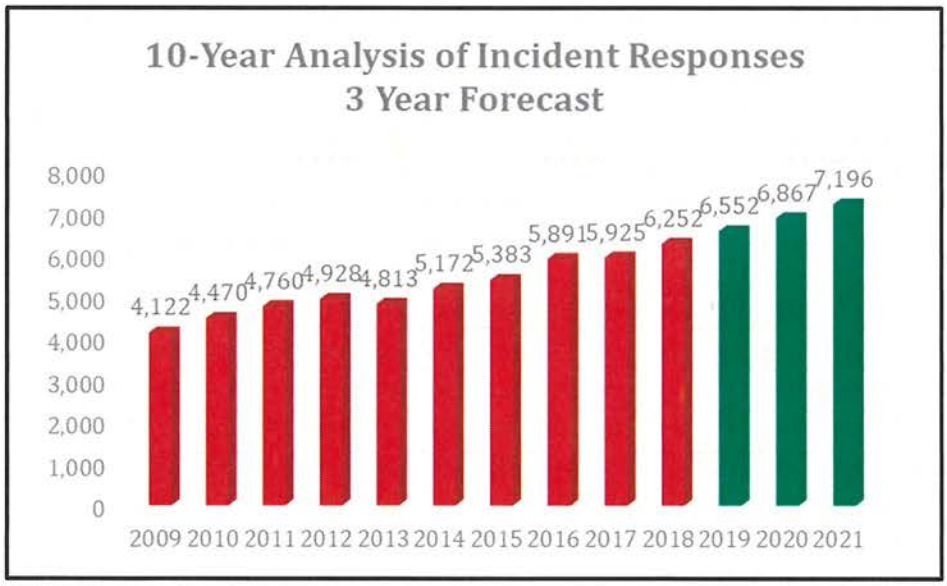
The Delaware Fire Department is a full-service department. It responds to a multitude of requests for service from the community. The majority of responses are for medical incidents which are 81.57% of total responses annually. A chart on the following page provides a 10-year analysis of the responses made by the department. In 2009, the Delaware Fire Department changed the means of counting incidents. Prior to 2009, if a paramedic unit and an engine responded to the same call, the incident was recorded as both a fire incident and an EMS incident.

Ohio Fire Incident Reporting System – Incident Classification

	2018	2017	2016	2015	2014	5 Year Total	Percentage of Calls
Fires	111	110	108	126	101	556	**1.94%**
Over Pressurization/Rupture	3	7	4	1	3	18	**0.06%**
EMS Request (does not incl alarm and lift assist)	4,491	4,419	4,658	4,257	4,046	21,871	**76.41%**
Hazardous Conditions	159	149	150	135	124	717	**2.50%**
Service Calls	540	351	128	155	141	1,315	**4.59%**
Good Intent Calls	267	259	213	155	162	1,056	**3.69%**
False Calls	671	615	620	541	589	3,036	**10.61%**
Severe Weather	0	5	3	1	0	9	**0.03%**
Other	10	12	6	12	6	46	**0.16%**
Total	**6,252**	**5,927**	**5,890**	**5,383**	**5,172**	**28,624**	**100.00%**

Incident Types

	2018	2017	2016	2015	2014	5 Year Total	Percentage of Calls
Fire Responses	1,014	988	964	846	921	4,733	**16.54%**
Hazardous Material Responses	125	103	89	97	67	481	**1.68%**
Technical Rescue Responses	14	15	9	18	6	62	**0.22%**
Medical Responses	5,099	4,821	4,828	4,422	4,178	23,348	**81.57%**
Total	**6,252**	**5,927**	**5,890**	**5,383**	**5,172**	28,624	**100.00%**



Section 1.10 Mission, Vision and Value Statements

The Mission Statement

The purpose of the Mission Statement is to answer the question "Why do we exist as an organization?" In 2007, the internal stakeholders, who developed a new Mission Statement, conducted a great deal of work and discussion. In 2017, this Mission Statement was reviewed and re-adopted by the internal stakeholders. The intentionally simplistic, yet meaningful statement is provided below:

Protection through preparedness and response,
delivered by the highest trained professionals

The Vision Statement

In addition to knowing why we exist as an organization, all successful organizations need to define where they expect to be in the future. After having established the organization's Mission, the next step was to establish a new vision of that would carry the Delaware Fire Department into the future. Vision statement is built upon the framework of the Mission Statement and provide targets of excellence that the organization will strive toward and provide a basis for their goals and objectives.

The internal stakeholder completely rewrote the Vision Statement. The new vision will be met by continuing to understand our community needs and expectations, and establishing goals and objectives to meet those needs and expectations. The following is the Vision Statement:

Delaware Fire Department Vision Statement

The Delaware Fire Department will be a progressive Fire Department
meeting the needs and expectations of the community.

Our Values

Establishing values embraced by all members of an organization is extremely important. Values recognize those features and considerations that make up the personality of the organization. Those assembled for the Delaware Fire Department during the strategic planning process felt it absolutely necessary to declare the following statements as values for the organization.

- ***Commitment*** - We value a family atmosphere in which every member can grow personally and professionally towards providing an excellent level of service to our internal and external communities.
- ***Professionalism*** - Through dedicated and competent employees; we serve as honest stewards of the tax payers' money, and will never allow our integrity to become compromised.
- ***Respect*** - We value respect for each person as an individual, and an attitude that recognizes the worth of others, exhibiting compassion for those in need. We value diversity as strength for our organization and as a representative bond to our community.
- ***Teamwork*** - We believe in the value and promotion of teamwork within our organization and the community. We believe that through service as a cohesive and enthusiastic team, there is formidable strength, balance and security.

With the completion of the Mission, Vision and Values, the Delaware Fire Department established the operation of the organization. The Mission, Vision, and Values are the foundation of any successful organization. Every effort should be made to keep these current and meaningful so that the individuals who make up the organization are well guided by them in the accomplishment of the goals, objectives, and day-to-day tasks.

Our Pledge

Our pledge to our community is:

- *We will be ready.*
- *We will be there quickly.*
- *We will do our best to care for you.*
- *We will help you through your emergency.*

Section 2 – Risk Assessment

The only true way to adequately and properly provide services to a community is to assess the risk being protected. Unfortunately, many communities across the country never actually assess the risks they are assigned to protect. They base their levels of protection on past practice or common expectations. Those communities have spent dollars and wasted resources on uneducated decisions about public safety services. In the case of fire/EMS services, a community must assess the risk it protects to be able to educate their elected officials and decision makers on what resources are needed to protect the community.

One reason communities often struggle with risk assessment is that evaluation tools are difficult to use. Most fire chiefs can tell you what structures cause them the greatest concern in their community; what they cannot do is give an educated answer as to why they need the resources they ask for each year.

Community budgets are increasingly becoming scrutinized and tighter. Each tax dollar spent must be supported by accurate data. A community must demand that their fire officials conduct ongoing risk assessment and apply that data to the delivery of emergency services.

In order for the Community Risk Reduction and Standard of Cover to yield an accurate representation of potential risk, an assessment tool was needed to analyze the community. Research was conducted on several assessment tools to help analyze the City of Delaware. Risks were evaluated looking at Delaware's population and demographics, community infrastructure, anticipated growth, historical responses, risk based on natural and man-made disasters, risk based on demand zones and the risk of the structures/buildings being protected.

The risk analysis of the building structures and the impact they have on our Community was a system the Department modified from the Jacksonville Naval Air Station Fire Department (NASJAX) tool. Several studies were conducted utilizing the modified tool. After closer scrutiny, the Delaware Fire Department Risk Assessment Guide (Appendix A) was created and adopted by the Department. The guidebook identified how buildings within the community would be analyzed in a consistent manner; yielding valuable information as to the hazards posed. From the details, each property was assessed a value based on the assessment, and this was called a Community Risk Assessment Value (CRAV). The Department began the task of performing a risk assessment profile on each commercial and residential structure in the jurisdiction. Included with this was the utilization of the City's geographical information system (GIS). As the City continues to grow and develop, the standards applied throughout this document will be applied.

The CRAV process was coordinated by the agency's Risk Reduction Division and reviewed by the operations personnel. This process allowed for a physical survey of every commercial property in the city.

Risk	CRAV Score
Ultra-High	20-30
High	18-19
Medium	16-17
Low	10-15

This section will discuss the immediate population served, the assessment tool used, and a comprehensive review of fire and non-fire risks.

Section 2.1 - Population Served

The current population of Delaware is richly diverse. Over the past several decades, Delaware has continued to evolve as a combination of residential, educational, manufacturing and retail community. The once smaller, wood frame homes of less than 1,500 square feet are being slowly replaced by larger residential homes constructed of lightweight construction materials. Along with this growth of personal dwellings, the downtown area has seen redevelopment, and commercial growth has continued throughout the city. This section outlines those key factors continuously assessed during the development and maintenance of a community standard.

Established	May 9, 1808
Chartered	1951
Municipal Area	19.4 Square Miles
Region	Central Ohio
Delaware County Size	249 square miles
Population	39,267 (July 1, 2017, US Census)
Population Growth 2010-2017	13.0%
Delaware County Population	200,464
Population Growth 2010-2017	15.1%
Under the age of 18	25.5%
From 18 to 64	85.7%
65 years of age or older	11.2%
Female %	51.8%

Fact	Fact Note	Delaware, Ohio	Delaware County, Ohio	Ohio	United States
Population estimates, July 1, 2017, (V2017)		39,267	200,464	11,658,609	325,719,178
Population estimates, July 1, 2016, (V2016)		38,643	196,463	11,614,373	323,127,513
Population estimates base, April 1, 2010, (V2017)		34,756	174,189	11,536,730	308,758,105
Population estimates base, April 1, 2010, (V2016)		34,756	174,189	11,536,727	308,758,105

Population, percent change - April 1, 2010 (estimates base) to July 1, 2017, (V2017)		13.00%	15.10%	1.10%	5.50%
Population, percent change - April 1, 2010 (estimates base) to July 1, 2016, (V2016)		11.20%	12.80%	0.70%	4.70%
Population, Census, April 1, 2010		34,753	174,214	11,536,504	308,745,538
Persons under 5 years, percent		7.50%	6.30%	6.00%	6.20%
Persons under 18 years, percent		25.50%	27.10%	22.50%	22.80%
Persons 65 years and over, percent		11.20%	12.50%	16.20%	15.20%
Female persons, percent		51.80%	50.50%	51.00%	50.80%
White alone, percent	(a)	90.80%	88.10%	82.50%	76.90%
Black or African American alone, percent	(a)	4.60%	3.50%	12.80%	13.30%
American Indian and Alaska Native alone, percent	(a)	0.10%	0.20%	0.30%	1.30%
Asian alone, percent	(a)	1.60%	6.20%	2.20%	5.70%
Native Hawaiian and Other Pacific Islander alone, percent	(a)	0.00%	Z	0.10%	0.20%
Two or More Races, percent		2.20%	1.90%	2.20%	2.60%
Hispanic or Latino, percent	(b)	2.30%	2.60%	3.70%	17.80%
White alone, not Hispanic or Latino, percent		89.10%	85.90%	79.50%	61.30%
Veterans, 2012-2016		2,278	9,726	779,187	19,535,341
Foreign born persons, percent, 2012-2016		3.50%	6.50%	4.20%	13.20%
Housing units, July 1, 2017, (V2017)		X	73,193	5,201,485	137,403,460
Owner-occupied housing unit rate, 2012-2016		62.50%	81.20%	66.00%	63.60%
Median value of owner-occupied housing units, 2012-2016		$161,100	$267,600	$131,900	$184,700
Median selected monthly owner costs - with a mortgage, 2012-2016		$1,441	$1,965	$1,238	$1,491
Median selected monthly owner costs - without a mortgage, 2012-2016		$513	$695	$447	$462
Median gross rent, 2012-2016		$861	$969	$743	$949
Building permits, 2017		X	1,319	23,917	1,281,977
Households, 2012-2016		13,991	66,544	4,601,449	117,716,237
Persons per household, 2012-2016		2.52	2.8	2.45	2.64
Living in same house 1 year ago, percent of persons age 1 year+, 2012-2016		83.70%	88.70%	85.10%	85.20%
Language other than English spoken at home, percent of persons age 5 years+, 2012-2016		4.00%	8.00%	6.70%	21.10%
High school graduate or higher, percent of persons age 25 years+, 2012-2016		93.60%	96.60%	89.50%	87.00%
Bachelor's degree or higher, percent of persons age 25 years+, 2012-2016		34.30%	52.50%	26.70%	30.30%
With a disability, under age 65 years, percent, 2012-2016		6.40%	4.80%	10.00%	8.60%
Persons without health insurance, under age 65 years, percent		7.90%	3.90%	6.60%	10.10%
In civilian labor force, total, percent of population age 16 years+, 2012-2016		67.10%	69.70%	63.20%	63.10%

In civilian labor force, female, percent of population age 16 years+, 2012-2016		62.40%	63.30%	58.90%	58.30%
Total accommodation and food services sales, 2012 ($1,000)	(c)	62,538	460,183	20,652,777	708,138,598
Total health care and social assistance receipts/revenue, 2012 ($1,000)	(c)	222,623	541,558	80,915,693	2,040,441,203
Total manufacturers shipments, 2012 ($1,000)	(c)	2,055,462	3,012,008	313,629,976	5,696,729,632
Total merchant wholesaler sales, 2012 ($1,000)	(c)	40,606	D	155,426,023	5,208,023,478
Total retail sales, 2012 ($1,000)	(c)	538,962	3,178,620	153,553,997	4,219,821,871
Total retail sales per capita, 2012	(c)	$15,002	$17,556	$13,301	$13,443
Mean travel time to work (minutes), workers age 16 years+, 2012-2016		27	26	23.3	26.1
Median household income (in 2016 dollars), 2012-2016		$58,472	$94,234	$50,674	$55,322
Per capita income in past 12 months (in 2016 dollars), 2012-2016		$28,129	$42,985	$27,800	$29,829
Persons in poverty, percent		9.80%	4.70%	14.60%	12.70%
Total employer establishments, 2016		X	4,447	252,201	7,757,807
Total employment, 2016		X	79,055	4,790,178	126,752,238
Total annual payroll, 2016 ($1,000)		X	4,066,416	218,466,744	6,435,142,055
Total employment, percent change, 2015-2016		X	4.30%	1.50%	2.10%
Total nonemployer establishments, 2015		X	16,658	763,418	24,331,403
All firms, 2012		2,677	16,809	904,814	27,626,360
Men-owned firms, 2012		1,455	9,704	510,078	14,844,597
Women-owned firms, 2012		1,006	5,113	306,824	9,878,397
Minority-owned firms, 2012		149	1,659	122,653	7,952,386
Nonminority-owned firms, 2012		2,373	14,596	759,569	18,987,918
Veteran-owned firms, 2012		320	1,692	91,316	2,521,682
Nonveteran-owned firms, 2012		2,196	14,361	776,193	24,070,685
Population per square mile, 2010		1,833.70	393.2	282.3	87.4
Land area in square miles, 2010		18.95	443.1	40,860.69	3,531,905.43
FIPS Code		"3921434"	"39041"	"39"	"00"

NOTE: FIPS Code values are enclosed in quotes to ensure leading zeros remain intact.

Value Notes

1 - Includes data not distributed by county.

Fact Notes

(a) Includes persons reporting only one race

(b) Hispanics may be of any race, so also are included in applicable race categories

(c) Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data

Value Flags

"-" Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper interval of an open ended distribution.

D - Suppressed to avoid disclosure of confidential information

F - Fewer than 25 firms

FN - Footnote on this item in place of data

NA - Not available
S - Suppressed; does not meet publication standards
X- Not applicable
Z - Value greater than zero but less than half unit of measure shown

Information obtained from:
https://www.census.gov/quickfacts/fact/table/US,delawarecityohio,delawarecountyohio,OH/PST045217 on June 3, 2018

Section 2.2 – Community Infrastructure

The City of Delaware community infrastructure can be defined as a complex system of health care facilities, residential housing, employment opportunities, parks and recreational facilities, education systems, public safety, transportation networks, utility systems and retail establishments that aims to improve the community's quality of life. These services, networks and physical assets work in tandem to form the foundation of a strong neighborhood

Education

Two public school districts

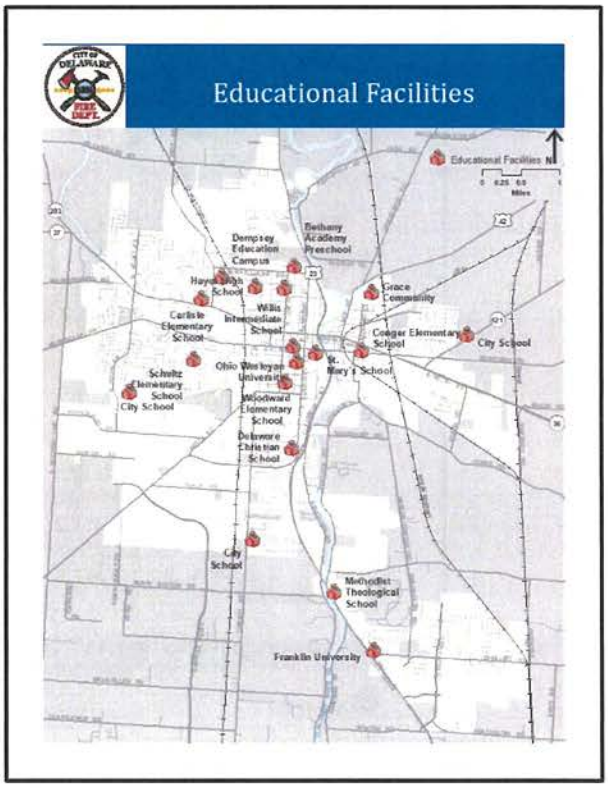
- Elementary Schools 5
  (2,621 Students, 285 Staff)
- Middle Schools 1
  (1,312 Students, 218 Staff)
- High Schools 1
  (1,661 Students, 204 Staff)

Private schools

- St. Mary's Catholic School 1
  (400 Students, 60 Staff, K-8)
- Delaware Christian School 1
  (325 Students, 46 Staff, K-12)
- Grace Community School 1
  (110 Students, 15 Staff, K-8)

University/Colleges

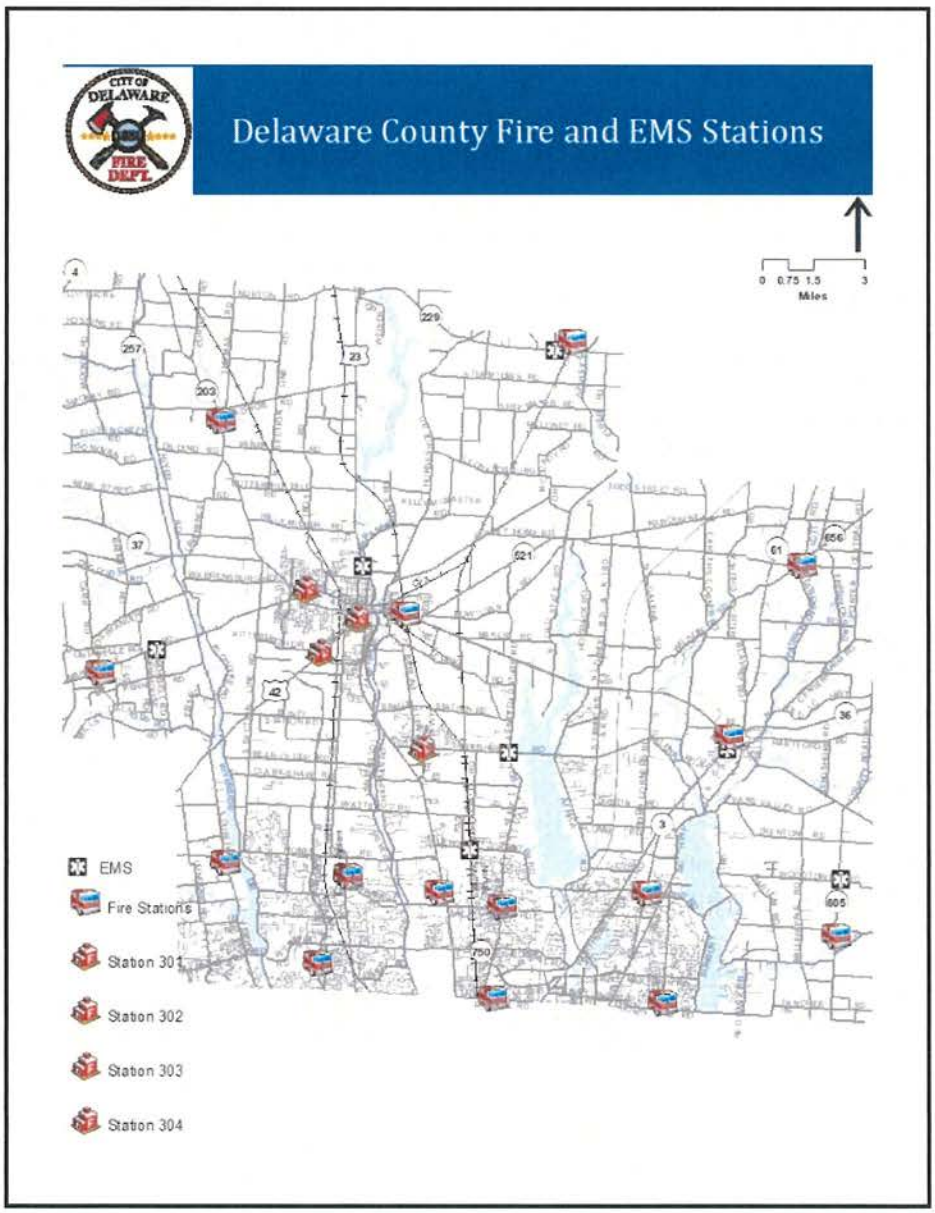
- Ohio Wesleyan University
  (1450 Students, 500 Staff)
- Franklin University
  (10 Students, 2 Staff)
- The Methodist Theological School in Ohio (233 Students, 50 Staff)



See larger map in the Map Section

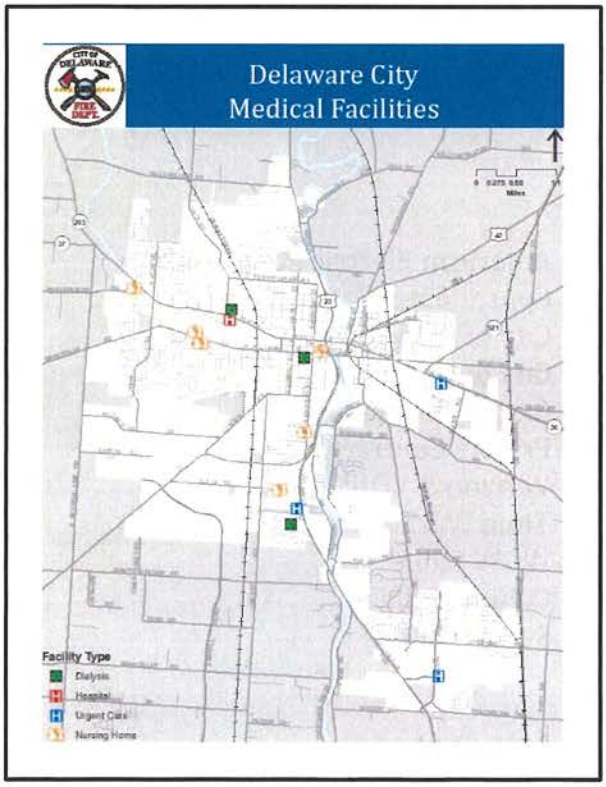
Public Safety Services

- Fire Stations 4
- Police Station/Jail 1
- Sheriff's Department / Jail 1
- Ambulance / EMS Providers (City and DCEMS) 2
- Tri-Township Fire District 1
  Located in City on east side



Health Care

- Hospital (304 Beds) 1
- Dialysis Centers 2
- Nursing Homes, Assisted Living 7



Parks and Recreation

- Belle Ave Park 2 acres
- Blue Limestone Park 16 acres
- Carson Farms Park 8 acres
- Cheshire Park 5 acres
- City Bicentennial Park 3 acres
- Eastside Park 3.5 acres
- Hidden Valley Golf Course 38 acres
- Kensington Place Park 12 acres
- Lexington Glen Park 8 acres
- Lincoln Field 0.2 acres
- Locust Curve Park 3 acres
- Marvin Lane Park 1.5 acres
- Mingo Park 55 acres
  (Community Pool and Recreation Center)
- Nottingham Park 6 acres
- Oakhurst Park 3.5 acres

o Riverview Park	25 acres
o Ross Street Park	1 acres
o Shelbourne Forest Park	6 acres
o Smith Park	50 acres
o Stratford Woods Park	15 acres
o Sunnyview PPG Park	5 acres
o Veterans Park (Delaware Community Center/YMCA/Splash Pad)	28 acres
o Wetlands Park/Dog Park	38 acres

Public Utilities

o Electric Power	American Electric Power & Consolidated Rural Electric
o Water/Sewer	City of Delaware
o Solid Waste/Recycling	City of Delaware
o Commercial Solid Waste	City of Delaware Private Contractors
o Telephone	Verizon & VOIP
o Cable	Time Warner WOW Cable
o Natural Gas	Columbia Gas Suburban Gas

Major Retail Shopping

o Delaware Center	S. Sandusky St.
o Delaware Community Plaza	Columbus Pk.
o Delaware Square	Columbus Pk.
o Downtown Delaware	Sandusky St.
o Georgetowne Center	Troy Rd.
o Glennwood Commons	SR 36/37
o Troy Road Center	Troy Rd.
o Westfield Shopping Center	N. Houk Rd.

Major Residential Complexes

- o Bed and Breakfast (2)
- o Baymont Inn & Suites
- o Comfort Inn
- o Forest Brook Apartments
- o Londontown Apartments
- o Methodist Theological Center
- o Pacer Inn
- o Travelodge
- o Trotter's Landing
- o Willowbrook

- Willowbrook @ Delaware Run

Ohio Wesleyan University Housing

- Bashford Hall – 70 South Liberty
- Hayes Hall – 165 West William
- Smith Hall (East and West) – 38 South Liberty
- Stuyvesant Hall – 223 West William
- Thomson Hall – 62 South Liberty
- Welch Hall – 56 South Liberty
- House of Black Culture – 65 Oak Hill again
- Citizens of the World – 88 Oak Hill
- InterFaith House – 118A Rowland
- House of Linguistic Diversity – 94A Rowland
- House of Spiritual Athletes – 110B Rowland
- Peace & Justice House – 94B Rowland
- Sexuality and Gender Equality House – 118B Rowland
- Tree House – 110A Rowland
- Honors House – 81 Oak Hill
- Panhellenic House – 30 Williams Drive
- 4 Williams Drive
- Bigelow-Reed House – 23 Williams Drive
- Alpha Sigma Phi Fraternity – 9 Williams Drive
- Chi Phi Fraternity – 216 N Franklin Street
- Delta Tau Delta Fraternity – 20 Williams Drive
- Phi Delta Theta Fraternity – 19 Williams Drive
- Phi Gamma Delta Fraternity (Fiji) – 35 Williams Drive
- Sigma Phi Epsilon Fraternity – 10 Williams Drive

Transportation

- Major Highways:
  - 1-71 (to Columbus, Cleveland, Cincinnati)
  - U.S. 23 (to Columbus and Detroit)
  - U.S. 42 (north-south to I-70, I-71)
  - U.S. 36 (east-west through Delaware)
- Air:
  - Delaware Municipal Airport, 40,000 operations per year on 5,800-foot runway.

    (See Map #5 for the Airport Buffer locations)
- Rail:
  - CSX
  - Norfolk Southern Railroads

    (See Map #6 for the Railroad Route locations)

Largest Employers

o OhioHealth (healthcare)	1,500
o The Kroger Company (distribution)	1,100
o Delaware County	1,091
o Delaware City Schools	646
o Ohio Wesleyan University (education)	600
o Advance Auto Parts (distribution)	400
o Vertiv (manufacturing)	350
o PPG (manufacturing)	330
o City of Delaware	301
o Domtar (manufacturing)	300
o Jeg's Automotive (distribution)	250
o Liberty Casting (manufacturing)	230
o International Paper (manufacturing)	175
o Luvata (manufacturing)	150
o Midwest Acoustic Fiber (manufacturing)	150
o Sam Dong Ohio, Inc (manufacturing)	100

Residential Housing

o Median Home Value:	$161,100 (2010 census)
o Housing Units:	1990 - 7,660
	2000 - 10,291
	2006 - 13,523
	2010 – 14,192
	2017 – 16,089

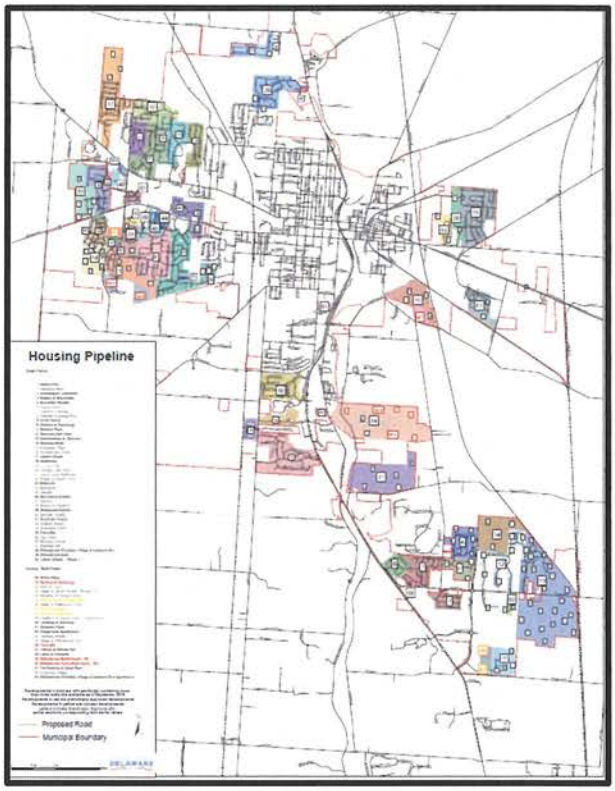
Employment

The following table shows comparative average monthly employment and unemployment statistics for the indicated periods.

	Unemployment Rate		
Year	County	State	U.S.
1994	3.9%	5.5%	6.1%
1995	3.0	4.8	5.6
1996	3.7	4.9	5.4
1997	2.9	4.6	4.9
1998	1.8	3.9	4.3
1999	2.1	4.2	4.2
2000	1.8	4.1	4.0
2001	2.2	4.3	4.8
2002	3.9	5.7	5.8
2003	4.0	6.2	6.0
2004	4.0	6.1	5.5
2005	4.1	6.0	5.1
2006	3.5	5.4	4.5
2012	4.5	6.3	8.1
2017	3.2	4.9	4.1
2018	3.2	4.6	3.9

Section 2.3 - Anticipated Community Growth

Delaware County was the 22nd fastest-growing county in the USA by percentage of growth according to the 2010 Decennial Census, and was #89 in the fastest-growing counties in the US according to the Census Bureau's population estimates from 4/2010 to 7/2017, with 15% growth added 26,250 people to a total of 200,464.



Delaware County is also the No. 1 fastest-growing county in the state of Ohio whether in the 2010 Decennial Census or the Census Estimate between 2010 and 2017, but was No. 2 between July 2016 to July 2017 (Union County was the No. 1 during this period). Between April 2000 and April 2010, the growth rate of Central Ohio (13.96%) was higher than the United States (9.71%) and the State of Ohio (1.62%), as well as other metropolitan areas in Ohio. From 2013 to 2014, Ohio experienced the highest annual growth rate compared to the previous five years.

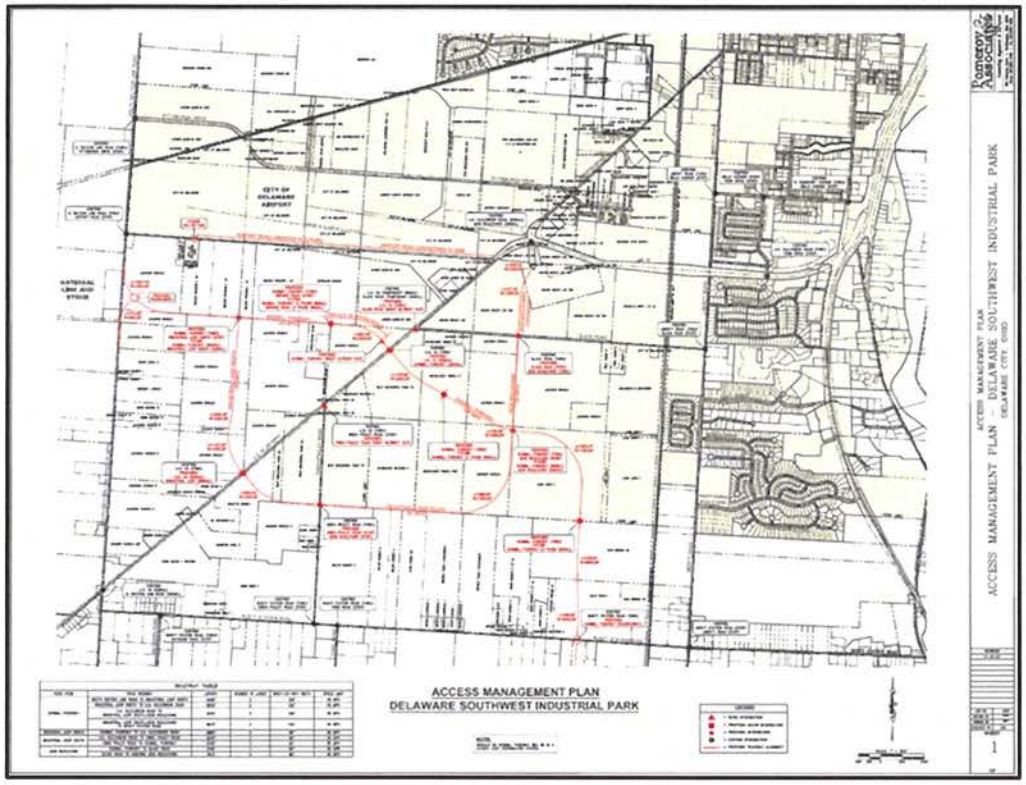
Since 1970, the population growth rate of Franklin County was been lower than the overall growth rate of Central Ohio. This suggests that the growth has spread out over Central Ohio beginning at about that point. Therefore, the Delaware Co. Regional Planning used the population data for the last 40 years to figure projections for the Step-Down method.

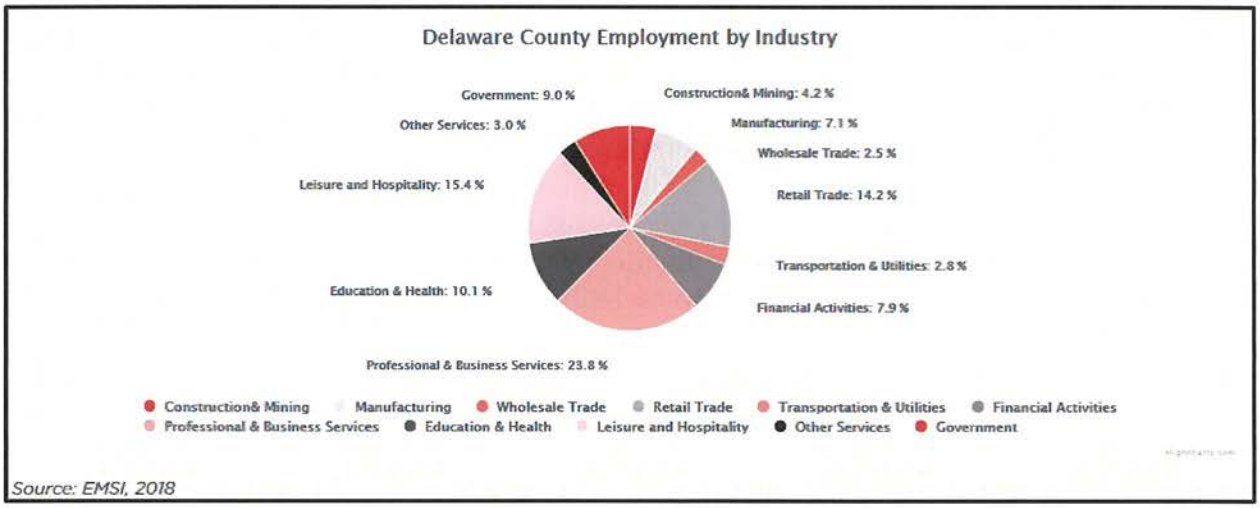
According to the population estimates by the Census Bureau, Delaware County experienced a 1.95% average annual growth rate in population from July 2010 to July 2017, which is lower than the average annual growth rate between 2000 and 2010 (4.71%).

Industry/Economy: The City of Delaware knows the importance of standing out in a competitive, global economy. By identifying its many strengths and marketing them, Delaware has fashioned a brand identity that will carry its economic development efforts into its next successful era. The City of Delaware is a business-friendly, community of opportunity, offering a secure return on investment.

Delaware's economic engine is fueled by strategically focused business attraction, business retention, workforce support, incentives and quality of life. Collaborating regionally, we provide a superior business environment. Our industrial park and strong road, rail and air logistics drive Delaware County's manufacturing base with a diverse mix of national and global industrial leaders that complement our thriving downtown and strong retail

development. Delaware has partnered regionally with Columbus 2020 and Mid-Ohio Regional Planning Commission for economic development.





Residential Growth: According to the Delaware County Regional Planning Commission, the City of Delaware's population is forecasted to increase with residential building permits between 2016-2020 and then begin to slow down over incremental 5-year periods through 2040.

Residential Construction	Single Family	Multi-Family	Other	Condos	2_Family	Total Dwellings	YTD Value
1992	62	8	50	Tracked as Other		120	$8,606,817
1995	157	0	58	Tracked as Other		215	$18,338,004
2000	327	0	2	Tracked as Other		329	$43,353,781
2005	258	265	96	Tracked as Other		619	$73,352,416
2006	189	28	0	Tracked as Other		217	$48,053,336
2007	161	0	41	Tracked as Other		202	$37,405,974
2008	88	0	68	Tracked as Other		156	$22,907,160
2009	99	0	16	Tracked as Other		115	$19,216,794
2010	108	0	24	Tracked as Other		132	$20,066,769
2011	98	0	0	Tracked as Other		98	$19,006,426
2012	117	49		24	14	204	$50,483,337
2013	184	0		129	0	313	$45,565,331
2014	156	88		15	0	259	$46,199,103
2015	180	22		0	2	204	$41,543,596
2016	223	65		16	2	306	$62,377,674
2017	220	0		24	8	252	$67,318,796
2018	364	250		9	0	623	$112,191,029

Data received from City of Delaware Planning and Community Development

Population: According to the Delaware County Regional Planning Commission, the City of Delaware's population is forecasted to increase 15.6% between 2010-2020.

Year	Population	Population Change	Percent Percentage of Change
1960	13,282		
1970	15,008	1,726	13.00%
1980	18,780	3,772	25.13%
1990	20,030	1,250	6.66%
2000	25,243	5,213	26.03%
2005	31,320	6,077	24.07%
2010	35,446	4,126	13.17%
2015	37,952	2,506	7.07%
2017	39,267	1,315	3.46%
2020	40,990	1,723	4.39%
2030	45,459	4,469	10.90%
2040	48,019	2,560	5.63%
Total Build-Out	**106,061**	**66,794**	**170.10%**

Data received from DCRPC 2017 Demographic Information

Year	Building Permits	Percent Change
2011-2015	779	
2016-2020	1276	0.638
2021-2025	1017	-0.203
2026-2030	810	-0.2035
2031-2035	645	-0.2037
2036-2040	514	-0.2031

Data received from DCRPC 2017 Demographic Information

Land use: The City of Delaware is currently in the process of updating the Comprehensive Plan. This is expected to be completed in late 2019 or early 2020. According to the most updated plan known as the 2003-2008 Comprehensive Plan:

> *Within the current City limits, a total of 4,637 acres were undeveloped in the third quarter of 2003. Of that total, 2,109 acres are zoned for residential uses, 380 acres are zoned for commercial uses, 944 acres are zoned for manufacturing uses, 39 acres are zoned for Planned Office/Institutional uses, and 1,164 acres are zoned for agriculture (which is a holding zone in which newly annexed land is placed until it is ready for rezoning and development).*
>
> *The undeveloped land zoned for residential uses could accommodate about 11,768 dwelling units, commercially zoned land could accommodate about 6.6 million square feet of space, and the industrially zoned land could accommodate about 16.4 million square feet of space. However, these are gross estimates that do not take into account the ability to develop particular sites, right-of-way dedications, parkland dedication, market demand, and other similar factors.*

This analysis illustrates the potential for our community growth, and to meet that need, the fire department needs to grow with the community. There are many opportunities for industry, businesses, and new community citizens to move to Delaware, increasing the need for fire and life safety services.

The planned development of the City's Southwest Industrial Park will be driven on the needs of those developing companies and industries. Conceptual plans have been provided; however, how and when these properties are developed will be determined later. The conceptual drawings have been used to determine the department's capabilities to protect the industrial park and maintain the desired response time of a 4-minute travel time.

Section 2.4 - Risk Assessment and Hazard Identification

In order to prepare appropriately for potential disasters and emergencies that might occur

within the jurisdiction, one must have an accurate understanding of the kinds of risks the community might be faced with. As already stated in this document, the goal of the Community Risk Assessment is to evaluate the whole community to allow elected officials, city administration, the fire department and the citizens the ability to make calculated decisions on the level of service desired from their fire, rescue and EMS provider.

The 2016 edition of NFPA 1730 (Organization and Deployment of Fire Prevention Operations) provides direction for the creations of a Community Risk Assessment process. NFPA 1730 states "The purpose of that process is to assist in the development and implementation of a community risk reduction plan and program to reduce, mitigate or eliminate the community's risk". This risk assessment should be reviewed every 5 years.

The 2016 edition of NFPA 1710 (Organization And Deployment Of Fire Suppression Operations By Career Fire Departments) states that "NFPA 1710 is scoped to focus strictly on deployment, staffing, and service levels, it is one component of a total community fire protection planning process".

The National Fire Protection Association (NFPA) and the Federal Emergency Management Association (FEMA) set out the basic definition of a risk assessment, which details the fact that it is "a quantitative and qualitative tool used for measuring the probability of incident occurrence and impact that a given area may experience if certain criteria are met during an incident". These tools can take many forms, from a simple paper survey to a calibrated set of indicators designed to be applied and manipulated for each analyzed area. Information is then prioritized and ranked to assess the importance and degree of preparation needed for each event.

This section identifies how the analysis of the various risks and threats, both natural and man-made, were considered within the City of Delaware. A three step-process was utilized to create the Risk Assessment and Hazard Identification. A similar process was also used to identify the risks as part of the 2018 Delaware Co. Emergency Management Mitigation Plan.

- Step one was to identify all possible natural and man-made incidents that could impact the City of Delaware.
- Step two was to analyze the responses made by Delaware Fire Department to natural and man-made incidents. The approach taken was to evaluate the incidents; probability of an incident occurring, consequences of the incident, and needed resources to handle the incident. The Risk Assessment Score was developed using the Heron's Formula. The following chart identifies the methodology used:

Risk Assessment Methodology		
Probability	0	Greater than Annually
	2	Quarterly/Annually
	4	Monthly
	6	Weekly
	8	Daily
Consequences	0	No People/Vacant Property
	2	Individual/Single Residence or Business
	4	Multiple People/ Residence or Business
	6	Multiple People/ Residence or Business /Financial Impact to City
	8	Mass Quantity People/ Residence or Business /Financial Impact to Region
Resources Needed	0	None
	2	2 or Less Apparatus
	4	3 to 4 Apparatus
	6	4 to 8 Apparatus
	8	Greater than 8 Apparatus
Risk Assessment Score	< 19.5	Low Risk
	19.6-44.0	Medium Risk
	44.1-78.3	Large Risk
	> 78.4	Ultra-High Risk

- Step three was the development of a profile that contains a general description of the nature and behavior of the hazard followed by a summary of the most critical occurrences of the event in the City.

Section 2.5 - Risk Analysis

The identification of the risks the community is exposed to was a lengthy process. In addition to the historical responses made, analysis was conducted using FEMA's Mitigation Ideas book from January 2013. Within the book were various natural risks that communities may be exposed to. The table below identifies the various risks and hazards that have been identified for the City of Delaware. Risks such as sea level rise, hurricanes, tsunamis that are not named have been identified as unlikely or not possible to occur. A detailed risk analysis is provided for each of these risks.

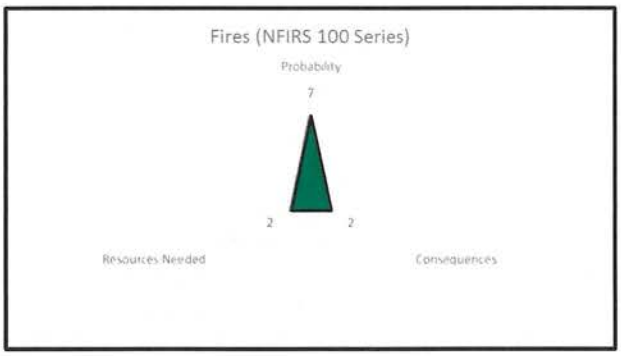
Fire Responses

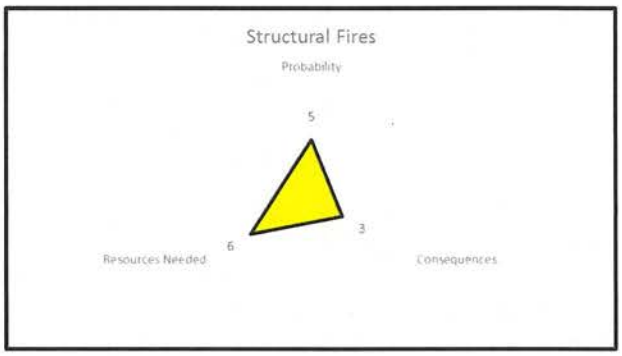
Fire responses were analyzed and based on the past five-years of the NFIRS/OFRIS coding within the 100 series. The fire department has experienced large loss fires in the past. This has included the Delaware Hotel fire in 2009, the downtown fire in 2010 and the Liberty Casting fire in 2012. The risk analysis classified the fire risk into three basic categories. These were structure fires, vehicles fire and all other fires. A detailed list of all fires for the five-year period is provided. Based on the probability, consequences and resources needed, the fire risk in the City of Delaware is a low risk. The exception to this is for structural fires.

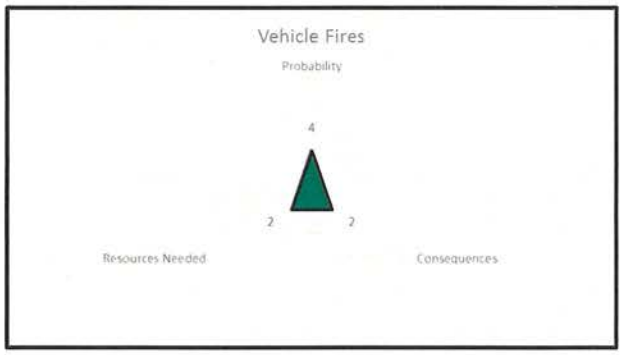
In most cases, the amount of responses have remained consistent over the years, and through continued training and risk reduction activities, the demand for services is expected to remain consistent.

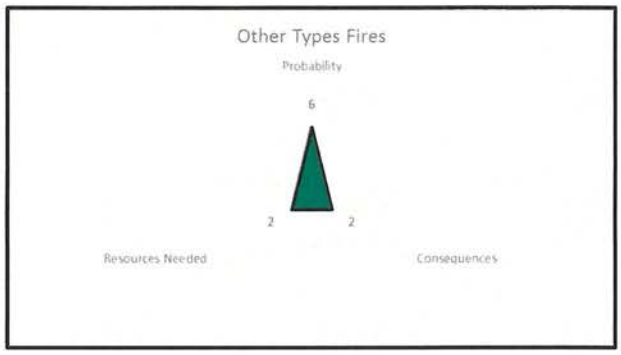
Fire	5-Year Total	2018	2017	2016	2015	2014	5-Year Fire Loss	5-Year Value	5 Year % Saved
Building fire	196	35	42	41	48	30	$3,063,405	$301,519,438	98.98%
Fires in structures other than in a building	4	0	1	1	1	1	$12,700	$1,851,850	99.31%
Cooking fire, confined to container	69	14	17	15	13	10	$10,939	$39,658,406	99.97%
Chimney or flue fire, confined to chimney or flue	6	2	1	1	0	2	$750	$560,000	99.87%
Fuel burner/boiler malfunction, fire confined	3	1	1	1	0	0	$45	$6,598,400	100.00%
Trash or rubbish fire, contained	19	2	6	1	3	7	$116	$14,302,600	100.00%
Fire in Mobile Home	3	1	0	1	1	0	$1,650	$35,500	95.35%
Mobile Property Other	2	0	0	1	0	1	$5,700	$19,900	71.36%
Passenger vehicle fire	73	15	8	10	23	17	$283,300	$544,385	47.96%
Road freight or transport vehicle fire	14	1	2	4	2	5	$69,100	$810,200	91.47%
Aircraft	1	1	0	0	0	0	$0	$0	
Self-propelled motor home or recreational vehicle	5	3	1	1	0	0	$44,150	$54,000	18.24%
Natural vegetation fire, other	17	5	7	2	3	0	$1,260	$263,660	99.52%
Forest, woods or wildland fire	4	1	1	1	0	1	$0	$1,150	100.00%
Brush, or brush and grass mixture fire	19	3	2	4	7	3	$800	$282,100	99.72%
Grass fire	9	0	5	2	1	1	$5	$342,600	100.00%
Outside rubbish, trash or waste fire	74	21	10	10	18	15	$1,460	$2,108,680	99.93%
Garbage Dump	2	1	0	1	0	0	$0	$0	N/A
Dumpster or other outside trash receptacle fire	20	2	4	7	3	4	$5,600	$24,450	77.10%
Outside stationary compactor/compacted trash fire	7	0	1	2	1	3	$8,700	$2,503,000	99.65%
Outside equipment fire	9	3	1	2	2	1	$4,600	$802,900	99.43%
	556	111	110	108	126	101	$3,514,280	$372,283,219	99.06%

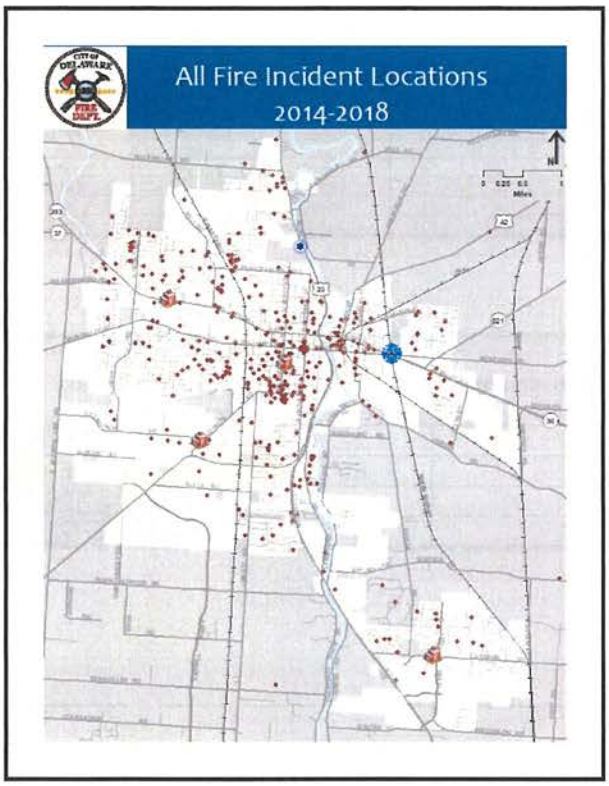
	Probability	Consequences	Resources Needed	Risk Assessment Score	Risk
Fires (NFIRS 100 Series)	7	2	2	14.28	Low
Structural Fires	5	3	6	26.92	Medium
Vehicle Fires	4	2	2	8.49	Low
Other Types Fires	6	2	2	12.33	Low











5- Year Fire Response Locations (2014-2018)

Downtown Building Fire

Emergency Medical

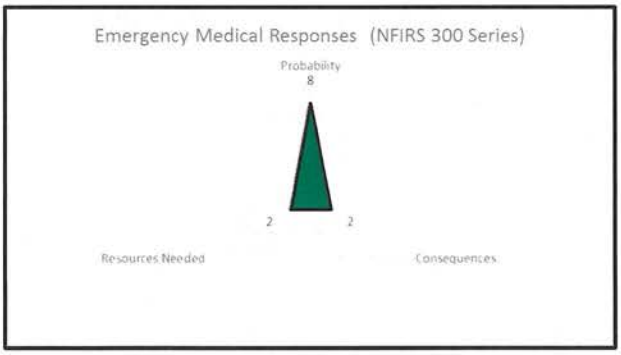
Emergency medical responses account for approximately 81% of the department's incidents. The Delaware County Communication Center, known as DelComm (county-wide 911 Communication and PSAP Center), use the Association of Public-Safety Communications Officials emergency medical dispatching (EMD) system. Emergency medical dispatching applies a systems approach to ensure the quality management of emergency medical dispatch activities by allowing dispatchers to screen callers and determine a nature code. Based on the nature code and the risk, an appropriate assignment of apparatus and resources are sent to effectively manage the emergency. Responses can be upgraded or downgraded based on additional information received.

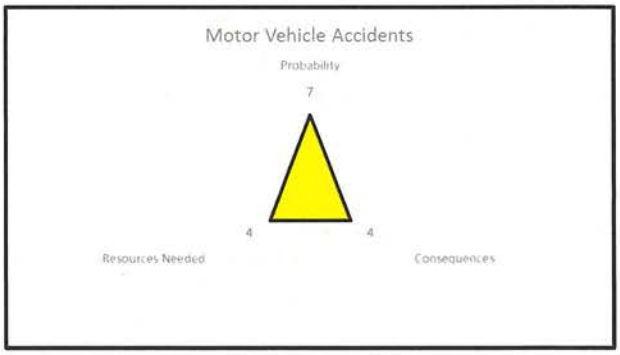
Over the past five-years, medical responses have grown by 14%. With the growth in the

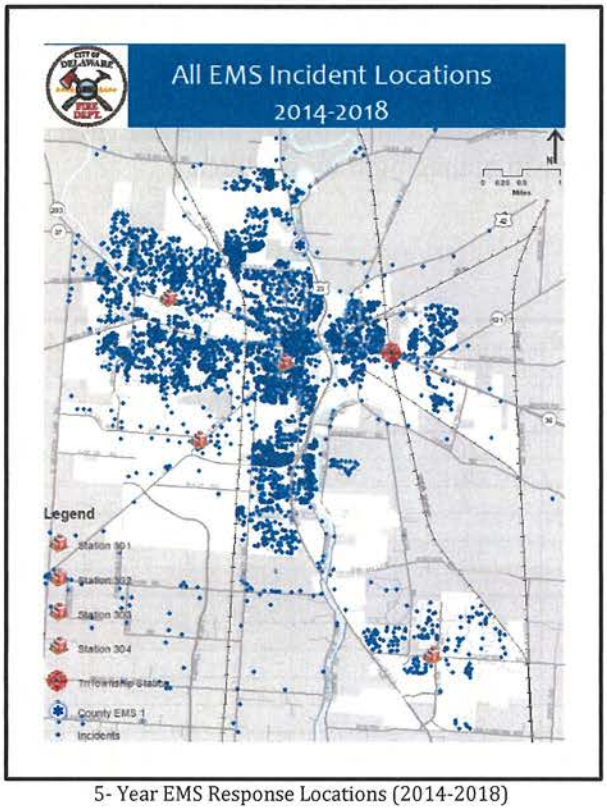
community and the continued aging of population, the demand for medical services is expected to grow. In 2013, the Department implemented the use of service coordinators to assist in linking non-emergency services to people in need, and reduce the impact upon emergency services. The Department is also researching the use of a community paramedicine program to assist in meeting the unmet medical needs and assisting the community in managing their healthcare.

EMS/Rescue	5-Year Total	2018	2017	2016	2015	2014
EMS call, excluding vehicle accident with injury	20,687	4,243	4,177	4,404	4,010	3,853
Vehicle accident with injuries	779	158	152	173	165	131
Motor vehicle/pedestrian accident (MV Ped)	61	13	16	17	10	5
Motor vehicle accident with no injuries	118	26	24	27	23	18
Lock-in	6	0	0	1	4	1
Extrication	10	3	0	2	3	2
Search for person in water	5	1	3	0	1	0
Removal of victim(s) from stalled elevator	30	8	10	4	6	2
Confined Space Rescue	2	0	0	0	2	0
Ice Rescue	1	0	0	0	0	1
Trench/below grade rescue	2	0	1	1	0	0
High Angle Rescue	1	0	0	0	1	0
Swift water rescue	5	2	1	1	1	0
Rescue or EMS standby	164	37	35	28	31	33
	21,871	**4,491**	**4,419**	**4,658**	**4,257**	**4,046**

	Probability	Consequences	Resources Needed	Risk Assessment Score	Risk
Emergency Medical Responses (NFIRS 300 Ser	8	2	2	16.25	Low
Motor Vehicle Accidents	7	4	4	30.20	Medium







5- Year EMS Response Locations (2014-2018)

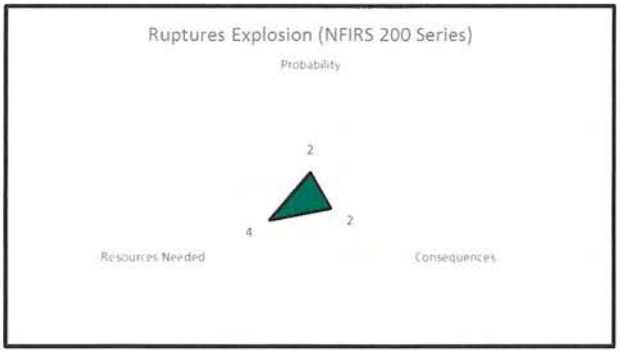
Motor Vehicle Crash US 23

Dangerous Situations

Dangerous situation responses were analyzed and based on the NFIRS/OFRIS coding within the 200, 400 and 500 series. Dangerous situations include a multitude of emergencies, such as reponses for ruptures/explosions (200 series), flammable liquids/gas leaks, hazardous material incidents, electrical issues, building collapses (400 series) and assisting the general public (500 series). Requests for these services have grown and are expected to continue to grow. One of the largest areas for the increase is the request to assists invalids. This is an area where the Department anticipates the Service Coordinators and the future Community Paramedics could provide assistance.

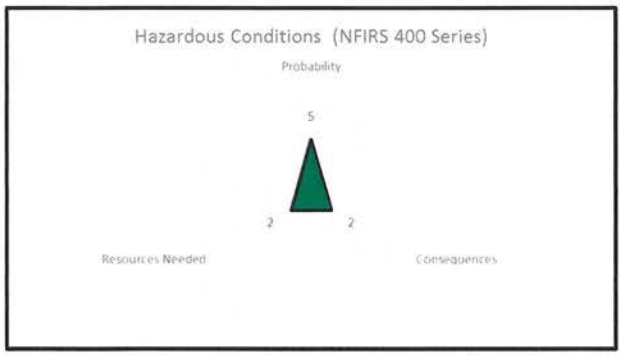
Rupture/Explosion	5-Year Total	2018	2017	2016	2015	2014
Overpressure rupture from steam, other	1	0	1	0	0	0
Fireworks Explosion (No Fire)	1	1	0	0	0	0
Explosion - No Fire	2	1	0	0	0	1
Excessive heat, scorch burns with no ignition	14	1	6	4	1	2
	18	**3**	**7**	**4**	**1**	**3**

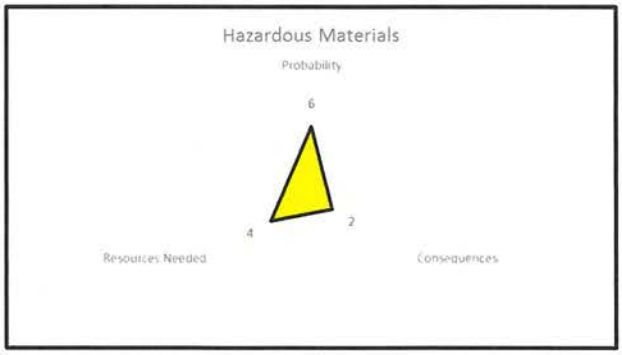
	Probability	Consequences	Resources Needed	Risk Assessment Score	Risk
Ruptures Explosion (NFIRS 200 Series)	2	2	4	8.49	Low

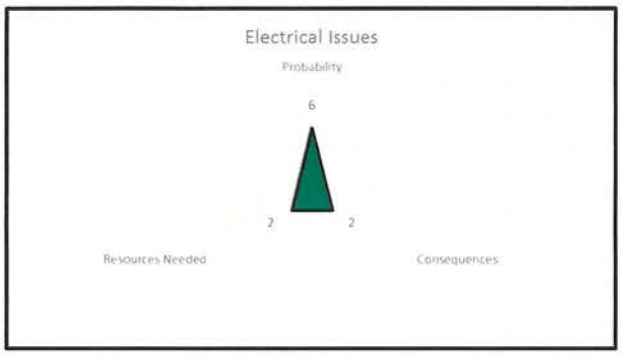


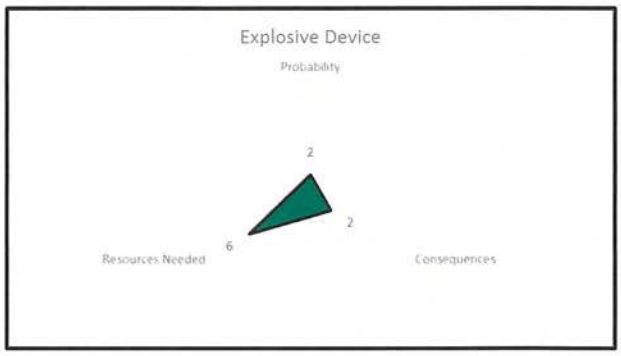
Hazardous Condition	5-Year Total	2018	2017	2016	2015	2014
Gasoline or other flammable liquid spill	49	12	14	12	5	6
Gas leak (natural gas or LPG)	232	54	45	36	53	44
Oil or other combustible liquid spill	24	4	5	4	7	4
Chemical spill or leak	33	7	7	5	10	4
Refrigerant Leak	1	1	0	0	0	0
Carbon monoxide incident	63	11	7	15	13	17
Electrical wiring/equipment problem, other	61	12	14	17	11	7
Heat from short circuit (wiring), defective/worn	17	4	3	4	2	4
Overheated motor	23	7	5	5	3	3
Light ballast breakdown	3	0	1	0	2	0
Power line down	135	28	34	35	19	19
Arcing, shorted electrical equipment	65	19	11	14	7	14
Accident, potential accident, other	1	0	1	0	0	0
Vehicle accident, general cleanup	2	0	1	0	1	0
Biological Hazard	2	0	0	1	0	1
Aircraft Stand-by	1	0	0	1	0	0
Explosive, bomb removal (for bomb scare, use 721)	4	0	1	1	2	0
Building Collapse	1	0	0	0	0	1
Attempt to Burn	0	0	0	0	0	0
	717	**159**	**149**	**150**	**135**	**124**

	Probability	Consequences	Resources Needed	Risk Assessment Score	Risk
Hazardous Conditions (NFIRS 400 Series)	5	2	2	10.39	Low
Hazardous Materials	6	2	4	19.80	Medium
Electrical Issues	6	2	2	12.33	Low
Explosive Device	2	2	6	12.33	Low



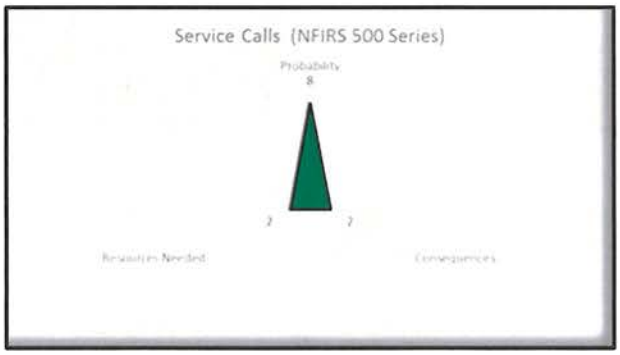


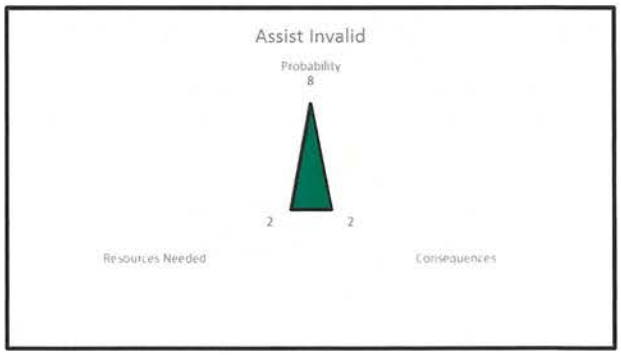


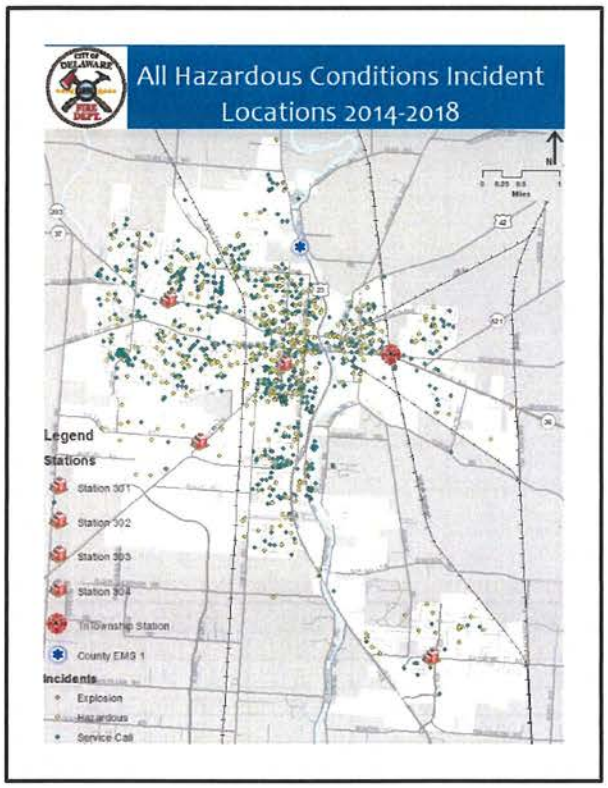


Service Call	5-Year Total	2018	2017	2016	2015	2014
Service Call, other	11	2	2	3	2	2
Person in distress, other	13	1	1	3	6	2
Lock-out	40	11	11	6	9	3
Water problem, other	17	3	4	2	5	3
Water or steam leak	56	12	10	5	8	21
Smoke or odor removal	79	12	10	26	7	24
Animal rescue	25	7	3	5	5	5
Public service assistance, other	27	7	5	7	3	5
Assist police or other governmental agency	33	8	7	7	3	8
Police matter	8	1	2	2	1	2
Public service	82	20	25	12	16	9
Defective Elevator, No Occupants	1	1	0	0	0	0
Assist invalid	758	422	250	25	43	18
Unauthorized burning	159	32	19	23	47	38
Cover assignment, standby, moveup	6	1	2	2	0	1
	1,315	**540**	**351**	**128**	**155**	**141**

	Probability	Consequences	Resources Needed	Risk Assessment Score	Risk
Service Calls (NFIRS 500 Series)	8	2	2	16.25	Low
Assist Invalid	8	2	2	16.25	Low







5- Year Hazardous Conditions Response Locations (2014-2018)

Hydrochloric Acid Sill US 23 & US 42

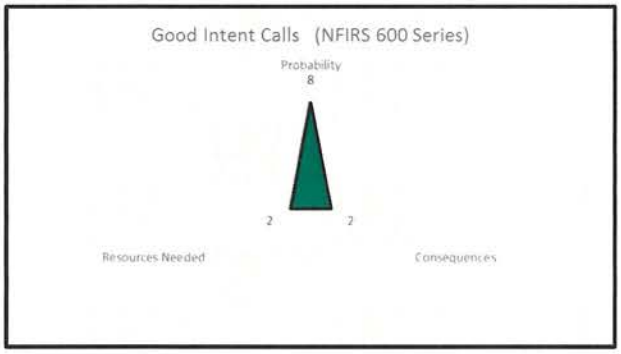
Appendix E – Top Chemicals Transported in Bulk by Rail through Delaware County

Good Intent and False Calls

Good Intent and False Call responses were analyzed and based on the NFIRS/OFRIS coding within the 600 and 700 series.

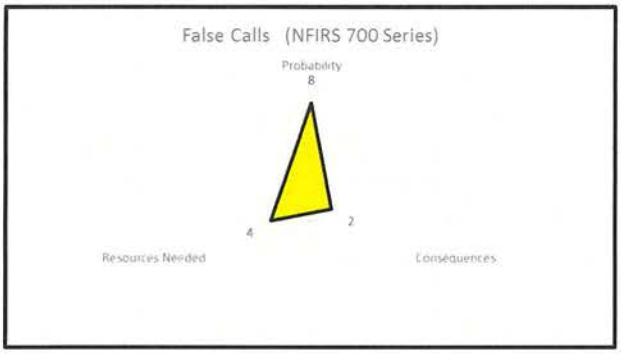
Good Intent	5-Year Total	2018	2017	2016	2015	2014
Good intent call, other	5	1	1	0	3	0
Dispatched & cancelled en route	557	134	130	114	82	97
Wrong Location	6	2	0	2	0	2
No incident found on arrival at dispatch address	83	24	28	14	4	13
Authorized controlled burning	40	6	18	7	5	4
Prescribed fire	9	0	6	0	0	3
Steam, other gas mistaken for smoke, other	11	1	3	2	3	2
Smoke scare, odor of smoke	178	45	38	34	30	31
Steam, vapor, fog or dust thought to be smoke	22	7	2	7	4	2
EMS Call, Party Tx non-fire	2	0	0	2	0	0
Barbecue, tar kettle	3	0	1	0	2	0
Hazmat release investigation w/ no hazmat	140	47	32	31	22	8
	1,056	**267**	**259**	**213**	**155**	**162**

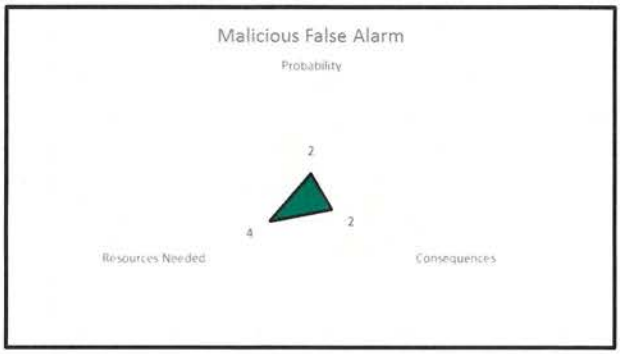
	Probability	Consequences	Resources Needed	Risk Assessment Score	Risk
Good Intent Calls (NFIRS 600 Series)	8	2	2	16.25	Low

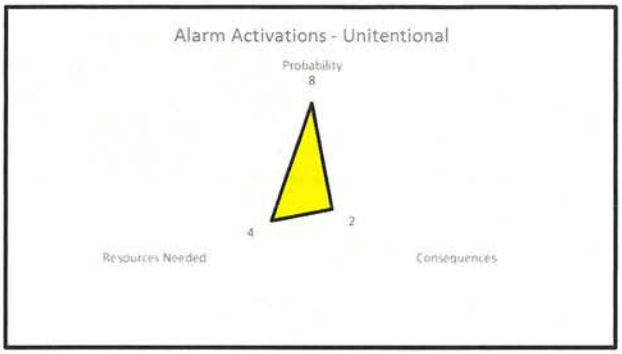


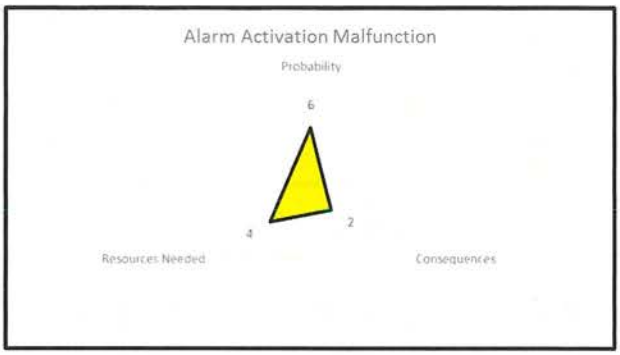
False Call	5-Year Total	2018	2017	2016	2015	2014
False alarm or false call, other	8	1	2	2	1	2
Malicious, mischievous false call, other	14	1	5	4	2	2
Local alarm	3	0	0	1	0	2
Central station, malicious false alarm	20	4	6	5	3	2
Bomb scare - no bomb	6	1	2	2	0	1
System malfunction	8	1	0	1	3	3
Sprinkler activation due to malfunction	18	3	2	2	5	6
Extinguishing system activation due to malfunction	4	1	1	1	0	1
Smoke detector activation due to malfunction	213	49	43	30	44	47
Alarm system sounded due to malfunction	196	39	45	47	29	36
CO detector activation due to malfunction	84	15	19	17	17	16
Unintentional transmission of alarm, other	69	7	13	15	17	17
Medical Alarm, False, other	781	200	167	154	140	120
Sprinkler activation, no fire - unintentional	47	8	5	12	8	14
Smoke detector activation, no fire - unintentional	690	137	158	149	113	133
Detector activation, no fire - unintentional	259	69	64	64	33	29
Alarm system sounded, no fire - unintentional	491	107	69	89	101	125
Carbon monoxide detector activation, no CO	125	28	14	25	25	33
	3,036	**671**	**615**	**620**	**541**	**589**

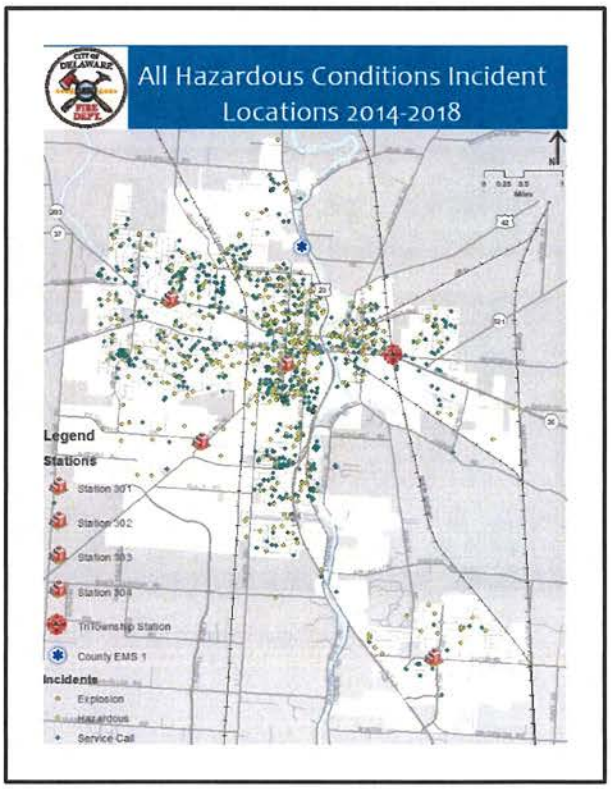
False Calls (NFIRS 700 Series)	8	2	4	25.92	Medium
Malicious False Alarm	2	2	4	8.49	Low
Alarm Activations - Unitentional	8	2	4	25.92	Medium
Alarm Activation Malfunction	6	2	4	19.80	Medium











5- Year Hazardous Conditions Response Locations (2014-2018)

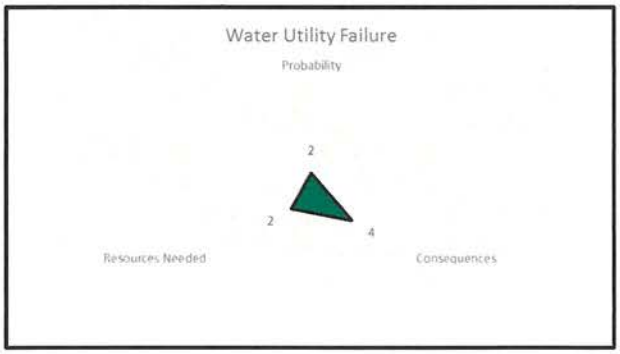
Smoke Scare involving the duct system of manufacturing plant

Utility Failure

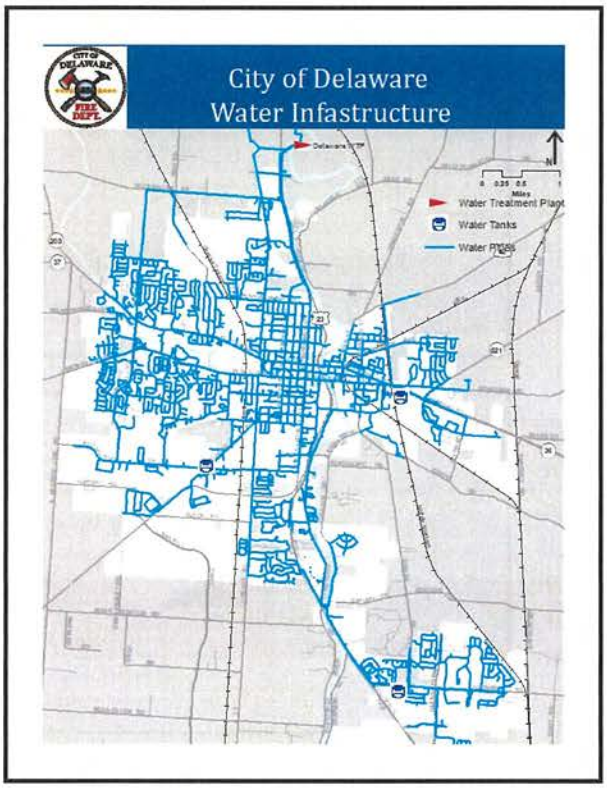
Utility failure is an uncommon event and the impact to the community is typically to a localized area that is without the utility for a short period of time (1-8 hours). Utilities that are considered of importance include water, sewer, gas and electric. The reliability of these utility systems overall is greater than 99.9% of the time, or less than 8 hours annually. The exception to this would be scheduled maintenance of the system with advance notice to the customers.

	Probability	Consequences	Resources Needed	Risk Assessment Score	Risk
Utility Failure	2	4	2	8.49	Low
Water Utility Failure	2	4	2	8.49	Low
Sewer Utility Failure	2	4	0	5.66	Low
Gas Utility Failure	0	4	4	11.31	Low
Electric Utility Failure	2	4	2	8.49	Low

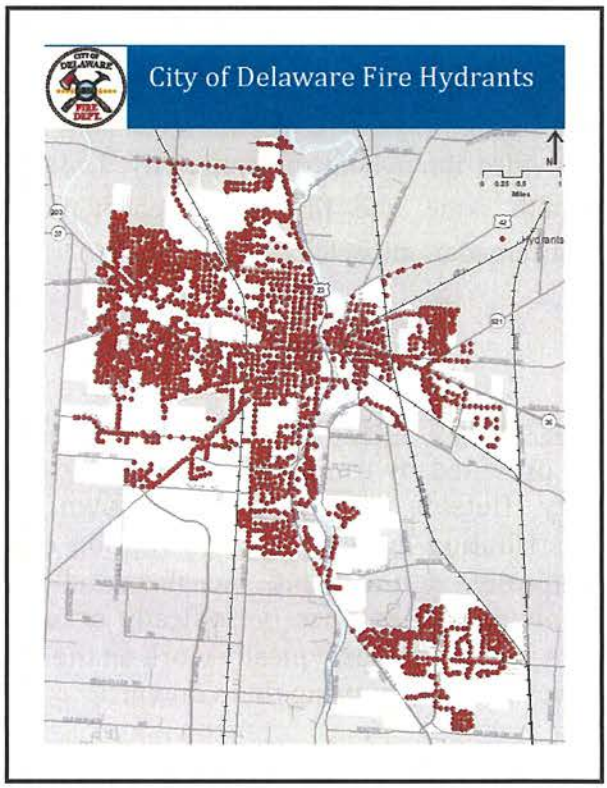
Water Utility Failure – Water service is provided by the City of Delaware Public Utility Department and is provided throughout the entire city. When water outages occur regardless of scheduled/non-scheduled, Public Utility makes contact with the fire department. A brief overview of the impacted area is provided. Contact is then made when the water is restored. Water outages can go up to 8 hours when maintenance is being performed.



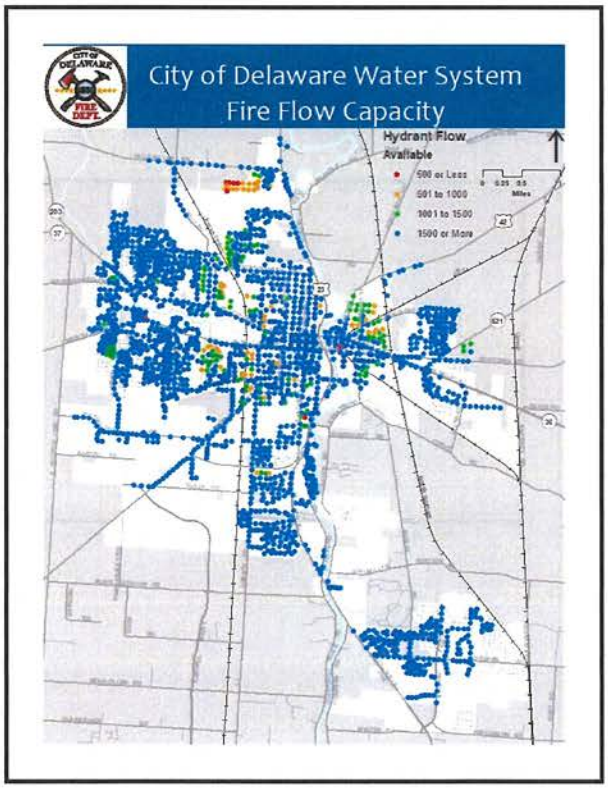
Public Utilities conducts maintenance on fire hydrants



City Water System (Treatment Plant, Tanks, and Water Lines)

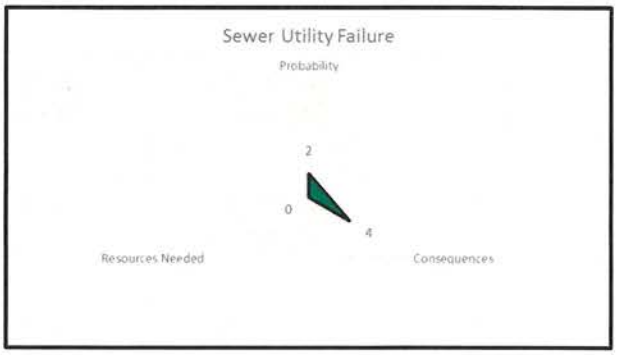


City Fire Hydrant Coverage

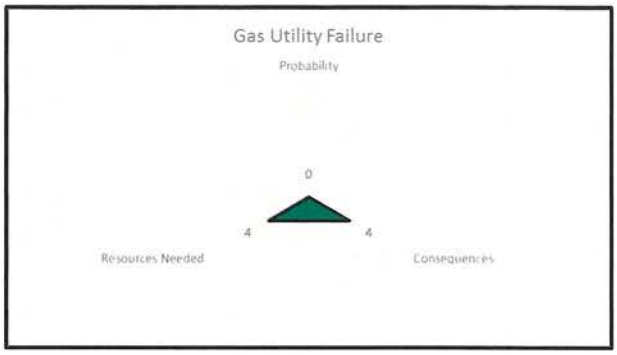


Capacity City Fire Flow

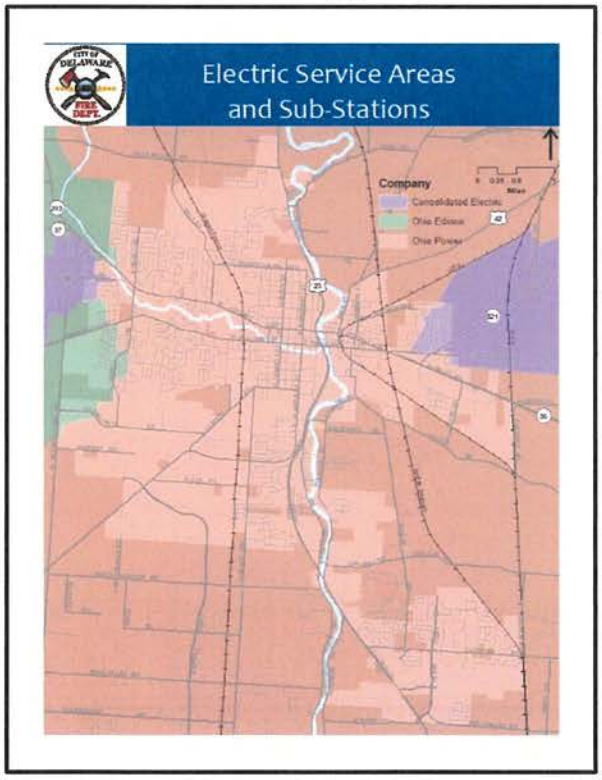
Sewer Utility Failure – Sewer service is provided by the City of Delaware Public Utility Department and is provided throughout the entire city. Unless there is a health issue, the fire department typically is not concerned or impacted.

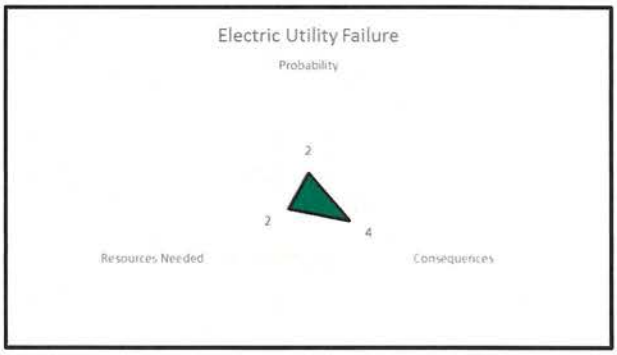


Gas Utility Failure – Natural and propane gas service is provided by a multitude of agencies within the city. Outside of a major shut-down of the gas distribution system, the interruption of service is typically non-existent. Localized shut-down of individual lines does periodically occur, however, the gas companies typically work on the distribution lines without shutting them down.



Electric Utility Failure – Electric service is provided mainly by American Electric Power and Consolidated Electric. There are a couple of other service providers in the city, however these are provided to specific pieces of property. Electric service is provided throughout the entire city. Electric outages are typically the result of an event (i.e. storm, transformer issue, motor vehicle accident) and are typically limited to being out for 1-2 hours.



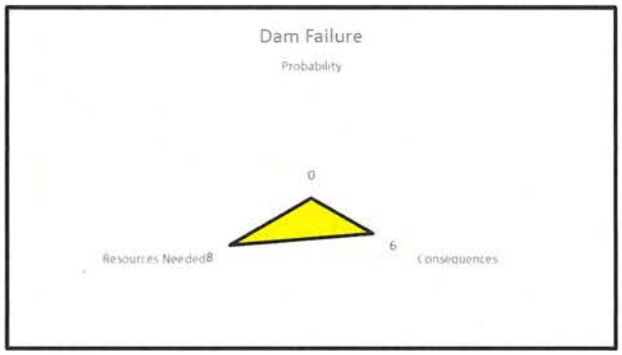


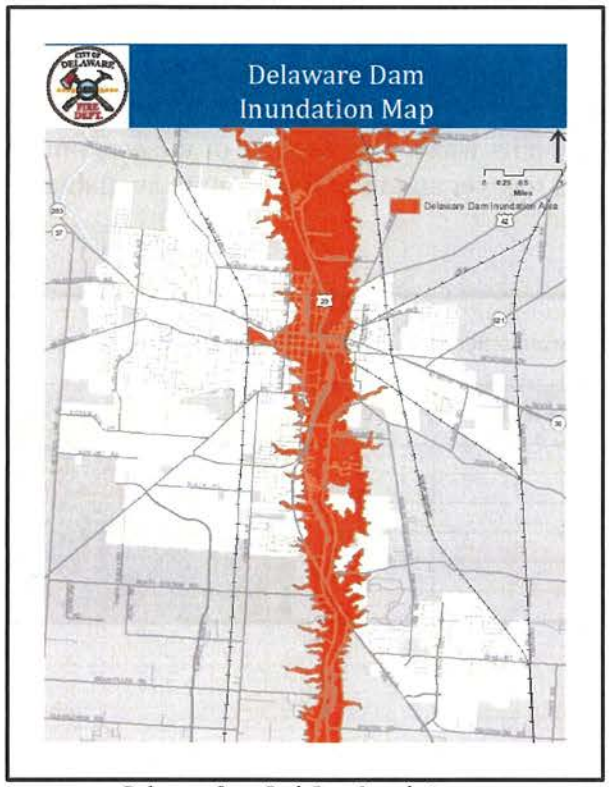
Natural Hazards

A natural disaster is a major adverse event resulting from a natural processes of the Earth; including but not limited to, dam failures, droughts, earthquakes, flooding, severe summer storms, severe winter storms, and tornadoes. A natural disaster can cause loss of life or property damage, and typically leaves some economic damage in its wake. The severity of the economic damage depends on the affected population's ability to recover and the infrastructure available.

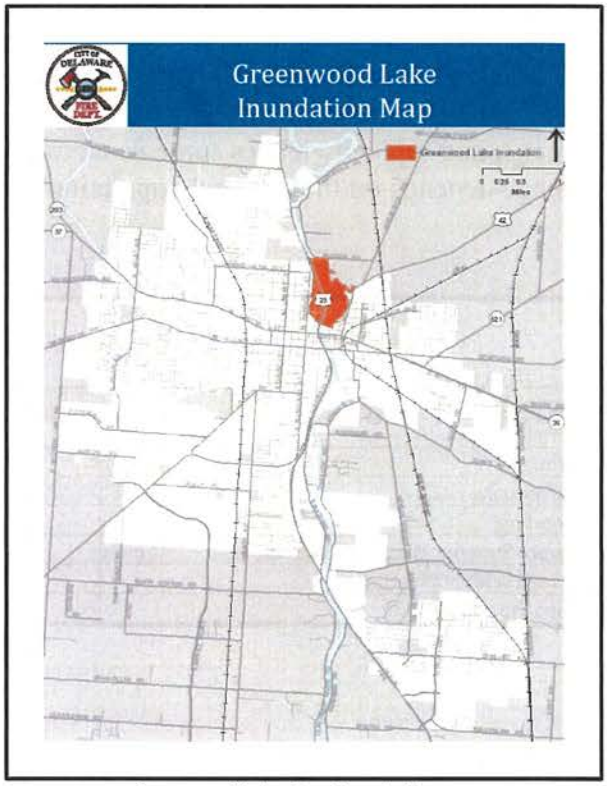
	Probability	Consequences	Resources Needed	Risk Assessment Score	Risk
Natural Hazards					
Dam Failure	0	6	8	33.94	Medium
Drought	0	4	2	5.66	Low
Earthquake	0	8	8	45.25	High
Flooding	2	4	4	13.86	Low
Severe Summer Weather/Extreme Heat (This inclu	2	4	2	8.49	Low
Severe Winter Weather	2	4	2	8.49	Low
Tornado	0	4	6	16.97	Low

Dam Failure – Delaware has two Class I dams that can impact the City. These are the Delaware State Lake Dam and Camp Greenwood Lake Dam. A dam failure is considered a catastrophic type of failure characterized by the sudden, rapid, and uncontrolled release of impounded water or the likelihood of such an uncontrolled release. It is recognized that there are lesser degrees of failure and that any malfunction or abnormality outside the design assumptions and parameters that adversely affect a dam's primary function of impounding water is properly considered a failure. These lesser degrees of failure can progressively lead to or heighten the risk of a catastrophic failure.



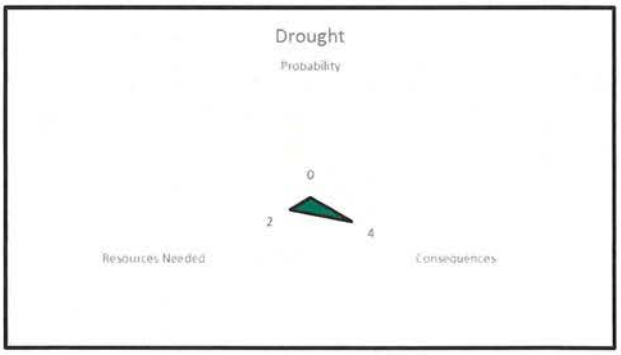


Delaware State Park Dam Inundation

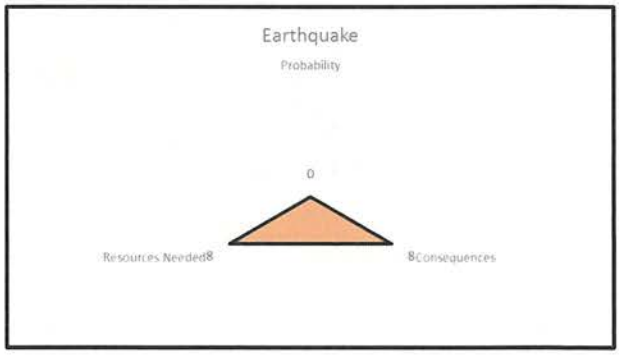


Greenwood Lake Dam Inundation

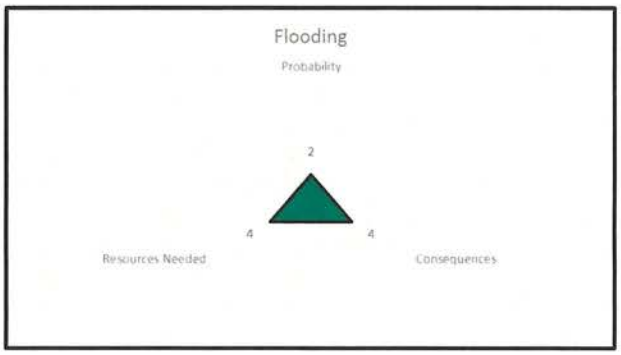
Drought – A drought is a period of unusually dry weather that persists long enough to cause deficiencies in the water supply (surface or underground). The City of Delaware has a potential for a drought. Steps have been taken to mitigate a drought and/or a flood through the building of the Delaware State Park Dam.

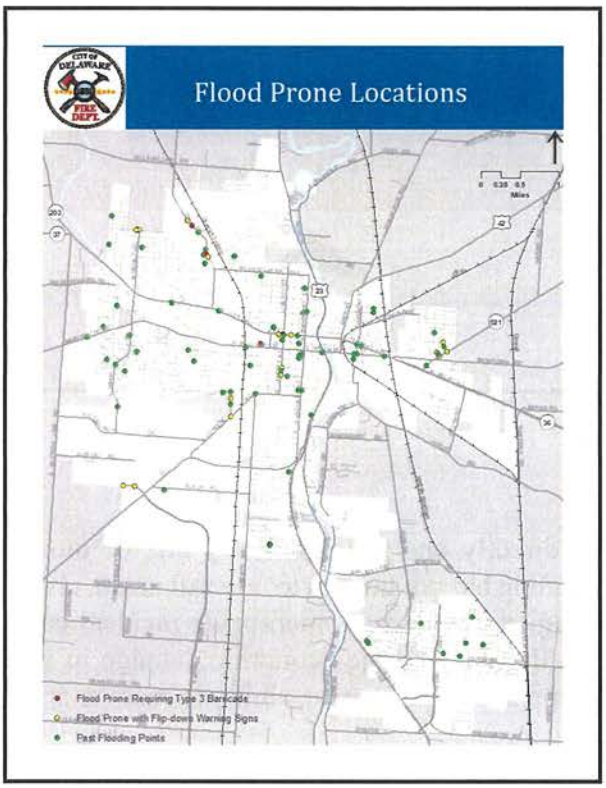


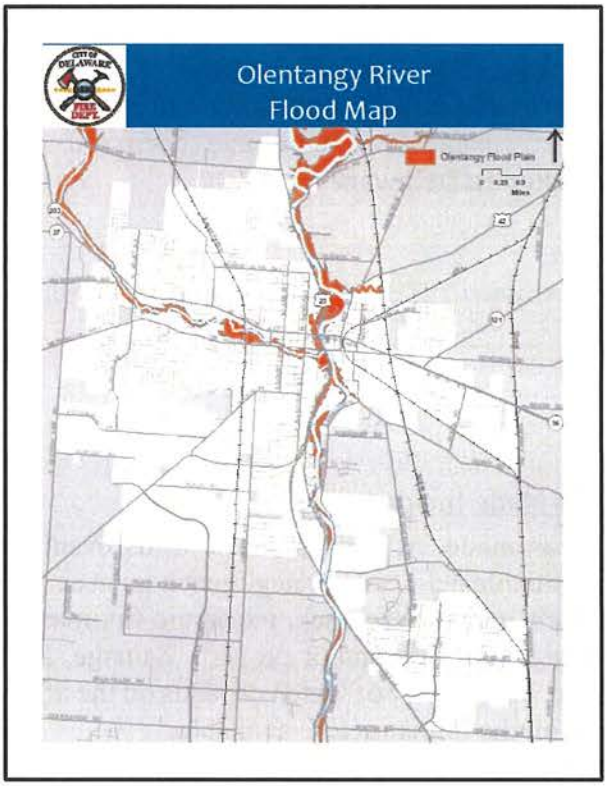
Earthquake – An earthquake is a sudden release of energy that creates a movement in the earth's crust. The City of Delaware has seen some minor seismic activity over the years. The Division of Geological Survey of the Ohio Department of Natural Resources coordinates the network from the Ohio Earthquake Information Center at the Division's laboratory facilities at Alum Creek State Park near Delaware, Ohio.



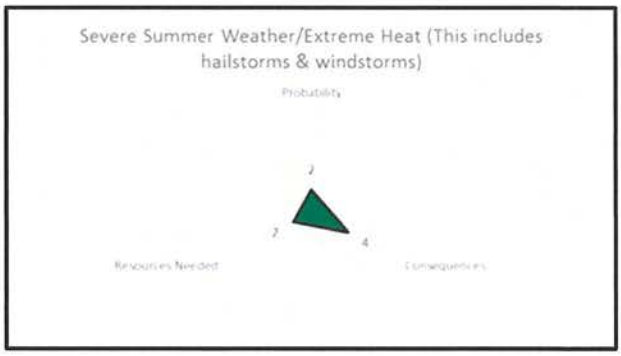
Flooding – The City of Delaware experiences flash flooding throughout the year. While flooding is typically seen as part of severe summer weather events, prolonged rain or snow events in other seasons can cause flooding issues. Steps have been taken to mitigate a flood through the building of Delaware State Park Dam.



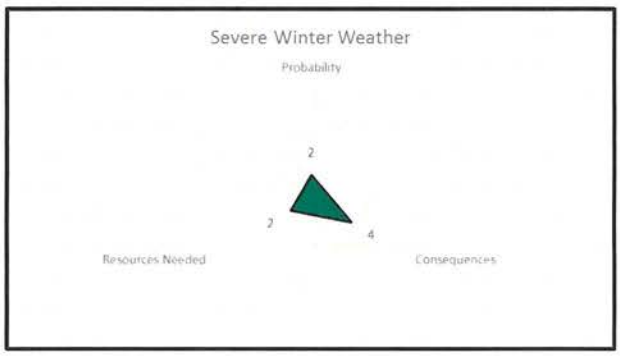




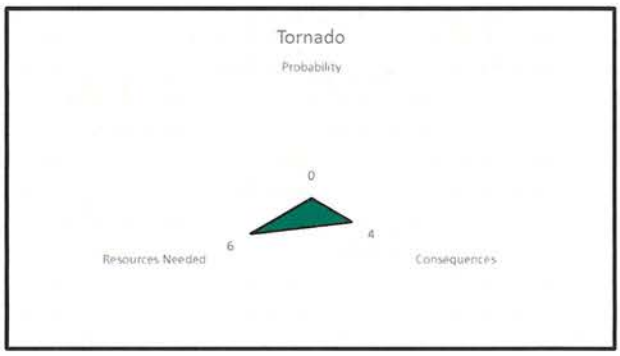
Severe Summer Weather – The City of Delaware sees severe weather at times during the summer. Severe summer weather includes, severe thunder storms, high winds, extreme temperatures and hail.



Severe Winter Weather – The City of Delaware experiences severe winter weather during the winter months. Severe winter weather includes, snow, sleet, ice storms, extreme cold temperatures, high wind and blizzards. These storms typically down trees, causes power outages, damage property, as well as cause injuries and fatalities.



Tornado – The City of Delaware is vulnerable to tornados. While there have not been any recent tornadoes, they have occurred on occasion in Delaware Co.

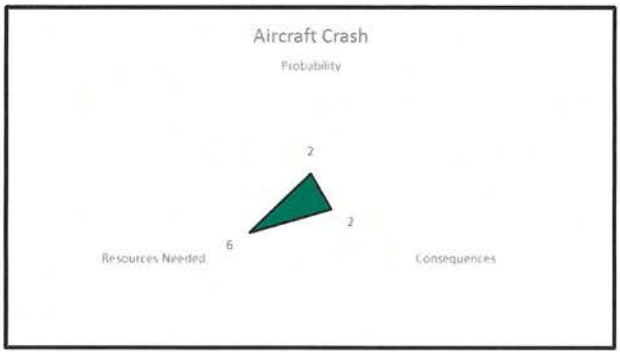


Man-Made Incidents

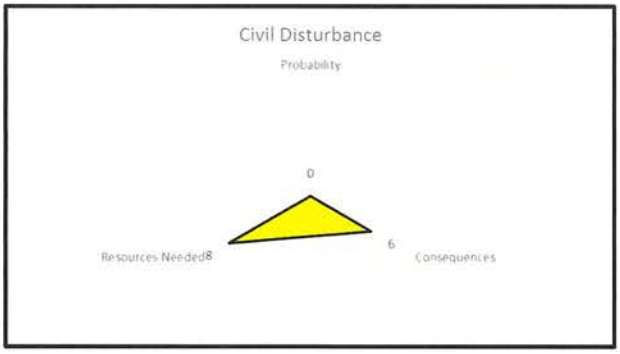
A man-made incident is a disastrous event caused directly and principally by one or more identifiable deliberate or negligent human actions including but not limited to; aircraft crash, civil disturbance, cyber-attack, pandemic flu, mass shooting or terrorism. A man-made incident can cause loss of life and/or property damage, and typically leaves some economic damage in its wake, the severity of which depends on the affected population's resilience, ability to recover and also on the infrastructure available.

	Probability	Consequences	Resources Needed	Risk Assessment Score	Risk
Man-Made Incidents					
Aircraft Crash	2	2	6	12.33	Low
Civil Disturbance	0	6	8	33.94	Medium
Cyber	0	2	2	2.83	Low
Pandemic	0	8	8	45.25	High
Shooting	2	2	4	8.49	Low
Terrorism	0	6	8	33.94	Medium
Utility Failure	4	4	2	13.86	Low

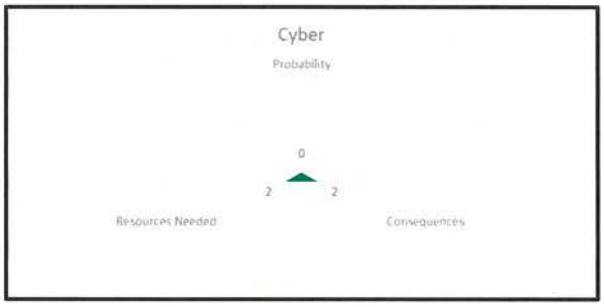
Aircraft Crash – The City of Delaware is home to a Municipal Airport. The airport does not have a control tower so it operates under visual fly rules. The 5,800 foot runway allows for aircraft including Cessna/Gulfstream aircraft to take off and land.



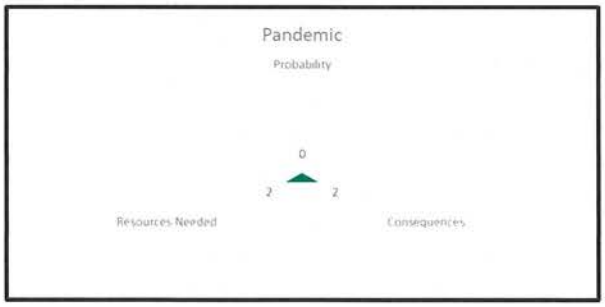
Civil Disturbance – The City of Delaware is home to numerous special events and various activities. The Police Department and the City have and continues to maintain an outstanding proactive relationship with the community.



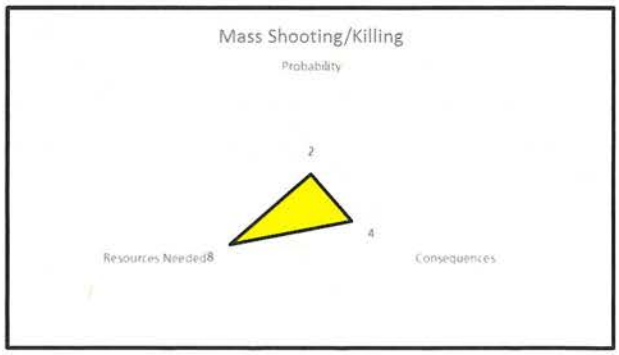
Cyber Attack – A cyberattack is any type of offensive operation that targets computer information systems, infrastructures, computer networks, or personal computer devices. These attacks tend to be focused on individual businesses and individuals.



Pandemic – A pandemic is the worldwide spread of a new disease. An influenza pandemic occurs when a new influenza virus emerges and spreads around the world, and most people do not have immunity. Viruses that have caused past pandemics typically originated from animal influenza viruses.



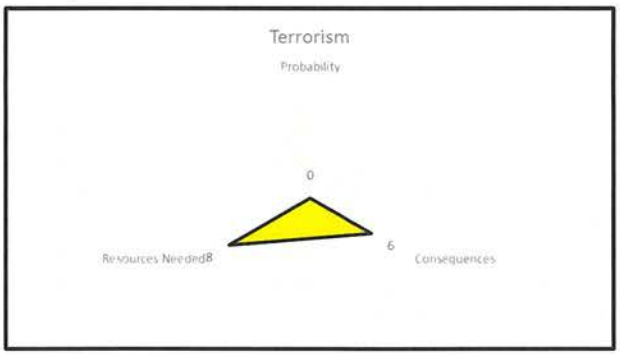
Mass Shooting/Killing – A mass shooting or killing is an incident involving multiple victims of firearms-related or other type of violence. Located in the City are locations such as schools, places of worship, universities, businesses and special events where these types of incidents have occurred across the country.

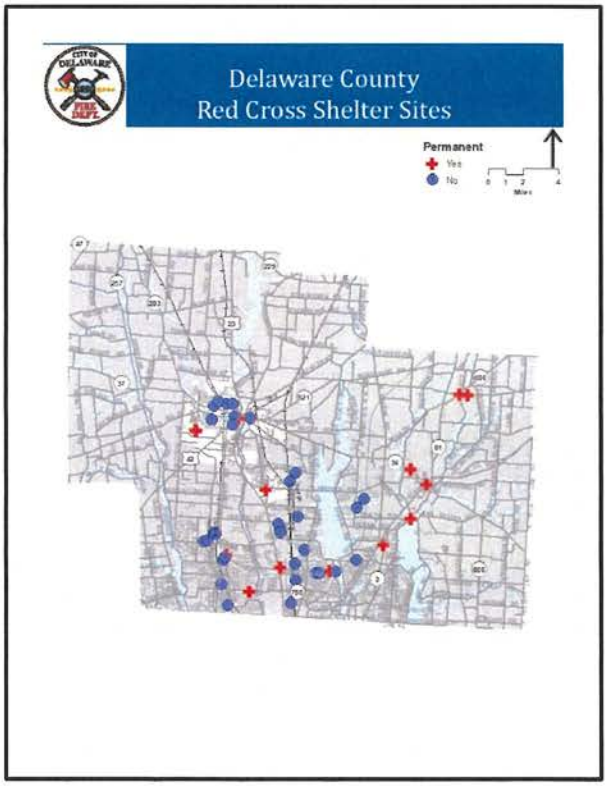


Terrorism (Domestic and Interntional)

International terrorism: Is perpetrated by individuals and/or groups inspired by or associated with designated foreign terrorist organizations or nations (state-sponsored).

Domestic terrorism: Is perpetrated by individuals and/or groups inspired by or associated with primarily U.S.-based movements that espouse extremist ideologies of a political, religious, social, racial, or environmental nature.



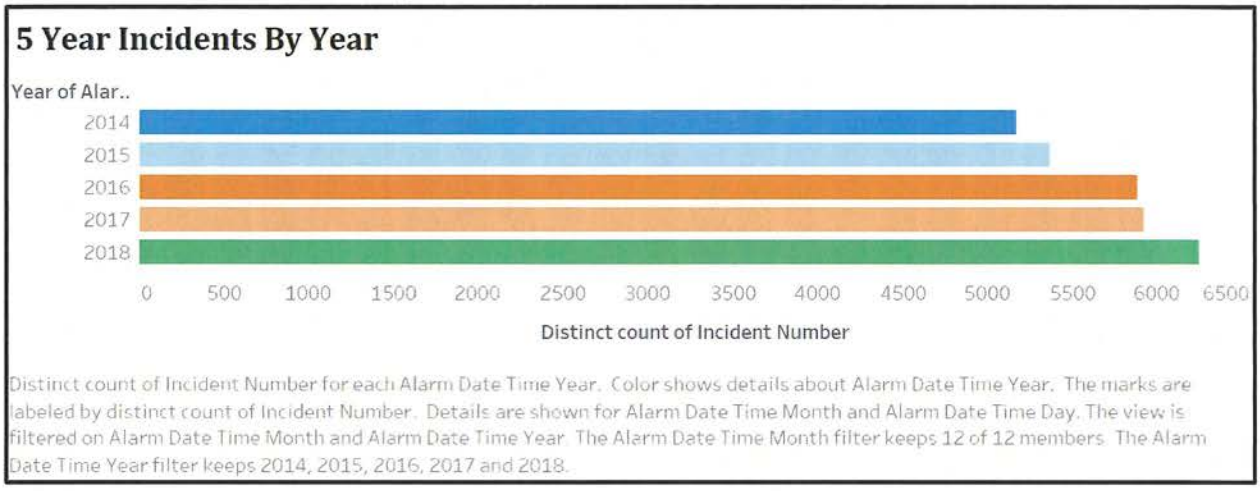


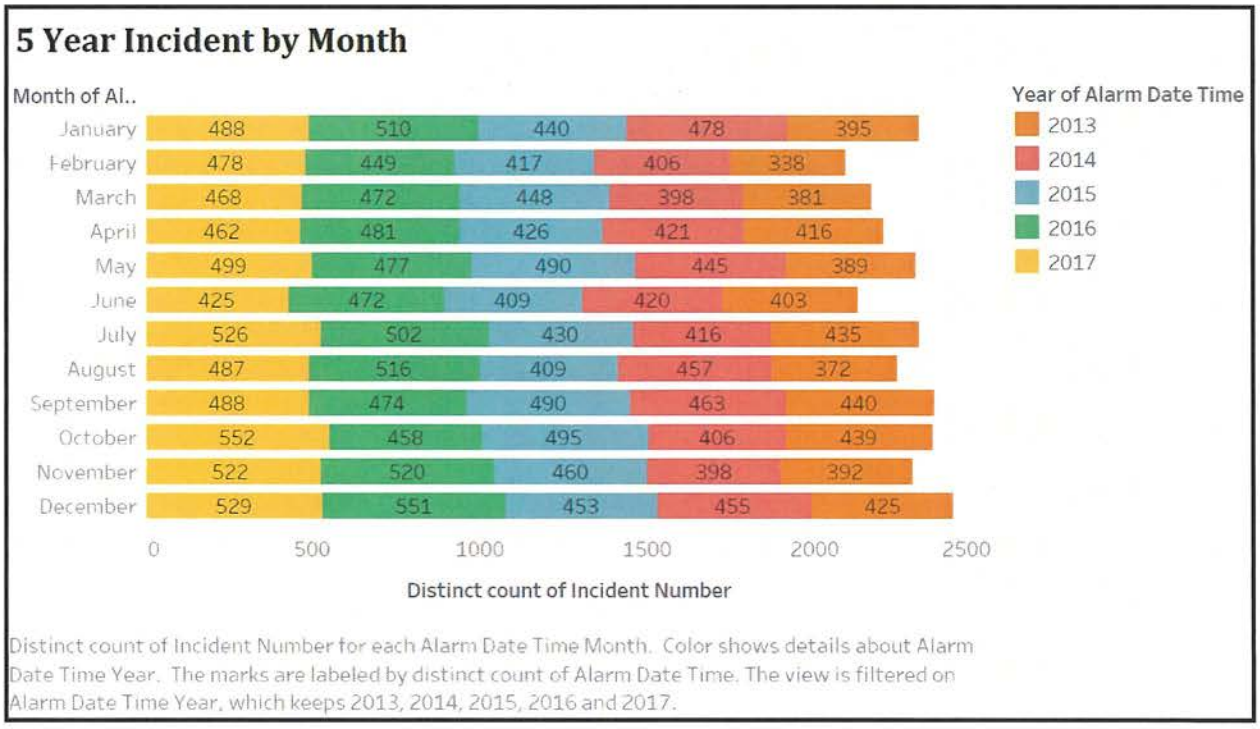
Delaware County Red Cross-Shelter Site Locations

Section 2.6 - Risk Assessment – Incident Historical Information

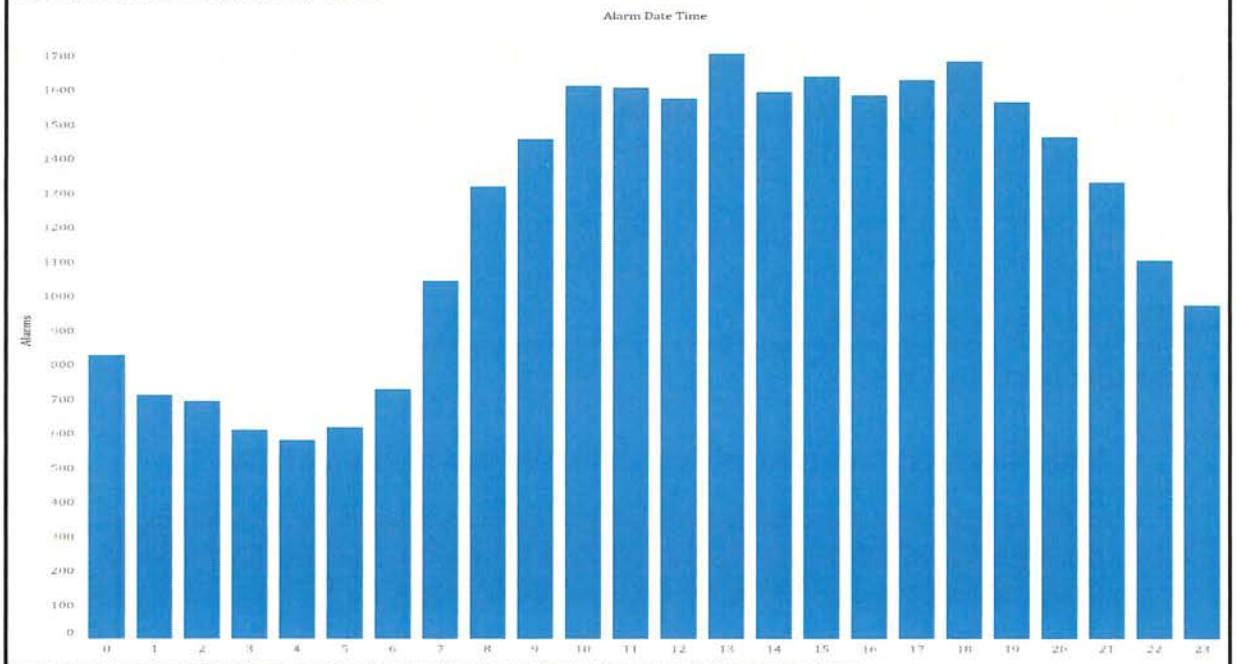
A risk assessment was based on the department's incident historical information. Over 29,000 incidents were reviewed. The historical summary provided is related to Delaware's past experience and for the highly probable risks that occur within the City. The timeframe used for this analysis is for a 5-year period from January 1, 2014 through December 31, 2018.

Five-Year Incident Summary





Incident Time of Day/ 2014-2018



Sum of Alarms for each Alarm Date Time Hour. The data is filtered on Alarm Date Time Year, which keeps 2014, 2015, 2016, 2017 and 2018.

Incidents Time of Day and Week Day/2014-2018

Arrival Date Time

Hour of ..	S	M	T	W	T	F	S	Grand Total
00	160	130	84	132	112	84	126	828
01	133	106	99	95	112	83	85	713
02	120	98	83	82	102	88	120	693
03	104	115	81	71	70	81	89	611
04	114	88	74	68	82	65	92	583
05	72	111	80	90	118	55	92	618
06	87	122	120	105	98	97	101	730
07	117	183	145	133	148	189	130	1,045
08	163	214	195	191	197	213	146	1,319
09	177	257	227	199	222	201	177	1,460
10	202	287	229	220	230	227	218	1,613
11	197	280	223	226	234	237	213	1,610
12	191	259	211	244	223	230	218	1,576
13	202	327	202	244	244	262	224	1,705
14	200	248	265	231	203	238	214	1,599
15	221	242	244	248	222	264	201	1,642
16	216	249	213	235	224	254	193	1,584
17	236	259	212	254	238	235	198	1,632
18	208	286	233	216	251	221	271	1,686
19	213	258	235	188	205	248	220	1,567
20	199	228	190	205	232	240	172	1,466
21	160	233	172	178	182	189	213	1,327
22	138	153	130	154	168	189	174	1,106
23	139	159	110	140	118	157	152	975
Grand ..	3,969	4,892	4,057	4,149	4,235	4,347	4,039	29,688

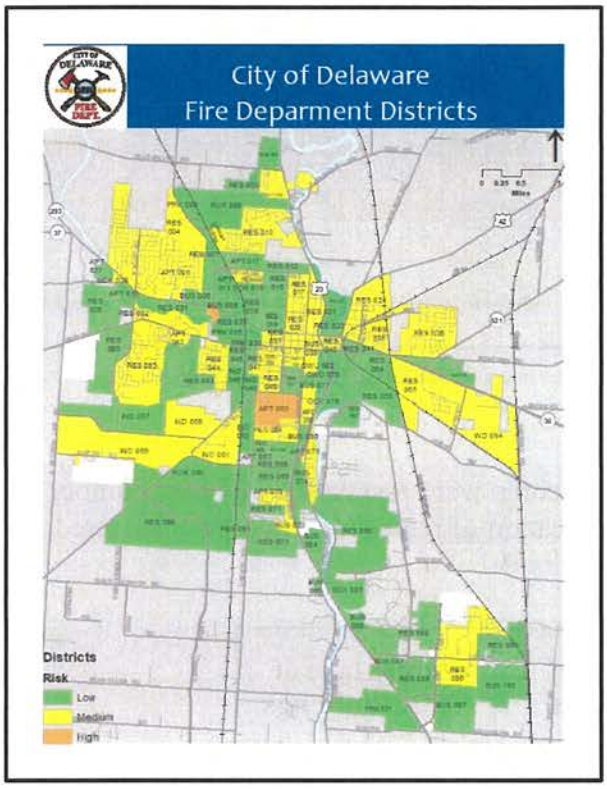
Count of Incident Number

55.0 327.0

Count of Incident Number (color) broken down by Arrival Date Time Weekday vs. Alarm Date Time Hour. The data is filtered on Alarm Date Time Year, which keeps 2014, 2015, 2016, 2017 and 2018.

Section 2.7 - Risk Analysis – Demand Zones

In order to provide a complete and accurate portrayal of the risks posed throughout the City, an analysis was conducted based on the demand zones. The demand zone analysis created four categories of risks known as Low, Medium, High and Ultra High Risks. The probability, consequences and impact of responses were analyzed based on the demand zones. These demand zones are primarily based on geographic boundaries, and include residential units, business locations, governmental facilities, health care facilities, educational buildings and manufacturing complexes to name a few. The department continues to utilize the demand zones jointly created by the Delaware Police and Fire Departments. The department has 101 individual reporting demand zones.



Risk Analysis – Demand Zones

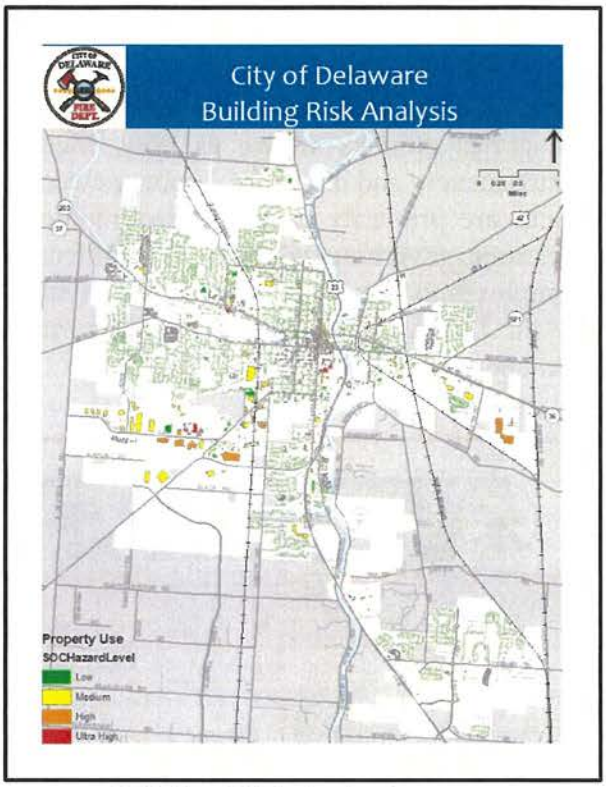
Risk Assessment Methodology		
Probability	0	None
	2	Monthly
	4	Weekly
	6	3 Times a Week
	8	Daily
Consequences	0	No People/Vacant Property
	2	Low
	4	Medium (Highest Building Risk)
	6	High (Highest Building Risk)
	8	Ultra-High (Highest Building Risk)
Resources Needed	0	None
	2	2 or Less Apparatus
	4	3 to 4 Apparatus
	6	4 to 8 Apparatus
	8	Greater than 8 Apparatus
Risk Assessment Score	< 19.5	Low Risk
	19.6-44.0	Medium Risk
	44.1-78.3	Large Risk
	> 78.4	Ultra-High Risk

Demand Zone Risk Assessment

Section 2.8 - Risk Analysis – Building Risk Analysis

The risk analysis process also involved the scoring of each structure based on the Delaware Fire Departments Building Risk Assessment (Appendix A). This model was developed by modifying

the NASJAX Community Risk Profile (CRA). The type of risks identified included life safety, fire, value to the community, hazards to the community and included a review of the structure, concentration of structure, occupancy, process, and population. The frequency and historic severity of an incident for each of the risks and hazards were also applied to identify a potential for occurrence. This historical data was provided by the comprehensive record management database maintained by the department.



Building Risk Analysis

The Community Risk Assessment Value (CRAV) scores were assessed by district number to help identify locations of risk so that the ultimate location of resources could be considered. A detailed review of each district is provided in Appendix B.

Category of Risk	Number of Structures	Percentage of Total Buildings
Low	11,701	93.25%
Medium	592	4.72%
High	170	1.35%
Ultra-High	85	0.68%

While 98% of the facilities were identified as Low to Medium, the community still had a large amount of facilities considered as High and Ultra High. The location of these facilities are located on the map above.

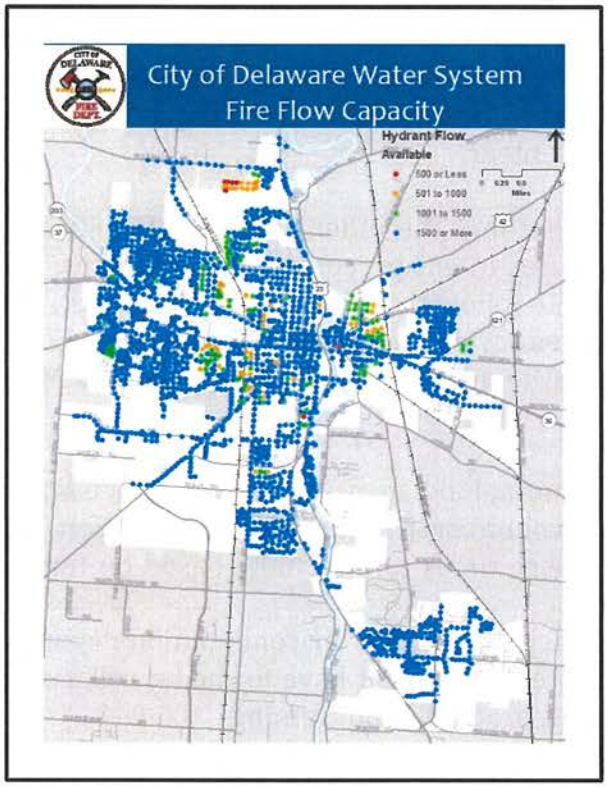
Section 2.9 - Fire Flow Concerns

The City of Delaware Public Utilities has made and continues to make significant improvements in the water flow capabilities within the city. In 2006, a 2.0 million gallon

storage tank was added to the system. Prior to that, all water storage tanks were raised to the same height. This allowed for a single system that was gridded. In 2012, Public Utilities added a well field to add to the capacity of the water plant. In 2015 the water plant underwent renovation and expansion that increased the capacity from 6.0 million gallons of water per day to 6.8 millions of gallons per day.

In 2018, the Insurance Services Office conducted a review of the Fire Department's operations. As part of this review, the water capacity and capabilities were reviewed. The City's water system was reviewed and received 36.50 points out of a possible 40 points. All fire hydrants are tested annually by the Public Utilities Department.

The fire flow assessments are reviewed prior to the issuance of any new construction permits and the fire flow requirements are required to be met as part of the Ohio Fire Code.



City Water System, Fire Flow Capability

Section 2.10 - Run Card Based On Risk Analysis

The Delaware Fire Department is dispatched through the county-wide 911 system known as DelComm. All fire and EMS systems within the county operate from the single 911 PSAP Center. DelComm operates a Computer Aided Dispatch (CAD) system with the capability to dispatch incidents based on a run card. Within the CAD system are pre-determined

response criteria based on the various nature codes. These types of responses and the order in which the apparatus respond is commonly referred to as Run Cards. Run cards assist in ensuring that the proper number and types of vehicles respond and to ensure an effective response force is dispatched. The CAD is also capable of overriding the run card based on the hazard of a specific address. This allows the department to increase responses to High and Ultra-High Risk structures. These run cards are identified as part of Appendix D.

Section 2.11 - Reliability of Other Resources

The Delaware Fire Department participates in a county-wide automatic mutual aid program. Formal agreements are not needed as a result of the State of Ohio's Intrastate Mutual Aid Compact (ORC 5502.41). Regularly and automatically, units from neighboring fire departments are included in the initial dispatch and response into the city and vice-versa. The inclusion of the automatic mutual aid units are recommended by the Computer Aided Dispatch (CAD) system based on the run cards. The capabilities and training skill levels of all agencies within the county vary. The service levels range from career, to combination to part-time/volunteer.

The Delaware Fire Department and the other Delaware County fire departments have adopted policies and procedures to ensure consistent operations. It is understood that a department cannot be forced to follow these procedures; however, the Incident Command System is strong and utilized by all agencies. The Incident Command System is in compliance with the National Incident Management System (NIMS). Factors that affect reliability:

1. The fire department mutual aid agencies to the north, east and west of the City of Delaware are either volunteer/part-time or combination fire departments. Their capabilities and response times can fluctuate based on time of day and day of the week.
2. To the south, the agencies are career or combination departments. These agencies, including Delaware Fire Department have formed a collaborative initiative focused on common operations, protocols and training.
3. Delaware County EMS provides emergency medical service mainly to the north, east and west areas of the city. The availability of these resources is expected to continue to be reliable.
4. All agencies utilize the county-wide 800 Mhz trunked radio system. This radio system is provided with redundancy and a back-up dispatch center is provided at the Orange Township Fire Station 361. The radio system is fully interoperable with the neighboring counties and the State of Ohio MARC's system.

Section 3 – Standard of Coverage

In order to perform a complete assessment of a community's ability to respond to specific emergencies, the community must define its response standards. These standards must be made based on an educated understanding of the risk faced both from the source and from the community.

In order for a community's emergency resources to make a positive impact on an incident, they must arrive in time to affect change. Calls for assistance must be processed and dispatched quickly. In this section we will assess and establish a total response time measurement for the service taking into consideration the factors involved in creating effective change with structural fires, emergency medical calls, technical rescue responses and hazardous material responses.

Section 3.1 - Total Response Time Measurement

The concept of a response time continuum has evolved from the standards set by the National Fire Protection Association (NFPA) and through the Commission on Fire Accreditation International fire accreditation process. The theory of a response time assessment and standard was foreign to the fire service prior to the mid-1980s. The initial response time standard for the Delaware Fire Department was developed in 2003 and included as part of the City's Comprehensive Plan. The City's Comprehensive Plan stated a response time goal of four (4) minutes 90% of the time, but did not define this as the travel time or total response time. The Department has interpreted that this is the travel time of the units responding, which aligns with NFPA 1710.

Given this response objective, the question remains - how does a community evaluate and measure the fire department's progress or efficiency? The elected officials annually adopt a fiscal budget which identifies the funding and staffing levels. Through this process, the community, in essence, buys a level of protection for itself. The purpose of defining the factors that determine the standard of cover allows the community to be informed about the decisions they make for the provision of emergency services.

It is important to recognize that the individual time elements are critical components of an organization's ability to positively impact the outcome of an emergency event. Fire growth is exponentially based upon concentration of fuels, elapsed time to intervention, atmospheric conditions, etc. Similarly for medical emergencies, especially in terminal events such as cardiac arrest, the elapsed time to effective intervention has a direct relationship in determining survivability and ultimately, quality of life.

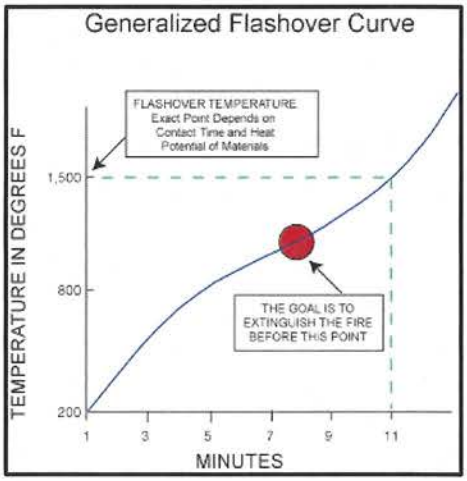
All emergency incidents follow a specific series of events. Emergency systems primarily intercede after the "point of awareness" of the emergency event. An emergency response time continuum is composed of the following time points and intervals for all emergencies:

	State of Normalcy		
Soft Data	**Discovery of Event**	The point at which an event is discovered.	
	Event Initiation Call 911	The point at which a condition exists requiring activation of the emergency response team.	Alarm Handling / Total Response Time
Hard Data	**Alarm Received at 911 PSAP and Fire/EMS Communications Center** Performance Indicator: 95% in 30 Seconds	The point at which a call is received and answered at DelComm (Regional 911 Public Safety Answering Point (PSAP) and Communications Center)	
	Alarm Processing Time Performance Indicator: 90% in 60 Seconds	A process by which an alarm is answered by DelComm and is retransmitted to emergency response facilities and response units	
	Turnout Time EMS Performance Indicator: 90% in 60 Seconds	The interval between the activation of station/company alerting devices and the time the crew is aboard the apparatus and en route (wheels rolling)	Total Response Time
	Turnout Time Fire/Special Operations Performance Indicator: 90% in 80 Seconds		
	Travel Time First Unit on Scene Performance Indicator: 90% in 4 minutes Effective Fire Force Performance Indicator: 90% in 8 minutes	The time interval that begins when a unit is en route to the emergency incident and ends when the unit arrives at the scene Placement of 15 fire fighters on scene	
	Initiate Action Time/Intervention	The point at which operations to mitigate the event begin and may include size-up, investigation, resource deployment, and/or patient contact/intervention	
	Termination of Event	The point at which units have completed the assignment and are available to respond to another request for service or return to their station	

Section 3.2 - Fire Science and the Rapid Response to Affect Positive Change

According to the NFPA, the leading cause of fires in homes and garages is cooking equipment, followed by heating equipment. Smoking materials is the leading cause of civilian fire deaths, accounting for nearly 25 percent. Most smoking-related deaths occur with the ignition of upholstered furniture, mattresses, or bedding. Cooking equipment is the leading cause of home fires and home fire injuries. Unattended cooking is the principal behavioral factor. Heating equipment is the second leading cause of home fire incidents, most involving portable or space heaters. Nearly half of all people arrested for arson are juveniles. Child fire play, typically with matches or lighters, accounts for one out of every ten fire deaths, and is for the leading cause of preschooler fire deaths.

A fire within a structure has been classified into three defined growth stages. The first is the incipient phase and occurs from ignition to open flame. The second phase of fire is the free burning stage and is characterized by rapid growth and heat production. During this phase of fire growth, the fire can reach the point of flashover. Flashover is the point when the fire dramatically grows from burning the initial contents to all of the contents in the space. The final phase of the fire growth is the smoldering phase, which occurs when the available oxygen is consumed by the fire. At this stage, a rapid introduction of oxygen into the room can lead to a back draft. Flashover is likely to occur if the temperature of the upper gas layer in an enclosure reaches approximately 1,000 degrees Fahrenheit.



It has long been known that the real killer in structure fires 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. Test fires in furnished residential structures have demonstrated the production of carbon monoxide in measurable amounts after three and one half minutes from the ignition of the fire.

The time-temperature curve standard is based on data from the National Fire Protection Association (NFPA) and The Insurance Services Office (ISO), which have established that a typical point source of ignition in a residential house will flash over at some time between 3 and 30 minutes after ignition, turning a typical room and contents fire into a structural fire of some magnitude. It should be noted that the National Institute of Standards and Technology and Underwriters Laboratory jointly studied the burning of today's buildings and materials. Information from the study was published and distributed in 2013. It was recognized that buildings and materials burn much faster and hotter than previously experienced. This will continue to be evaluated and the need to make adjustments in our operations will be assessed.

The utility of the time-temperature curve is limited by a number of factors.

- It does not account for the time required for the existence of a fire to be discovered and reported to the fire department via the 9-1-1 system.
- The time from ignition to flashover varies widely (3-30 minutes depending on building characteristics); thus it cannot provide a valid basis for the allocation of resources.
- The curve is constantly shifting, given the numerous changes in building construction, built-in suppression systems, the increase use of fire-resistive materials for furniture and other items typically found in the interior of occupied buildings.

Flashover is a critical stage of fire growth for two primary reasons:

- First, no living thing in the room of origin will survive, so the chance of saving lives, drops.
- Second, flashover creates a quantum leap in the rate of combustion, and a significantly greater amount of water is needed to extinguish the fire. This creates increased property damage and facilitates the need for extra manpower.

In regard to the general tactics and strategy of fire suppression, in order to successfully save lives and reduce property damage, the fire must be attacked prior to flashover. As indicated in the time and temperature curve, the time frame prior to flashover is 8-9 minutes. This timeframe supports the need for strategically located fire stations in order to ensure response times allow for adequate fire suppression intervention.

While arrival on the incident is essential, it is just as important to ensure that the equipment and personnel are able to make the effective change.

Fire Suppression

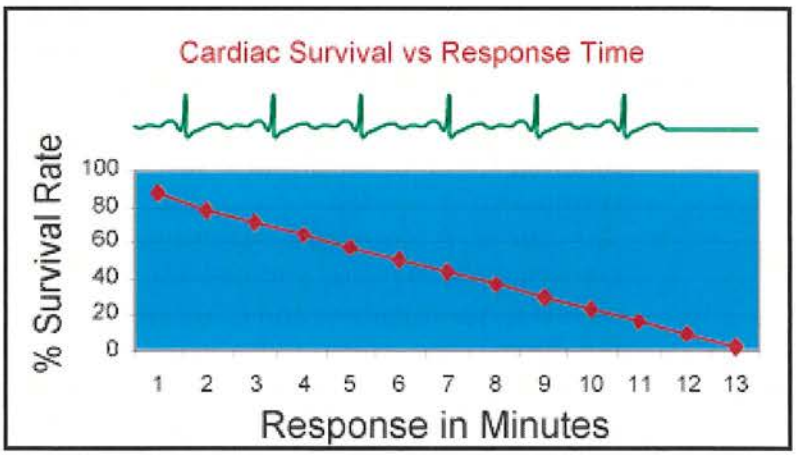
All fire engines, the quint and the ladder are equipped with essential equipment to begin fire suppression efforts. The department has upgraded the nozzles carried on apparatus to facilitate better extinguishing power with the higher BTU's being produced with today's fires. The fire department also includes Novacool which assists in the extinguishment of fires by cooling, blanketing, and emulsifying surfaces; eliminating possibility of re-ignition. Other essential equipment also includes thermal imaging cameras.

Non-Fire

The department also has special operation equipped apparatus and trailers with other equipment and supplies needed for the protection of the community. The Fire Department also works regionally with the other departments in Delaware County. This includes providing special operation services such as technical rescue and hazardous material operations.

Section 3.3 - The Human Factor and Medical Response Time

Emergency medical incidents have time based benchmarks in which critically ill or injured patients need to be stabilized and enroute to a medical facility. A key component must be in place for this stabilization to take place. Spontaneous circulation can cease in almost every type of medical emergency whether it is an injury or illness related problem.



Physiologically, brain death begins four (4) to six (6) minutes after the cessation of circulation. After ten (10) minutes, based on research, the survivability outcome of a patient who suffers from the loss of spontaneous circulation is considered unlikely. There are other time-sensitive medical incidents such as trauma, acute myocardial infarction, and stroke that require treatment at a specialty care medical facility as rapidly as possible.

Emergency Medical Service

All primary transport units are typically staffed with a minimum of two (2) paramedics and other first response equipment are staffed with a minimum of one (1) paramedic. All primary vehicles are equipped with advanced life support equipment. This includes a cardiac monitor/defibrillator, advanced airways and first round medications. This ensures

that personnel can immediately begin providing life threatening care and treatment upon the arrival.

Section 3.4 – Managing the Risks

Annually the fire department provides a multitude of public education, public relation, code enforcement and service coordination programs to reduce the various risks in the community. The department annually reaches 40,000 people documented through its various programs. In addition to these program, firefighters also annually conduct surveys of the various fire planning zones to review existing risks and also identify new risks that have developed. These risks are then incorporated as part of this document and response information.

The department also focuses on being proactive with our community special events that require additional staffing and resources to ensure services are maintained. This includes coverage for July 4th Parade and fireworks, Ohio Ironman, Delaware County Fair, the downtown Art Festival and Cruise-in car show, just to name a few. Personnel staff the needed equipment to support operations including an EMS Bike Team and special event carts.

Staffing is also increased as part of our situational awareness prior to adverse weather conditions that may increase demands for service. This includes the staffing of a snowplow for winter storms. During heavy snowfalls, personnel will plow paths for the apparatus to gain access to the emergency location and then shovel access paths for the crews to get a stretcher for the patient.

The Fire Department is also active in other means to manage and reduce the risk in the community. The Fire Department is involved in reviewing the impact prior to property annexations, rezoning of properties and site development reviews. Reviews include the impact to existing services, type of construction and building use, fire protection systems and property access. The Department is also involved with road planning standards, both from a local and regional standpoint, for the purpose of using the roads, accessibility and transportation safety purpose.

Managing the Fire Risk

The Delaware Fire Department's Risk Reduction Division enforces the 2017 Ohio Fire Code for all commercial/business structures within the City. The Division works closely with the City's Building Department on new and existing commercial construction. For residential facilities, the fire department has limited authority related to fire inspections within the actual private dwelling unit. Then situations arise within a dwelling unit, the Department will work closely with the city's Code Enforcement program related to problems. This includes issues within residential housing units involving hoarding conditions

The Delaware Fire Department recognizes the importance of Public Fire Education as a necessity for reducing risk. Emphasis is placed on school programs as well as those for

industrial facilities. Strong ties with the local school system have been fostered and the programs provided are welcomed in the classroom. The Department has become active in social media and our local radio station to communicate safety messages. Other programs provided by the Department provides are smoke detector and carbon monoxide distribution, Safety Town, Kids Safety Scene, city's First Friday activities, training nursing home staff with the State Fire Marshal, city's citizens academy, Kids Summer Fire Academy, Ohio Wesleyan University Resident Training, fire drills and fire extinguisher training, to name a few.

Community Risk Reduction Goal

1. Work annually with the Buckeye Region American Red Cross to install 10-year smoke alarms in identified areas of the City.
2. Conduct an assessment of the Fire Inspection program to adjust the inspection schedule based on a risk assessment.

Managing the Medical Risk

In 2014, the department implemented an innovative way to begin reducing the risks to seniors. Through a partnership with SourcePoint (public program for older adults/seniors), a part-time social worker known as a Service Coordinator was hired to assist in managing seniors risks. The Service Coordinator meets with seniors who have been identified as "at risk" and conducts interviews and home safety inspections that ultimately links the residents with needed services, thus reducing the impact on EMS. Annually this program sees over 300 new clients. In 2017, through fire department funding, the program was expanded to include all residents, regardless of age. This addition has assisted with many of the younger age "at risk" including mental health issues and drug addiction. Further expansion of this program is being considered for our Police Department with the potential addition of another service coordinator to be housed with the Police Department and focusing on Mental Health. Other EMS programs provided include CPR training, community active shooter programs, car seat inspections, promotion of AEDs with annual inspections and the disposal of medication at various locations in our community including the police station.

The department works closely with other community agencies including our Health District with its Community Health Improvement Plan (CHIP) and Stepping Up programs. Delaware County has been named the "Healthiest County in Ohio" for several years. In the 2013-2018 CHIP, one of the Fire Department's goals was to implement a Community Paramedicine program to assist in reducing the emergent cares and assisting the community in managing their healthcare. The Department as a result implemented a Service Coordinator program to assist in linking non-emergency services to people in need, to help reduce the impact upon the emergency services.

Community Risk Reduction Goal

1. Continue to assess the needs of all ages and high frequency patients and link their needs to needed and available resources.

Managing the Hazardous Material Risk

With industry and the various transportation routes within our city, the department has established relationships with key community leaders. Personnel assigned to our hazardous material teams and Delaware County Emergency Management conduct periodic tours of a SARA Tier 2 facility's. They work and periodically train with the plant personnel and hazardous material teams to gain familiarity with the capabilities and potential threats. Maps have been developed by Delaware County Emergency Management, showing key intersection locations, the potential impact a spill would have, and the amount of people affected.

Community Risk Reduction Goal

1. Continue to conduct site assessments at hazardous material sites primarily within the City and secondarily in Delaware County to gain familiarity and limit impact from a hazardous material spill.

Managing the Technical Rescue Risk

The final category involves a multitude of various technical rescue risks. Personnel periodically assess known confined space locations, swift water rescue entry points and trench rescue locations. When personnel are notified of an entry into these locations, personnel will meet with the site personnel to review the work being conducted, emergency operation plans and potential hazards and risks related to the work.

Community Risk Reduction Goal

1. Continue to identify and conduct site assessments and preplan at technical rescue sites gain familiarity and limit impact of a rescue.
2. Identify and implement river access points along the Olentangy River.

Section 3.5 - Critical Task Capabilities

In order to affect positive change, fire department personnel must be properly assigned, resources must be properly placed and equipped, and each individual must be given a critical task to complete. Consequently, those individuals must arrive within a timeframe that allows them a chance to use their skills to stop the loss or convert a potentially fatal medical condition. It is necessary to assess and establish the task assignments for both fire and EMS responses, as well as non-fire risks. For each CAD nature code, the Department has established the risk, effective response force and the reporting category. The dispatch nature codes are what the Department uses in determining response time capabilities. An example of the CAD nature codes with the risks and needed effective response force is provided below.

Risk	ERF	NatureCode	Nature Description	NFPA Category	EMS - ERF Based on
Low	2	2	Auto Accident No-Injuries	Fire	
High	6	4	Auto Accident Injuries	Technical Rescue	
Low	6	4A	Auto Accident-Hit Skip/Injuries	Technical Rescue	
Medium	6	4P	Person Struck By Vehicle - Injured	Technical Rescue	
High	23	6	Aircraft Crash	Technical Rescue	
Low	2	16	D.O.A	EMS	
Low	2	17A	Well Being	EMS	
Low	2	18	Dog Bite	EMS	
Low	2	18A	Animal Call	EMS	
Low	2	20	Domestic	EMS	
Low	2	42	Nature Unknown	Fire	
Low	7	42M	Suspicious Mail	Hazardous Materials	
Low	2	47	Take Report	Fire	
Low	2	48	Rape	EMS	
Low	5	52	Shooting	EMS	Yes

Structural Fire Fighting Critical Tasking & Effective Response Force

The variables of fire growth dynamics and property and life risk combine to determine the fire ground tasks that must be accomplished to mitigate loss. These tasks are interrelated but can be separated into two basic types; fire flow and life safety. Fire flow tasks are those related to getting water on the fire. Life safety tasks are those related to finding trapped victims and safely removing them from the building.

Fire flow tasks can be accomplished with hand held hoses or master streams (i.e., nozzles usually attached to the engine or ladder). Master streams take fewer firefighters to operate because they are most often fixed to the apparatus. The decision to use hand lines or master streams depends upon the stage of the fire, water supply, personnel available, and the threat to life safety. If the fire is in a pre-flashover stage, firefighters can make an offensive fire attack into the building by using hand lines to attack the fire and shield trapped victims until they can be removed from the building. If the fire is in its post-flashover stage and has extended beyond the capacity or mobility of hand held hoses, or if structural damage is a threat to firefighters' safety, the structure is declared lost and master streams are deployed to extinguish a fire and to keep it from advancing to surrounding exposures.

Below are the fire flow capabilities of the handlines and master streams used by the Delaware Fire Department.

- 1 ¾" Preconnect Hose Line – 175 gpm @ 50 psi nozzle pressure
  (In 2019, the department will begin transitioning the primary attack line to a 2" preconnect hose line that is expected to flow 210-230 gpm. This is being done to facilitate a faster knock down of the fire with the higher BTUs that are being seen with newer contents and lightweight construction.)
- 2 ½" Preconnect Blitz Line - 250 gpm @ 50 psi nozzle pressure
- Preconnected RAM Nozzle – 500 gpm

- Engine Master Stream – 1,000 gpm
- Ladder Elevated Master Stream – 2,000 gpm

First arriving firefighters may use a transitional "defensive to offensive" strategy (discussed below) to limit or remove an IDLH (immediate danger to life or health) threat while awaiting the arrival of additional resources. Life safety tasks are based upon the number of occupants, their location, their status (e.g. awake versus sleeping), and their ability to take self-preserving action. For example, ambulatory adults need less assistance than non-ambulatory adults require. The elderly and small children always require more assistance. Before on-scene procedures can be established, the initial Incident Commander (IC) must select an appropriate initial strategy: offensive, defensive, or transitional.

Offensive Strategy

An offensive strategy is an aggressive interior fire attack. The top priority is rescue of trapped victims. Because the Delaware Fire Department desires to limit the number of fires that spread beyond the room of origin and to limit fire related deaths and injuries, the aggressive offensive attack is utilized wherever possible given safety and other relevant concerns.

- Time sensitive
- Most effective when fire is limited to room and contents
- Most effective for limiting loss and saving the lives of trapped victims

Transitional Strategy

A transitional strategy is utilized in the face of changing resource levels or changing fire conditions. A transitional (defensive to offensive) attack may be utilized while awaiting the arrival of sufficient resources to safely mount an offensive attack, to temporarily reduce the immediately dangerous to life and health (IDLH) conditions, or until a large fire can be "knocked down" sufficiently to permit interior attack. Conversely, a transitional offensive to defensive strategy may be employed when fire progress renders a building unsafe for continued interior operations.

- May occur pre or post-flashover
- Moderate property loss is experienced
- Rescue and survival of trapped victims is much less likely

Defensive Strategy

A defensive strategy is one that allows for no interior fire attack except as may be necessary to rescue trapped firefighters. No attempts are made to rescue civilian victims because in circumstances where defensive tactics are warranted, victims are presumed to be beyond rescue. Nearly all firefighting is performed from outside the structure with the goal of containing the fire to the initial structure involved.

- Post-flashover, free burning (the building itself is burning, not just the contents)
- Substantial to complete property loss will be experienced
- Victim rescue is not attempted, and trapped victims do not survive

Fire Response – Critical Tasking & Effective Response Force

Incident Type		Engines		Ladders		Medics/QRV		Rescue		Chief		EFR	Special Units	
		Apparatus	FFs	Apparatus	FFs	Apparatus	FFs	Apparatus	FFs	Apparatus	FFs		Apparatus	FFs
AIR	Aircraft	3	9	1	3	2	4	1	3	1	1	20	QRV	2
FAR FAC	Fire Alarm	1	3	1	3	0	0	0	0	1	1	7	0	0
Bomb	Bomb Threat	1	3	0	0	0	0	0	0	1	1	4	0	0
STFR STFC	Structure Fire	3	9	1	3	1	2	0	0	1	1	15	0	0
	Working Fire	1	3	1	3	1	3	0	0	1	1	10	Air Unit, Red Cross, Utilities	

Personnel - EFR	AIR	FAR/FAC	Bomb	STFR/STFC
Incident Command/Documentation	1	1	1	1
Fire Attack (1st Engine)	3			3
Water Supply/Back-up Line (2nd Engine	3			3
Rapid Intervention (3rd Engine)	3			3
Search and Rescue (1st Ladder)	3			3
Ventilation/Forcible Entry/Utility				
Safety				
Extrication (1st Rescue)	3			
Medical Assistance	4			2
Investigate		3		
Stand-By		3	3	
Total Personnel	**20**	**7**	**4**	**15**

Non-Fire Tasking & Effective Response Force

Critical tasking for non-fire risks are much like those related to fire risks. Because the same resources are used to respond to many of the non-fire risks, the response and the apparatus and personnel are the same.

The Delaware Fire Department also does an excellent job monitoring the other non-fire risks that occur throughout the community. For example, each special event activity is scheduled through the city and approved through a permit process. Staffing for these special events is based on the amount of people expected to participate and be in attendance and the risk of the event. In addition, the Delaware Fire Department is responsible for emergency management operations for the entire city. This allows the Delaware Fire Department to monitor and implement the concepts related to NIMS and the National Response Framework.

Emergency Medical Services Critical Tasking & Effective Response Force

Incident Type		Engine/Ladder		Medics		Chief		EFR	Special Units	
		Apparatus	FFs	Apparatus	FFs	Apparatus	FFs		Apparatus	FFs
INJY	Basic Life Support	0	0	1	2	0	0	2	0	0
CA	Advanced Life Support	1	3	1	2	0	0	5	QRV if Medic has 3-Replaces Engine	2
SHOOT	Advanced Life Support-W Threat	1	3	1	2	1	1	6	QRV if Medic has 3-Replaces Engine	3

Personnel - EFR	INJY	NON	SHOOT
Incident Command/Documentation	1	1	1
CPR			1
Defibrillation			1
Airway management		1	1
IV Access/Medication Administration		2	1
Patient Assessment/Treatment	1	1	1
Total Minimum Personnel	**2**	**5**	**6**

Hazardous Material Critical Tasking & Effective Response Force

Incident Type		Engine		Ladder/Rescue		Medics		Chief		EFR	Special Units	
		Apparatus	FFs	Apparatus	FFs	Apparatus	FFs	Apparatus	FFs		Apparatus	FFs
SPILL	Fuel Spill	1	3	0	0	0	0	0	0	3	0	0
GASO	LPG/LNG Leak	1	3	1	3	0	0	1	1	7	0	0
HazMat	DART 1	1	3	1	3	0	0	1	1	7	HazMat 302	0
	DART 2	0	0	0	0	0	0	0	0	0	DART Duty Officer	1
	DART 3	0	0	0	0	0	0	0	0	0	DART Team & Equipment	20

Personnel – EFR	Fuel Spill	GASO	HazMat1
Incident Command/Documentation	1	1	1
Investigate/Operations	2	2	2
Safety/RIT		3	3
Medical Assistance			
Support		1	1
Stand-By			
Total Personnel	**3**	**7**	**7**

Technical Rescue Critical Tasking & Effective Response Force

Incident Type		Engine		Ladder/Rescue		Medics		Chief		EFR	Special Units	
		Apparatus	FFs	Apparatus	FFs	Apparatus	FFs	Apparatus	FFs		Apparatus	FFs
AA	MVA	1	3	1	3	1	2	1	1	9		
ELEV	Elevator Resq	1	3	1	3	1	2	1	1	9		
RESCUEHA	High Angle Rescue	1	3	1	3	2	4	1	1	14	Trench Trailer, Liberty Ladder	3
COLLAPSE	Collapse	1	3	1	3	2	4	1	1	14	Trench Trailer	3
CAVE	Confined Space	1	3	1	3	2	4	1	1	14	Trench Trailer	3
DROWNING	Water Rescue	1	3	2	6	2	4	1	1	18	Boat, Dive Team,	4
FARM	Industrial Accident	1	3	1	3	2	4	1	1	11		

Personnel – EFR	MVA	Elevator Resq	High Angle	Collapse	Confined Space	Water Resq	Indust Acc
Incident Command/Documentation	1	1	1	1	1	1	1
Search and Rescue			2	2	2	5	2
Safety/RIT	2	2	2	2	2	3	2
Extrication	3	3	3	3	3	3	3
Medical Assistance	2	2	2	2	2	2	2
Support	1	1	1	1	1	1	1
Stand-By			3	3	3	3	
Total Personnel	**9**	**9**	**14**	**14**	**14**	**18**	**11**

Section 3.6 - Service Level Objectives

A community expects a certain level of service from their emergency service organizations. A responsible agency will first examine the level of risk in the community then they will determine what services can be provided in the areas of fire, EMS, and special non-fire risk responses and at what level of quality these services are expected to be maintained with the existing level of support. A standard of cover policy is the final statement and the foundation of this service. A community accepts a standard of cover and then works along with their professional staff to maintain that level of service.

The standard of cover is based on several very basic principles. Once the service commitment is determined by policy, the resources must be distributed in a way that maximizes the efficiency of each unit. The distribution of resources includes both equipment and personnel. In the fire service, distribution of resources has been very traditional. Units are normally placed in fixed locations (fire stations). These fire stations were previously determined on community acceptance more often than need. Once "fixed in location", these fire stations are hard to move as a community expands and develops. Thus, the fire service professionals must continuously monitor and focus on the efficient distribution of all its resources, equipment and personnel. Today, the Department is focusing on locations that are determined based on risk, demand for service, response times and future development.

Because most of the resources are delivered from fixed locations, the concentration of resources is equally important to maintaining a community standard of cover. An agency must deploy resources in a manner which provides depth and redundancy normally referred to as concentration. This concentration of resources allows a community to manage busy periods of service, or areas of increased activity, when needed.

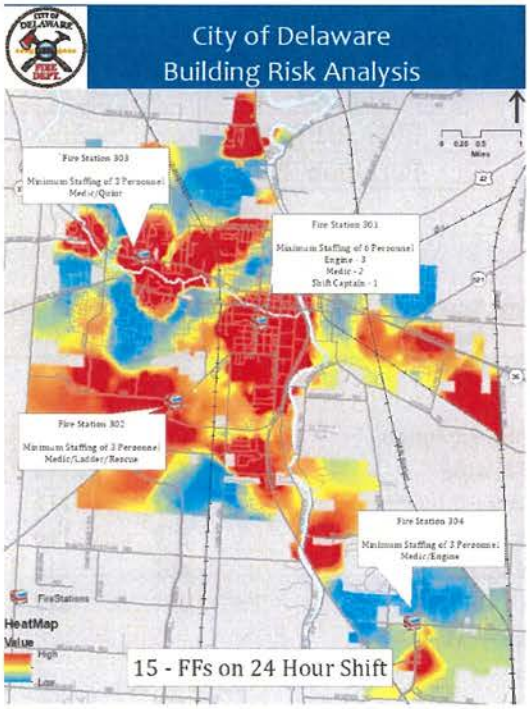
Section 3.7 - Distribution and Concentration Criteria

The level of service provided to the community is determined primarily by decisions made regarding the distribution and concentration of resources. In order to effect positive

change, these decisions must be made with the potential level of risk in mind. Distribution speaks to the resources available for the first-due unit's ability to respond, while concentration refers to the total resources in order to form an effective response force. Risk factors considered include both fire and non-fire risks as well as those pertaining to medical emergencies. While it is unreasonable to expect the fire department to save every life or stop all significant property loss, it is reasonable to seek to find a balance that will keep fire, non-fire and medical related risk at a reasonable level. That balance should ideally yield the maximum savings of life and property at a reasonable cost to the community.

Fire station location is driven by a number of factors. Stations are usually located where they are most tolerated by the residents, where it would best serve the community, availability of land and the transportation corridors. It takes extraordinary resources for an agency to locate a service facility exactly where it is needed. The Delaware Fire Department currently operates four (4) fire stations. The primary fire station (Station 301) is located on S. Liberty St., in the heart of the city and within the Ohio Wesleyan University campus. The second fire station (Station 302) is located on Pittsburgh Dr. in the city's industrial park. The third fire station (Station 303), which began operation on September 26, 2013, is located in the city's northwest quadrant. The fourth fire station (Station 304) is located in the southeast quadrant of the city at 821 Cheshire Rd. Fire Station 304 opened in early February 2019.

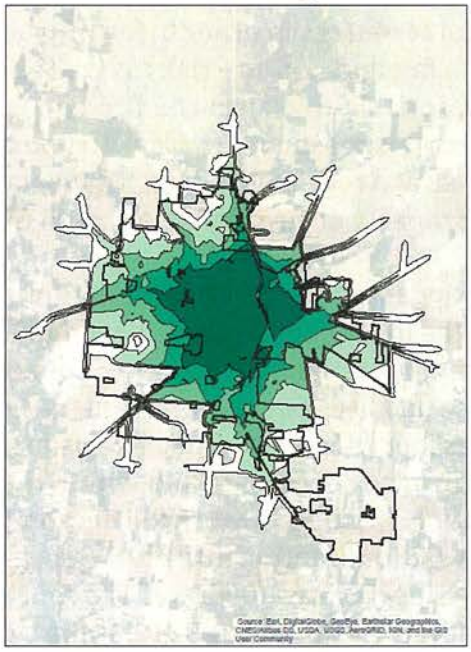
Delaware Fire Department also utilizes Delaware County EMS for the delivery of medical service to the northern and southeastern quadrants. Also of note is the location of Tri-Township Fire Districts fire station located on the city's east side. Tri-Township responds automatically on all structure fires within the City of Delaware, thus provides immediate coverage for structure fires on the City's east side. The diagram below shows the current response capabilities from each of the current fire stations.



Fire Station 301

Fire Station 301 is located at 99 S. Liberty St, encompassed around the Ohio Wesleyan University campus. This fire station is responsible for the historic downtown, many governmental buildings, older residential homes and the east side of the city. The map below depicts the travel time from the fire station to all areas of the city. Each shade indicates an increase in travel time with 2-minute increments with the darker green being 4-minutes and the lightest green being 10-minutes. Responses data is from 2014-2018.

Station 301 Coverage



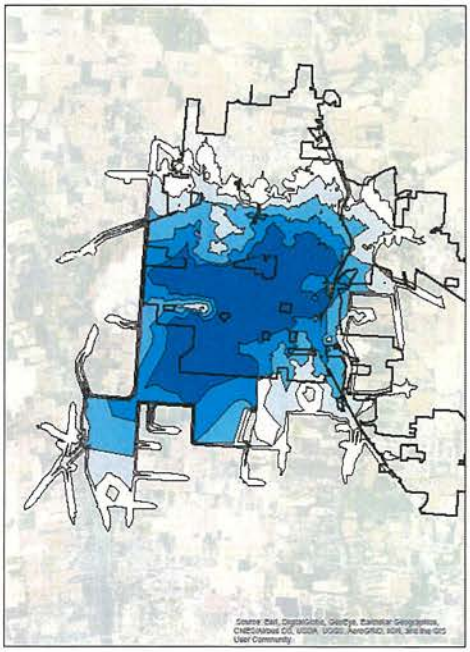
Fire Station 301	Staffing	Call Volume	Station Volume %
		18,433	64.39%
Engine 301	3	8,637	
Medic 301	2	13,352	
EMS 301 (based o	2	4,167	
Battalion 301	1	2,370	

Incident Type Station ID	Incident Count	Used in Ave Resp.	Average Response Time HH:MM:SS	Total Loss	All Response Total Property Value
Station: 301					
Fire	350	255	00:04:51	$2,026,265.00	$196,883,610.00
Rupture/Explosion	16	9	00:04:12		
EMS/Rescue	14,405	12,790	00:05:03		
Hazardous Condition	543	215	00:04:59		
Service Call	856	106	00:04:36		
Good Intent	667	215	00:04:49		
False Call	1,567	893	00:04:45		
Severe Weather	5	2	00:05:51		
Other	24	5	00:00:54		
Totals:	**18,433**	**14,490**	**00:05:01**	**$2,026,265.00**	**$196,883,610.00**
Total Incident Count	**18,433**			**$2,026,265.00**	**$196,883,610.00**

Fire Station 302

Fire Station 302 is located at 681 Pittsburgh Dr., in our industrial park. This fire station is responsible for the major industrial areas of the city, the municipal airport and newer residential homes. The map below depicts the travel time from the fire station to all areas of the city. Each shade indicates an increase in travel time with 2-minute increments with the darker blue being 4-minutes and the lightest blue being 10-minutes. Responses data is from 2014-2018.

Station 302 Coverage



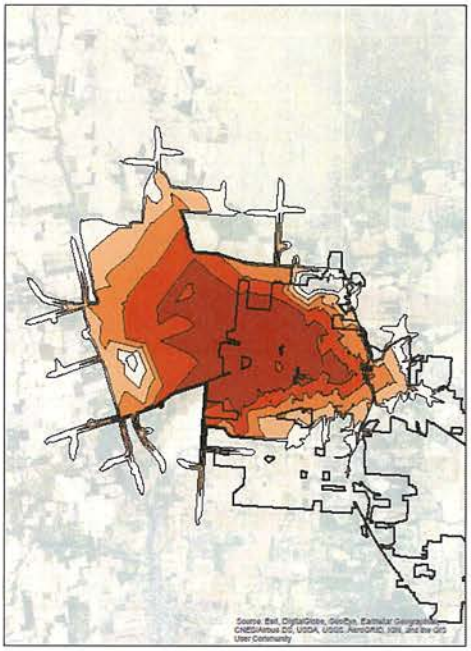
Fire Station 302	Staffing	Call Volume	Station Volume %
		2,209	7.72%
Ladder 302	3	3,019	
Medic 302		2,590	
Rescue 302		495	

Incident Type / Station ID	Incident Count	Used in Ave Resp.	Average Response Time HH:MM:SS	Total Loss	All Response Total Property Value
Station: 302					
Fire	58	42	00:05:10	$663,668.00	$102,709,328.00
Rupture/Explosion	2	1	00:04:24		
EMS/Rescue	1,658	1,407	00:06:09		
Hazardous Condition	47	26	00:05:56		
Service Call	79	6	00:06:22		
Good Intent	99	11	00:06:15		
False Call	254	177	00:05:09		
Other	12	3	00:01:06		
Totals:	**2,209**	**1,673**	**00:06:00**	**$663,668.00**	**$102,709,328.00**
Total Incident Count	**2,209**			**$663,668.00**	**$102,709,328.00**

Fire Station 303

Fire Station 303 is located at 1320 W. Central Ave. This fire station covers the hospital, newer residential homes and the commercial development along Central Ave. The map below depicts the travel time from the fire station to all areas of the city. Each shade indicates an increase in travel time with 2-minute increments with the darker orange being 4-minutes and the lightest orange being 10-minutes. Responses data is from 2014-2018.

Station 303 Coverage



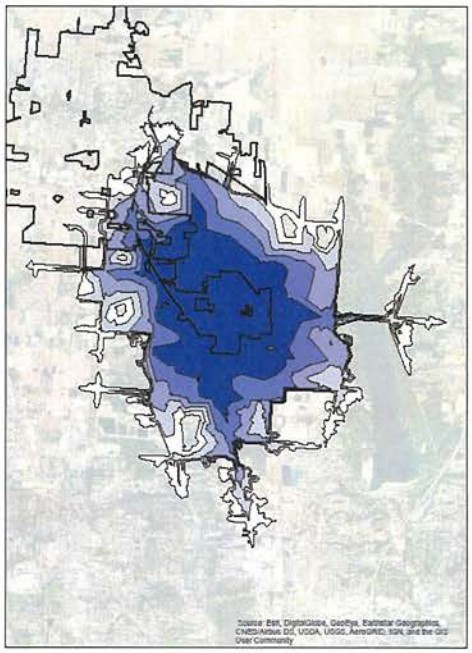
Fire Station 303	Staffing	Call Volume	Station Volume %
		7,016	24.51%
Engine 303	3	1,293	
Medic 303		6,843	

Incident Type / Station ID	Incident Count	Used in Ave Resp.	Average Response Time HH:MM:SS	Total Loss	All Response Total Property Value
Station: 303					
Fire	117	84	00:05:37	$479,618.00	$68,668,507.00
Rupture/Explosion	1	1	00:06:49		
EMS/Rescue	5,216	4,580	00:05:05	$4.00	$8.00
Hazardous Condition	98	41	00:05:51		
Service Call	352	49	00:04:31		
Good Intent	228	36	00:05:38		
False Call	991	477	00:04:46		
Severe Weather	3	2	00:06:57		
Other	10	3	00:02:18		
Totals:	**7,016**	**5,273**	**00:05:04**	**$479,622.00**	**$68,668,515.00**
Total Incident Count	**7,016**			**$479,622.00**	**$68,668,515.00**

Fire Station 304

Fire Station 304 is located at 821 Cheshire Rd. The fire station covers the rapidly growing area in our City's southwest including a medical facility, senior activity center and newer large residential homes. Since January 2014, responses within St 304's coverage area has been tracked as part of the incident reports. Fire Station 304 is scheduled to open in February 2019. When operational, the Fire Station will house 3 firefighters. The map below depicts the travel time from the fire station to all areas of the city. Each shade indicates an increase in travel time with 2-minute increments with the darker purple being 4-minutes and the lightest purple being 10-minutes. Responses data is from 2014-2018.

Station 304 Coverage

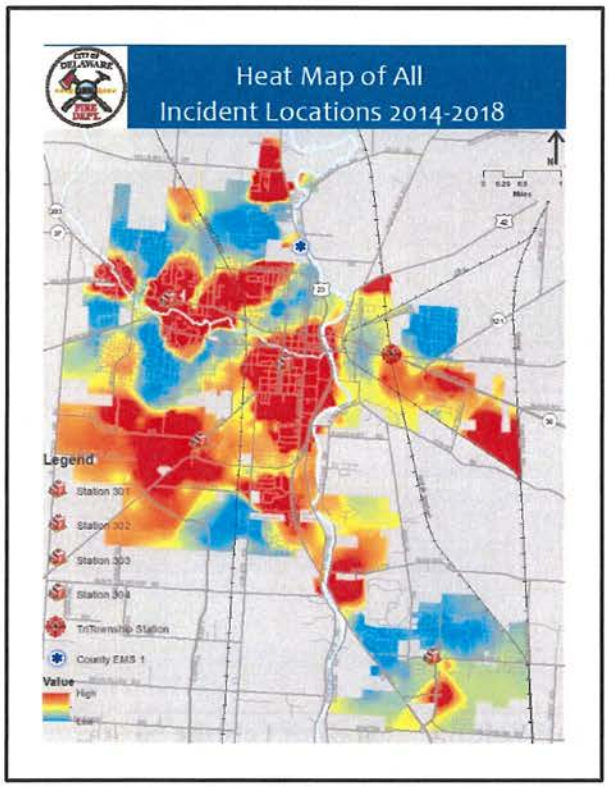


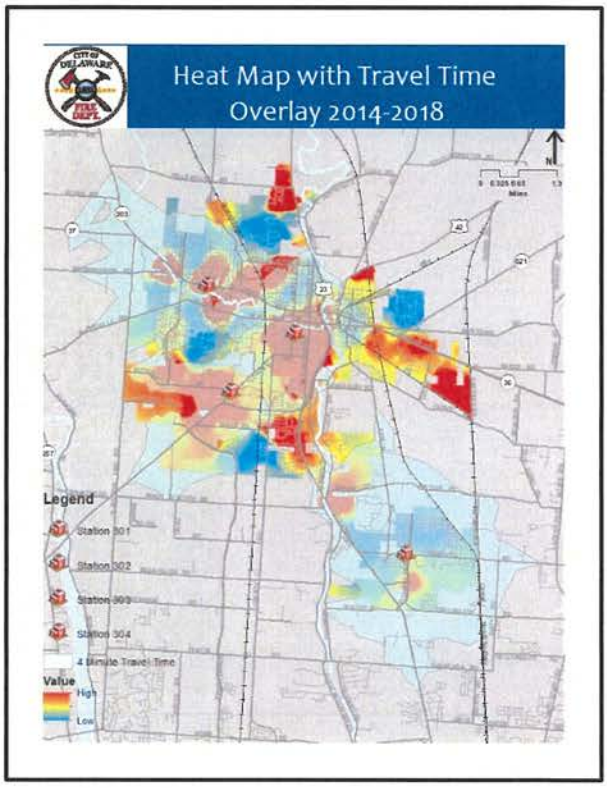
Fire Station 304	Staffing	Call Volume	Station Volume %
		967	3.38%
Engine 304	N/A	Not Operational	
Medic 304		Not Operational	

Incident Type Station ID	Incident Count	Used in Ave Resp.	Average Response Time HH:MM:SS	Total Loss	All Response Total Property Value
Station: 304					
Fire	31	20	00:09:08	$344,729.00	$4,021,774.00
EMS Rescue	592	535	00:07:43		
Hazardous Condition	29	9	00:09:57		
Service Call	28	3	00:08:54		
Good Intent	62	12	00:09:12		
False Call	224	101	00:07:52		
Severe Weather	1	1	00:08:27		
Totals:	**967**	**681**	**00:07:51**	**$344,729.00**	**$4,021,774.00**
Total Incident Count	**967**			**$344,729.00**	**$4,021,774.00**

The following map provides incident locations from 2014 through 2019. This map further shows the incident demand density areas for the fire department known as hot spot mapping. The white colored areas indicate low demands, with colors escalating to red for areas that have a high density of incidents.

The final map shows the distribution of the proposed four (4) fire station configuration and the (4) minute travel time/six (6) minute TRT.





Section 3.8 - Standard of Cover Benchmarks and Baselines

Baseline and benchmark standards have been determined using event data from 2014 through 2018. The benchmark identifies the community's desires and best practices based on national standards, also known as our target goal. The baseline indicates the fire departments current capabilities. From that information, service level objectives have been established for distribution and concentration total response times.

Fire Suppression Program:

Benchmarks (Target Goal):

Distribution

For 90 percent of all structure fires in the city, the total response time for the arrival of the first-due unit, staffed with a minimum of 1-officer and 2-firefighters, shall be 6 minutes and 20 seconds in all areas. The first due unit shall be capable of: providing a minimum of 300 gallons of water and 1,500 gallons per minute (gpm) pumping capacity, assuming command of initial operations, sizing-up and making tactical decisions of rescue vs. extinguishment, and advancing a 200-foot first attack line flowing a minimum of 175 gpm. These operations shall be done in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

Concentration

For 90 percent of all structure fires in the city, the total response time for the arrival of the effective response force (ERF), staffed with 15-personnel and officers, shall be 10 minutes and 20 seconds in all areas. The ERF shall be capable of: assuming command of initial operations, sizing-up and making tactical decisions of rescue vs. extinguishment, initiating fire attack with back-up, search and rescue operations, establishing a water supply, establishing emergency medical services (EMS), providing ventilation, and providing rapid intervention and complying with the Occupational Safety and Health Administration (OSHA) requirements of two-in and two-out. These operations shall be done in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

Baselines (Current):

Delaware Fire Department's baseline statements reflect actual performance during 2014 to 2018. The department relies on the use of automatic aid from neighboring fire departments to provide its effective response force complement of personnel. The agency's baseline service level objectives are as follows:

Distribution

For 90 percent of all structure fires in the city, the total response time for the arrival of the first-due unit, staffed with a minimum of 1-officer and 2-firefighters, is 7 minutes and 53 seconds in all areas. The first due unit is capable of: providing a minimum of 300 gallons of water and 1,500 gpm pumping capacity, assuming command of initial operations, sizing-up and making tactical decisions of rescue vs. extinguishment, and advancing a 200-foot first attack line flowing a minimum of 175 gpm. These operations are done in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

Concentration

For 90 percent of all structure fires in the city, the total response time for the arrival of the ERF, staffed with 15-personnel and officers, is 13 minutes and 00

seconds in all areas. The ERF shall be capable of: assuming command of initial operations, sizing-up and making tactical decisions of rescue vs. extinguishment, initiating fire attack with back-up, search and rescue operations, establishing a water supply, establishing EMS, providing ventilation, and providing rapid intervention and complying with the OSHA requirements of two-in and two-out. These operations are done in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

(All Risk) Fire Suppression - 90th Percentile Times - Baseline Performance			2014-2018	2018	2017	2016	2015	2014
Alarm Handling	Pick-up to Dispatch	Urban	02:09	02:20	01:46	01:55	01:55	02:29
Turnout Time	Turnout 1st Unit	Urban	02:26	02:29	02:25	02:24	02:18	02:26
Travel Time	Travel Time 1st Unit	Urban	04:52	04:48	04:22	04:23	04:53	05:04
	Travel Time ERF Concentratio	Urban	08:50	08:58	08:18	08:26	08:01	08:25
Total Response Time	Total Response 1st Unit Distribution	Urban	07:53	07:21	07:20	07:31	07:55	08:45
			269	55	62	53	43	56
	Total Response ERF Concentratio	Urban	13:00	13:13	11:10	11:33	12:07	10:58
			109	24	18	30	20	17

Emergency Medical Services Program:

Benchmarks (Target Goal):

Distribution

For 90 percent of all EMS responses in the city, the total response time for the arrival of the first-due unit, staffed with a minimum of 2-personnel with ALS capability, shall be 6 minutes in all areas. The first due unit shall be capable of: assessing scene safety, sizing-up the situation, conducting initial patient assessment and care, initiating defibrillation, and transporting patients.

Concentration

For 90 percent of all multi-company EMS responses in the city, the total response time for the arrival of the effective response force (ERF), staffed with a minimum of 1-officer and 4-personnel, shall be 8 minutes in all areas. The ERF shall be capable of: assessing scene safety, establishing command, sizing-up the situation, establishing the number of patients, initiating triage, requesting additional resources, initiating life saving measures, conducting initial patient assessment, directing apparatus set up, and transporting patients.

Baselines (Current):

Delaware Fire Department's baseline statements reflect actual performance during 2014 to 2019. The department relies on the use of automatic aid from neighboring fire departments to provide its effective response force complement of personnel. The agency's baseline service level objectives are as follows:

Distribution

For 90 percent of all EMS responses in the city, the total response time for the arrival of the first-due unit, staffed with a minimum of 2-personnel, is 7 minutes and 32 seconds in all areas. The first due unit is capable of assessing scene safety, sizing-up the situation, conducting initial patient assessment and care, initiating defibrillation, and transporting patients.

Concentration

For 90 percent of all EMS responses in the city, the total response time for the arrival of the ERF, staffed with a minimum of 1-officer and 4-firefighters, is 9 minutes and 19 seconds in all areas. The ERF is capable of assessing scene safety, establishing command, sizing-up the situation, establishing the number of patients, initiating triage, requesting additional resources, initiating life saving measures, conducting initial patient assessment, directing apparatus set up, and transporting patients.

(All Risk) EMS - 90th Percentile Times - Baseline Performance			2014-2018	2018	2017	2016	2015	2014
Alarm Handling	Pick-up to Dispatch	Urban	01:30	01:27	01:29	01:28	01:32	01:35
Turnout Time	Turnout 1st Unit	Urban	02:00	02:01	01:58	02:01	01:58	02:05
Travel Time	Travel Time 1st Unit	Urban	05:15	05:16	05:26	05:14	05:11	05:09
	Travel Time ERF Concentratio	Urban	06:18	06:22	06:13	06:14	06:19	06:18
Total Response Time	Total Response 1st Unit Distribution	Urban	07:32	07:30	07:44	07:32	07:26	07:38
			18631	3832	3630	3832	3622	3715
	Total Response ERF Concentratio	Urban	09:19	09:14	09:17	08:58	09:02	10:51
			4073	854	822	794	954	649

Hazardous Materials Program:

Benchmarks (Target Goal):

Distribution

For 90 percent of all hazardous material incidents in the city, the total response time for the arrival of the first-due unit, staffed with 1-officer and 2-firefighters, shall be 6 minutes and 20 seconds in all areas. The first due unit shall be capable of: completing a size-up, establishing command, requesting additional resources, initiating life saving measures, estimating the potential harm without intervention, and begin establishing a hot, warm and cold zone.

Concentration

For 90 percent of all hazardous incidents in the city, the total response time for the arrival of the effective response force (ERF), staffed with a minimum of 7-firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF shall be capable of: completing a size-up, establishing command, requesting additional resources, initiating life saving measures, staging and apparatus set up, providing emergency medical services (EMS) support knowledge, and providing technical expertise, skills and abilities during hazardous materials incidents in accordance with the agency's standard operating guidelines.

Baselines (Current):

Delaware Fire Department's baseline statements reflect actual performance during 2014 to 2019. The department relies on the use of automatic aid from neighboring fire departments to provide its effective response force complement of personnel. The agency's baseline service level objectives are as follows:

Distribution

For 90 percent of all hazardous materials incidents in the city, the total response time for the arrival of the first-due unit, staffed with 1-officer and 2-firefighters, is 8 minutes and 36 seconds in all areas. The first due unit is capable of: completing a size-up, establishing command, requesting additional resources, initiating life saving measures, estimating the potential harm without intervention, and begin establishing a hot, warm and cold zone.

Concentration

For 90 percent of all hazardous incidents in the city, the total response time for the arrival of the ERF, staffed with a minimum of 7-firefighters and officers is 11 minutes and 31 seconds in all areas. The ERF is capable of: completing a size-up, establishing command, requesting additional resources, initiating life saving measures, staging and apparatus set up, providing EMS support knowledge, and providing technical expertise, skills and abilities during hazardous materials incidents in accordance with the agency's standard operating guidelines.

(All Risk) Hazardous Materials - 90th Percentile Times - Baseline Performance			2014-2018	2018	2017	2016	2015	2014
Alarm Handling	Pick-up to Dispatch	Urban	01:56	01:39	01:43	01:59	02:02	02:03
Turnout Time	Turnout 1st Unit	Urban	02:19	02:16	02:19	02:13	02:13	02:26
Travel Time	Travel Time 1st Unit	Urban	05:37	05:18	05:24	05:39	05:22	06:38
	Travel Time ERF Concentratio	Urban	08:22	07:01	08:51	08:06	07:29	08:29
Total Response Time	Total Response 1st Unit Distribution	Urban	08:36	07:53	08:40	08:19	08:10	10:05
			286	65	62	49	41	69
	Total Response ERF Concentratio	Urban	11:31	11:05	11:28	11:16	10:26	12:28
			131	29	32	25	24	21

Technical Rescue Program:

Benchmarks (Target Goal):

Distribution

For 90 percent of all rescue incidents, the total response time for the arrival of the first-due unit, staffed with a minimum of 2-firefighters, shall be 6 minutes and 20 seconds in all areas. The first due unit shall be capable of completing a size-up, establishing command, requesting additional resources, and initiating life saving measures.

Concentration

For 90 percent of all rescue incidents, the total response time for the arrival of the effective response force (ERF), staffed with 9-firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF shall be capable of: completing a size-up, establishing command, requesting additional resources, initiating life saving measures, staging and apparatus set up, providing technical expertise, knowledge, skills and abilities during technical rescue incidents, and providing emergency medical services (EMS) support.

Baselines (Current):

Delaware Fire Department's baseline statements reflect actual performance during 2014 to 2019. The department relies on the use of automatic aid from neighboring fire departments to provide its effective response force complement of personnel. The agency's baseline service level objectives are as follows:

Distribution

For 90 percent of all technical rescue incidents, the total response time for the arrival of the first-due unit, staffed with a minimum of 2-firefighters, is 7 minutes and 11 seconds in all areas. The first due unit is capable of

completing a size-up, establishing command, requesting additional resources, and initiating life saving measures.

Concentration

For 90 percent of all technical rescue incidents, the total response time for the arrival of the ERF, staffed with 15-firefighters and officers, is 9 minutes and 33 seconds in all areas. The ERF is capable of: completing a size-up, establishing command, requesting additional resources, initiating life saving measures, staging and apparatus set up, providing technical expertise, knowledge, skills and abilities during technical rescue incidents, and providing EMS support.

(All Risk) Technical Rescue - 90th Percentile Times - Baseline Performance			2014-2018	2018	2017	2016	2015	2014
Alarm Handling	Pick-up to Dispatch	Urban	01:53	01:37	01:39	01:43	02:24	02:08
Turnout Time	Turnout 1st Unit	Urban	02:16	02:15	02:10	02:21	02:11	02:19
Travel Time	Travel Time 1st Unit	Urban	04:41	04:35	04:21	04:09	04:27	06:07
	Travel Time ERF Concentratio	Urban	06:05	06:04	05:52	06:26	06:07	06:07
Total Response Time	Total Response 1st Unit Distribution	Urban	07:11	07:02	06:31	06:29	06:37	08:44
			722	132	142	150	147	152
	Total Response ERF Concentratio	Urban	09:33	09:04	09:35	09:03	10:21	09:15
			509	110	128	91	90	90

Section 3.9 - Staffing Levels and the Impact on Standard of Cover

Delaware Fire Department Standard Operating Policy determines the staffing level of each particular type of response unit. It is the intent of the policy to place a workforce in the field able to accomplish the goals and objectives of the organization on scene of an emergency, stopping loss or damage, and beginning corrective measures or therapy within the times indicated in the policy. With the use of automatic mutual aid, the department also relies on the staffing levels of the other agencies.

Staffing levels are driven by the need to place an adequate number of trained personnel on the scene within the standard time limit. Ultimately, those fiscal resources made available by the elected officials drive the Delaware Fire Department's ability to staff positions. Risk Management is used to analyze the city's problems using real world factors. These risk factors are derived from previous response history coupled with future trends, which are based upon those issues facing the community.

Section 3.10 - Evaluation of Reliability of Fire Companies

Reliability of emergency services provided by Delaware Fire Department is the result of the availability and capability of appropriate resources to meet response benchmarks on a routine basis and during times when resources are committed to other emergencies, training or assignments/details. To better understand the Department's reliability, it is necessary to consider how station locations and apparatus deployment leads to a reliability model that meets the needs of Delaware in an effective, affordable and acceptable manner. To further support reliability of the system during times of extraordinary high demand, there are processes in place to recall resources and to utilize mutual aid companies.

As noted, the Department now has four (4) staffed fire stations located in the city. Fire Station 304 opened in February 2019. The Department staffs five (5) front-line response apparatus operating 24 hours per day, seven days a week. All front-line vehicles are staffed with a minimum of three (3) personnel on fire apparatus and the staffed medic unit has a staffing of two (2) FF/Paramedics. In addition to these units, a Shift Captain staffs a vehicle and oversees the Department operation city-wide, 24 hours per day, seven days a week. The primary objective of station locations and apparatus deployment is to provide an ERF with appropriate apparatus and equipment at the scene of an emergency to mitigate it in a safe and timely fashion. This is accomplished within a dynamic environment where numerous variables are considered, including call types, distances, and risks.

As previously mentioned, DelComm uses as a CAD system that is based on a run card system, to select the closest available and most appropriate unit to respond to a given incident. Within the CAD system, the city is divided into run districts, that identifies the apparatus and running order based on specific types of incidents. The list provides depth for apparatus to a 3rd alarm incident, and a Level 3 Mass Casualty response. If additional resources are needed, these resources would be requested through the Ohio Fire Service Emergency Response Plan.

As shown previously in this section, the Department's performance is relatively strong in meeting response objectives for first-due units and for the concentration of responding units. Reliability of the system is the final analysis point and demonstrates the Department's overall performance effectiveness. The Department will be continuing to monitor the reliability of the service and seek improvement with the addition of resources.

Section 3.11 - Exhaustion of Resources

In the event that the initial emergency response proves to be inadequate, Delaware has the capability to request additional resources through DelComm's CAD system. With the existing system in place, it is possible to deplete all of the available Delaware County fire resources to respond in a timely manner to an incident within the City of Delaware. In addition to these resources, the State of Ohio has created a statewide mutual aid program. Requests for

additional resources from other counties would be made through the Ohio Fire Service Emergency Response Plan. This mobilization could take several hours to arrive at the scene.

Section 3.12 - Recommended Actions

As a result of the overall evaluation and SWOT analysis, the Department has identified opportunities to capitalize on existing strengths, overcome weaknesses, and reduce the Department's vulnerability to threats. The resultant "Recommended Actions" should be implemented over the course of the next five years to improve areas within the Standard of Cover that are not working as effectively or efficiently as possible. As a part of the Department's stated strategic planning methodology, these recommended actions were one of the significant inputs considered by the Department, City and public during the 2010 fire levy campaign. With the passage of the levy, the Department Administration has created an annual business plan that outlines the strategic result areas, goals and objectives that will be pursued for the given year.

The Department feels that the following recommended actions can make a significant contribution to the long-term performance of the Delaware Fire Department's emergency fire, medical response, special operations, risk reduction and personnel development:

1. The Department should continue moving forward with the plans established as part of the 2010 Fire Levy.
2. The Department should explore means to diversify revenue to ensure long-term funding stability.
3. The Department should attempt to work on a countywide status on the standardization of training and operations to improve the efficiency and effectiveness while operating during multi-agency responses.
4. The Department should continue to assess levels of risk within the community utilizing a risk assessment process. The risk assessments should be updated bi-annually and should be expanded to ensure data is up-to-date, relevant, credible and reliable.
5. The Department should further investigate ways to optimize performance to mitigate risk and meet current and short-term objectives. This should include pre and post-performance evaluations of apparatus, facility and staff deployment plans.
6. The Department should work on developing a regional long-term infrastructure investment plan to mitigate response issues, including distribution, concentration and reliability issues in the city and potentially throughout Delaware County. As a component of this process, the Department should increase their involvement and influence in long-term urban planning and land use policy to ensure that emergency protection and response is one of the considerations.
7. The Department should continue to work on the full implementation of Priority Dispatching including tiered responses to improve performance, in order to improve

efficiency, service delivery, and responsiveness in the notification, call handling and dispatching processes.

8. The Department should identify areas for quality improvement of all departmental data to ensure that performance measurement is based on data that is as accurate and reliable as possible.
9. The Department should continue to explore means to use technology to make improvements in the efficiency and effectiveness of its operation, including the use of traffic pre-emption and dispatching based on the closest available unit..
10. The Department should continue to explore means to provide training to improve the overall performance.

Appendices

Appendix A – Delaware Fire Department Risk Assessment Guide
Appendix B – Delaware County Multi-Hazard Mitigation Plan
Appendix C – High and Ultra High Risk List
Appendix D – Delaware Fire Department Run Cards
Appendix E – Top Chemicals Transported in Bulk by Rail in Delaware County
Appendix F – Hazardous Material Transportation Route Risk Analysis