Fire Departments Shared Services Study

Full Consolidation

City of Mountain Iron

City of Virginia

Conducted by

McGrath
CONSULTING GROUP, INC.

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Executive Summary

The intent of the executive summary is to give an overview of the most important issues and opportunities identified by the consulting team during the course of the study. The reader is highly encouraged to read the document in its entirety in order to gain an understanding of the recommendations presented within the report. Reading only the executive summary does not provide ample information on which to base decisions or to judge the recommendations made within this report.

The City of Mountain Iron and the City of Virginia participated in a Shared Service Study funded 90% from the State of Minnesota Governor's Fire and Rescue Services Task Force, and 10% shared by the two municipalities. The purpose of the study was to take a comprehensive independent assessment of each fire department; identifying areas of excellences and opportunities for greater shared services with the intent to improve services, ensure cost efficiency, and seek a plan for future service delivery.

McGrath Consulting Group, Inc. submitted a proposal through Executive Order 09-13 providing for The Governor's Task Force on A Shared Services Approach To Fire And Rescue Services In Minnesota. The designated representative representing the two municipalities and fire departments was City Administrator Craig Wainio. The initial grant request to the State for the study was a combined effort of the three Fire Chiefs.

Shared Services has many different meanings. For example both departments currently provide mutual aid to each other in situations when additional resources (personnel and/or apparatus) are needed. If the two organizations chose to act or become a single service provider, they could utilize one of the options allowed in the State of Minnesota:

- Full Consolidation (aka: District) – two or more service providers merge into one, single, legal agency, with its own taxing authority.

- Joint Powers Agreement – are contacts with other governmental units in which the taxing authority remains with each unit of government. These agreements can take the form of joint powers entities, service contracts, mutual aid agreements, shared resources and shared personnel.

The consultants recommend Mountain Iron and Virginia Fire Departments should consolidate into a Full Consolidation "District" which will serve as the foundation for future consolidations which could improve the emergency fire and EMS services throughout the Iron-range. In time a Full Consolidation will allow other neighboring municipalities to join the consolidation benefiting from all the benefits of consolidation.

Introduction

In 2009, the Governor of Minnesota signed Executive Order 09-13 Providing for the Governor's Task Force on a Shared Service Approach to Fire and Rescue Services (Fire and Rescue Shared Services Task Force) in Minnesota. The fire service has a long successful history of cooperative efforts when facing natural or man-made disaster/emergency situations; unfortunately, the same cannot be said for cooperative efforts off-site of the emergency scene.

Consolidations of services/resources have numerous benefits to both the service providers and those that receive their services. The State of Minnesota Governor's Fire and Rescue Shared Services Task Force (FRSTF) encourages service providers to share resources and improve services under two major categories:

- Full Consolidation (aka: District) – two or more service providers merge into one, single, legal agency, with its own taxing authority.

- Joint Powers Agreement – are contacts with other governmental units in which the taxing authority remains with each unit of government. These agreements can take the form of joint powers entities, service contracts, mutual aid agreements, shared resources and shared personnel.

The City of Mountain Iron and the City of Virginia, in Saint Louis County, Minnesota chose to evaluate and explore future opportunities in jointly providing emergency fire protection through a consolidation." The two communities jointly hired McGrath Consulting Group, Inc. to assist in identifying potential areas of opportunity for examining the most cost effective and efficient

methods in providing quality protection to residents and visitors within the service protection area.

McGrath Consulting Group, Inc. recognizes that each City has its own unique opportunities and challenges and any potential resulting consolidation would not be without challenges, as well. The overarching goal of Cities participating in this study is to provide their residents and visitors with the highest level of emergency services possible within the fiscal capabilities of each City.

Study Methodology

The consultants made site visits to meet with and interview key stakeholders in each City and organizations including elected officials, appointed government officials, fire department leadership, community leaders, and residents. During these site visits, the consultants gathered and analyzed both qualitative and quantitative data to gain a better understanding of the existing state of the organizations as they currently exist, thereby, identifying future opportunities for greater cooperative efforts could be identified.

To provide a meaningful report, the consultants conducted a comprehensive audit of the City of Mountain Iron and City of Virginia Fire Departments, separately, to assess existing apparatus, facilities, staffing, employment, resource deployment and general operational procedures. The consultants make recommendations in this report that would be of significant benefit to each of the organizations studied.

Five consultants participated in this study and analyzed topics appropriate to their specific skills and expertise. All but the last consultant listed below made a minimum of a site visit. The consultant team consisted of:

- Dr. Tim McGrath CEO – Project Manager / Lead Consultant
- Chief Justin Heim, Ph.D. – Fire/EMS consultant
- Dr. Victoria McGrath CEO – McGrath Human Resources Group
- Ms. Malayna Halvorson-Maes – Human Resource consultant

- Chief Robert Stedman – Fire/EMS Consultant

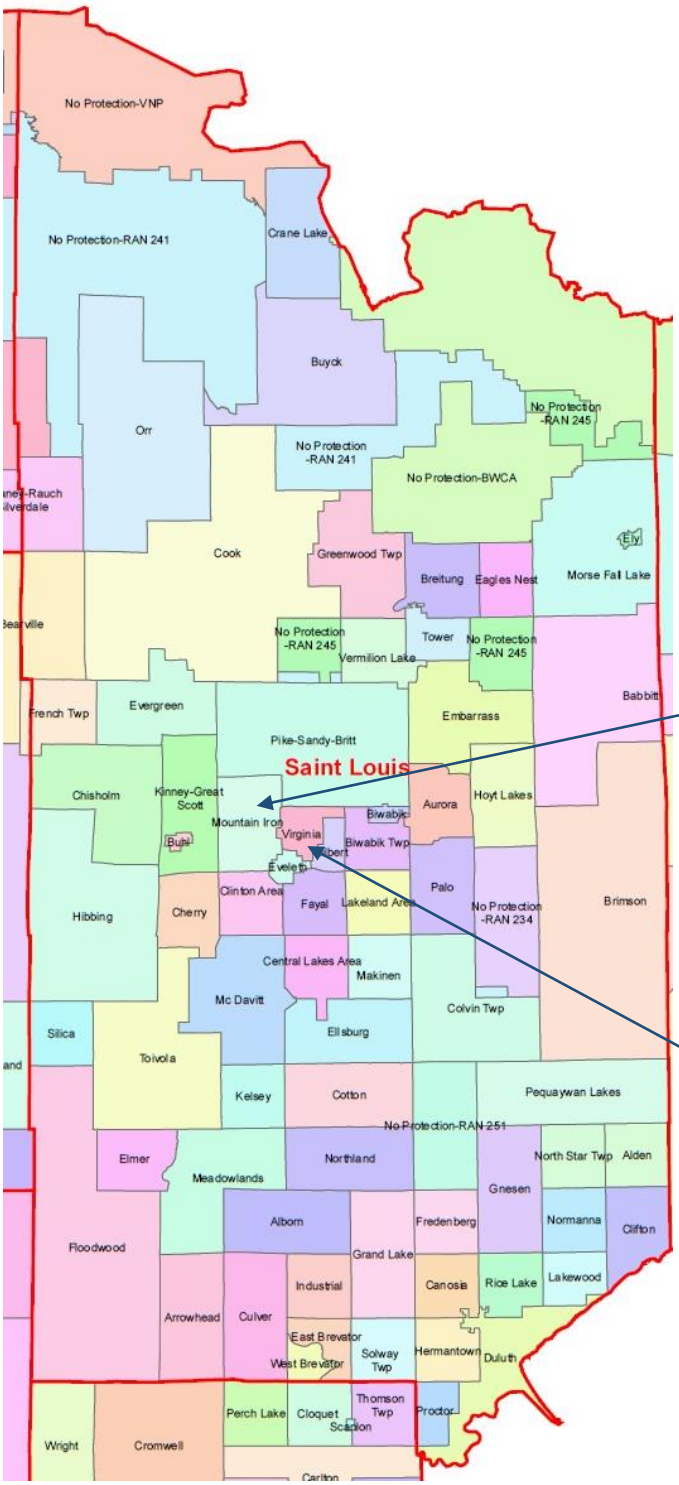
The reader will note that much of Mountain Iron data/information is absent in the report inasmuch as the consultants were unable to obtain the information from leadership. Conversely, the consultants wish to thank the Fire Chief of the Virginia Fire Department who provided copious information/data in a timely manner.

The consultants are extremely appreciative of the numerous stakeholders who participated in the study, each of whom ensured that the consultants were able to receive the information requested for the study in a timely manner. The consultants wish to express special appreciation to the two Fire Chiefs who provided data, as well as the City and Township governing and appointed officials for their candor and information.

Community Overview and Governance

Saint Louis County, MN

Figure 1: Saint Louis County, MN



Both the Cities of Mountain Iron and Virginia are located in Saint Louis County, the largest county (total area) in Minnesota and the largest in the United States east of the Mississippi River. The area is known for surface mining of taconite [iron-bearing (15% iron) sedimentary rock) which is ground and the taconite pellets are magnetically recovered and melted down into steel. The estimated population is slightly less than 200,000, a slight decrease from the 2010 census.

Mountain Iron - The City of Mountain Iron was founded in 1892 as a mining village and encompasses 71.3 square miles with an estimated current population of 2,869. Mountain Iron is proud to be known as the Taconite Capital of the World.

Virginia - The City of Virginia was incorporated in 1896 as a logging community, later to become an iron mining community. The City encompasses 18.8 square miles with a current estimated population of 8,523. Virginia displays the nickname of Queen City of the North.

City of Mountain Iron Governance

Government formation is Mayor-council consisting of a Mayor and four City Council members all having equal vote. The Mayors term is two years and each Council members is four years staged terms.

City administration is the responsibility of the City Administrator who oversees the day to day operations of the City. The administration division of the City has four employees who perform: financial, human resources, budgeting, planning, and economic development. Other departments in the City consists of Public Works, Municipal Services, Fire/EMS, Zoning, Accounting, and Building Maintenance. Police protection is provided by contract from the Saint Louis Sheriff Department since 1975.

The population distribution is 60% urban and 40% rural. Median resident age is 43.9 years and the median household income is $52,536. The race distribution is illustrated in the table below:

Table 1: Mountain Iron Race Distribution

Mountain Iron	
Race	**% of Population**
White	96.4%
Two or more races	1.8%
American Indian	0.7%
Hispanic	0.6%
Black	0.3%
Asian	0.2%

City of Virginia Governance

The City of Virginia has a Mayor/Council form of government. The Mayor's term is two years and the six City Council members are staged terms of four years each. The City is a full service municipality with the population distribution of 93% urban and 7% rural.

The median household income is $35,456 with a per capita income of $24,425, and the median resident age is 44.9 years. The crime rate is one of the highest in Minnesota and 29.4% greater than the national crime rate. The race distribution is illustrated in the table below:

Table 2: Virginia Race Distribution

Virginia	
Race	**% of Population**
White	89.2%
American Indian	6.2%
Two or more races	2.8%
Black	1.0%
Hispanic	0.9%
Asian	0.3%

Fire Department Overview

Mountain Iron Fire Department

The Mountain Iron Fire Department (MIFD) is a municipal department of the City of Mountain Iron, although the department is not listed on the City's webpage. All apparatus and equipment are housed in a single fire station which is attached to the City's Public Works complex at 8877 Slate Street just west of Mineral Avenue, Mountain Iron.

The department is staffed completely with paid-on-call members, which means the member are not housed in the fire station; rather, they respond to emergency calls from home, work, or other locations and receive $12.00/hour for calls and training. Although the fire department is a municipal division of the City, they function as if they are a private corporation; e.g. membership elects their officers. The selection of fire department officers did not align as to the information provided by the Fire Chief and that of the City Policy # 2008-02 -amended December 21, 2009.

The City policy states:

> **Appointment Responsibilities**
>
> *Subject to tall discretion of the City Council or its Designee, all appointments to officer positons are to be approved by the Fire Chief. In the case of the Fire Chief and Assistant Fire Chief positions, the appointment is to be made by the City Council or its Designee.*

Also positon titles are different as illustrated in the table below:

Table 3: Selection of Officers

Officers Selection		
Fire Department		**City**
Fire Chief/EMS Director		Fire Chief
Assistant EMS Director		Assistant Chief
Assistant Fire Chief		Captain
Safety Officer		Captain
Captain (Training)		Captain
Captain (Wildland)		Training Officer
Captain (Safety/Trucks)		

Although the department has one more positon position "Safety" it appears twice in the FD information provided.

In the fire departments information there were seven positions that are elected by the membership; each elected position receives a monthly stipend, combined totaling $18,000 annually as illustrated in the table below:

Table 4: Mountain Iron Stipends

Mountain Iron Fire Department		
Position	**Stipend per Month**	**Annual Stipend**
Fire Chief	$ 525.00	$ 6,300.00
Assistant EMS Director	$ 250.00	$ 3,000.00
Assistant Fire Chief	$ 250.00	$ 3,000.00
Captain (Training Officer)	$ 125.00	$ 1,500.00
Captain (Wildland Officer)	$ 125.00	$ 1,500.00
Captain (Safety/Trucks Officer)	$ 75.00	$ 900.00

It should be noted in the fire department information the Safety Officer was not included in the stipend table.

Recommendation – Officers Stipends

- *The City should clarify if there is a seventh position of Safety Officer and is that individual receiving a monthly stipend?* ***Priority 3***

Including the officers positions listed above, there were 21 members listed on the roster for MIFD at the time of the study.

The leadership of the department was reluctant to share information with the consultants inasmuch as he stated "they didn't want to become part of the Virginia Fire Department". After

several communications and additional site visit, with the Chief, provided some information; however, the format given required the consultants to determine many of the query sections through a hand-count: therefore, there might be slight errors in some categories but should not have any negative impact on the recommendations – see Appendix A for the data requested by the consultants at the beginning of the project.

Virginia Fire Department

In March of 1893 a group of concern citizens formed the Virginia first fire company. The Virginia Fire Department (VFD) experienced two major fires that destroyed the majority of the City in its 125-year existence. Today the VFD is a career municipal department which provides all services associated with larger municipal fire departments, including Emergency Medical Services (EMS) at the Advance Life Support (ALS) at the paramedic level. ALS (paramedic) is the highest level of pre-hospital care available. EMS at the ALS level is provided within the 19.2 square miles of the City, and outside the City limits of Virginia to a 640 square mile area in rural northern Minnesota. In addition, the department provides inter-facility hospital transfers at both the emergency and non-emergency level.

The department staffing consists of 34 career personnel and 1 civilian member. Shift personnel work 24 hours on-duty followed by 48 hours off-duty. Career personnel are unionized under the International Association of Firefighters (IAFF) local 390. The labor management relationship was very positive as expressed during the site stakeholders interview. Tragically, three firefighters have died in the line of duty while serving citizens of Virginia during the tenure of the department.

The VFD Chief provided copious data and information and assisted the consultants in obtaining information they were having difficulties obtaining. From the data he provided, the consultants are able to assess future fire/EMS that will benefit the City of Virginia and City of Mountain Iron.

National Standards

Most standards in the fire/EMS service identify the minimum job performance requirements in an attempt to ensure that those performing fire services are qualified. Standards are an attempt by the industry or profession to self-regulate by establishing minimal operating, performance, or safety standards, and they establish a recognized standard of care. The primary industry standards that would apply to the City of Mountain Iron and City of Virginia Fire Departments include:

National Fire Protection Association (NFPA)

Non-mandatory

Although NFPA has 300 codes and standards, two of the most significant are **NFPA 1710** (Organization and Development of Fire Suppression, Emergency Medical Operations, and Special Operations to the Public by **Career** Fire Departments), and a sister standard **NFPA 1720** (Organization and Development of Fire Suppression, Emergency Medical Operations, and Special Operations to the Public by **Volunteer/Paid-On-Call** Fire Departments). In the case of Mountain Iron Fire Department, NFPA 1720 would be applicable; whereas, for the Virginia Fire Department NFPA 1710 would apply.

Minnesota statutes and enabling legislation give the elected officials wide latitude to organize and provide for fire protection in the State. Minnesota Statute 412.221 gives Cities the power to establish a fire department. There is nothing in the Statutes that appears to make fire protection compulsory. How each City chooses to provide fire protection, the level of protection reflects the quality of life standards for the community. NFPA 1710 (career FD) is more stringent, whereas, NFPA 1720 is less stringent and allows the Authority Having Jurisdiction (AHD) considerable flexibility. Regardless if NFPA 1710 or NFPA 1720, the codes/standards have the effect of a double-edged sword; the fire department is not required to meet them, but the fire department would most likely be judged against these standards by a host of investigating agencies in the case of a firefighter's line-of-duty death.

Minimum Response and Response Times

The criteria for both City's is different in as much as two different NFPA standards would apply to each: NFPA 1720 – Mountain Iron / NFPA 1710 – Virginia

NFPA 1720 – Mountain Iron

Table 5: NFPA 1720 Staffing & Response

Demand Zone[a]	Demographics	Minimum Staff to Respond[b]	Response Times (minutes)[c]	Meets Objective (%)
Urban Area	>1000 /mi^2	15	9	90
Suburban Area	500-1000/mi^2	10	10	80
Rural Area	<500/mi^2	6	14	80
Remote Area	Travel Distance ≥ 8 miles	4	Dependent on Travel Distance	90
Special Risk	Determined by AHJ	Determined by AHJ Based on Risk	Determined by AHJ	90
NFPA 1720: 4.3.2 Staffing and Response Time (2014 Edition)				

[a] *jurisdiction can have more than one demand zone*
[b] *Minimum staffing includes members responding from the AHJ department and automatic aid*
[c] *Response time begins upon completion of the dispatch notification and ends at the time interval shown in the table.*

NFPA 1710 – Virginia

Based on a 2,000 square foot, residential single family, two-story, without a basement fire:

Table 6: NFPA 1710 Staffing Requirements

# of Personnel Needed	Assignment
1	Incident Command
1	Pump Operator
4	Attack Line - 2 lines @ 2 firefighters
2	Support - one each attack line
2	Search & Rescue
2	Ventilation
2	Initial Rapid Intervention Crew
14	***Sub Total***
1	Aerial - if utilized
15	**Total**

Table 7: NFPA 1710 Response Times

Department	Duty	Maximum Time Allowed
Dispatch	Answering & Processing	64 seconds
Fire Department	Turn Out Time (out the door)	60 seconds - EMS
		80 seconds - Fire
Travel Time	Scene Arrival	240 seconds (4 minutes)

Recommendation – NFPA

- *Each department should ensure that the governing officials understand the significance of the current standard that applies to their department.* ***Priority 2***

- *Neither department should adopt their respective NFPA standard. Adoption would include the adoption of all OSHA and NFPA standards by reference included in the document. However, a plan should be developed to meet as many of the NFPA standards as possible in the future.* ***Priority 5***

Occupational Safety and Health Administration (OSHA)

Mandatory

OSHA states that "once fire fighters begin the interior attack on an interior structural fire, the atmosphere is assumed to be "Immediately Dangerous to Life or Health" (IDLH) and section (g) (4) of OSHA's Respiratory Protection Standard, 29, CFR 1910.134 [**two-in/two-out**] applies." OSHA defines interior structural firefighting "as the physical activity of fire suppression, rescue, or both inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage." This rule is commonly referred to as the **"two-in/two-out" rule**, which is OSHA's mandatory requirement for interior firefighting.

Rapid Intervention Crew (RIC) Team

OSHA requires that at least one team of two or more properly equipped and trained fire fighters are present outside the structure before any team(s) of fire fighters enters the structural fire. This requirement is intended to assure that the team outside the structure has the training, clothing, and equipment to protect them and, if necessary, safely and effectively rescue fire fighters inside the structure. For high-rise operations, the team(s) would be staged below the IDLH atmosphere. [29 CFR 1910.134(g) (3) (iii)]

Insurance Service Offices, Inc. (ISO)

Non-mandatory

The Insurance Services Office, Inc. (ISO) publishes and utilizes the Fire Suppression Rating Schedule (FSRS) to "review available public fire suppression facilities and to develop a Public Protection Classification (PPC) for insurance purposes."

Many insurance companies utilize this rating system to establish premium schedules for fire insurance. Communities with a lower rating can generally expect to have lower fire insurance premiums than those with higher ratings, thus creating an incentive for the community's investment in fire protection. However, insurance rates are often driven by a competitive market between insurance companies, with ISO having less significances.

ISO Rating Factors

The classification of the fire protection assigned to a community is based on four categories:

- Fire Department (50 percent)
- Water Supply (40 percent)
- Emergency Communication (10 percent)
- Community Risk Reduction (up to 5.5-point reduction)

The Community Risk Reduction section of the FSRS offers a maximum of 5.5 points, resulting in 105.5 total points available in the FSRS. The inclusion of this section for "extra points" allows recognition for those communities that employ effective fire prevention practices, without unduly affecting those who have not yet adopted such measures. The addition of Community Risk Reduction gives incentives to those communities who strive proactively to reduce fire severity through a structured program of fire prevention activities.

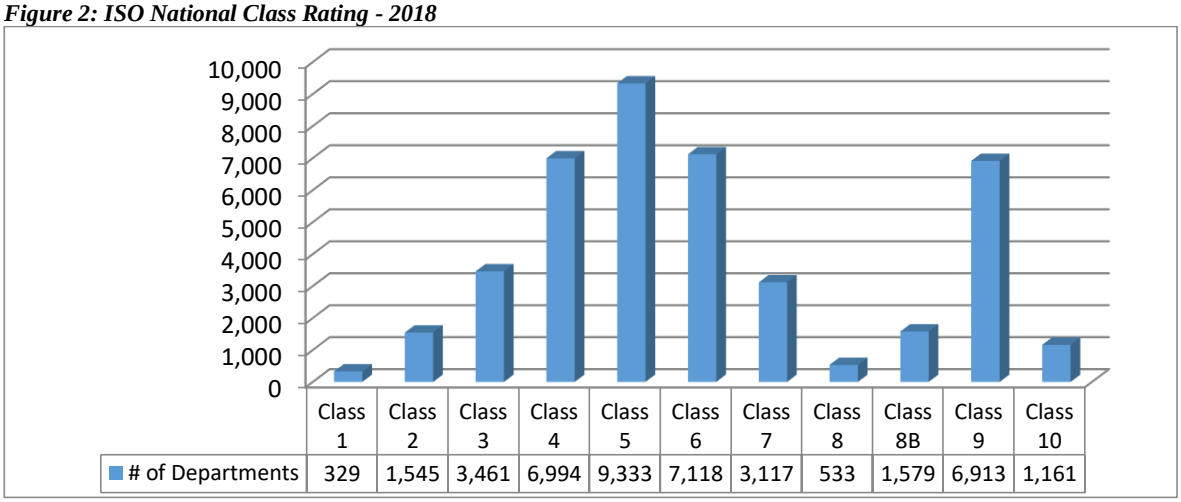
The areas of community risk reduction evaluated in this section include:

- Fire Prevention
- Fire Safety Education
- Fire Investigation

The total points are compared to a chart with ten classes, each representing about 10 points, for a total of 100 points, excluding the influence of Community Risk Reduction. Class 1 is the highest, and Class 10 is the lowest.

The figure below illustrates the classification category and number of departments with the corresponding ISO class number on a National basis 2018 data of 42,083 departments:

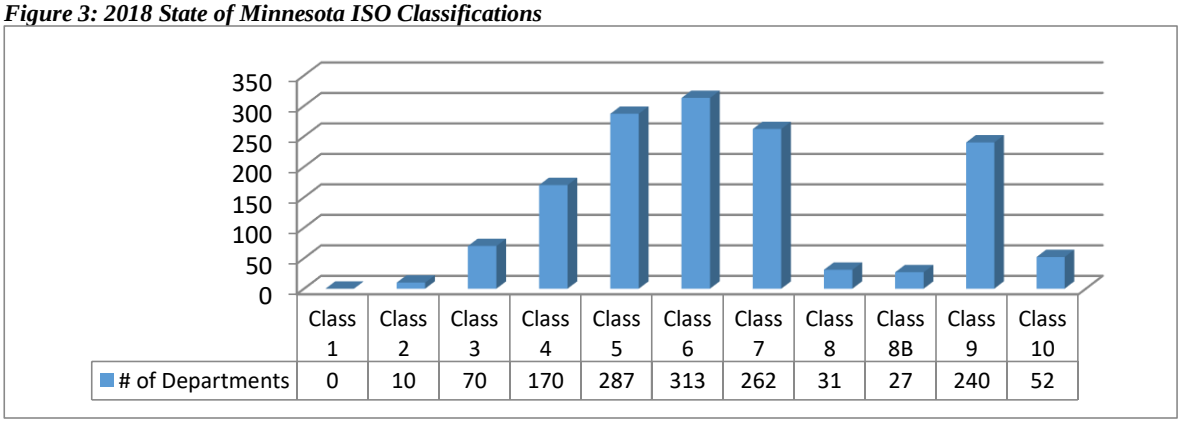
Figure 2: ISO National Class Rating - 2018



	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 8B	Class 9	Class 10
# of Departments	329	1,545	3,461	6,994	9,333	7,118	3,117	533	1,579	6,913	1,161

In the state of Minnesota, 2018, 1,462 fire departments ratings were classified by ISO in 2018 as illustrated below.

Figure 3: 2018 State of Minnesota ISO Classifications



	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 8B	Class 9	Class 10
# of Departments	0	10	70	170	287	313	262	31	27	240	52

Individual Public Protection Classification (PPC) Scores

The summary of the ISO PPC classifications is illustrated in the table below:

Inasmuch as both departments utilize the same Public Safety Answering Point (PSAP) aka: Dispatch, the Emergency Reporting scores would all be the same; however, the fire departments 50% scores and water supply 40% scores would be reflections of the individual departments and municipality. The table below illustrates the PPC scores for each department:

Table 8: City's Individual PPC Scores

	Credit Earned/Available		
FSRS Item	**Mountain Iron**	**Virginia**	**Credit Available**
Emergency Reporting			
Credit for Emergency Reporting	2.40	2.40	3.00
Credit for Telecommunicators	3.12	3.12	4.00
Credit for Dispatch Circuits	1.80	1.80	3.00
Credit for Receiving & Handling Fire Alarms	***7.32***	***7.32***	***10.00***
Fire Department			
Credit for Engine Companies	4.53	4.00	6.00
Credit for Reserve Pumpers	0.00	0.48	0.50
Credit for Pumper Capacity	3.00	3.00	3.00
Credit for Ladder Service	3.72	1.82	3.00
Credit for Reserve Ladder & Service Trucks	0.00	0.19	4.00
Credit for Deployment Analysis	1.60	6.74	10.00
Credit for Company Personnel	4.38	9.99	15.00
Credit for Training	1.34	6.42	9.00
Credit for Operational Considerations	2.00	2.00	2.00
Credit for Fire Department	***20.57***	***34.64***	***50.00***
Water Supply			
Credit for Supply System	11.65	23.73	30.00
Credit for Hydrants	2.88	3.00	3.00
Credit for Inspection & Flow Testing	1.80	4.20	7.00
Credit for Water Supply	***16.13***	***30.93***	***40.00***
Divergence	**-0.16**	**-1.61**	
Community Risk Reduction	**2.52**	**4.46**	**5.50**
Total Credit	***46.38***	***75.74***	***105.50***

Summary ISO Classification

Table 9: Departments PPC Classification

City	ISO	Year		Dispatch	Fire Dept.	Water	Divergence	CRR	Final Score
Mountain Iron	6/6Y	2016 - Feb		7.32 of 10	20.57 of 50	16.13 of 40	-0.16	2.52 of 5.5	46.38 of 105.5
Virginia	3/3X	2016 - Nov		7.32 of 10	34.64 of 50	30.93 of 40	-1.61	4.46 of 5.5	**75.74** of 105.5

Divergence = The divergence factor mathematically reduces your preliminary scores if the fire department and water-supply scores are out of line with each other.
CRR = Community Risk Reduction – prevention/safety education programs

Therefore, City of Virginia would receive fire insurance rates based on a rating of a Class 3; whereas, City of Mountain Iron would receive fire insurance rates based on a rating of Class 6. It is possible that residents in the City of Virginia would be paying less for fire insurance than the residents of the City of Mountain Iron on equal property values.

The value of the ISO rating to a community continues to be questionable as a determining factor in a community's level of fire protection. The ISO purpose is to determine a fire insurance classification, which may or may not be used by insurance companies in the calculation of property insurance premiums for an area. ISO only rates those pieces of the fire protection program they feel are important to assign insurance rates. There is limited value in attempting to assess a fire department by solely utilizing the community's ISO rating; rather, the Commission on Fire Accreditation International (CFAI) accreditation process far exceeds any other type of instrument in measuring a service provider against defined benchmarks.

Center for Public Safety Excellence (CPSE)

Non-mandatory

A better evaluation tool exists today. The International Association of Fire Chiefs (IAFC) has developed a program that measures the quality and performance of a particular fire service agency and will award national accreditation to those departments that pass the stringent criteria. The Center for Public Safety Excellence (CPSE), the umbrella organization, utilizes a process known as the Commission on Fire Accreditation International (CFAI). It specifies more than 250 performance indicators, including 70+ core competencies against which a fire agency can measure itself.

The CFAI is a structured process for documenting the levels of fire safety, fire prevention, fire safety education, and fire suppression services currently provided, and for determining the future level of service the department should provide. The accreditation process asks the community to determine and document whether its fire protection services are appropriate, adequate, and effective.

The advantage to the CFAI accreditation program lies in the process itself. The department must examine every aspect of its existence and determine the most cost-effective means of providing service. This program requires a time commitment and effort on the part of the fire administration. If at some future point the department wishes to seek accreditation, it is recommended that a single individual be assigned full-time for the completion of this project. Although the consultants do not recommend that any of the departments begin the accreditation process, it is suggested that the administration look at the performance indicators or benchmarks set up for the evaluation process to use as a guide while developing policies and procedures for their department

Recommendation – CFAI Accreditation

- *The fire department should not seek international accreditation (CFAI) at this juncture; rather, the CFAI performance indicators and core competencies should be utilized as a model for quality and a benchmark for opportunities.* ***Priority 5***

Emergency Activities

The prime function of a fire department is to respond to emergencies. Although this activity only takes a small percentage of the department's total time, its state of readiness must always be at a maximum. The challenge for fire/EMS leadership is to identify the need for resources that will provide the highest level of service, safety for those who receive and provide that service, and justify the fiscal resources needed. Fire chiefs and department supervisors should daily utilize categories of data for a variety of leadership/management functions, including but not limited to:

- Fiscal management
- Staffing

- Resource deployment
- Budgeting
- Purchasing
- Strategic planning
- Program development/implementation
- Program oversight/assessment
- Assuring competency
- Assuring cost-effective/efficient services
- Communication with governing board(s)

Leadership can quantify the above objectives through good data. The International Association of Fire Chiefs (IAFC) defines good data as data that meets three components:

- **Good Data is Relevant** – you are collecting information on the things that matter, like response times and number of calls for service.

- **Good Data is Accurate** – your processes for data collection must be consistent and trustworthy.

- **Good Data is Reliable** – a measurement from one company is equivalent to the same measurement from another company. You don't have to "adjust your data to accommodate known distortions".

Source: International Association of Fire Chiefs: Weathering the Economic Storm, December 2008

Ten Year Total Emergencies

The departments were requested to provide call totals for the last ten years from their data management system. The figure below represents the ten-year record of total incidents and reflects a percentage of increase or decrease per year and the ten-year average percent change.

Table 10: Ten Year Total Calls & % Change

Department	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg %/Per Yr.
Mountain Iron								128	117	87	
% Change									-8.59%	-25.64%	-17.12%
Virginia	3,087	2,415	3,013	3,063	3,388	3,566	3,587	3,428	3,957	4,257	
% Change		-21.76%	24.76%	1.66%	10.6%	5.25%	0.59%	-4.43%	15.43%	7.58%	4.41%

Incident by Nature

The departments participate in the National Fire Incident Reporting System (NFIRS) fire/EMS program in reporting all incidents through the Minnesota State Fire Marshal (Division of Minnesota Department of Public Safety), under authority of the United States Fire Administration (USFA).

NFIRS categorizes incident types into nine categories with each category having a series number with multiple sub-categories under each main series number. The USFA collects and analyzes NFIRS data from participating states to provide a legal record of fact, assist fire department administrations in evaluating their fire and EMS effectiveness, and to collect data for use at the state and national levels.

The following table and figures reflect the 2015 - 2017 emergency activities of the departments utilizing the NFIRS series categories:

Mountain Iron NFIRS

Table 11: Mountain Iron NFIRS Data

Mountain Iron Fire Department						
NFIRS	**Description**	**2015**	**2016**	**2017**	**% of Total**	**National %**
Series 100	Fires	29	41	29	29.8%	4.7%
Series 200	Overpressure/Explosion	1	0	0	0.3%	0.2%
Series 300	Rescue/EMS	15	9	7	9.3%	64.1%
Series 400	Hazardous Conditions	18	9	5	9.6%	3.7%
Series 500	Service Calls	5	12	8	7.5%	7.1%
Series 600	Good Intent Calls	52	38	25	34.6%	10.5%
Series 700	False Alarm/False Calls	8	8	13	8.7%	8.7%
Series 800	Severe Weather	0	0	0	0.0%	0.1%
Series 900	Special Incidents	0	0	0	0.0%	0.7%
Total Calls		**128**	**117**	**87**	100%	100%

No explanation for large drop in 2017 total calls.

The NFIRS Series 100 – Fires are considerably higher than the National average for fire departments. Sub-categories in Series 100 include:

- Structure fire

- Fire in mobile property used as a fixed structure
- Mobile property (vehicle) fire
- Natural vegetation fire
- Outside rubbish fire
- Special outside fire
- Cultivated vegetation, crop fire
- Fire, other

Virginia NFIRS

Table 12: Virginia NFIRS Data

Virginia Fire Department						
NFIRS	**Description**	**2015**	**2016**	**2017**	**% of Total**	**National %**
Series 100	Fires	53	50	43	1.3%	4.7%
Series 200	Overpressure/Explosion	4	5	5	0.1%	0.2%
Series 300	Rescue/EMS	3,034	3,532	3,795	89.0%	64.1%
Series 400	Hazardous Conditions	32	42	50	1.1%	3.7%
Series 500	Service Calls	65	90	142	2.6%	7.1%
Series 600	Good Intent Calls	194	179	177	4.7%	10.5%
Series 700	False Alarm/False Calls	43	53	38	1.2%	8.7%
Series 800	Severe Weather	0	1	0	0.0%	0.1%
Series 900	Special Incidents	3	5	7	0.1%	0.7%
Total Calls		**3,428**	**3,957**	**4,257**	100.0%	100%

The Series 100 – Fires are considerably lower than the national average; most likely from the efforts of the Fire Prevention Bureau. Series 300 – Rescue/EMS is considerably higher than the national average; the EMS response district is 640 square miles.

Simultaneous/Overlapping Incidents

Simultaneous/overlapping incidents is a term utilized by most data management systems, which refers to times when the department is handling an emergency situation and another unrelated emergency incident occurs requiring immediate fire department response. Depending on the record management system utilized by a department, these incidents might be called overlapping, or back-to-back calls.

The significance of the amount and frequency of simultaneous incidents can result in increased response times or greater usage of mutual aid. There is no consensus in the industry as to an

exact number when simultaneous/overlapping incidents require additional resources. Fire departments do not have the ability to "stack calls" as do police agencies who routinely prioritize calls and dispatch accordingly. With few exceptions, when 9-1-1 requests the fire department it is for an emergency – at least in the opinion of the caller.

If every piece of fire or EMS apparatus were available at its assigned location every time a call for service was received, the department's reliability would be 100%. If, however, a call is received for a particular station/unit, but that station/unit is already committed to another incident, be it fire or EMS, and the next closest unit must respond from a different station or source; the substitute company may exceed the maximum prescribed response time.

As the number of emergency calls per day increases, the probability increases that the primary unit needed for response is already committed and a backup or substitute unit will need to be dispatched. Although there are no national standards that indicate when simultaneous/overlapping calls require additional on-duty personnel, the consultant's experience indicates that when simultaneous/overlapping calls reach 15% to 20% serious consideration to additional on-duty personnel is recommended.

Mountain Iron Overlapping Incidents

The MIFD was unable to provide simultaneous/overlapping calls for any of the three-year study period.

Virginia

The VFD was able to provide a very detailed analysis of their overlapping calls in 2017, including how many times there were from two to eight unrelated emergency incidents occurring at the same time as illustrated in the figure and table below:

Figure 4: Virginia Overlapping Incidents - 2017

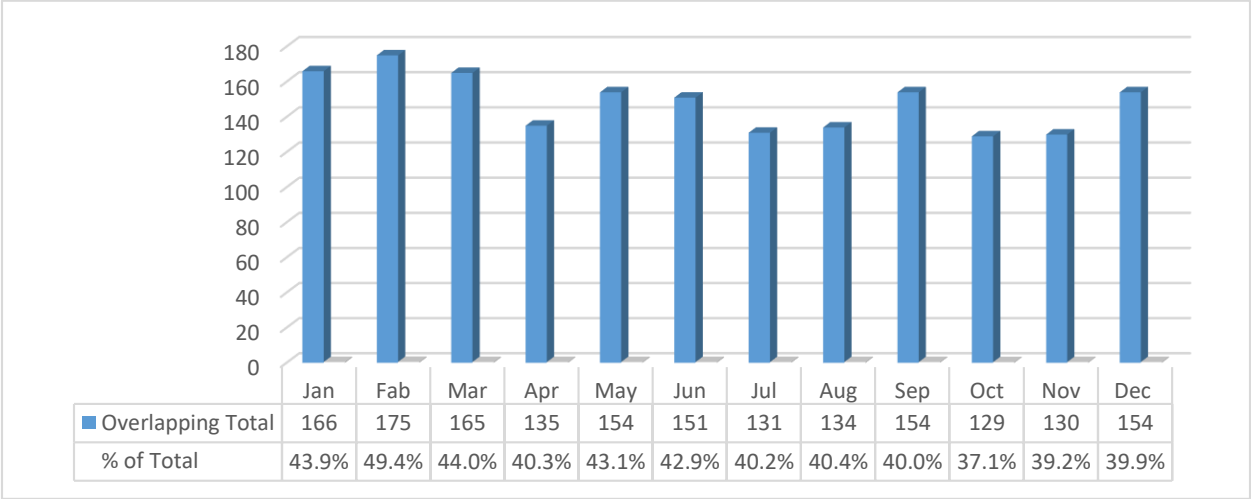


Table 13: Virginia Overlapping Incidents - 2017

Virginia Fire Department - 2017													
Overlaps Occurances	**Jan**	**Fab**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Overlaps of 2	88	94	105	85	99	101	76	93	98	75	80	80	1,074
Overlaps of 3	42	43	36	27	35	31	35	27	32	31	27	43	409
Overlaps of 4	19	19	11	14	11	13	12	11	16	14	15	16	171
Overlaps of 5	11	12	5	5	7	5	4	2	4	5	5	12	77
Overlaps of 6	4	4	7	2	1	1	3	1	3	4	2	2	34
Overlaps of 7	1	2	1	2	1	0	1	0	1	0	1	1	11
Overlaps of 8	1	1	0	0	0	0	0	0	0	0	0	0	2
Overlapping Total	***166***	***175***	***165***	***135***	***154***	***151***	***131***	***134***	***154***	***129***	***130***	***154***	**1,778**
% of Total	**43.9%**	**49.4%**	**44.0%**	**40.3%**	**43.1%**	**42.9%**	**40.2%**	**40.4%**	**40.0%**	**37.1%**	**39.2%**	**39.9%**	**41.7%**

Emergency Service Trends

Progressive fire department leadership utilizes emergency response data for multiple purposes including budgeting, strategic planning, management, and resource deployment. The data in the following areas is beneficial to the day-to-day management of a department. The following areas will be examined as they pertain to the Mountain Iron and Virginia Fire Departments:

- Calls by month
- Calls by day of the week
- Calls by time of day
- Calls distribution by district
- Mutual aid/Automatic aid

Incidents by Month

Both departments provide copious opportunities for outdoor activities year-round ranging from hiking, fishing, biking, water and ice activates, skiing, and hunting; therefore, as with most northern areas, the spring, summer, and fall usually have more tourists and activities resulting in a greater demand for services on the fire department.

Mountain Iron – by Month

Table 14: Mountain Iron Incidents by Month

Mountain Iron Fire Department													
Yrea/Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
2015	9	10	8	11	14	6	12	9	11	14	11	13	128
2016	10	7	12	11	15	8	11	6	12	7	4	14	117
2017	10	6	6	7	16	7	8	4	4	8	4	7	87
Average	*9.7*	*7.7*	*8.7*	*9.7*	*15.0*	*7.0*	*10.3*	*6.3*	*9.0*	*9.7*	*6.3*	*11.3*	*110.7*
% of Total	*8.7%*	*6.9%*	*7.8%*	*8.7%*	*13.6%*	*6.3%*	*9.3%*	*5.7%*	*8.1%*	*8.7%*	*5.7%*	*10.2%*	*100%*

Both May and December indicate as the busiest months with the remainder of the months remaining relatively slight variations.

Virginia – by Month

Table 15: Virginia Incident by Month

Virginia Fire Department													
Yrea/Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
2015	291	287	316	254	301	303	313	285	254	269	264	291	3,428
2016	309	335	320	321	380	293	324	371	313	332	313	346	3,957
2017	378	354	375	335	357	352	326	332	382	348	332	386	4,257
Average	*326.0*	*325.3*	*337.0*	*303.3*	*346.0*	*316.0*	*321.0*	*329.3*	*316.3*	*316.3*	*303.0*	*341.0*	*3,881.0*
% of Total	*8.4%*	*8.4%*	*8.7%*	*7.8%*	*8.9%*	*8.1%*	*8.3%*	*8.5%*	*8.2%*	*8.2%*	*7.8%*	*8.8%*	*100%*

Virginia Fire Department remains equally busy throughout the year most likely due to high percentage (89.0%) of their emergency incidents being EMS.

Incidents by Day of the Week

Incidents reviewed by day of the week are another metric utilized by leadership to manage the resources of the organization. Coupled with time of day and perhaps incidents by month, this information could be of value if a pattern emerges suggesting staffing will be problematic.

Mountain Iron – by Day of the Week

Table 16: Mountain Iron Incidents by Day of the Week

Mountain Iron Fire Department								
	Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**	**Total**
2015	18	15	21	15	19	26	14	128
2016	6	20	16	19	19	21	16	117
2017	10	12	12	9	14	15	15	87
Average	*11.3*	*15.7*	*16.3*	*14.3*	*17.3*	*20.7*	*15.0*	*110.7*
% of Total	*10.2%*	*14.2%*	*14.8%*	*13.0%*	*15.7%*	*18.7%*	*13.6%*	*100%*

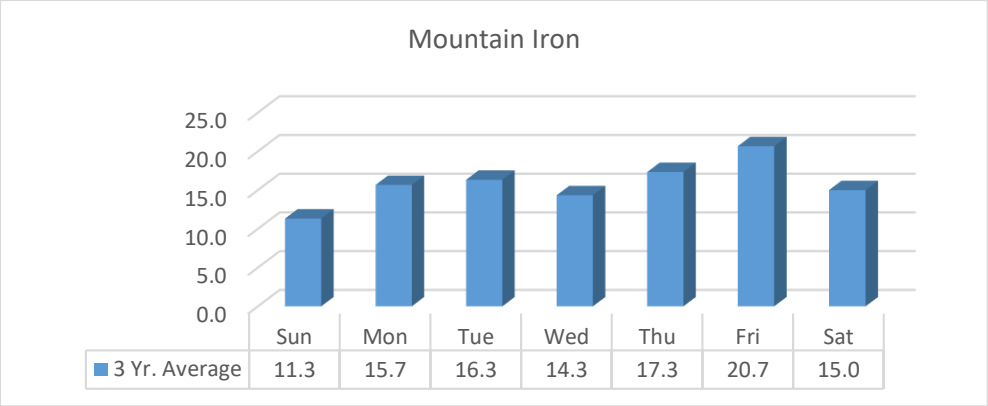
Virginia – by Day of the Week

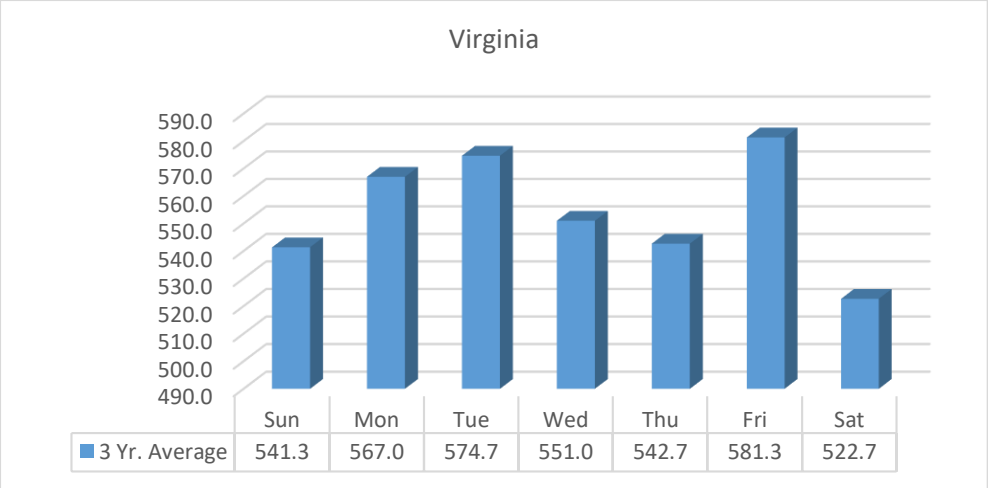
Table 17: Virginia Incidents by Day of the Week

Virginia Fire Department								
	Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**	**Total**
2015	490	452	528	463	491	537	467	3,428
2016	518	615	541	587	568	592	536	3,957
2017	616	634	655	603	569	615	565	4,257
Average	*541.3*	*567.0*	*574.7*	*551.0*	*542.7*	*581.3*	*522.7*	*3,880.7*
% of Total	*13.9%*	*14.6%*	*14.8%*	*14.2%*	*14.0%*	*15.0%*	*13.5%*	*100%*

The figures below illustrate incidents by day of the week for both fire departments:

Figure 5: Incidents by Day of the Week





Incidents by Time of Day

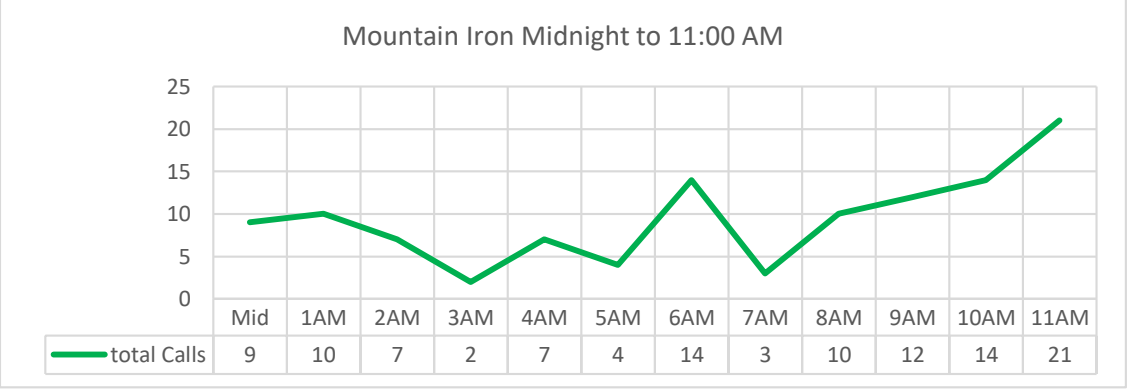
Mountain Iron – by Time of Day

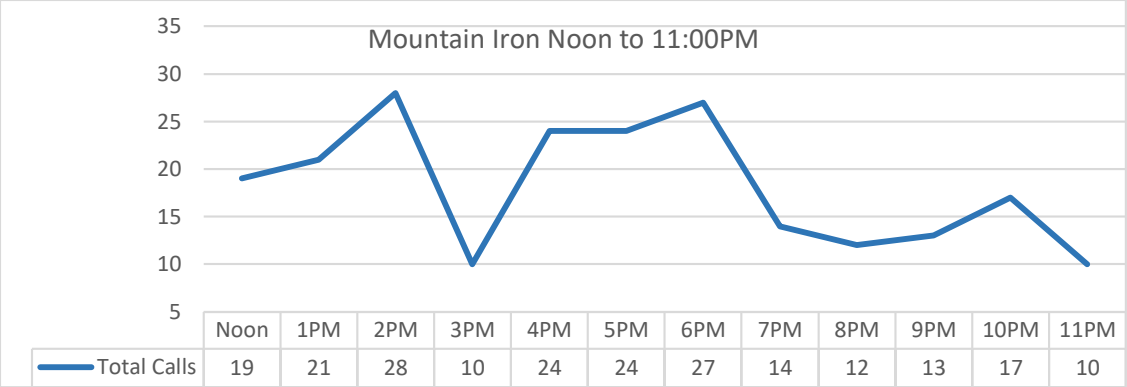
Table 18: Mountain Iron Incidents by Time of Day

Mountain Iron Fire Department												
Years/Hours	**Mid**	**1AM**	**2AM**	**3AM**	**4AM**	**5AM**	**6AM**	**7AM**	**8AM**	**9AM**	**10AM**	**11AM**
2015	2	**7**	**1**	**0**	**0**	**4**	**5**	**2**	**5**	**4**	**6**	**9**
2016	2	0	4	1	5	0	5	1	2	3	2	8
2017	5	3	2	1	2	0	4	0	3	5	6	4
Average	*3.0*	*3.3*	*2.3*	*0.7*	*2.3*	*1.3*	*4.7*	*1.0*	*3.3*	*4.0*	*4.7*	*7.0*
% of Total	*2.7%*	*3.0%*	*2.1%*	*0.6%*	*2.1%*	*1.2%*	*4.2%*	*0.9%*	*3.0%*	*3.6%*	*4.2%*	*6.3%*

Mountain Iron Fire Department												
Noon	**1PM**	**2PM**	**3PM**	**4PM**	**5PM**	**6PM**	**7PM**	**8PM**	**9PM**	**10PM**	**11PM**	**Total**
7	**7**	**16**	**3**	**8**	**8**	**11**	**4**	**6**	**4**	**6**	**3**	128
9	6	10	4	11	10	9	5	5	5	5	5	117
3	8	2	3	5	6	7	5	1	4	6	2	87
6.3	*7.0*	*9.3*	*3.3*	*8.0*	*8.0*	*9.0*	*4.7*	*4.0*	*4.3*	*5.7*	*3.3*	*110.7*
5.7%	*6.3%*	*8.4%*	*3.0%*	*7.2%*	*7.2%*	*8.1%*	*4.2%*	*3.6%*	*3.9%*	*5.1%*	*3.0%*	*100%*

Figure 6: Mountain Iron Incidents by Time of Day





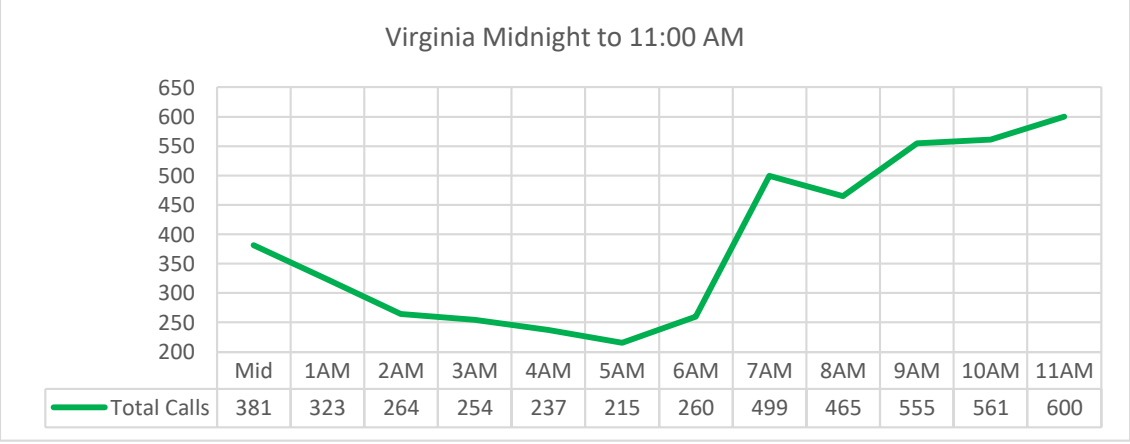
Virginia – by Time of Day

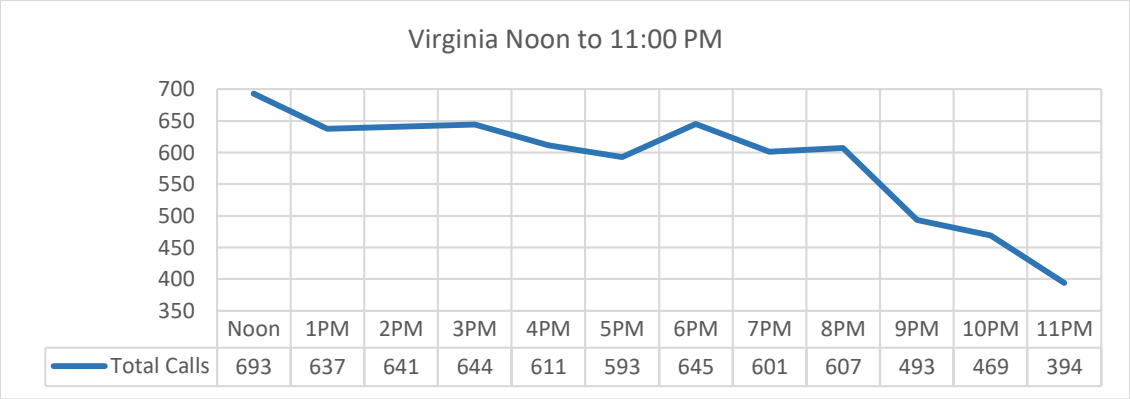
Table 19: Virginia Incidents by Time of Day

Virigina Fire Department												
Years/Hours	**Mid**	**1AM**	**2AM**	**3AM**	**4AM**	**5AM**	**6AM**	**7AM**	**8AM**	**9AM**	**10AM**	**11AM**
2015	104	**91**	**69**	**78**	**64**	**78**	**81**	**134**	**146**	**173**	**169**	**184**
2016	128	128	93	83	92	73	89	172	151	199	180	185
2017	149	104	102	93	81	64	90	193	168	183	212	231
Average	*127.0*	*107.7*	*88.0*	*84.7*	*79.0*	*71.7*	*86.7*	*166.3*	*155.0*	*185.0*	*187.0*	*200.0*
% of Total	*3.3%*	*2.8%*	*2.3%*	*2.2%*	*2.0%*	*1.8%*	*2.2%*	*4.3%*	*4.0%*	*4.8%*	*4.8%*	*5.2%*

Virginia Fire Department												
Noon	**1PM**	**2PM**	**3PM**	**4PM**	**5PM**	**6PM**	**7PM**	**8PM**	**9PM**	**10PM**	**11PM**	**Total**
206	**189**	**187**	**187**	**170**	**175**	**210**	**173**	**167**	**152**	**126**	**115**	3,428
225	210	222	222	209	211	200	204	226	169	147	139	3,957
262	238	232	235	232	207	235	224	214	172	196	140	4,257
231.0	*212.3*	*213.7*	*214.7*	*203.7*	*197.7*	*215.0*	*200.3*	*202.3*	*164.3*	*156.3*	*131.3*	*3,880.7*
6.0%	*5.5%*	*5.5%*	*5.5%*	*5.2%*	*5.1%*	*5.5%*	*5.2%*	*5.2%*	*4.2%*	*4.0%*	*3.4%*	*100%*

Figure 7: Virginia Incidents by Time of Day





Fire department leadership should be particularly interested in data which indicates when the department is at its busiest both in time of day, day of the week, and month. The reason is when a significant pattern is discovered that indicates the probability that emergency incidents will occur at a certain time, it allows the department to utilize "peak staffing". This is especially beneficial for organizations that can clearly identify when emergency incidents are most likely to occur.

In most departments, incidents charted by time of day follow a pattern similar to a "bell curve." The least busy time of day is from midnight to early morning, peaking in the mid-afternoon, and decreasing in the very late evening hours. There is somewhat of a "bell curve" for the VFD (compare AM & PM); however, there doesn't appear to be the case for the MIFD.

Although the least busy time of day is from midnight to early morning, it is also when the highest number of civilian fire deaths occurs, due to the occupants sleeping. Those most at risk are the very young and old, who often are less able to escape and protect themselves.

Incidents by Districts

The MIFD has a single fire protection district (City limits) in which they respond other than for mutual aid request; However, VFD has the City (divided into 5 districts) and a 640 square mile EMS Primary Service Area in which they respond:

Mutual/Automatic Aid

The philosophical concept of mutual aid is to offer assistance to a fire department upon request of the host district. The sole purpose is to give or receive assistance when all available resources, equipment or personnel, are depleted – and then on a limited basis. Automatic aid differs from mutual aid in that it is a pre-determined agreement with another department to respond automatically when the host department receives an alarm at a given location or area.

In some studies, the consultants have found that governing officials believe that requesting assistance from other communities on a routine basis will preclude them from having to add additional personnel, pay overtime, or provide more apparatus. This thinking is greatly flawed inasmuch as the foundation of mutual and automatic aid is reciprocity.

The departments provided the following mutual/automatic aid figures for 2017 as illustrated in the tables below.

Table 20: Mutual/Automatic Aid - Given & Received - 2017

Mountain Iron - 2017			
Given		***Received***	
Mutual Aid	Automatic Aid	Mutual Aid	Automatic Aid
7	24	3	17
Total Given = 31		Total Received = 20	

Virginia - 2017	
Given	***Received***
Mutual/Automatic	Mutual/Automatic
Total Given = 57	Total Received = 44

The Mountain Iron data was hand counted by the consultants; the data management systems do not provide a breakdown between mutual and automatic aid.

Mountain Iron aid given = 35.63% of the total 2017 incidents
Virginia aid given = 1.34% of the total 2017 incidents

Public Safety Answering Point (PSAP) (aka Dispatch)

The St. Louis County dispatch center is a consolidated public safety dispatch facility, aka: Public Safety Answering Point (PSAP). The St. Louis County dispatch center dispatches police, fire, and EMS for 185 public safety agencies, including Mountain Iron and Virginia Fire Departments.

The dispatch center is responsible for the entire 6,680 square mile area that encompasses St. Louis County and the nearly 200,000 residents that live within. The dispatch center is currently the centralized point of coordination for all county emergency warning services. The St. Louis County dispatch center provided all data referenced in this section. In 2017, the center answered 209,618 requests for assistance per year, of which 153,386 or 73% were emergency 9-1-1 calls. Of the 153,386 emergency calls for service answered, 94% were answered within ten (10) seconds.

The dispatch center currently operates with 6-8 telecommunicators per shift. All telecommunicators are trained to the Association of Public-Safety Communications Officials (APCO) Emergency Medical Dispatch (EMD) standards. The APCO EMD standards are based on the National Highway Traffic Safety Administration (NHSTA) National Standard Curriculum. Participants are required to complete a formal 40-hour telecommunicator course and maintain current cardiopulmonary resuscitation (CPR) training prior to taking the EMD course. APCO EMD certified telecommunicators must maintain 24 hours of continuing education every two years and pass a recertification exam. Certified EMD dispatchers are able to provide 9-1-1 callers with pre-arrival instructions prior to fire department or EMS arrival such as instructing bystanders how to perform CPR over the telephone.

PSAP Standards

9-1-1 Answering Times Standards

There are four agencies that have published standards for communication centers pertaining to 9-1-1 answering times: Federal Emergency Management Agency (FEMA), National Emergency Number Association (NENA), National Fire Protection Association (NFPA), and the Associated Public-Safety Communications Officials (APCO).

FEMA

FEMA requires the National Incident Management System (NIMS) to utilize the National Fire Protection Association NFPA 1221 – 2016 edition as its standard for answering emergency calls. NFPA 1221 standard requires:

Installation, Maintenance, and use of Emergency Services Communications Systems

NFPA 7.4 Operating Procedures

7.4.1 95% of alarms received on emergency lines shall be answered within ***15 seconds***, 99% of alarms shall be answered within 40 seconds.

7.4.1.1 Compliance with 7.4.1 shall be evaluated monthly using data from the previous month.

7.7 Communications centers shall establish a quality assurance/improvement program to ensure the consistency and effectiveness of alarm processing.

National Emergency Number Association (NENA)**:**

The NENA serves as the only professional organization solely focused on 9-1-1- policy, technology, operations, and education. NENA 56-005 June 2016 stated:

3.0 Call taking standards

3.1 Standard for answering 9-1-1 Calls. Ninety percent (90%) of all 9-1-1 calls arriving at the Public Safety Answering Point (PSAP) shall be answered within ***ten (10) seconds*** during the busy hour (the hour each day with the greatest call volume, as defined in the NENA Master Glossary 00-001). Ninety-five (95%) of all 9-1-1 calls should be answered within twenty (20) seconds.

3.2 Order of Answering Priority. It is the responsibility of on-duty Telecommunicators to answer all in-coming calls. All phone calls will be answered in order of priority. 1st priority will be the 9-1-1 and emergency 7/10-digit phone lines; 2nd priority will be non-emergency lines and 3rd priority will be the administrative and/or internal phone lines

3.3 Standard Answering Protocol – 9-1-1 lines. All 9-1-1 lines at a primary Public Safety Answering Point (PSAP) shall be answered beginning with "9-1-1."

Associated Public-Safety Communications Officials (APCO)

APCO is an international organization of public safety communication professionals. The standards set by APCO are 90% of the incoming E9-1-1 calls are answered in *ten (10) seconds* or less. APCO by referencing the NENA 3.0 standard.

Phone Activities

There are 10 total wireline and wireless trunk phone lines into the PSAP all with rollover capability when busy. The wireless trunks are Phase II capable. Phase II service requires that wireless carriers provide Automatic Location Identification (ALI) information to the PSAP centers. The accuracy requirements for this service are 50 meters (164 feet) for 67% of calls and 150 meters (492 feet) for 95% of calls with hand-based solutions, or 100 meters (328 feet) for 67% of calls and 300 meters (984 feet) for 95% of calls with network-based solutions. Therefore, if a caller utilizing a cell phone dialed 9-1-1 and was unable to speak, the PSAP could trace the call to a location close to the cell phone.

St. Louis PSAP/Virginia FD Essential PSAP Data

In a previous consolidation study conducted just prior to this project, the St. Louis PSAP provided answering call data which met all of the above mentioned standards; however, the consultants were unable to obtain the other component associated with the dispatching of fire/EMS calls:

- *Answering Time – provided*
- *Processing Time – not provided – time from when the phone is answered until the time the call is dispatched not to exceed 64 seconds (NFPA 1221).*

The Virginia Fire Chief provided data that indicates that the NFPA Processing Time far exceeds their standard. The processing time provided by the Virginia Fire Chief for St. Louis PSAP for VFD calls in 2017 averaged 2 minutes 34 seconds.

Table 21: PSAP Essential Data

PSAP Processing Time		
Incident	**Processing Time**	**Exceeds NFPA 64 Sec**
Fires	2 min 34 sec	140.63%
EMS	2 min 45 sec	157.81%

Times provided by Virginia FD

Recommendation – PSAP Processing Time Data

- *The St. Louis PSAP Director and the Virginia Fire Chief should meet and establish a program that would ensure that the PSAP is meeting the processing times provided in the NFPA 1221 standard.* ***Priority 1***

Response Times

Providing emergency services is all about response times. How long it takes the fire department to get on location to begin to mitigate the fire or provide emergency medical service is the primal issue. An acceptable response time is subjective depending on if you are the one in need or not. When a citizen makes a call to 9-1-1 for an ambulance or fire, every second seems like minutes and their anxiety will disproportionately increase as the severity of the incident worsens.

All fire professionals understand the importance of response time and many have lived the results of not being there just a few seconds sooner. Yet many fire departments do not routinely use data as a management tool to address opportunities to improve response times. There were considerable differences in the departments as to how leadership utilized response times.

Response Time Components

When examining response times, it is essential that all parties are talking about the same response time components. As noted in the National Standard section of this report, NFPA 1720 applies to Mountain Iron, whereas, NFPA 1710 applies to Virginia. The actual measurement of response time must be a total system understanding of all components of response time, including:

Detection Time: *The time it takes to detect the emergency incident and dial 9-1-1.*

Notification Time: *The time from when the call is received by dispatch (PSAP) to the time the department is notified.*

Turnout Time: *The time it takes personnel to prepare and leave quarters after notification.*

Travel Time*: The time the first fire apparatus leaves the station to the time it arrives on the scene. (The term travel time ends when the unit arrives on location of the emergency)*

Mitigation Time: *The time the first apparatus arrives at the scene to the time when actual extinguishing/treatment (mitigation) efforts begin.*

Response Time Data

The Virginia Fire Chief utilized data from the St. Louis PSAP CAD to illustrate response times for numerous surrounding fire departments. The table below illustrates the response times for both a fire in Mountain Iron and a fire in Virginia:

Table 22: Response Times - 2017

Activity	Fire In Mountain Iron	Fire In Virginia
PSAP Dispatch Time	0:02:25	0:02:45
FD Response Time	0:10:23	0:01:41
PSAP Dispatch to FD on Scene	0:14:42	0:06:49
PSAP Call Received to FD on Scene	0:16:58	0:09:34

Times shown in hr:min:sec
FD Response Time = time needed to put apparatus enroute

The obvious difference in the category of "FD Response Time" is that VFD is a career department with personnel on-duty; whereas, MIFD is a paid-on-call and members have to respond from work or home to staff the apparatus at the fire station. However, the following table illustrates response times for a fire in Mountain Iron in which both departments would respond upon the same PSAP notification:

Table 23: Fire in Mountain Iron

Fire In Mountain Iron	Mountain Iron	Virginia
Dispatch to On Scene	00:14:42	00:08:45

Assumption that VFD personnel are in quarters and not on a call

Virginia Fire Department can and has arrived at a fire scene within the corporate limits of Mountain Iron before MIFD arrived. This is not a point of criticism about MIFD; rather, an opportunity to examine greater partnerships.

Staffing

At the heart of many fire department assessments is the future staffing methodology and their associated costs. The largest line item in most department's budgets pertain to personnel costs. Fire chiefs and firefighters of all ranks normally want to increase the number of fire department staff in order to better serve the citizens. An increase in staff results in more firefighting personnel being available to respond to emergencies within the community. Larger staffing levels could equate to a greater margin of safety for both the citizens of the community and the firefighters as well as faster mitigation times resulting in diminished losses.

On the other side of the equation is the factor of what the City can afford. Hiring additional firefighting personnel (paid-on-call or career) is expensive and often the large expense item within the department's budget. Certainly during difficult fiscal times, such as those facing government at all levels today, the lines between wants, needs, and ability to pay become blurred and emotions easily can create an unpleasant environment in which individuals/groups choose sides on the issue. In reality, all sides want the highest level of protection for their citizens and employees – achieving the balance is the issue.

Types of Staffing Methodologies

Most businesses purchase insurance to cover their facilities (property) and belongings (contents). Many businesses also purchase a business interruption policy. Businesses do this to ensure that a devastating fire will not result in the business failing; the policy provides income until they are able to recover from the loss. Unlike business, government cannot purchase business interruption insurance; therefore, most communities invest in their fire departments to ensure the continued flow of tax dollars that provide the essential services for the citizens as well as the

businesses in the community in addition to providing life safety to their citizens. The Cities are responsible for ensuring that protective services are adequate for citizens and businesses.

The follow staffing methodology are common within fire departments in the United States:

Career Shift Employees

Career shift staffing ensures a certain level of immediate initial response for the emergency incident. Although both career and paid-on-call/volunteer employees are professionals, the time dedicated to the profession within each of the two categories of employees suggests that career employees should be better trained and perform at a higher level than paid-on-call/volunteer employees. Again, this is not derogatory towards paid-on-call/volunteer personnel; rather, being on-duty for extended periods of time provides career employees the opportunity to train when not involved in emergency or other assigned duties.

Conventional wisdom suggests that having on-duty personnel will improve response time by allowing emergency apparatus the ability to respond more quickly; it eliminates the time spent waiting for off-duty personnel to arrive at the fire station. Career employees add a degree of safety to the emergency team inasmuch as the individuals work and live with each other and have a greater opportunity to develop a team environment, which is especially valuable on the emergency scene. Career employees are often more involved in the daily activities of the fire department and can usually handle a variety of duties not suited for part-time or paid-on-call volunteer employees.

Having career personnel on duty on a daily basis allows the fire chief to develop strategic plans as to how emergency incidents will be handled with known, available resources. This staffing model ensures that a district will be able to immediately respond with a known quantity of personnel and equipment to a reported emergency situation. In addition, a known (assigned) number of personnel will staff each piece of apparatus.

A common concern with career staffing is that the twenty-four-hour shift schedule is inefficient and antiquated. Perhaps the most common staffing of career employees is a three shift scenario,

in which an employee works twenty-four hours on duty followed by forty-eight hours off duty (there are variations to 24/48 schedules). The twenty-four-hour shift schedule results in each shift being assigned to work an average of 10.17 days per month, excluding any additional time off for vacation, sick, etc.

To understand why the twenty-four-hour schedule has evolved, one must understand the economy the twenty-four-hour shift brings in terms of affordability (not necessarily productivity, but costs). If one were to magically convert the twenty-four-hour employees to an eight-hour per day schedule while maintaining the same staffing level, the number of employees would be 40% higher.

Paid-On-Call/Volunteer Employees

It is important to make a distinction between volunteer and paid-on-call members. Although both are comprised of individuals who are highly dedicated and professional, the difference lies in the fact that a true volunteer member does not receive any monetary reimbursement; whereas paid-on-call members receive compensation most often on an hourly basis or per-call basis (stipend). As such, paid-on-call members could be considered employees of the district and subject to the requirements of federal wage and hour regulations. Although the district/department refers to its members as volunteers, they technically are paid-on-call members.

Volunteer/paid-on-call fire departments have been an intricate part of the fire service in the United States for over 300 years. The key to success using this methodology is directly related to the ability to find dedicated individuals who have the desire and time to become proficient in the delivery of critical firefighting and other lifesaving services. Although many principles and concepts are similar in career and volunteer departments, other aspects differ – particularly as they relate to response times, personnel, and program management.

The economics of volunteer/paid-on-call firefighters is the number one reason some communities embrace this type of organization. District boards are faced with maintaining or

increasing public safety services while revenues remain stagnate or diminish. With that said, one must not assume that volunteer organizations are free.

Volunteer organizations are built on four basic premises – pride, exclusivity, influence, and competition. The early volunteer organization had a tremendous amount of pride in the service it provided. It was exclusive in that only a few were allowed to join. It had tremendous influence, particularly in local political issues and elections. As a result of volunteer fire departments "springing up" (often next door to one another), these organizations were in competition with one another – primarily because of the number of volunteer companies in many communities and the lack of coordination among them.

The volunteer/paid-on-call organizations face many challenges not found – or at least not emphasized – in the career organization. Volunteer/paid-on-call organizations must spend considerable time and effort in recruiting and maintaining its memberships. The recruitment process must become one of "salesmanship." Thus, organizational principles such as hierarchy, unity of command, and span of control are placed on the back burner, while human relations and motivations are emphasized. Once individual needs have been met and the volunteer is a part of the organization, then organizational principles are taught and applied.

Managing volunteer/paid-on-call members is every bit as difficult as managing career employees – perhaps more so. One must not forget that an essential aspect of management involves responsibility, whether the department is a volunteer, combination, or career department. These responsibilities include budget, discipline, legal compliance, planning, delegating, establishment of policies and procedures, adequate service delivery, etc.

Fire chiefs of volunteer/paid-on-call departments must meet the needs of their members. Most firefighters do not join and remain members of volunteer/paid-on-call departments for monetary reasons. The reasons often range from a sense of community to the recognition of being a firefighter. The fire chief must recognize these needs; find a compromise between member's conflicting needs; and search for a way that the organization can meet individual needs. The

chief must also recognize when these methods need to change so the organization can retain members while remaining within budgetary guidelines.

Volunteer/paid-on-call staffing presents several challenges. Organizing members into functional companies becomes difficult due to the uncertainty of who will be able to respond to various alarms. On the emergency scene, unity of command and span of control become difficult to establish and maintain. This task is much different and far more challenging than in an organization that relies on career personnel, who are assigned to regular shifts and working hours.

Volunteer/paid-on-call organizations tend to operate in a more informal manner than career or combination organizations. While this approach often seems to work quite well, it is not always the most efficient. The district could find it more difficult to control or set performance expectations for a volunteer organization due to its perceived lack of direct control.

Volunteer/paid-on-call departments have a tendency to recruit members with very similar backgrounds and values as the existing membership. Diversity is a major challenge in volunteer/paid-on-call departments. Without this diverse pool of individuals, the basic operation and maintenance of the department and equipment might depend on a chosen few or in some cases not be accomplished at all.

Although the consultants have described challenges with paid-on-call staffing methodology, they highly recommend continuation of this staffing method until which time the call volume exceeds the capabilities of the paid-on-call members' ability to devote the time needed. Although there are advantages to career staffing, this staffing methodology is associated with a whole new set of challenges. Currently, ISO grades a department on its staffing by requiring three volunteer/paid-on-call members to be the equivalent of one career employee.

Paid-On-Premise (Part-time) Employees

Paid-on-premise (POP) employees, also known as part-time employees, have been found to be a highly successful method of staffing in areas that have a number of career departments in close proximity. Utilizing this scenario, the community would hire individuals that were already certified firefighters/EMTs on a part-time basis to either fully staff or augment shifts. Part-time personnel usually work twelve-hour blocks a few days per pay cycle or month. This could result in a significant reduction of salaries and avoidance of future pension liability for the district versus hiring its own career employees.

There are both advantages and disadvantages to paid-on-premise employees. However, the consultants are finding more departments utilizing this staffing method due to the significant cost savings of a part-time employee over a full-time employee. There are departments that utilize paid-on-premise personnel to staff their stations 24/7. Although paid-on-premise staffing is highly discouraged by the International Association of Fire Fighters (IAFF) to its members, in a growing number of areas in the United States there seems to be no lack of participants – both union and non-union firefighters - willing to fill these positions. However, in areas such as the Cloquet district there are fire departments and private ambulance services that have employees certified in both fire and EMS. Therefore, the district is afforded the opportunity to hire paid-on-premise (part-time) personnel to address future staffing needs.

Privatization/Contractual

The consultants have dealt with municipalities/districts that either do not have their own fire department or have a combination of their own employees and individuals hired through a service (contract) that provides everything from personnel to apparatus and equipment. There are also communities that are protected by totally private fire departments.

The fiscal benefits are the most attractive reason to contract fire/EMS services. In this scenario, the district reaches agreement with the service provider and has no additional expenses. In other words, the cost of fire service becomes a fixed line item in the budget. The district hires

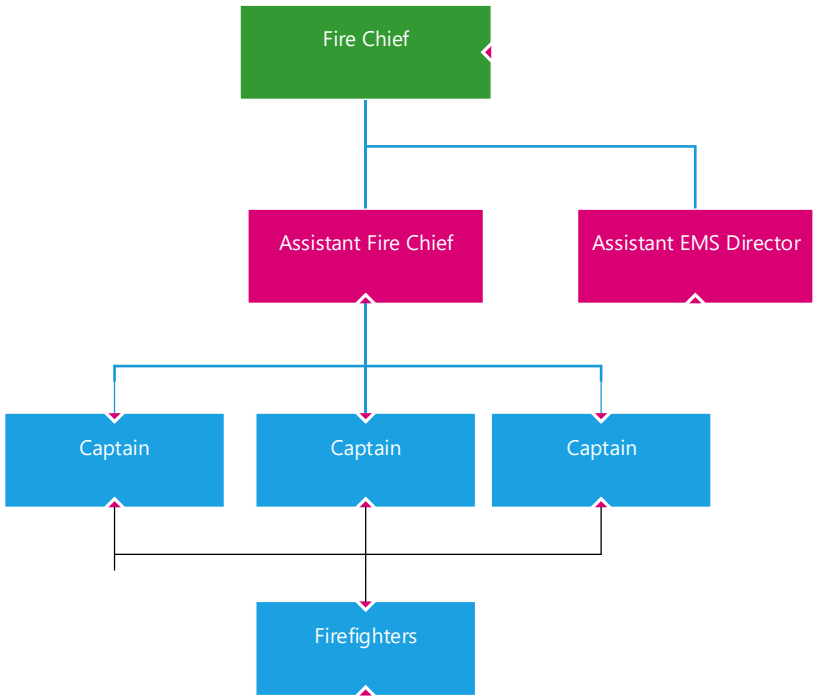
positions, not individuals; all overtime, sick, vacation (etc.) benefits become the responsibility of the service provider.

The most commonly heard complaint about contractual employees is their tenure with the service provider. Many individuals who take these positions do so until full-time career positions become available in career departments, so turnover can be a concern.

Mountain Iron FD Staffing

As previously noted, all the members of the MIFD are paid-on-call which means they are paid an hourly fee for calls and training. At the time of the study, there were 21 members, which is very positive for a volunteer/paid-on-call organization. Although the department did not provide an organizational chart, the consultants believe it would be similar to the figure below:

Figure 8: Mountain Iron FD Origination Chart (estimated)



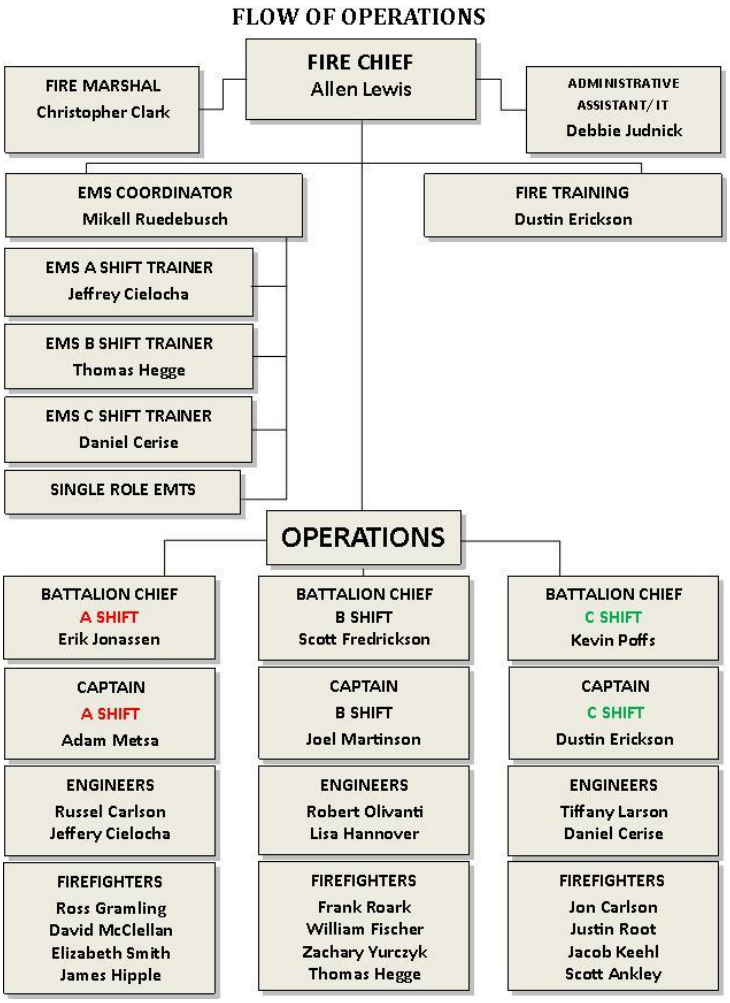
Recommendation Mountain Iron Staffing

- *The staffing methodology for Mountain Iron Fire Department is appropriate and should remain as the staffing methodology in the future.* ***Priority 5***

Virginia Staffing

The Virginia Fire Department consists of all career members and one civilian Administrative Assistant. The 34 members consist of 26 shift personnel assigned to three 24-hour on-duty shifts, and 5 single role EMTs on a 40 hour per week shifts. The total calls for the VFD in 2017 was 4,257 emergency responses or 11.7 calls per day. In addition, the VFD data verifies that approximately 41.7% of all calls occur when personnel are already committed to other emergency situations. The figure below illustrates the organizational chart of the VFD:

Figure 9: Virginia FD Organization Chart



Recommendation – Virginia Staffing

- *The volume of calls per day handled by eight on-duty personnel @ maximum staffing to five on-duty personnel @ minimum staffing with simultaneous/overlapping incidents at 41.7% requires additional daily on-duty staffing at a minimum of two Firefighter/Paramedics per shift.* ***Priority 2***

Personnel Management

To evaluate the human resource practices of the organization, we must clarify the definition of an employee and the definition of a volunteer. Keep in mind, the departments are part of a City, thus, all federal and state labor laws apply regardless if the fire department personnel are employees or volunteers.

Fair Labor Standards Act

In order to understand the compensation and overtime rules for the departments, one must first take a step back and understand the definition of an employee and the types of employees allowed under the Fair Labor Standards Act (FLSA). The Fair Labor Standards Act is the federal law passed in 1938 to regulate minimum wages, overtime pay, equal pay, and child labor standards in employment. In 2004, the federal regulations were amended with clarifications to the federal exemptions to the overtime provisions as well as clarifications with municipal employees. The State of Minnesota follows the provisions of the FLSA through the Minnesota Fair Labor Standards Act. Minnesota's FLSA requires overtime to be paid for hours worked over 48 hours a week; whereas, the Federal FLSA requires overtime paid for hours worked over 40 hours per week.

The question is then what law to follow – Minnesota's FLSA or the federal law. Federal overtime laws apply to:

- Businesses whose employees produce or handle goods for interstate commerce;
- Businesses with gross annual sales of more than $500,000; and

- Certain other businesses, including hospitals, nursing homes, schools and government agencies (A guide to Minnesota's overtime laws).

Based on this definition, both municipalities would qualify as a government agency and therefore, would follow the federal FLSA guidelines.

This section delineates the regulations of the FLSA as it applies to all forms of employment currently present within the departments –paid-on-call/part-time, paid-on-premise, and full-time/career. Thus, how the individuals are classified and how they are compensated will be the determining factors in the Cities obligations under the FLSA. When Federal and State FLSA regulations conflict, the ruling is based on what is most beneficial for the employee. Furthermore, additional clarification will be made as to what constitutes an exempt (salaried) employee from a non-exempt (hourly) employee and the pay implications.

What is an employee?

What is an employee? The definition of an employee under FLSA is an individual who performs services for the "employer." If an individual is not an employee, he or she is not covered by the minimum wage, overtime, recordkeeping, and other provisions of the FLSA.

Volunteers/Paid-on-Call: The FLSA provides a specific exemption for individuals who volunteer services to public agencies. The FLSA, however, exempts public employers from paying minimum wage and overtime to individuals who qualify as "volunteer/paid-on-call" – individuals motivated to contribute service for civic, charitable, or humanitarian reasons. An individual who performs services for a public agency qualifies as a volunteer/paid-on-call, if:

- The individual receives no compensation, or is paid *expenses, reasonable benefits, or a nominal fee* to perform the services for which the individual volunteered; and

- Such services are *not the same type of services* for which the individual is employed to perform for *the same public agency.*

If an individual meets the above criteria for volunteer/paid-on-call status, he or she will not be considered an employee covered by FLSA minimum wage and overtime provisions. *A public*

employer can pay a nominal fee to volunteer/paid-on-call; the fee must not be a substitute for wages and must not be tied to productivity. Thus, a paid-on-call member in a municipal environment, performing public safety responsibilities, and who does NOT receive compensation that is tied to productivity, such as an hourly wage, would also be exempt from the minimum wage requirements.

Paid-on-Call, Part-time or Paid-on-Premise Personnel: Individuals who receive some sort of compensation or nominal fee will have their employment status based upon how the fee is distributed. Two types of compensation are considered to be nominal fees by the Department of Labor (DOL) and continue to exempt the employee from the Fair Labor Standards Act – Pay per call, or a monthly/annual stipend. Pay per call, whether the person responds from their home or place of employment or is scheduled for hours at the fire station (paid-on-premise), has compensation paid to the individual when responding to an emergency call. The amount of *compensation may not be tied to productivity and may not vary on time spent on the activity*. The Department of Labor's regulations specify that the payment of a nominal amount on a per-call basis to volunteer/paid-on-call firefighters is acceptable so long as the compensation is tied to the volunteer/paid-on-call's sacrifice rather than productivity-based compensation. (DOL, Wage and Hour Division Opinion Letter, August 7, 2006)

However, the Department of Labor has determined that payment to volunteer/paid-on-call firefighters on a per-hour basis destroys the bona fide volunteer/paid-on-call status and creates an employment relationship. This type of payment is akin to hourly wages based on productivity. (DOL, Wage and Hour Division Opinion Letter July 7, 1999)

Minnesota Minimum Wage

The minimum wage in the State of Minnesota is $9.65 per-hour as of January 1, 2018, as long as the municipal budget is ≥ $500,000 annually. Both municipality annual budgets exceed $500,000. Therefore, any payment based on a per-hour basis must be a minimum of $9.65 per-hour, thus, this threshold has been met in both organizations.

Departments Member Employment Status

Based on the definitions and requirements under FLSA, each department pays differently and therefore, their members could or could not be considered employees. As previously stated, a member cannot be both; so, if members are paid per-hour, that is considered pay tied to productivity; whereas, if members are paid a set amount or a point system, they might be considered volunteer/paid-on-call. If members are paid in-part both per-hour and a fixed amount regardless of time they would be considered employees.

Mountain Iron Fire Department

Members are paid $12.00 per-hour for training and emergency incidents; and are paid monthly. The member's compensation is tied to productivity; therefore, Mountain Iron Fire Department members are classified as employees. The City of Mountain Iron must comply with all federal and state laws as it relates to minimum wage and overtime (overtime issue will be discussed in a later section of the report). The Fire Department compensation to its paid-on-call does meet the State of Minnesota's Minimum Wage Law.

If the City and department continue with employees, there is an option to pay different wages for fire-emergency incidents and a different rate of pay for training (assuming both are above Minnesota's minimum wage). This will be discussed in the 7G FLSA exemption section of the report.

There are six (6) members who also receive a monthly stipend for holding a particular position within the department as illustrated in the table below (previously included in this report):

Table 24: Mountain Iron FD Stipends

Mountain Iron Fire Department		
Position	Stipend per Month	Annual Stipend
Fire Chief	$ 525.00	$ 6,300.00
Assistant EMS Director	$ 250.00	$ 3,000.00
Assistant Fire Chief	$ 250.00	$ 3,000.00
Captain (Training Officer)	$ 125.00	$ 1,500.00
Captain (Wildland Officer)	$ 125.00	$ 1,500.00
Captain (Safety/Trucks Officer)	$ 75.00	$ 900.00

Stipends, in addition to an hourly wage, are acceptable under FLSA. The Consultant's recommend these amounts be tied to differences in job responsibilities of the rank. A critique of job descriptions will be discussed in the Job Description section of the report. Therefore, it is recommended the pay be tied to additional responsibilities, skills, and requirements of the ranks. Furthermore, the stipends should be evaluated annually for appropriate increases. Therefore, the stipend should be the same for all three captains.

Payment Methods - How the member is paid determines if they are classified as an employee or volunteer/paid-on-call. The first question is – are the member's employees or volunteer/paid-on-calls? Once they are paid by the hour, they are considered employees. As an employee, the City must ensure the following:

- *There is an established work cycle*
- *Ensure hours worked over the work cycle are paid at an overtime rate*
- *All hours at paid a minimum wage*

In addition, under Minnesota statute, employers are required to pay their employees for all wages due at least once every 31 days. Therefore, Mountain Iron's compensation methodology correlates to employees – not volunteers/POC's – therefore, pay cycles must be monthly.

FLSA Work Cycle

The FLSA allows firefighters to be paid an overtime rate that is not based on a 40-hour week; this provision is commonly referred to as the 7(k) exemption. The law allows the employer (municipality) to choose a pay cycle from seven (7) to twenty-eight (28) days as illustrated in the Table below:

Table 25: 7K Firefighter Overtime Chart

Cycle	Hours Allowed	Hours Worked	FLSA Overtime
28	212	224	12
27	204	216	12
26	197	208	11
25	189	200	11
24	182	192	10
23	174	184	10
22	167	176	9
21	159	168	9
20	151	160	9
19	144	152	8
18	136	144	8
17	129	136	7
16	121	128	7
15	114	120	6
14	106	112	6
13	98	104	6
12	91	96	5
11	83	88	5
10	76	80	4
9	68	72	4
8	61	64	3
7	53	56	3

Most municipalities for a paid-on-call department choose the highest FLSA cycle (28-days). This would mean that if any member, other than an exempt member, (currently none are classified as such) would not receive overtime at a rate of 1.5 times normal hourly rate until that member exceeds 212 hours within the 28-day cycle.

The cycle beginning date and ending date must be set by the municipality and the Fire Chief must account for the hours any member works (receives compensation) within those 28-days, At the end of the 28th day, a new 28-day cycle would begin. The probability that any of the department members/employees would reach this threshold at this FLSA cycle would be rare; however, the departments have an obligation to track hours and ensure all time worked, if over the 212 hours in the 28-day cycle, is paid at the overtime rate.

Training hours will need to be tracked as hours worked. Per the 7G FLSA provision, those hours, as long as they do not resemble the work performed as a volunteer/paid-on-call, are truly training and/or meeting duties. Thus, these training hours can be paid at a rate different provided they meet Minnesota's Minimum Wage requirement.

The recommendation for Mountain Iron is to utilize the Minnesota Minimum Wage as the base wage for training hours, or other non-emergency station work. The minimum wage rate, or a higher than minimum wage rate for payment when responding to incidents. Keep in mind, if any employee works beyond the 212 hours, the hourly rates will have to be recalculated to overtime rates and paid accordingly. Thus, the department will need to keep a watchful eye on the time put in by employees during each work cycle.

If Mountain Iron were to convert any employee to full-time, they need to understand the FLSA definition of hours worked verses hours paid (currently this is not a factor). Thus, all hours for vacation, holiday and sick should be considered hours paid and would not count towards overtime.

Finally, each organization is required to maintain recordkeeping requirements for all employees, including City personnel. The Wage and Hour Division provides the following as a list of the basic records an employer must maintain:

- Employee's full name and social security number
- Address, including zip code
- Birth date, if younger than 19

- Sex and occupation
- Time and date of week when employee's workweek begins
- Hours worked each day
- Total hours worked each workweek
- Basis on which employees' wages are paid (i.e., $12.00 per hour for emergency response; $9.75 for training)
- Regular hourly pay rate
- Total straight time earnings
- Total overtime earnings for the pay cycle
- Total wages paid each pay period
- Date of payment and the pay period covered by the payment

All payroll records must be maintained for at least three (3) years. Records on which wage computations are based should be retained for two (2) years (i.e., time cards, wage rate tables, records of deductions from wages, etc.). (Wage and Hour Fact Sheet #21: Recordkeeping Requirements under the Fair Labor Standards Act)

Virginia Fire Department

Employees are full time career and are covered under the International Association of Fire Fighters Collective Bargaining Agreement with the City of Virginia. Their compensation is tied to productivity; therefore, the City must comply with all federal and state laws as it relates to minimum wage and overtime. The City provides for a 24-day FLSA cycle, compensating the first 180 hours at straight time, and all other additional hours as overtime at 1.65 times the standard hourly rate. All salaries exceed minimum wage standards, which is only 1.5 times the hourly rate.

The wages for the City of Virginia Fire Department are achieved through contract negotiations. The current contract expires in 2019. There are a couple of concerns that should be addressed during the next round of contract negotiations. Individuals on a 24-hour schedule, usually work 56 hours week, typically work 2,912 hours per year. The contract indicates a 53-hour week, or

2,756 per year. The contract may be correct; however, the City should evaluate the work schedule to ensure that correct number of hours – per work cycle and annually – are being utilized. Many contracts established these numbers when FLSA came into play for government entities and in some cases are incorrect.

Each rank has only one rate of pay although there are technically five [5] levels of firefighter. With the generations that are entering the workplace, compensation for tenure, or compensation based upon achievement of additional training/certifications, is becoming more popular. In addition, the distance between ranks is very small; therefore, the department is most likely experiencing a compression problem. Compression is when base salary plus overtime exceeds the rank above. There is no way to eliminate compression, but if the compensation grid is constructed correctly, some of that compression can be minimized.

There is a provision in the FLSA Section 7(g)(2) which permits an employer to pay a different rate of pay for various types of work if the rate is not less than minimum wage. The employer must satisfy the following four requirements:

- *The employee must perform two or more kinds of work;*
- *The employer must establish a bona fide different hourly rate for those different kinds of work;*
- *The compensation must be paid pursuant to an agreement or understanding arrived at between the employer and the employee in advance of the performance of the work; and*
- *The compensation must be computed at rates not less than one and one-half times such rates applicable to the same work when performed during non-overtime hours.*

The Virginia Fire Department might consider use of different pay rates for inspections and/or other non-emergency types of duties.

The contract indicates two other types of pay. A 2017 adjustment was made for certain ranks and longevity. Per FLSA, bonus pay or extra pay that is 'pursuant to any prior contract, agreement, or promise' (§7(e)(3)(a)) must be included in the overtime calculation, including the City's grandfathered Longevity pay, which is being properly calculated into overtime. If the

2017 market adjustment becomes a permanent part of the contract, those dollars would also need to be included in the overtime calculation.

Recruitment

Departments Demographics

Prior to continuing the discussion on recruitment, the Consultant performed an analysis of the years of service and age of members for the Virginia Fire Department. The data was not available for the Mountain Iron Fire Department.

Age Demographics

The age and years of service is very revealing for the departments. Age for members was only provided by the Virginia Fire Department. The Consultant has provided Virginia and the national average of age within the fire service. This information coupled with career plans (including retirement) can provide a department with data as to how to approach training and succession planning.

Table 26: Age Categories Departments/National

Department & National Age Categories					
Age	**VFD**	**% of Total**	**MIFD**	**% of Total**	**National %**
<20	1	3.2%	***No Data***		3.3%
20 to 29	6	19.4%			20.9%
30 to 39	15	48.4%			26.7%
40 to 49	9	29.0%			24.0%
50 to 59	0	0.0%			17.2%
60>	0	0.0%			7.9%

From the table above it would appear that VFD has a younger than average age distribution. Some organizations find that most of their members are over the age of 40 – and can become great mentors/coaches for younger personnel. Furthermore, if the workforce is a 'young' department, then administration needs to work to ensure succession planning through encouraging training and education of these individuals – not only for special skills needed in the department; but also, in leadership and management.

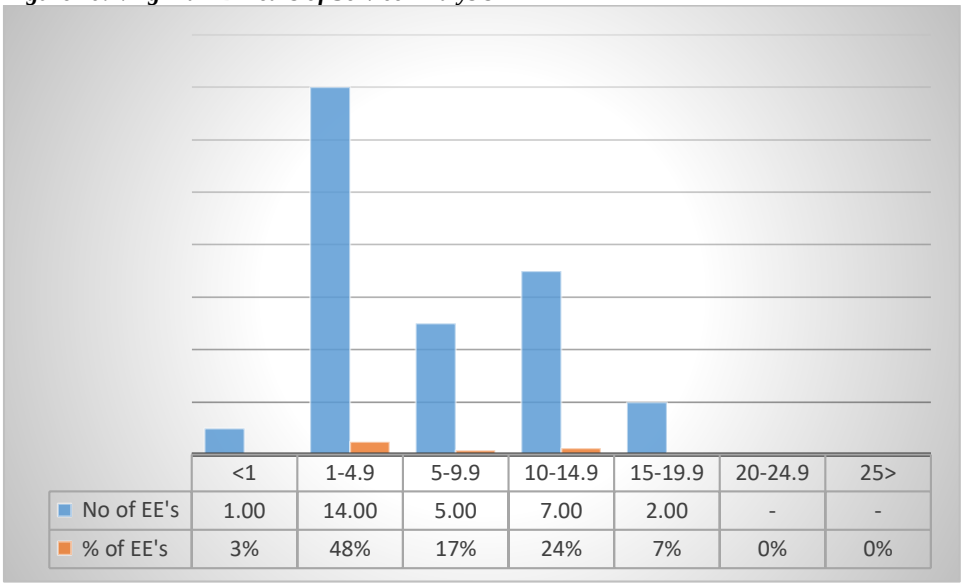
Recommendation – Age Categories

- *Mountain Iron Fire Department leadership should record the age categories of the members to identify potential future gas in skill sets of employees.* ***Priority 4***

Years of Service Demographics

The Virginia Fire Department provided years of service to the Consultant. The department is extremely young, with 48% of its employees with less than 10 years of service. This should be an indication to administration that consideration of career tracks as well as strong leadership training is necessary in order to keep employees interested and engaged in the department.

Figure 10: Virginia FD Years of Service Analysis



	<1	1-4.9	5-9.9	10-14.9	15-19.9	20-24.9	25>
No of EE's	1.00	14.00	5.00	7.00	2.00	-	-
% of EE's	3%	48%	17%	24%	7%	0%	0%

The age and years of service for the two departments can be very revealing for the department. As the baby boomer generation continues to age, organizations are finding a significant skills gap between those that have the ability to retire, and the age and experience of those in line to replace them. Efforts and emphasis need to be placed on developing succession plans so that less tenured individuals within the organization understand the skills, education, and knowledge necessary to step into these positions when they become vacant. Promoting individuals just

based upon seniority does not benefit the individual, nor the organization. These two departments are no exception.

Departments Recruiting

The current recruitment process between the departments range from word-of-mouth to a fairly aggressive recruitment program. Recruitment is a critical part of maintaining membership. It may be the potential members first contact with a city, so it is an employer's first opportunity to make a positive impression for the applicant. Right or wrong, first impressions can influence decisions. The recruitment process should be easy to follow, transparent, and timely, so the applicant has a positive experience; so even if they are not selected, they may be drawn to apply again in the future.

Today's candidate doesn't always utilize the traditional modes of looking for positions. Since recruitment needs to go beyond traditional networking, use of social media sites can assist. Members want a purpose, and the Cities websites should be expounding why there is a benefit to becoming a Firefighter for the Cities. Thus, the Cities need to ensure its website, Facebook, LinkedIn etc. sites are emphasizing their opportunities with their respective departments, in addition to traditional recruitment in local newspaper, radio, television media sources. Finally, each department should be using public outreach opportunities such as having a recruitment table at local community events whenever possible. The following is a summary of the finding of the two (2) departments.

Mountain Iron Fire Department

Mountain Iron uses a City application that can be found on the City website, so there is accessibility to the application. However, no additional information on the expected hiring process is available; nor is there a Fire Department page on the City's website to promote the services of the department or to become a Fire Fighter for the City. The application cannot be filled out electronically, but must be printed, completed, and submitted back to the City hard copy or via scan. Applications are to be received at City Hall and forwarded to the Fire Chief for screening. The application appears as if it has not been updated for many years, although

there is no revision date, and is not visually appealing for first impression purposes on the organization. The application also requests a driver's license number. Given the fact that applications are still received traditionally, not via a secured software, plus the heightened concerns for identity theft, driver's license number are not usually requested at time of initial application. The department's policy on hiring also includes a statement on Veteran's Preference, but this was not found in the department's hiring process. Therefore, it should be eliminated, or should be explained how the information will be used.

The Health/Safety Committee is responsible for conducting interviews once multiple applications are collected; however, no timeline was provided in which an application may be held before an interview would occur. Candidates are also subject to a competency test and physical agility test, although neither test has been validated. The City does require a waiver to be signed prior to administering the physical agility test. All examinations need to be a validated exam that is reflective of a knowledge base required for an entry level firefighter candidate. Questions should focus on areas such as human relations, mechanical reasoning, mathematics skills, and reading comprehension. Several testing firms exist nationally that sell on a contract basis, examinations and grading services for entry level firefighters. The Consultants recommend the department begin using validated firefighter written examinations for all entry level testing.

Upon successfully completing these steps, the City Council will authorize a contingent offer of employment. A criminal background check is then conducted via the County Sheriff's department, and each applicant is recommended to see their medical provider for a physical. No standard examination is recommended by the City, so what type of physical being administered, along with written results may be inconsistent, which could be a liability to the City under the American's with Disabilities Act. Under the law, an employer may make a conditional job offer on successfully passing a medical exam, but only if all new employees in the same job have to take the same exam. Therefore, this component needs to be standardized and related to the position. In addition, the City should only be receiving pass/fail results from the medical provider. For purposes of privacy, and protections under the Genetic Information Nondiscrimination Act (GINA), the employer is not recommended to receive any medical

information about the new employees other than pass/fail. As a result, the City is recommended to identify for the medical providers what related physical tests are necessary, such a pulmonary function and hearing tests, and ensure there is a clear understanding of the results information they are to receive.

Virginia Fire Department

The City of Virginia uses a City application that can be found on the City website, so there is accessibility to the application, although no additional information on the expected hiring process is available. There is a Fire Department page on the City's website to promote the services of the department which is positive. The application cannot be filled out electronically, but must be printed, completed, and submitted back to the City hard copy or via scan. Applications are submitted to Human Resources or the Fire Chief and forwarded to the Fire Chief for screening. Human Resources should be the single-entry location to accept all applications for the City. This will allow the HR team to track all applications, and forward them in a defined manner. It is standard for HR to review applications for completion and minimum qualifications, and only forward applications to a department to be considered further. This also saves time for the Fire Department. HR can then communicate with rejected applicants immediately. The City should consider an application tracking system, so applicants apply within an enterprise system. Further, the City can add job specific questions to applications, retain all applications in a single area, maintain data for related HR metrics and Affirmative Action/EEOC requirements, and allow the sharing of applications through a secure portal, so there are no paper applications. The cost of an electronic application systems is usually based upon an organizations FTE count, so smaller organizations pay less. NEOGOV is a leading software company serving public sector organizations the City may wish to consider, as an example.

Human Resources first screens all applicants with a NCIC (National Crime Information Center) background check to review criminal convictions substantially related to the job, documents are secured.

An initial screening interview then occurs and is considered pass/fail based on interview panel scoring. The City is recommended to ensure that all interviewers have been trained to ensure questions are within legal parameters to avoid claims of unfair or discriminate hiring practices, or that a Human Resources representative attends the interviews. The scoring methodology system should be retained, and all documents maintained per the City's document retention policy.

A physical agility test is administered (for single-role EMT applicants) after the first interview by fire department personnel and monitored by an HR staff member. This test was developed by the department and is not validated for single-role EMTs; however, all firefighter/paramedics must have a valid Candidate Physical Abilities Test (CPAT) within the last year. As indicated with the Mountain Iron Department, all examinations need to be validated.

The second interview is sometimes an interview process, and other times an assessment exercise. Both options are acceptable, but the City is recommended to develop a written policy outlining the circumstances in which an assessment exercise will be used in lieu of (or in addition to) a second interview for consistency purposes.

Upon successfully completing these steps, the City Council will authorize a contingent offer of employment. A criminal background check is then conducted via the City's Police Department, as well as undergoing a psychological evaluation and pre-employment physical compliant with NFPA 1582. All results are submitted back to Human Resources for review and retention purposes. It is recommended the City review the documents received from the providers to ensure they are not receiving medical information that would be a liability to the City.

Recruitment and Hiring Findings:

Each department has a different interviewing/selection process. Not all departments are utilizing websites or social media tools as effectively as possible, which is inexpensive to maintain. It is important that each department also have a written standardized interview and selection process and make that available on their websites for applicants to review.

Oral interviews at the entry level, should only be conducted by a represented number of members within the departments as well a representative of City administration. Human Resources or a Fire Officer should either be present at these meetings or conduct training with members of the department to ensure questions are within legal parameters to avoid claims of unfair or discriminate hiring practices. A scoring methodology system should be established, and all documents maintained per the Cities document retention policy.

The Consultants recommend the departments move to more standardized written tests that have been validated by a reliable source. There are concerns when organizations develop their own written tests in that, if challenged, there is difficulty in establishing the tests have not discriminated against a particular protected class of individuals. There are a number of organizations that provide validated written entry-level tests that the Consultant's suggest the department's consider.

For a physical agility exam to be valid, it must be applicable to the physical fitness level required to perform the essential job duties of being a firefighter. Practices that include testing components that cannot be directly linked to job functions are problematic in that they may be considered discriminatory, thereby wrongly eliminating candidates who would otherwise be qualified for the job. To reduce liability risk in this area, the Consultants recommend the departments use a third-party agency to conduct candidate physical ability testing utilizing the nationally recognized Candidate Physical Ability Test (CPAT). The CPAT is a legally defensible and legitimate tool for assessing eligibility for employment. In addition to being endorsed by the International Association of Fire Fighters and International Association of Fire Chiefs, the test meets validity criteria established by the federal Equal Employment Opportunity Commission, the U.S. Department of Justice, and the U.S. Department of Labor.

To ensure all candidates have an equal opportunity to succeed, the CPAT includes an orientation and mentoring process that begins weeks prior to the actual test. This process involves an explanation of the test and its physical demands, recommendations of training and conditioning drills, and an opportunity to preview and practice the exercises. The CPAT examination process

is open to anyone interested in taking the test. All costs associated with the CPAT testing process should be bore by the candidate themselves.

Finally, given the departments require a post-offer pre-employment process with an occupational health medical provider in the area, the departments should all consider reviewing their tests with this provider to develop consistent testing and threshold requirements.

Orientation

When a candidate completes all required post-offer testing and checks, a hire date is set between the candidate and the Chief, although the orientation process varies per department. The orientation process is as important as the interview process in terms of the impressions an organization makes on a new hire. An engaging orientation process that is clearly laid out and documented for the new member will be smoother and more productive than informal processes and sets a standard of expectation. An effective orientation process will cover the culture and history of the department, SOPs and performance expectations, job requirements, communication expectations, issuing gear, and much more. The following is a summary of the orientation processes identified for each department:

> **Mountain Iron Fire Department** – no documents were located. Department indicated orientation includes providing department SOGs, issuing gear, response systems, and payroll paperwork.
>
> **Virginia Fire Department** – The City utilizes a new hire packet, inclusive of checklists, forms, and related policy distribution. New employees are part of a formal training period that runs an estimated 12 weeks in which the trainee is evaluated following each shift worked.

A written comprehensive orientation checklist will help ensure consistent training and documentation of the training process, especially if mentors vary. This will also ensure time sensitive items, such as I-9 documents that have mandatory timelines for completion are met within legal timeframes. Orientation processes should include payroll information, scheduling, gear assignment, a copy of all relevant SOG's and other policy/procedures, introduction to other personnel, introduction to physical location, introduction to apparatus/equipment, location of resource materials, sit down time with the Chief, and other items specific to the department.

Employee Handbook

Employee Handbooks are a summary of information about an organization that will often include administrative procedures and employment related policies. This document covers basic topics such as expectations of conduct, selection and promotional processes, hours of work, discipline, benefits (if applicable), separation, and standard employment policy topics such as harassment, bullying, use of technology etc.

The following is a summary of the employee handbooks, or related documents identified for each department:

> **Mountain Iron Fire Department** – Although a Handbook was provided, volunteer fire fighters and ambulance personnel are listed as excluded from coverage of this Manual. Given the Manual is dated from 2002, it is not known when the last updates were, and if this exclusion is intended for paid-on call personnel. The department does have a separate written policy handbook.
>
> **Virginia Fire Department** – City Personnel Policy Manual and Collective Bargaining Agreement was provided. The Personnel Policy Manual does not have a written development or revision date.

Mountain Iron is recommended to immediately implement and utilize their respective City Employee Handbook, upon adjustment to ensuring paid on-call personnel are covered. The employee handbook should be distributed to all Members and acknowledged as received in writing.

Even though both Cities have a Policy Manual, they are both missing critical regulatory updates that have occurred over the last decade. Some examples include Reasonable Accommodations under ADA/ADAAA; ensuring sexual harassment policy do not create an employment contract; USERRA, Military Leave under Federal FMLA, Break Time for Nursing Mothers, as well as other more recent HR topics, social media, confidentiality etc. An HR Audit will identify regulatory compliance concerns, as that was not the scope of this project. However, if the Cities

are compliant in their practices, yet the official documents of the Cities are not, this leaves the Cities at a liability risk.

Job Descriptions

Job descriptions are useful communication tools to explain to members what tasks the department expects them to perform. Job descriptions should also address performance standards. Without these tools, members may not perform as expected. Job descriptions also identify the education, skill, and ability necessary for a position. Minimum qualifications assist in screening for recruitment and promotional purposes and provide members with a guide of what will be needed to attain higher ranking positions they may be interested in obtaining in the future.

Below is a summary of the findings of job description documents found in the departments:

> **Mountain Iron Fire Department** – has complete position descriptions for the positions of: Fire Chief, Assistant Chief, Captains, First Responder Director, First Responder Assistant Director, First Responder, Volunteer Fire Fighter, and Training Officer.
>
> **Virginia Fire Department** – has complete positon descriptions for the position of: Fire Chief, Battalion Chief, Engineer, Captain, firefighter/paramedic, and Training Coordinator.

Job descriptions are an important part of the application process – in which the applicant signs off that they are capable of performing the functions of the position; of indicating the types of accommodations that are required. The job descriptions should also delineate responsibilities of officers – not only operational skills, but also management and leadership skills required for the positions. These job descriptions should be utilized not only in the hiring process, but also the promotional process.

Performance Evaluations

Although neither departments have a formal performance evaluation process, they acknowledge it should occur. Even though the Virginia Fire Department is covered under a collective bargaining agreement, management should still conduct a simple performance evaluation

process. It is just not tied to anything monetary. It is well known that recognition is the number one motivator of people, especially powerful with volunteers. Over the career of the Consultants, a simple exercise was performed with multiple fire service groups from career, combination, and volunteer departments. The number one ranked motivator, from a list of ten (10) possible responses of 'what employee's want most out of a job' was Appreciation/Recognition of Work Done.

A major purpose of a performance evaluation is to acknowledge and encourage high quality performance. There is no better way to open an effective channel of communication between the Officer and department member, yet studies indicate 90% of employees dislike formal performance reviews, and officers dislike them as well. However, ongoing performance discussions with the members, summarized in writing and reevaluated annually is critical in providing feedback and recognition for performance.

The departments should move to a Performance Management model where Officers regularly meet and talk with their subordinates to provide timely feedback. These meetings should be no less than quarterly and depending on the situations, the meetings may need to be more frequent. These meetings may be formal or informal but note taking and documentation are essential and mandatory components. The departments might do well to develop a generic "topic template" for these discussions. This model gives the member time to prepare and focus on the upcoming discussion and gives the officer a forum to ask questions, make notes, and provide feedback. The conversation can also focus on what the member wants either professionally to move up the career ladder; or what the focus of the members reason is for volunteering.

An excellent tool in the evaluation tool box that should be considered by the departments is a self-evaluation. No member wants to be a problem or weak link within an organization. A self-evaluation tool helps an employee to critically analyze their own performance and to provide insight into their strengths and weaknesses. A perception fallacy is that if you ask them to rate themselves, they will tell you how great they are since no one is going to tell their boss how they are underperforming. This is not the case, as members/employees tend to be honest in self-

evaluations. By using this process, the officer can learn a great deal about the member, their personal thoughts and priorities, and how to help them be better performers.

Promotional Process

The promotion process for the Virginia Fire Department is completed internally. The current processes involve written exams, interview panels, and points given for longevity, evaluation, and overall experience. The written exam is considered pass/fail in order to continue with the rest of the promotional process. Thereafter, the first oral interview is 40%, the second oral interview is 40%, and longevity, evaluation, and overall experience is 20%. The written exam is not validated.

The City of Mountain Iron has, by Policy, appointment of Officers by the City Council every three (3) years. Education, experience, and other criteria should be used in addition to the establishment of specific rank job descriptions

Both departments have a formal process for promotion to officer ranks, although the processes differ significantly. The departments should use these criteria to develop a formalized, objective process to fill vacated ranks. This starts with developing complete job descriptions that include not only operational qualifications but leadership/supervisory qualifications as well. Further, the job descriptions should contain criteria as to the length of experience individuals must have – whether in this department or other fire departments – before being qualified for the position. The worst thing a department can do is hire or promote individuals who do not have the years of experience necessary for the position, even if it is only for a two-year period. Similarly, having Officers rotate in and out of positions discourages consistency of supervision.

As part of the performance evaluation process, the goals section should encourage younger individuals who have an interest in moving into officer roles to obtain the skills and qualifications necessary for the position. Thus, additional training in both operations and supervision should be encouraged.

Fire and police departments commonly use an assessment center for hiring and promotion. A team comprised of independent fire personnel, citizens, and/or members of the District board rank individuals who go through a series of tests. The vacancy is posted so that all internal and external applicants are eligible to apply. Through a screening process within the department, qualified applicants are allowed to test for the position. The tests combine operational and supervisory tasks relevant to the position. The team ranks the individuals from the best qualified to the least. The Fire Chief has the option of selecting from the individuals on the list after conducting an interview with the top candidates.

The Assessment Center process allows the Assessors to observe the candidate's thought process, organizational skills, leadership ability, stress tolerance, analytical skills, influence, delegation ability, decisiveness, sensitivity and/or empathy, communication techniques (both verbal and non-verbal), ability to function as a team member, and his/her ethics. In addition, assessment center testing can also be utilized to show a candidate's ability to command a tactical scene. Thus, the Consultants would recommend the department investigate an assessment Center to see if it can be incorporated into the promotional process.

The department would then develop a promotional eligibility list. Per department policy, promotional testing currently occurs when an opening occurs. Normally, the Chief can anticipate a future opening and conduct a testing process well in advance of a potential opening, which is beneficial not only to the employees but also the department. The promotional eligibility list is good for two (2) years. The Human Resources Department should maintain all scores, rankings, and lists on behalf of the departments.

An eligibility list can also serve as a management tool to assist in the career development of an employee. Individuals on the list should be able to "act" in the next rank in the absence of the supervisor, thus gaining on-the-job experience prior to assuming the promotional rank. Furthermore, this allows administration a chance to see how the employee performs when placed in the position. These assignments are considered temporary, and it is recommended the department's policy manual delineate the maximum length of time a person may serve in this capacity. The purpose is for the employee to gain experience and try out the position, as well as

minimize overtime in bringing individuals in on overtime to fill the spot. This is not intended to fill a position on a regular basis with an individual with lower pay. Typically, acting assignments cannot last longer than one (1) week and, in some extreme cases, a maximum of 30 days in the event an employee is out on a leave of absence.

Finally, each rank should specify criteria necessary to achieve the rank. Although the department has criteria, it does not allow skipping of ranks, which, with such a young tenured department, can prove to be problematic in the future. The accomplishment of the training/classes, participation in department activities, and 'acting' in higher ranks should be the primary criteria, not necessary time in a specific rank.

Fire Chief

The hiring of the Fire Chief is a critical appointment. Current practices of the communities are as follows.

- Mountain Iron Fire Chief and Officers are appointed by the City Council every three (3) years.
- Virginia Fire Chief is a permanent appointment by the Council.
- Virginia Fire Officers are promoted after a department posting, validated Minnesota Board of Firefighter Training and Education (MBFTE) written test, assessment exercise, interview process and Council approval/appointment.

The position of fire chief accomplishes the strategic initiatives of the organization through people. Both communities need a process to ensure that the individual leading the fire department is not only capable, but has the authority to address the changes that challenge the department in difficult times. Many fire department corporations resist change, and the first casualty is most often the fire chief.

Thus, the Consultants strongly recommend that the Fire Chief be appointed and report to the City Administrator. The recruitment should be an objective process in which a job description that delineates the skills, qualifications and duties of the position. The process should be posted

internally and advertised externally, and an assessment center testing process conducted. The selected Fire Chief should be given a three-year contract. Renewal of the contract should be based upon achievement of the established goals and achievement of the performance expectations. The City Administrator has the authority to hire and dismiss the Fire Chief.

Non-Union Managers

In the City of Virginia, the Fire Chief is the only non-union Fire Officer within the department. All other ranks fall in the same collective bargaining agreement, so Officers are unable to discipline or perform other personnel related duties for the department. The City should either 1) perform a Unit Clarification to have the supervisory ranks removed from the unions; or 2) create a separate bargaining unit for supervisory personnel. This will create a better opportunity for higher level positions to be used in a more effective manner, including performance related matters, and frees up the Chiefs for other functions.

Discipline

In order to operate effectively, all departments need to set standards of performance and conduct that are reinforced by SOG's. Rules should be clear, concise, and above all else, fair. They should also be put in writing and made available to all members. Disciplinary procedures enable the Chief to ensure all members follow those rules and address issues fairly and consistently. Below is a summary of findings with the departments:

> **Mountain Iron Fire Department** – has written disciplinary procedures outlining verbal, written, suspension, and termination within the departments administrative polices.
>
> **Virginia Fire Department** – has written disciplinary procedures outlining verbal, written, suspension, and termination within the City's personnel policy manual.

Discipline can also lead to legal issues for the departments, particularly if discipline is inconsistent, or the basis for discipline is unlawful. For that reason, all departments are recommended to maintain their disciplinary policy and related procedures. The departments are also recommended to standardize discipline template forms in which to follow. In addition, it is recommended that all officer positions involved in the disciplinary process be trained on disciplinary processes.

Personnel Records

Personnel records have three (3) major functions in an organization. They provide a memory or recall to administration and member; they offer documentation of events for use in resolving questions or personnel related problems; and they provide data for research, planning, problem solving, and decision-making.

While federal, state, and local laws require that certain employee information be maintained, certain basic records should also be retained to avoid errors of memory and provide information for making management and personnel related decisions.

Documents related to personnel files are currently maintained as followed:

> **Mountain Iron Fire Department** – All payroll related documents are maintained with City Administration. The Fire Chief retains all other personnel and medical records.
>
> **Virginia Fire Department** – All personnel documents are maintained in the City Human Resources Department.

Each department maintains different records, and some of those records may contain medical information. This is increasingly problematic because Officers change periodically in one (1) organization, so access to these records change. No retention/destruction policies were noted. In addition, at least one (1) department is not effectively separating documents into different files, as required under the American's with Disabilities Act (ADA). The following illustrates which documents should be maintained and in what type of file. Organizations must differentiate between employee information and medical information and maintain these documents in separate files.

The contents of human resource files vary by organization, but most human resource professionals accept some practices as standard. The following provides a checklist of items that may be included in personnel files:

Main Employee File

- Offer/promotion/transfer letter(s)

- Application form
- Acknowledgement of SOP/employee manual
- Acknowledgement of new policies
- Orientation checklist
- Termination checklist
- Performance appraisals
- Official performance documentation (memos, letters, discipline, recognition, etc.)
- Payroll documentation (change of address, transfer)
- Training requests (with approval and/or denial documentation)
- Copies of certifications, licences, transcrits, etc.

Separate Payroll File

- W-4 form
- Group benefit enrollment forms (if applicable)
- Retirement system calculations/benefits
- Insurance claim forms
- COBRA letter sent at time of employment and termination and other mandatory notices (if applicable)
- Automatic payroll deposit authorizations
- Miscellaneous deductions
- Payroll documentation (change of address, transfer documentation, leave of absences, etc.)

Separate Medical File – Mandatory separation

- Initial physical documentation – agility, psychological, pre-employment, hearing, respiratory etc.
- Worker's compensation information (doctor reports, letters, etc.)
- On-going non-CDL drug and/or alcohol screening information (CDL screening mandates its own file
- Vaccination records and/or decline form
- Other medical tests results

Subject Files Kept Separate

- Child support garnishments
- DSS requests (Medicaid, etc.)
- Exit interview forms
- Other garnishments
- Immigration Control Form I-9 – (All organization documents are usually maintained together for auditing purposes)
- Investigation notes or reports
- Litigation documents

- Reference checks
- Requests for employment/payroll verification
- Wage assignments
- Worker's compensation claims

The official file for Fire Department members should be retained in City Hall under the direction of the designated record custodian (Administrator or Human Resources). The personnel files should have limited access and be kept in a secure filing cabinet. Access to the general file should be restricted to the records custodian. Only the records custodian and designated administrative personnel should have access to the medical file. The person performing payroll functions should have access to the payroll files. Chiefs and Officers involved in the promotion process should have limited access to information pertaining to potential officer candidates. Information should be limited to past performance evaluations, and if appropriate, past commendations and/or disciplinary notices.

The Fire Departments should maintain limited information regarding a member, and the information they have should be kept in a locked file with access only by the Chief. Information maintained in the department files should be limited to copies of disciplinary actions and performance evaluations. All other information on an individual should be kept in the Cities official file. Any employee with access to the departments files should be trained on employee confidentiality.

Facilities

Both fire departments operate from a single fire station.

Mountain Iron Fire Station

The fire station is attached to the Public Works complex located at 8877 Slate Street. The figure below illustrates the current fire station"

Figure 11: Mountain Iron Fire Station

The three white doors on the right side of the figure above house the fire apparatus. The facility is very cramped with limited storage space. The station houses five pieces of fire/EMS apparatus. Part of the Public Works/Fire Station is protected with an automatic suppression system (sprinklers); however, the fire alarm system is not transmitted to an off-site monitoring facility.

There was no OSHA approved NFPA 1500 – A.10.1.5 – 2018 edition emission exhaust system from the stored station apparatus or small motors operating in the station (see Appendix B). The State of Minnesota Revised Statutes 176.011 subd.15 (c) states:

> *A firefighter on active duty with an organized fire department who is unable to perform duties in the department by reason of a disabling cancer of a type caused by exposure to heat, radiation, or a known or suspected carcinogen, as defined by the International Agency for Research on Cancer, and the carcinogen is reasonably linked to the disabling cancer, is presumed to have an occupational disease under paragraph (a). If a firefighter who enters the service after August 1, 1988, is examined by a physician prior to being hired and the examination discloses the existence of a cancer of a type described in this paragraph, the firefighter is not entitled to the presumption unless a subsequent medical determination is made that the firefighter no longer has the cancer.*

Recommendation – Emission Exhaust Removal

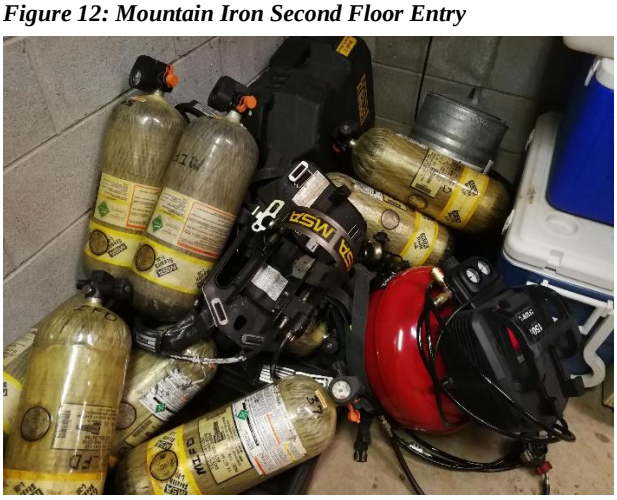
- *The fire station should be equipped with an OSHA approved vehicle emission exhaust removal system which accomplishes 100% capture and removal of exhaust emissions to the outside. (reference Appendix B)* ***Priority 1.***

The station lacks an emergency backup power generator. The Self Contained Breathing Apparatus (SCBA) is refilled from a bottle cascade system using a containment fill station which

provides the cylinder refill operation with a greater measure of safety. History has shown that most breathing air cylinder ruptures occur when the cylinder is being refilled with air.

The station is not American with Disabilities Act (ADA) compliant and the second floor office meeting room has only one means of entry and exit and is not protected from the apparatus floor in case of fire. Overall, the station is inadequate in size for the amount of apparatus and equipment stored. In addition, the station is in need of housecleaning and brought into compliance with life-safety code.

Figure 12: Mountain Iron Second Floor Entry



Recommendation – Mountain Iron Station

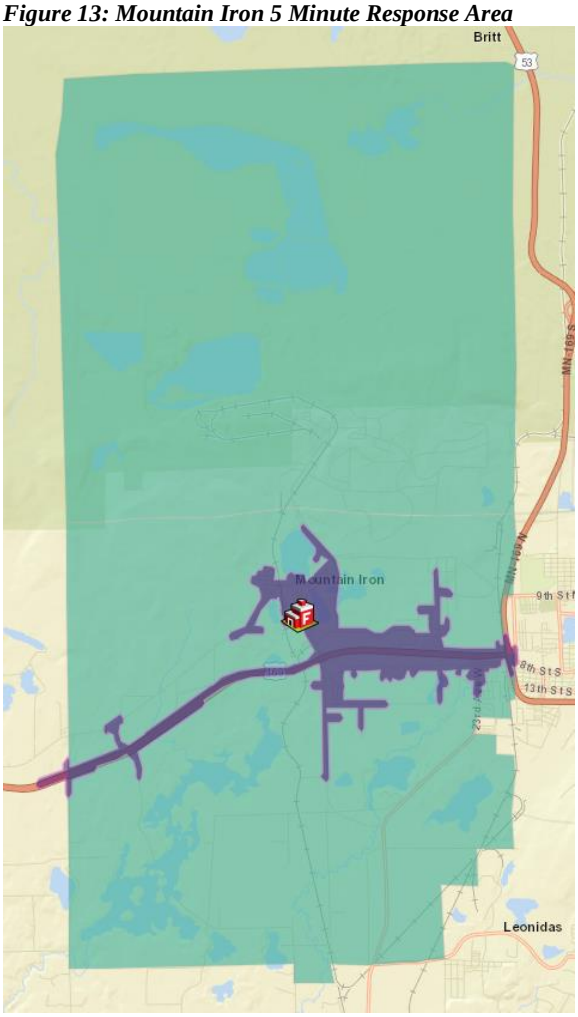
- *Either the facility needs to be enlarged or the amount of apparatus be reduced to provide some much needed room.* ***Priority 3***

- *At minimum the facility needs to be brought up to code ensuring adequate egress from the station in case of an emergency.* ***Priority 1***

Mountain Iron GIS Mapping

The figure below illustrates the complete 71.3 fire protection district for Mountain Iron the in turquoise:

Figure 13: Mountain Iron 5 Minute Response Area



The purple area is the distance the department can cover within a five-minute drive time under normal weather conditions mapped on normal traffic on a Friday at 4:00 PM. The red symbol represents the current location of the fire station.

Virginia Fire Station

The current fire station located at 115 4th Avenue North, Virginia and is approximately 20,000 square feet. The station was built in 1909 and renovated over the years to include a four-bay addition to the north side of the station to house ambulances and Chief's vehicle. Fire apparatus is housed in a two-story section of the older portion of the facility with offices and living facilities for the men and women serving as career members as illustrated in the figure below:

Figure 14: Virginia Fire Station

Although the station was very clean it has long since become inadequate for today's fire/EMS needs. The City commissioned Five Bugles™ an architectural design company for emergency service facilities. There findings are very comprehensive and indicates the VFD needs are at a minimum of 38,558 square feet well over the existing 20,000 square feet. The reader is encouraged to obtain a copy of the Five Bugles report from the City to better understand the current and future needs of the fire department.

The current facility has an approved OSHA and NFPA emission exhaust system as well as an emergency power generator for use during power failures. There are facilities for both men and women employees although the consultants question if the facility overall would meet City and State life-safety codes.

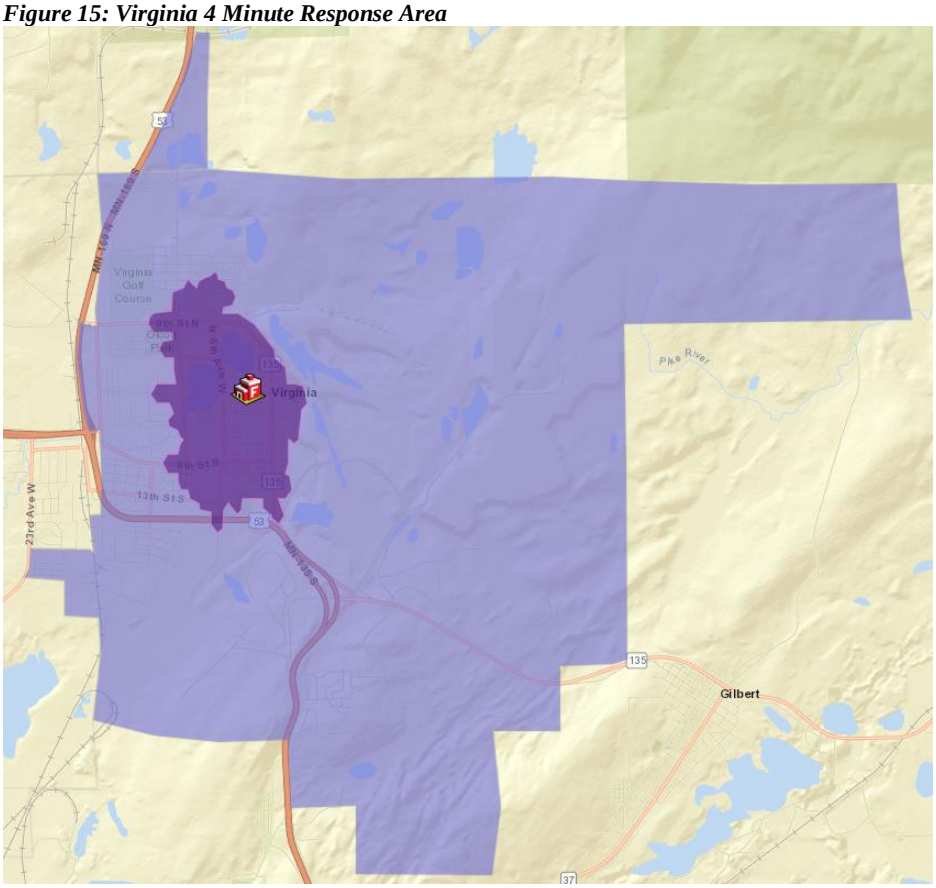
Recommendation – Virginia Fire Station

- *The City and fire department are in serious need for a new fire/EMS facility. There is inadequate room to accomplish the many support tasks needed to maintain emergency services at adequate state of readiness.* ***Priority 2***

Virginia Mountain Iron GIS Mapping

The light purple area represents the 620 square mile district that the VFD EMS provides for ALS paramedic treatment, which includes the City of Virginia 18.8 square miles as illustrated in the figure below:

Figure 15: Virginia 4 Minute Response Area



The dark purple represents a four-minute drive time from the fire station (red symbol) under normal weather conditions and traffic on a Friday evening at 4:00 PM. Note that MIFD is a five-minute drive time whereas VFD is a four-minute drive time – as required by NFPA 1710.

Apparatus

Fire Apparatus is categorized by what function it can carry out. Its original purpose was to deliver water to the fire, but it has now become an all-purpose vehicle equipped to provide tools and equipment for an ever-expanding mission e.g. transporting firefighters to the scene, providing a limited supply of water with which to fight the fire, and carrying tools, equipment, and hoses needed by the firefighters.

Mountain Iron Apparatus

Mountain Iron fire protection area encompasses 71.3 square miles and is protected with the following apparatus inventory:

Table 27: Mountain Iron Apparatus

Mountain Iron - Apparatus						
ID #	**Purpose**	**Year**	**Manufacture**	**Pump GPM**	**Tank Gal**	**Misc**
188	Engine	1994	Saulsberry	1,250	750	Failed Pump Test
4	Engine	2004	Unknown	1,250	2,500	
16	Brush	2016	Ford F-350		300	10 Gallons Foam
1	Mini-Pumper	2001	Ford F-550	1,000	300	10 Gallons Foam
10	Brush	2010	Ford F-550		400	10 Gallons Foam

No apparatus mileage or engine hours were provided.

All of MIFD apparatus and equipment is owned by the City of Mountain Iron.

Condition of Apparatus/Equipment

Most of the apparatus is in fair to good condition: however, one of the primary fire suppression engines failed its pump test and at the time of the study it was unknown if repairs or replacement was under consideration. The primary engines appeared to lack all the necessary equipment to satisfy both NFPA Standard 1900 as well as the Insurance Service Office (ISO) 2013 Fire Suppression Rating Schedule. All expired protective firefighter clothing along with expired SCBA were found in the station. It appeared that the equipment on the apparatus was in good and functional condition.

Incomplete Data

The consultants requested additional apparatus information (see Appendix A) which was not provided including apparatus maintenance records, are apparatus repairs conducted by a certified Emergency Vehicle Technician (EVT), record history of pump, ladder, and hose testing. It is unknown if the department has a vehicle replacement plan or life expectancy for its rolling stock and equipment.

The above information is advantageous for the department and municipality to have in the event a piece of apparatus was involved in a serious accident or firefighter is injured/killed due to equipment failure.

Recommendation – Mountain Iron Apparatus

- *The department needs to repair or replace it primary engine.* ***Priority*** *2*

Virginia Apparatus

Virginia fire apparatus is stored in two places due to the limited space in the existing fire station. Stored at Public Works is an engine and ambulance, both kept in condition for immediate use and listed as reserve apparatus. All the VFD apparatus and equipment is owned by the City of Virginia with the exception on the 2011 Hazardous Material trailer owned by the State of Minnesota Department of Homeland Security.

Apparatus Inventory

The current rolling stock of the VFD is illustrated in the table below:

Table 28: Virginia Apparatus

Virginia - Apparatus								
ID #	**Purpose**	**Year**	**Manufacture**	**Mileage**	**Engine Hrs.**	**Pump GPM**	**Tank Gallons**	**Misc.**
C-1	Chiefs	2017	Chevy Tahoe	12,664				
BC-1	Battalion Chiefs	2012	Chevy Tahoe	62,680				
Squad 150	FPB/Utility	2002	Ford - F350	106,970				
Engine 3	Engine	1998	Ford - F350	89,862			250	Slip in Pump
Medic 1	EMS	2015	Road Rescue	125,391		NA	NA	
Medic 2	EMS	2010	Road Rescue	168,400		NA	NA	
Medic 3	EMS	2015	Road Rescue	124,046		NA	NA	
Medic 4	EMS	2008	Horton			NA	NA	Reserve @ PW
Medic 5	EMS	2017	Road Rescue	15,867		NA	NA	
Medic 6	EMS	2014	Road Rescue	198,454		NA	NA	
Squad 150	Rescue/Pumper	2012	Spartan	44,163	387			
Ladder 1	Aerial	2003	Pierce	16,868	653			
Rescue 1	Rescue		E-one	13,090		550		
Engine 2	Engine	1992	Peterbuilt	35,668				Reserve @ PW
	Haz Mat Trailer	2011						DHS - 1 of 9
	Casualty Tr.	1995						EMS Disaster

Virginia - Apparatus								
ID #	**Purpose**	**Year**	**Manufacture**	**Mileage**	**Engine Hrs.**	**Pump GPM**	**Tank Gallons**	**Misc.**
	Air Cascade Tr.							SCBA Refill
	Water Rescue	1992	Inflate Boat					16 ft. 25 HP
	ATV	2010	Polaris	436				W/Trailer

Apparatus Maintenance

Much of the apparatus repair is performed either at the fire station or public works garage which has an EVT certified mechanic. EVT began as The Fire Apparatus Mechanics Certification Program, sponsored by the International Association of Fire Chiefs (IAFC). The IAFC introduced this certification program in an effort to elevate the standards of emergency vehicle maintenance and the personnel who perform the work.

Maintenance/repair documentation is kept at the fire department including: hose testing, pump testing, ladder testing, aerial ladder testing, and SCBA Air/Gas Quality testing.

Apparatus Condition

Condition of Apparatus

Most of the apparatus is in good condition and appears to have the necessary equipment to satisfy both NFPA Standard 1901 as well as the Insurance Service Office (ISO) 2013 Fire Suppression Rating Schedule. All equipment appears to be in good and functional condition.

The department provided a very comprehensive inventory list for equipment carried on each of its apparatus. These are important documents in the event the apparatus is destroyed by fire or accident thus allowing the department to document maximum insurance claims.

Engine Hour Meters

The VFD indicated they didn't start recording engine hours until 2015. An engine hour meter is a gauge or instrument that tracks and records overall elapsed time that the engine is actually running and is normally displayed in hours and tenths of hours. Most hour meters are used to log running time of equipment to ensure proper maintenance of expensive machines or systems.

This maintenance typically involves replacing, changing or checking parts, belts, filters, oil, lubrication or running condition in engines, motors, blowers, and fans, to name a few.

Fire trucks, ambulances, and police cars may all have significantly higher running times compared to mileage. Fire trucks can be running for hours at the scene without clocking a single mile. If maintenance is performed on these vehicles based on odometer readings only, engine life may be affected. Maintenance personnel understand the wear issues surrounding a vehicle's engine hour time compared to road miles.

Sufficiency of Apparatus

Sufficiency of apparatus can be considered in two ways: the ***amount*** of apparatus present, and the ***capabilities of the apparatus***. The consultants have observed fire departments that have an abundance of apparatus, often resulting in apparatus that is rarely deployed or more apparatus than the department is able to staff. In other instances, departments are under-equipped and/or the apparatus is lacking the tools required to perform tasks on the emergency scene.

The Fire Chief provided the consultants with a very comprehensive list of future equipment needs and in the opinion of the consultants, clearly separated needs from wants.

Apparatus Replacement Program

Fire apparatus, like all types of mechanical devices, have a finite life. That life-span depends on many factors such as mileage, engine hours, quality of the preventative maintenance program, technological advancements, quality of the driver training program, rule enforcement, quality of the original builder and components, availability of parts, custom or commercial chassis, ability of the district to generate funding, general appearance, etc.

The 2016 edition of NFPA 1901 recommends fire departments evaluate whether to retain fire apparatus in first-line service for more than 15 years as a result of safety considerations.

> *Annex D, titled Guidelines for First-Line and Reserve Fire Apparatus due to changes in NFPA 1901 especially relating to safety fire departments should seriously consider of keeping fire apparatus more than 15 years in first-line service.*

However, a one-size fits all for life expectancy of fire apparatus isn't feasible. Section D.1 of NFPA 1901 discusses minimizing the risk of injuries to firefighters based on improvements in safety features installed in current apparatus. The guideline further states current safety upgrades and innovations are not generally found in units 15 years or older, which, depending on limited usage, may still be in serviceable condition after 20 years. Again, there is no set number of years which determine the life of apparatus as previously outlined in this section. NFPA 1901 does suggest that apparatus more than 15 years old should be upgraded in accordance with NFPA 1912.

Apparatus/Vehicle Replacement Schedule

Mountain Iron Fire Department did not provide any replacement plan other than the Fire Chief indicated that their primary engine needed to be replaced because of inability to get parts. Conversely, Virginia Fire Department has an extensive replacement schedule; although the consultants believe the life expectancy on some of their apparatus is too conservative.

Although only one replacement schedule program is presented by the consultants, the amount of usage of the apparatus between the two departments is difficult to compare inasmuch as VFD has greater utilization of their apparatus. The table below illustrates the recommended replacement program for the departments based on assessment and current industry standards:

Table 29: Recommended Replacement Schedule

Apparatus	Recommendation Replacement
Ambulance	5 yrs. + Rechassis + 5 yrs. No reserve
Engine/Pumper	20 yrs. + 5 yrs. reserve
Tender	20 yrs. + 5 yrs. reserve
Aerial	20 yrs. + 5 yrs. reserve
Heavy Rescue	20 yrs. + 5 yrs. reserve
Command Vehicles	10 Years no reserve
Brush/Utility	15 yrs. + 5 yrs. reserve
Tow Vehicles	As Needed

The VFD provide one source of data that indicated that an ambulance had a five-year life expectancy; however, in a later document they indicated that the life of all ambulances would be extended to six-years. The consultants do not support the six-year life expectancy and recommend that after five-years the chassis be replaced and the patient compartment renovated and reused for an additional five-years. Although the table above indicates no reserve for an ambulance, one ambulance should be kept in reserve, but its life not extended past the initial five-years plus one rechassis.

Recommendation – Virginia Apparatus

- *Aerial apparatus needs to be replaced. The issue that the current facility isn't large enough to house aerial apparatus does not procure the need for this type of apparatus.* ***Priority 3***

- *Ambulances should have an initial life expectancy of five-years and at that point the chassis should be replaced (titled as new) and the patient compartment renovated and repaired as needed. This could result in a 50 to 60% cost savings over a new ambulance.* ***Priority 4***

Training

Training is the foundation of the fire/EMS service, beginning with the basic training given to each new fire fighter. Every other training topic and training subject fire fighters receive throughout their career is premised upon their basic training. A fire fighter, regardless of the compensation they may or may not receive, must be engaged in a comprehensive training program throughout their relationship with the fire department, or they might not perform to the level of service expected of them and endanger their life and the lives of others.

A training program that reflects current fire service standards and practices can aid the department in the retention of personnel as well as in the recruiting process. Training program goals must include the maintenance of basic skills, subject matter that addresses evolving hazards and current trends as well as the use of new tools and equipment. The ability to provide a very high level of service is premised on training being provided at the same level.

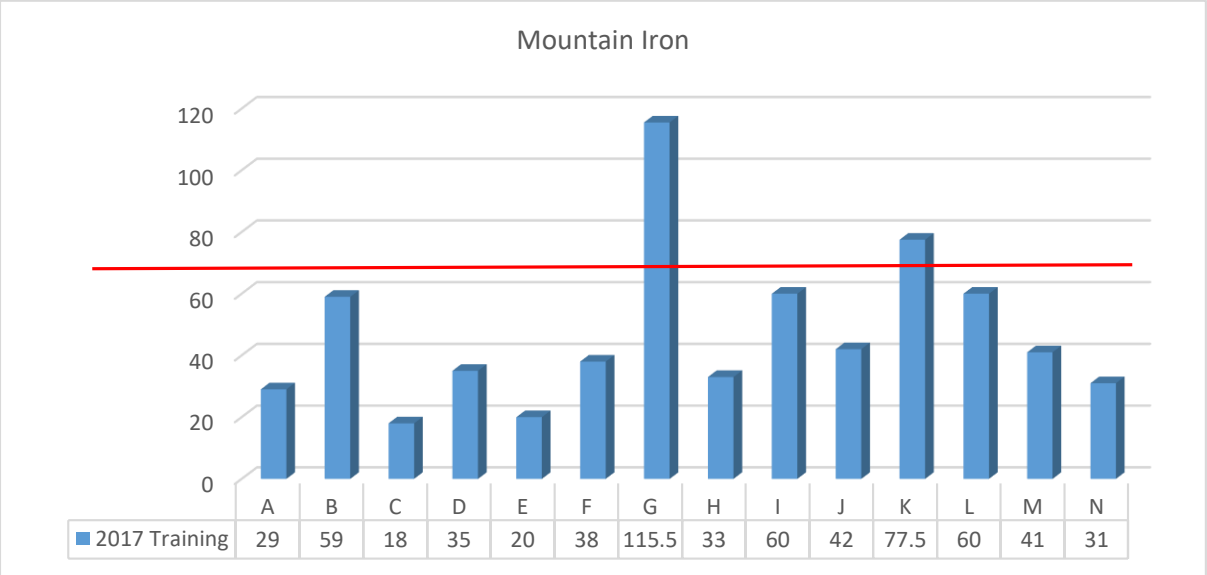
Emergency providers perform to the level they are trained, typically under times of extreme danger and stress. The statement ***"How you train is how you will perform on the emergency scene during an emergency"*** describes the absolute need for providing an effective training component within a modern fire and EMS department.

Mountain Iron Training

The department provided 63 sheets of meeting and training hours for 2017. The consultants hand counted each individual hour for 2017 for items marked or referred to training. Many of the sheets had no training topic listed and in most cases the individual signed the sheet; however, the consultants counted the members checked but with no signature.

Fourteen members appeared to have been active all of 2017; four members appeared to have started mid-year and their hours were not included in the training figure. One member received certification as a state firefighter during 2017. The figure below illustrates the training hours of the active members of the MIFD for 2017:

Figure 16: Mountain Iron Members Training - 2017



The 14 active members are illustrated in the figure above in a random manner; therefore, the A – M does not identify an individual by their last name. If each member were to record 6 hours of

training per month, they would accumulate a minimum of 72 hours per year (represented by the red line in the figure). The table illustrates that two department members exceeded six hours of training per month.

The department did not provide certification levels of its members; therefore, it is unknown how many members are state certified and if so at what level.

Virginia Fire Department Training

The VFD was able to provide very complete training records for its employees for the year 2017. From these sheets, one could not only establish training topics/objectives, but also dates, hours of class, and instructor.

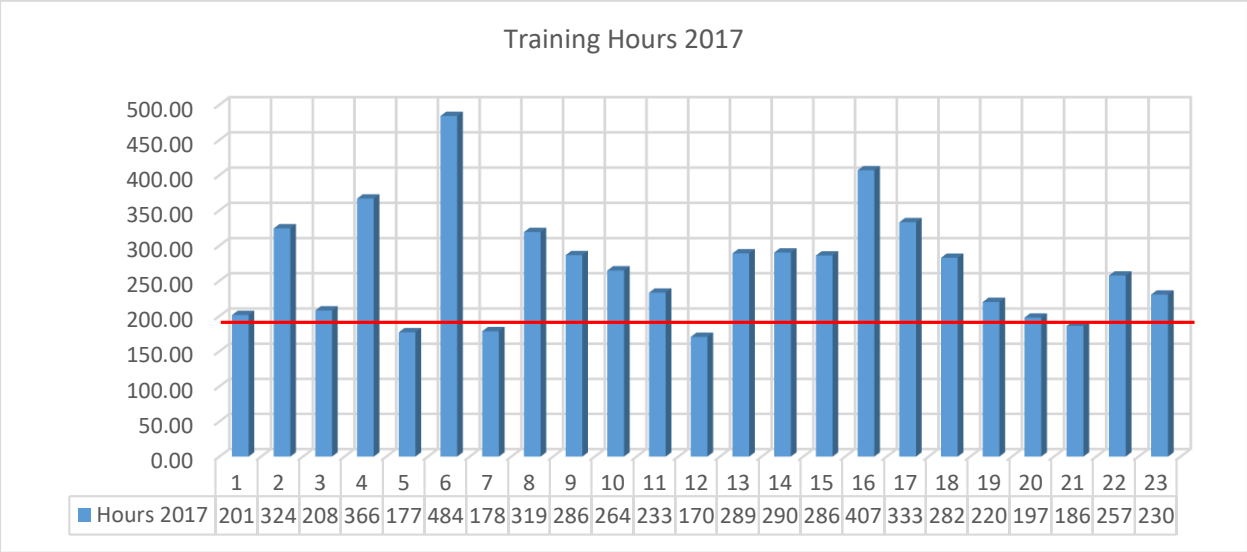
Recently, ISO reduced the total number of training hours for a non-probationary member from 240 to 192 per year. However, other mandatory hours were adjusted as illustrated in the table below:

Table 30: ISO New Training Requirements

Training	*Hours*
Company	192
Hazardous Material	6
Driver	20
New Driver	60
Officer	12
New Recruits	240
Facility (Tower)	18
Pre-Planning	1

As with MIFD, the consultants removed employees who were not active members throughout the year. In VFD's case, this included 5 members with the other 23 members showed training numbers for all of 2017 as illustrated in the figure below:

Figure 17: Virginia Training Hours - 2017



Note: the numbers cannot be associated with a name.

The red line represents the ISO mandatory company training hours (192 hours/per year). At a minimum, this requires two hours of training per member, per shift throughout the year. The department had 82.61% of its members meet the ISO standard in 2017.

The VFD has a designated Training Officer who coordinates the training curriculums as well as assuring that personnel maintain their mandatory certifications. The training calendar, curriculum inventory, lesson plans, training records, and certifications appeared to be in good order.

The Liability of Poor Training

With an increasingly litigious society, the liabilities associated with poor training and/or poor documentation of that training, are enormous. Within the last decade, there has been an increased tendency for municipalities/districts to be stripped of their immunity protection when dealing with an employee's injury or death. It is hoped that neither department experiences a firefighter's line-of-duty death. However, in the event of such an occurrence or a serious line-of-duty injury, a large number of state and federal agencies would conduct independent investigations. At minimum, the fire department would need to provide the investigators with the following:

- *Documentation that the individual received training in the evolution(s) in which the death/injury occurred.*

- *Comprehensive curriculum of the training topic.*

- *Attendance sheet with the individual's signature indicating he/she attended – not a list of member's names with a check-off box.*

- *Record of the instructor's qualifications to teach the topic.*

- *Competency documentation showing how the department measured the ability of the individual to safely perform the task in which he or she was injured.*

- *Historical records showing how frequently this topic was instructed and what other topics supported a safe environment under the conditions found at the accident scene.*

In the event of a serious accident or line-of-duty death, lack of such documentation could result in fines from both state and/or federal agencies, as well as leave the fire department and perhaps even the district board open to serious civil litigation.

In addition, the following should be recorded into the record management system: date of the training, time and duration of the training, class objectives, audio/training aids utilized, training participant's feedback, notes or comments by the instructor on how the training could be improved.

Competencies vs. Training Hours

Beyond the actual training program, today's fire service requires more than simply teaching members how to perform their jobs safely; it requires validation of their competency to do so. A well-constructed training program will employ a system to ensure all members receive required training and document core competencies (practical training evolutions) and it appears the current Records Management System (RMS) has these capabilities.

The topic of measuring competencies of department personnel continues to raise strong feelings from both those who manage the department and those department members who provide the

actual service. Yet everyone seems to agree that the most importance issue is safety of the emergency responders. Therefore, is it adequate for a Chief to base the abilities of the emergency responder personnel on their certifications and monthly training records or attendance at drills, versus their actual ability to not only perform the task, but also to do so in a safe manner?

Emergency events do not discriminate between volunteer, paid-on-call or career employee status; yet the amount of time available to dedicate to training can be influenced by that status. It is hard to actually determine the quality of training by examining monthly training records. Yet one cannot argue that how you train is how you will perform on the emergency scene. Training and safety are hard to separate when looking at performance.

Competency is the "quality of being adequately or well qualified physically and intellectually to perform the responsibilities of the position". Thus, the department must define the activities that are deemed necessary to determine if an employee is 'qualified' to perform the essential functions of the position. Thus, competency testing should be based on the individual's job description, which should include the job responsibilities as well as the mental and physical requirements of the job, not on how many hours spent on a training topic. Different levels of competency need to be developed based upon the roles and responsibilities of the rank; therefore, the competencies required of a firefighter are different than the competencies required of a captain or battalion chief.

When competencies are defined, measuring competencies is not only prudent, it actually can significantly improve a training program. One way to ensure established competencies are understood and individuals within that rank can perform the job functions is to utilize technology in measuring competencies. The use of technology will provide some substantial improvements in most training curriculums, while providing critically important documentation. Unfortunately, in many departments the firefighters are willfully short on training hours, documentation is grossly inadequate, and documentation that the individual can actually perform the function in a safe manner is nonexistent.

Discussion of competency testing often results in many jumping to the conclusion that if an individual lacks the skill associated with a particular task and cannot perform in a safe manner, there should be some type of punitive action. Quite the opposite should occur. Rather, remedial training should be given and documented, until such time the individual can perform the task safely and proficiently. Punitive action should occur if the individual refuses to correct the unsafe behavior.

National news recently covered a story that teachers' tenure should no longer exempt them from demonstrating competency in the topic they teach – unfortunately, one department did not believe they had the capability to measure competency; while the other fire department mandates competency testing observed by either the training officer, safety officer, and/or Chief.

Competency testing might be unpopular, but does not exempt departments from the responsibility of doing everything in their ability to ensure personnel are safe. It is strongly felt by the consultants that a minimum of semi-annual competency testing for all active line personnel be conducted by the senior management team in conjunction with the training division. The ultimate goal of such testing would be to identify deficiencies and develop remedial strategies for correction. In coordination with this testing should be a "Fit for Duty" medical testing program to also identify deficiencies and also develop remediation actions.

Recommendation – Competency Testing

- *Mountain Iron Fire Department needs to implement a competency testing component within their training curriculums. These findings must be documented and any deficiency should be addressed immediately.* ***Priority 1***

- *All career shift personnel should be required to obtain the ISO 192 hours of fire training plus the mandatory EMS training.* ***Priority 1***

Training Certificates

Consultants requested a list of certifications obtained by department members. MIFD did not provide member's certification list. VFD provided a listing of training certifications for the department members as illustrated in the table below.

Table 31: Virginia FD Members Certification

Certification	*# Members*
NFPA 1001 Fire Fighter I	28
NFPA 1001 Fire Fighter II	28
NFPA 1002 Apparatus Operator	9
NFPA 1041 Fire Instructor I	19
NFPA 1021 Fire Officer I	16
NFPA 1021 Fire Officer II	1
NFPA 1033 Fire Investigator	2
NFPA 1035 Fire Setter Specialist	1
NFPA 1035 Fire Setter Program Manager	1

Recommendation – Training Certifications

- *It is essential that the Mountain Iron Fire Department track and encourages members to seek certifications approved by the Minnesota Fire Service Certification Board.* ***Priority 2***

Fire Prevention / Public Safety Education

It is difficult to find any fire professional that does not agree with the importance of fire prevention programs. Most fire departments are publishing statements similar to the one below:

> *The goal of fire prevention is to educate the public to take precautions to prevent potentially harmful fires, and be educated about surviving them. It is a proactive method of reducing emergencies and the damage caused by them.*

OSHA requires employers to implement fire protection and prevention programs in the workplace. It is common to find companies fire prevention plan to state:

> *To protect our employees and facilities from the dangers of fire, our company has developed a fire prevention plan to reduce the risk of potential injuries, death, and property damage. The plan's purpose is to identify and control fire hazards.*

Professionals in the fire prevention field have been saying that when it comes to tight budgets, prevention is the first thing to be cut. Although Fire Chiefs will remain adamant that fire prevention is a top priority, the facts indicate that Fire Chiefs can't walk the talk; the average fire prevention budget ranges from a high of 3% of the total budget if you include career fire

personnel salaries and benefits assigned to a fire prevention bureau, in most cases less than 1% for prevention of the total fire budget.

Mountain Iron – Fire Prevention

No information was provided as to the activities of the MIFD in terms of fire prevention.

Virginia Fire Department – Fire Prevention

The department has a dedicated Fire Marshal who oversees all fire prevention activities conducted by on-duty shift personnel. Not including the Fire Marshal's salary and benefits, the VFD dedicates 0.35% of its total budget to fire prevention in 2017.

The number of inspectable occupancies is illustrated in the table below:

Table 32: Virginia Fire Prevention Data

Occupancies	Number
Residential rental properties	517
Apartment complex 4 units or more	67
Commercial properties	398
Adult/Child care-daycare	20
Private schools	3

The fire prevention bureau uses the codes and standards adopted by the city:

- *Minnesota Fire and Building codes 2015 edition*
- *Virginia Property Maintenance and Preservation code 207 edition*
- *Fire codes for Knox Box (entry key secure system) and fire pits has been adopted*

Public Safety Education

Although MIFD did not provide data pertaining to public safety education, the Chief indicated that they are active during fire prevention week in October.

Virginia Fire Department Public Safety Education

The VFD dedicated 0.09% of its total budget to public safety education activities in 2017 (public safety education is part of the fire prevention budget). The following list of activities was provided by the VFD which pertain to safety education as well as fire prevention:

- *School and special group tours and onsite presentations*
- *Fire Extinguisher education*
- *Smoke alarm program*
- *Knox box*
- *YFPI*
- *Arson task force*
- *Fire explorer program*
- *Other community risk reduction programs as requested or grant participation*
- *Friends of Virginia Public safety*
- *Fire investigation*
- *Fire Code enforcement and investigation*
- *Preplans*
- *Building plan review*

Within recent years, the fire department created and presented a Cooking Fires Public Safety Campaign which involved social media messaging, literature, magnets, and hot pads with cooking safety messages.

Fiscal

Introduction

The City of Virginia and the City of Mountain Iron both operate municipal fire departments. Both fire departments are primarily funded by property taxes, state aids, and grants. The City of Virginia is a full-time career fire department that provides Emergency Medical Services through an ambulance service that is funded separately from the fire department budget. The ambulance service was funded by an Enterprise Account which will be explained in more detail later in this section. The City of Mountain Iron is staffed with Paid-On-Call members. The fact that the City of Virginia Fire Department is staffed with full-time career personnel and the City of Mountain Iron Fire Department is staffed with Paid-On-Call personnel results in significant differences in the size of their budgets, which will be explained in this section.

Overview of City Budgets

The City of Virginia and the City of Mountain Iron contracted with McGrath Consulting Group, Inc. to review the fire and EMS Services being offered by both communities. An important aspect of the study is to review the current costs of fire and EMS Services that both communities are paying for these services. This section will review the overall budgets for both communities as well as the costs for fire and EMS services for each City.

City of Mountain Iron

The City of Mountain Iron operates on a January 1st to December 31st fiscal year. The city funds are divided into different fund accounts based on their purpose. The City of Mountain Iron budget funds are divided into two different accounts as statements of net position and the statement of activities.

Governmental Activities: *Includes most of the City's basic services including general government, public safety, streets, culture and recreation, and economic development. These services are funded primarily by property taxes, state and federal grants.*

Business-Type Activities: *The City charges a fee to customers to cover all or most of the costs of services the City provides. The City's electric, water treatment, wastewater treatment, refuse removal and recycling sales and services, and the Virginia "Mountain Manor", rental fees are in this fund.*

City of Virginia

The City of Virginia operates on a January 1st to December 31st fiscal year. The city funds are divided into different fund accounts based on their purpose. The City of Virginia budget funds are divided into two different accounts as statements of net position and the statement of activities.

Governmental Activities: *Includes most of the City's basic services including general government, public safety, streets and highways, culture and recreation, and economic development. These services are funded primarily by property taxes, state aids, and grants.*

Business-Type Activities: *The City charges a fee to customers to cover all or most of the costs of services the City provides. The City's public utilities, hospital, sewer, solid waste disposal, golf course, Washington Manor, clinic facility and ambulance services are in this fund.*

City of Mountain Iron Budget Revenue and Expenses

The table below illustrates the Mountain Iron budgets revenue and expenses for 2016 and 2017.

Table 33: Mountain Iron Revenue & Expenses

	Mountain Iron Budget Revenue & Expenses					
	Government Activities		*Business-type Activities*		*Total*	
	2016	*2017*	*2016*	*2017*	*2016*	2017
Revenue	$ 4,963,371	$ 4,791,167	$ 4,135,681	$ 4,309,986	$9,099,052	$9,101,153
Program Expenses	$ 4,255,120	$ 4,272,596	$ 4,455,198	$ 4,555,776	$8,710,318	$8,828,372

Governmental Activities

In terms of the total 2017 City Budget the following should be noted:

- *Government revenues during 2017 were $4,791,167 compared to $4,963,371 in 2016, which was a decrease of $172,204.*
- *The cost of all Governmental Activities in 2017 was $4,272,596 compared to $4,255,120 in 2016. This was an increase of $17,476 in government expenses in 2017 budget.*
- *Most significant revenues of Governmental Activities are grants and contributions not restricted to specific programs accounted for 52% of total revenues*
- *Grants and contributions restricted to specific programs accounted for 12% of total revenues*
- *Property taxes and other taxes accounted for 29% of the total revenues*
- *General government expense (32%) and street expense (32%) are the most significant, followed by public safety (22%) and culture and recreation expense at (14%).*
- *The most significant increase in the 2017 budget was for Public Safety*
- *Property taxes decreased in 2017 to $1,370,229 from $1,398,295 in 2016, which was a decrease of $ 28,066.*

Business-Type Activities

The activities covered by this budget do not include expenses related to the Mountain Iron Fire Department, which does not provide Ambulance Service to the City of Mountain Iron. Ambulance Service for the City of Mountain Iron are received from the City of Virginia.

City of Virginia Budget Revenue and Expenses

The following table reflects the revenue and expenses for the City of Virginia for 2016 compared to 2017 for both Governmental and Business-Type Activities.

Table 34: Virginia Budge Revenue & Expenses

	Virginia Budget Revenue & Expenses					
	Government Activities		*Business-type Activities*		*Total*	
	2016	*2017*	*2016*	*2017*	*2016*	2017
Revenue	$ 16,294,621	$ 18,000,943	$ 40,110,130	$ 38,926,437	$58,111,073	$55,221,058
Program Expenses	$ 16,331,139	$ 16,054,861	$ 32,951,668	$ 33,764,690	$49,084,807	$49,819,551

For the purposes of this study, we are only reviewing the larger picture of the City budget as it is much more complicated than the Fire Department and Ambulance Budgets. Therefore, this report does not go into detail about the total City budget.

It should be noted that the revenue and expenses for the fire department operations are in the Governmental Activities Fund and the Ambulance Service revenue and expenses are in the Business-Type Activities Fund. The Ambulance Service is operated as an Enterprise Account with the expectation that all expenses for the Ambulance Service will be funded by revenue generated by Ambulance Service Transport Fees.

Governmental Activities

In terms of the total 2017 City Budget the following should be noted:

- *Most significant revenues of Governmental Activities are grants and contributions not restricted to specific programs accounted for 39% of total revenues*
- *Grants and contributions restricted to specific programs accounted for 22% of total revenues*

- *Property taxes accounted for 31% of the total revenues*
- *Operating grants and contributions were 3% of the total revenues*
- *Fees, fines, and charges were 3% of the total revenues*
- *Fines and forfeitures, unrestricted investment earnings, and other revenues were 2% of the total revenues*
- *Public safety expenses accounted for 32% of the total expenses, followed by streets and highways at 25%, culture and recreation 18%, economic development 12%. General government 11% and interest on long-term debt at 2%*

Ambulance Enterprise Fund

The Ambulance Enterprise Fund is in the budget under Business-Type Activities. The Ambulance Service Budget as mentioned earlier is operated as an Enterprise Account, which means the expenses are funded by the revenue generated by the Ambulance Service.
In 2017, the ambulance operating revenues and expenses increased from 2016. The 2016-2017 ambulance service revenue and expenses are illustrated in the following table:

Table 35: Ambulance Enterprise Fund

Ambulance Enterprise Fund		
	2016	***2017***
Revenue	$ 2,956,903.00	$ 3,173,122.00
Expenses	$ 3,112,941.00	$ 3,374,700.00
Loss	$ (156,038.00)	$ (201,578.00)

As the table illustrates, the Ambulance Enterprise Account operated at a loss for the 2016 and 2017 fiscal years. The negative balances in these two years are then funded by the City with funds from the Governmental Activities Fund.

The fact that the City uses an Enterprise Account Fund for the Ambulance Service is somewhat unusual. From the consultant's experience, communities that have used an Enterprise Account to fund the Ambulance Service consistently have problems with the revenue not meeting the expenses required to operate the ambulance service. Our experience has been when a budget

deficit occurs, the deficit just grows each year until at some point the municipality must write off a significant portion of uncollected ambulance service fees.

Some reasons why communities usually end up with a deficit in the Ambulance Enterprise Account are:

- *The personnel that provide the ambulance service also provide the fire service staffing. When communities calculate their expenses for personnel salaries and benefits they usually calculate the costs to be higher for the ambulance service than for the fire service resulting in a higher cost for ambulance services than the revenue can support. The most common reason for this being done is the higher the ambulance costs, the lower the costs for fire department personnel salaries and benefits. The result is the lower the fire department budget expenses the lower the expenses for fire department operations being allocated to the property taxes.*

- *It is common to project revenue for ambulance service fees to be much higher than what the actual revenue will be on an annual basis. When projecting ambulance fees, it should be taken into consideration the fact for patients covered by insurance, the collection rates may be as high as 80-100% of the ambulance service charge, but for many other patients it will be much lower. Patients transported that have Medicare or Medicaid will have much lower payment rates, because Medicare and Medicaid only pay a certain amount for ambulance fees. Other patients may not have any insurance and are not able to pay the charges for their ambulance service transport.*

- *When allocating personnel costs for fire department personnel that provide EMS service as part of their employment, it is often difficult to determine how much of their salary and benefits should be allocated to the fire service and how much to allocate to the EMS Service. There is no magic formula for the cost sharing percentages as fire service personnel services can't just be measured on how may calls they respond to. There is a great deal of value for having full-time personnel in a fire station ready to respond to emergency calls 24-hours a day, which results in faster response times.*

- *In the past, the City of Virginia allocated the cost of fire department employees' salaries and benefits as 10% for Fire Services and 90% for EMS Services. The City of Virginia currently allocates fire department employee salaries and benefits as 40% for Fire Services and 60% for Ambulance Services.*

It is the understanding of the consultants that in the 2018 budget, the use of the Enterprise Account has been eliminated and the Ambulance Fee Revenue is being treated strictly as a revenue account, which is the most common method of tracking ambulance fee revenues that the consultants have seen.

City of Mountain Iron Fire Budget

The City of Mountain Iron Fire Department budget is fairly simple as shown in the following table, which reflects the Fire Department expenses for the years 2015 to 2017.

Table 36: Mountain Iron Fire Budget

Mountain Iron Fire Department Budget			
	2015	***2016***	***2017***
Salaries	$ 31,827	$ 28,000	$ 28,000
Payroll Taxes	$ 6,384	$ 4,000	$ 4,000
Training	$ 15,072	$ 20,000	$ 20,000
Maintenance	$ 66,144	$ 16,000	$ 16,000
Operations	$ 23,001	$ 30,000	$ 30,000
Firemen's Relief	$ -	$ 11,000	$ 11,000
Total	**$ 142,428**	**$ 109,000**	**$ 109,000**

As shown in the above table the fire department budget was just over $142,000 in 2015 and in 2016 & 2017 the budget was $109,000. The budget is not complicated as can be seen from the above table.

City of Mountain Iron Fire Revenue

The fire department is funded through the general fund which is partially funded through property taxes.

City of Mountain Iron Fire Capital Budget

In the documents provided to the consultants, in 2017 the Mountain Iron Fire Department budgeted $120,000 to purchased new self-contained breathing apparatus and $15,000 to purchased new defibrillators. In 2018, the fire department budgeted $100,000 towards the purchase of new fire truck.

In each of the last three budgets the City of Mountain Iron did budget funds for EMT Equipment. In 2016, the actual expenditure was $13,159, in 2017 the amount was $15,000 and in 2018 the budgeted amount is $15,000.

City of Virginia Fire and Ambulance Budgets

The City of Virginia has structured the fire department budget into two different funds as mentioned earlier. The fire department budget is from the Governmental Activities Funds and is funded primarily by property taxes and other revenue such as training grants, 2% fire dues, fire service fees paid for by the mining companies, and rescue revenue generated for extrication services.

The budget for the ambulance services are under the Business-Type Activities Fund or more specifically the Ambulance Enterprise Account.
For the purposes of this study, the consultants will use the combined budget numbers provided by the Fire Chief as this will provide a better insight and overview of the entire fire department and ambulance service costs to the City of Virginia.

City of Virginia Fire & Ambulance Expenses

The following table reflects the City of Virginia Fire Department Budget and the City of Virginia Ambulance Budget separately and then the two budgets combined to provide a bigger picture of fire and ambulance costs. The largest cost in both budgets are personnel costs, which is the usual situation in full-time career fire departments. The following table illustrates the budgets for the years 2015 to 2018. Each of the budgets are divided by personnel costs, operational costs, and capital costs.

Table 37: Virginia Fire & Ambulance Costs

Fire & Ambulance Budget Costs				
	2015	***2016***	***2017***	***2018***
Personnel	$325,664	$1,176,174	$1,435,606	$1,459,286
Operational	$188,450	$ 290,671	$ 303,671	$ 220,500
Capital	$ 36,609	$ 23,494	$ 501,535	$ 28,400
Total	**$550,723**	**$1,490,339**	**$2,240,812**	**$1,708,186**

In the above table, the total fire budget is much lower in 2015 than the other years. This is due to the fact that in 2015, the total costs for wages, only 10% of wages for both fire and ambulance, were allocated to the fire department and the remaining 90% was allocated to the ambulance. In 2017, the fire budget was much higher than 2015 and 2016 as the new Self Contained Breathing Apparatus (SCBA) was purchased in 2017.

The total ambulance budget during the four-year period is significantly more than the fire budget since all three budget areas of personnel, operational, and capital are higher than the fire budget.

As indicated above, the personnel costs, as percentage of the total fire and ambulance budgets, ranged from 69% to 80%, which is not unusual. Operational costs as a percentage of both budgets ranged from 13% to 20% of the total budget. Capital costs as a percentage of both budgets ranged from 1% to 12% of the total budget. In 2017, the capital percentage of the total budget was 12%, but this was the year the new fire engine was purchased.

The following table reflects the fire and ambulance costs by categories of personnel, operational, and capital for each department as well as for both combined.

Table 38: Virginia Fire & Ambulance Costs by Category

Fire & Ambulance Costs by Category				
	2015	***2016***	***2017***	***2018***
Ambulance Personnel	$2,873,714	$21,189,996	$2,412,917	$2,441,475
Ambulance Operational	$ 460,551	$ 606,735	$ 760,350	$ 430,500
Ambulance Capital	$ 215,023	$ 262,408	$ 180,878	$ 318,000
Fire Personnel	$ 325,664	$ 1,176,174	$1,435,606	$1,459,286
Fire Operational	$ 188,450	$ 290,671	$ 303,671	$ 220,500
Fire Capital	$ 36,609	$ 23,494	$ 501,535	$ 28,400
All Personnel	$3,199,378	$ 3,366,170	$3,848,523	$3,900,761
All Operational	$ 649,001	$ 897,406	$1,064,021	$ 651,000
All Capital	$ 251,632	$ 285,902	$ 682,413	$ 346,400

City of Virginia Fire and Ambulance Overtime & Health Costs Detail

Since the Personnel Costs are the highest percentage of both the Fire and Ambulance Budgets and salaries are the most significant, we thought it would be appropriate to look at the annual costs for overtime and health insurance costs for both Fire and Ambulance.

The following table illustrates the overtime cost for the two Fire & Ambulance budgets for the years 2016 to 2018:

Table 39: Virginia Fire & EMS Overtime

Virginia Fire/EMS Overtime			
Overtime	**2016 Actual**	**2017 Actual**	**2018 Budgeted**
Fire	$ 48,437.00	$ 81,114.64	$ 34,000.00
EMS	$ 222,736.00	$ 207,260.97	$ -
Pay Transfers	$ 73,557.00	$ 61,840.53	$ 260,000.00
Total	***$ 344,730.00***	***$ 350,216.14***	***$ 294,000.00***

The overtime pay for transfers was for callback pay to have personnel to do the interfacility transports at times. It appears a substantial amount of funds are being paid for overtime cost on an annual basis. There may be an advantage to hire more full-time personnel to reduce the amount of full-time being paid annually. The overtime budget for 2018 was reduced substantially due to the addition of new employees.

The other significant cost in Personnel Costs is for Medical Insurance for current employees as well as retired employees. The following table illustrates the amount of medical care costs for current and retired employees for the budget years 2016 to 2018:

Table 40: Virginia Personnel Costs Medical Insurance

	Virginia Personnel Costs Medical Insurance			
	Overtime	**2016 Actual**	**2017 Actual**	**2018 Budgeted**
Fire	Medical Ins.	$ 163,980.00	$ 228,112.07	$ 318,027.00
Fire	Retirees Ins. Prem.	$ 101,629.00	$ 110,027.27	$ 129,480.00
EMS	Medical Ins.	$ 297,127.00	$ 387,690.90	$ 441,641.00
EMS	Retiree Ins. Prem.	$ 152,443.00	$ 167,250.99	$ 194,220.00
Total		***$ 715,179.00***	***$ 893,081.23***	***$ 1,083,368.00***

The costs for medical insurance for current and retired employees have grown substantially between 2016 and 2018. Between 2016 and 2017, there was almost a 25 % increase in the costs of medical insurance. Between 2017 and 2018, the increase was about 21% increase. Between 2016 and 2018, the total increase for medical insurance was 51.48%, which is substantial. In 2018, the total fire and ambulance budget is $4,898,161 and medical insurance is $1,083,368 or about 22.11 % of the total 2018 budget.

City of Virginia Fire & EMS Revenue

Ambulance Fees

The City of Virginia does have a contract with BSchom, Inc. d/b/a expert T Billing to provide ambulance service fee billing services. The ambulance billing service was signed on September 1. 2017 and can be terminate for cause at any time with notice by the City. The billing service receives a fee of $27.00 per each billable transport provided by the billing service for the city of Virginia. According to the agreement, the pricing will be reviewed and potentially adjusted every two years.

The following table reflects the current ambulance fees charged by the City of Virginia Ambulance Service, which were effective on December 1, 2016. It appears the ambulance transport fees are current and are scheduled to be reviewed on a bi-annual schedule to assure that the rates remain current.

Table 41: Virginia Ambulance Service Fee Rates

Virginia Ambulance Service Fee Rates	
Description	**Rate**
ALS Mileage	$ 22.50
ALS1 Emergent	$ 1,600.00
ALS1 Non-Emergent	$ 1,600.00
ALS2 Emergent	$ 1,700.00
BLS Emergent	$ 1,450.00
BLS Non-Emergent	$ 1,450.00
Specialty Care Transport	$ 1,800.00
Treat, No Transport	$ 200.00
Virginia Ambulance Intercept	$ 400.00

Revenue from the ambulance service transport fees are an important revenue used to offset the cost for the expenses of operating the ambulance service. The following table reflects the total ambulance expenditures versus the total revenue from ambulance calls for the years 2015 to 2017.

Table 42: Virginia Ambulance Expenditures vs. Revenue

Virginia Ambulance Expenditures Vs. Revenue			
Description	**2015**	**2016**	**2017**
Expenditures	$ 3,390,338	$3,136,411	$3,464,399
Revenue	$ 2,444,815	$2,444,815	$3,158,001
Difference	$ (945,523)	$ (691,596)	$ (306,398)

The City of Virginia Ambulance Service does provide interfacility transports of patients from one health care facility to a different health care facility. The interfacility transport fees are fairly simple:

- *ALS - $1,600*
- *BLS - $1,450*
- *Mileage - $22.50 per Mile*

The Ambulance Service collects fees from the patients and/or the hospitals for the transports. The following table reflects the amount of revenue generated by the ambulance service for interfacility patient transfers for the years 2015 to 2017:

Table 43: Virginia Interfacility Transfer Revenue

Virginia Interfacillity Transfers Revenue			
	2015	**2016**	**2017**
Transfer Revenue	$ 1,346,724	$ 3,136,411	$ 3,464,399

This revenue is a substantial amount of revenue, which is included in the total amount of the total ambulance service revenue collected on an annual basis.

In the past year, the Fire Chief was able to provide the City Council with the data that indicated the number of requests for interfacility transfer that the Virginia Ambulance Service was not able to provide as there was not enough members on duty.

The Chief was able to provide the data that in 2016 the ambulance service had to turn down 240 interfacility transfers that would have generated revenue of about $340,504 and in 2017 they had to turn down 381 interfacility transfers that would have generated revenue of about $624,231 for the City. This information and data allowed the Chief to provide the justification to add six new full-time members to the department, which was approved by the City for 2018.

Other Revenue – Fire Department

The following table illustrates the revenue other than ambulance fees that the City of Virginia FD has collected for the past three years. It should be noted that some of the grant funds are a one-time revenue and are not received on an annual basis.

Table 44: Virginia FD Revenue 2015 - 2017

Virginia FD Revenue 2015 - 2017			
	2015	**2016**	**2017**
Fire Training Grant - Federal	$ 33,329.50	$ -	$ 42,599.00
Fire Training Grant - State	$ 41,707.98	$ 42,279.80	$ 71,331.48
State Fire Aid - 2% Fire Dues	$ -	$ -	$ 33,043.09
Special Fire Services	$ -	$ 44,980.36	$ 40,689.83
Rescue Revenue	$ 6,736.42	$ 11,071.20	$ 12,756.00
Total Fund Revenue	*$ 81,773.92*	*$ 98,331.36*	*$ 200,419.40*

City of Virginia Fire & EMS Capital Budget

The following table reflects the amount of capital funds spent for Fire and Ambulance for the years 2015 to 2018 (Budgeted).

Table 45: Fire & Ambulance Capital Costs

Fire & Ambulance Capital Costs				
	2015	**2016**	**2017**	**2018**
Fire Capital Costs	$ 36,609	$ 23,494	$ 501,535	$ 28,400
Ambulance Capital Costs	$ 215,023	$ 262,408	$ 180,878	$ 318,000
All Capital Costs	$ 251,632	$ 285,902	$ 682,413	$ 346,400

Some of the capital items purchased for the Ambulance Service included multiple ambulances, power load cot systems, and power load cots. For the fire department, capital items purchased included radios, chargers, and batteries, self-contained breathing apparatus, thermal imaging cameras, an air compressor, a Chiefs vehicle (SUV), and a fire engine. The above table clearly shows that other than the fire engine purchased in 2017, more capital funds are spent for the ambulance service. This can be contributed to having to purchase new ambulances on a shorter replacement schedule compared to fire apparatus.

The Fire Chief has been very proactive by developing a capital equipment replacement plan for both the fire budget and the ambulance budget. The following table reflects the proposed 10-year capital improvement plan for the fire budget.

Table 46: Virginia FD Capital Budget Plan 2018 to 2027

	Fire Department Capital Budget Plan 2018 to 2027									
Fire Budget Capital Outlay	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
New Fire Station	$ 300,000	$ 300,000	$ 300,000							
Retro fit Squad 150 (2018) (Fire Marshal Vehicle age 18) Replace in 2021 (60K)	$ 10,000	$ 20,000	$ 20,000	$ 20,000	$ 12,000	$ 12,000	$ 12,000	$ 12,000	$ 12,000	$ 12,000
Replace Chief 1 (Staff Car) (age 5) in 2022 (60K)	$ 12,000	$ 12,000	$ 12,000	$ 12,000	$ 12,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000
Replace Engine 2 (age 29) and Rescue 1 (age 20) with one Rescue/ Pumper in 2021 (800K)	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000
Replace BC 1 (BC vehicle) (age 10) in 2022 with Chief 1 Vehicle (no cost)										
Replace Ladder 1 (age 20) in 2023 (1.5M)	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 68,000	$ 68,000	$ 68,000	$ 68,000
Replace Engine 3 (Brush Vehicle age 25) in 2023 (80K)	$ 13,333	$ 13,333	$ 13,333	$ 13,333	$ 13,333	$ 13,333	$ 4,500	$ 4,500	$ 4,500	$ 4,500
Squad Company 1 (Engine) - (age 25) in 2037 (1.1M)	$ 57,895	$ 57,895	$ 57,895	$ 57,895	$ 57,895	$ 57,895	$ 57,895	$ 57,895	$ 57,895	$ 57,895
Technical Rescue Certification Training for Department - 2018	$ 30,000									
Thermal Imaging Camera (1)	$ 12,000									
Supplied Air Respirator System (Rescue)	$ 16,400									
Total Capital Expenditures	**$ 901,628**	**$ 853,228**	**$ 853,228**	**$ 553,228**	**$ 385,228**	**$ 383,228**	**$ 192,395**	**$ 192,395**	**$ 192,395**	**$ 192,395**

The cost of fire apparatus is very expensive as indicated in the above table, so it is critical that the plan be discussed by the City and plans be made to attempt to replace the fire equipment and vehicles in the future. It does appear that some of the prices may need to be verified, but the cost of fire apparatus is increasing rapidly.

The following table reflects the proposed 10-year capital improvement plan for the ambulance budget. Most of the ambulance capital plan includes purchasing a new ambulance on an annual basis and the ambulances are expensive. As mentioned above, some of the prices may need to be verified and perhaps estimated for inflation for future years. Again, planning by the City as to the capital plan that can be implemented is critical.

Table 47: Ambulance Capital Budget 017 to 2027

	Ambulance Capital Budget Plan 2018 to 2027									
Ambulance Capital Equipment	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
New Ambulance	$ 250,000	$ 275,000	$ 275,000	$ 275,000	$ 275,000	$ 275,000	$ 275,000	$ 275,000	$ 275,000	$ 275,000
Replace Cardiac Monitors*	$ 220,000						$ 250,000			
(2) Ventilators	$ 25,000	$ 25,000					$ 25,000	$ 25,000		
Simulation Man/Training	$ 8,500								$ 8,500	$ 8,500
Lucas Device	$ 15,000	$ 15,000				$ 15,000				
(4) I-Stat units	$ 8,000		$ 8,000		$ 16,000					
(1) Ultra sound	$ 8,000	$ 16,000	$ 8,000			$ 16,000		$ 8,000		
(2) King Vision Laryngoscopes	$ 4,000		$ 4,000		$ 4,000					
Total Cap. Expenditures	**$ 538,500**	**$ 331,000**	**$ 295,000**	**$ 275,000**	**$ 295,000**	**$ 306,000**	**$ 550,000**	**$ 308,000**	**$ 283,500**	**$ 283,500**

Making the purchase of the capital items may require funds to be placed into a capital equipment replacement account on an annual basis or bonding for some of the capital needs.

Fiscal Recommendations- Fire/EMS

City of Virginia Fiscal Recommendations

- *The fire department and ambulance operations should be combined into one budget to make administering and managing the budget more efficient for the Fire Department and Fire Chief.* ***Priority 3***

- *The City of Virginia should consider eliminating the use of the Enterprise Fund for Ambulance Services budget. It does appear that this change has been implemented.* ***Priority 3***

- *Operational costs for the fire department are about 50% of the operational cost of the ambulance service.* ***Priority 5***

- *Operational cost for the fire department fluctuate substantially. The difference for the fire department operational costs resulting in the 2018 budget having about $83,000 less than in 2017. This is about a 30% reduction in one year and it makes managing and operating the fire department difficult. Most operating costs are almost fixed from year to year such as utilities, fuel, training, etc. and a 30% reduction in a single year can affect fire department operations in a negative manner.* ***Priority 5***

- *Overtime costs could be reduced by increasing the number of full-time personnel, but it can be an issue that changes annually. Overtime is also affected by items such as vacations, holidays, sick leave, family medical leave and other reasons.* ***Priority 3***

- *The costs for medical insurance increased by over 50% from 2016 to 2018 and accounts for about 22% of the total fire and ambulance budgets. The City should focus on*

solutions to the problem of the medical insurance costs since if they are not addressed the problem is only going to grow. ***Priority 3***

- *The issue of future capital needs for both fire and the ambulance services need to be addressed. The City should work with their financial advisors to discuss long-term borrowing options and/or options for doing lease purchases of vehicles especially fire apparatus.* ***Priority 3***

City of Mountain Iron Fiscal Recommendations

- *The question to be answered is if the annual fire department budget is $109,000, does investing over $135,000 in 2017 and $115,000 in capital equipment in 2018 a good investment of tax dollars?* ***Priority 3***

Consolidation

The consulting firm conduct two simultaneous shared service studies involving five governing bodies in close proximity to each other in the northern St. Louis County. Both studies were funded in part through the State of Minnesota Governor's Fire and Rescue Shared Services Task Force and 10% from each community. A high level of parochialism, in the Iron Range area, has made the development of shared services working relationships very challenging. In the case of Mountain Iron and Virginia, it could be the exception; since officials in both communities indicated an interest in a "District" (full consolidation).

The State of Minnesota publishes a booklet addressing the creation of "fire districts" titled: A Blueprint for Shared Services created by Executive Order 09-13 Providing for The Governor's Task Force on A Shared Services Approach To Fire And Rescue Services In Minnesota
Source: https://dps.mn.gov/divisions/sfm/document-library/Documents/SharedServicesBluePrint.pdf

Although the consultant's Doctoral studies focused on Public Safety provider's consolidations, there is little that can be added to this document in addressing greater cooperative efforts. It is advantageous to address the major benefits of shared services:

- Method to Improve Service – most emergency providers have an area of service they exceed in and combining these resources verses duplicating them improves efficiency of service

- Emergency Medical Services is the predominate emergency response of both departments and creating a partnership would raise the level of EMS 1st Response to Advance Life Support (highest level of pre-hospital care)

- Unify Service Delivery – currently the two departments work together on the emergency scene but don't use the same training program and infrequently train together. Consolidation will allow both departments to operate under a single system and provide safety afforded the fire/EMS personnel working and training together under one set of standards and a single command.

- Future Cost Avoidance – a common misperception is that consolidations will initially save significant money. Some initial savings might occur but the greatest cost savings in consolidations is future cost avoidance.

- Eliminate Redundancy – consolidation means one administrative staff, and eliminates duplication of equipment, apparatus, services, programs, and support personnel.

Other benefits to both communities include, but are not limited to:

- Next logical step for two departments that already have functional consolidation in emergency responses
- Method to provide more cost effective services
- Standardization of services, programs, and training, resulting in cost savings, greater functionality, improved services, and employee safety
- Helps to balance demands for increased services against the concurrent demand for reduced cost
- Forces program examination
- Enhances depth of service
- Strategic planning becomes a necessity
- Maximize effective use of scarce resources
- Better utilization of department resources
- Decrease apparatus expenditures
- Standardization of non-emergency programs
- Increases service levels
- Eliminates district response lines – borderless boundaries – closes unit responds
- Allows opportunities to expand into specialized services
- Legitimate desire by the departments' leadership to become more efficient
- Improved ability to absorb financial crisis

The consultants recognize that the municipalities participating in both shared services studies would benefit from consolidation into a single provider Fire District; however, this study pertains to Mountain Iron and Virginia only. The consultants believe the consolidation of these two emergency service providers could become the foundation for future shared services amongst other public safety providers.

Even the formation of a Fire District between Mountain Iron and Virginia will not be without challenges; most likely including, but not limited to:

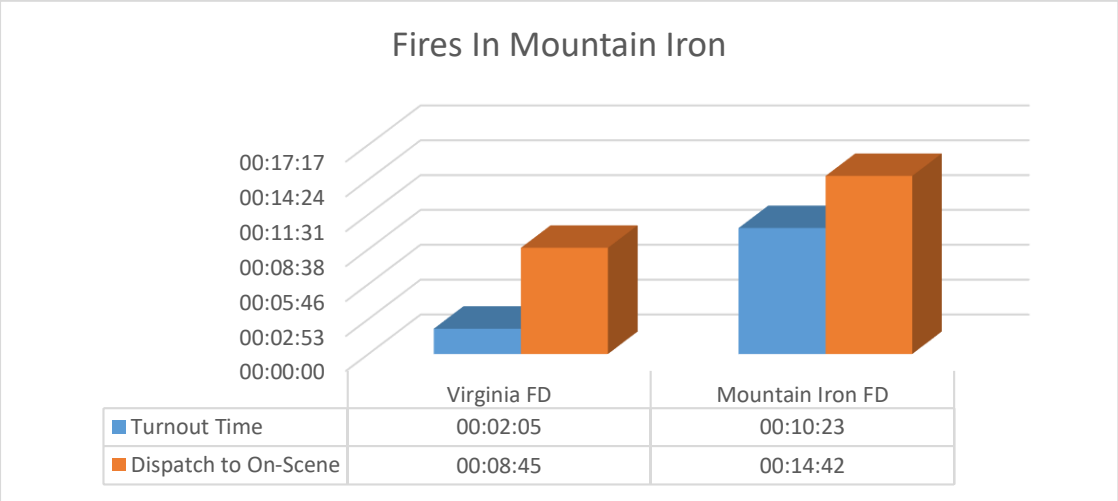
- Loss of Local Autonomy – both cities have a strong sense of identity and value their role and "control" of the department. "Our City is unique and we value our culture," is a theme heard often during the interviews. One does not have to lose their uniqueness by maximizing their opportunities to improve services.

- Current and Past Department Members – individuals can apply political pressure. Some current members are extremely concerned about loss of job and status. Meeting the needs of the community does not always align with meeting the needs of all individuals.

- Political Will – the strong sense of identity and community pride coupled with the fiscal capability to remain independent of the other City, removes incentive to change. for example: the statement by an official who remarked "both (Cities) names can be on the apparatus door, but our City's name must be in bigger print". *(quote not from this study only shared as an example)*

The consultants were provided with data taken from the St. Louis County Public Safety Answering Point, made available by the Virginia Fire Chief. The data indicated that under the current provider's model, if the City of Virginia Fire Department were dispatched simultaneously to a fire in Mountain Iron, the Virginia Fire Department would arrive first, with few exceptions. It should be noted that not everyone is in agreement with this above statement; however, the data provided does so indicate as illustrated below:

Figure 18: Fires In Mountain Iron Response



The data provided by the Virginia Fire Chief was an average for fire calls in Mountain Iron in 2017.

The Cloquet Area Fire District in Carlton County Minnesota, approximately 60 miles south of the Cities of Mountain Iron and Virginia, is a working example of a successful "full consolidation" (District) which could be a model for the cities of Mountain Iron and Virginia. Initially, the fire departments of Cloquet and Perch Lake agreed to a Joint Power Agreement (JPA) to consolidate. On January 1, 2009, the City of Cloquet and Perch Lake Township officially transferred the administration of their respective fire departments to a joint governing board, and the Cloquet Area Fire District (CAFD) was created. January 1, 2010 with the District Taxing Authority enacted.

Governance

In the Cloquet Area Fire District, a Board oversees the operation of the district and has hiring authority and provides direction for the District Fire Chief. The board consists of two representatives from the Township of Perch Lake, two representatives from the City of Cloquet, and one at large member. The Township and City no longer taxes for fire protection; rather, the taxing authority is the Fire District Board. The Township and City only authority of the fire department is through their respective representatives on the Fire District Board.

The Board composition in the Mountain Iron and Virginia consolidation would need to be negotiated. There needs to be representation on the Board in alignment with the resources provided to the District by each agency. Often the Board composition is derived in a similar manner as to the fiscal contribution of each municipality as illustrated below.

District Funding Formulas

District funding formulas are as diverse as the municipalities that create them. They are dependent on each municipality's issues such as:

- Service area
- Value of property protected
- Types of services desired e.g. Basic Life Support or Advance Life Suppose in EMS
- Resources provided to the District
    - Personnel
    - Apparatus/Equipment
- Population – include in-flux during certain hours
- Volume of emergency calls and their nature
- In many cases, some unique risks are uncommon to the other municipality

The table below illustrates the three most common components of a consolidated funding formula:

Table 48: Funding Formula Components

Funding Formula Components			
Component	**Percent Of**		
	Mountain Iron	**Virginia**	**Total**
Population Protected	25.2%	74.8%	100%
Historical Volume of Calls (3 years)	%	%	100%
Equalized Market Value of Property	%	%	100%
	Average of 3 %	Average of 3 %	100%

What is beneficial in keeping the funding formula to the basic components is that if one municipality component changes (increase/decrease), the percentage for that category will change and the final portion of fiscal responsibility for each municipality will align with those changes.

District Formation Example

In this section, it is important to focus on the issue being presented and not confuse it with any type of criticism of the department personnel efforts. EMS is chosen because it represented 64.1% of both departments emergency responses.

The consultants noted the significant discrepancy in pre-hospital care throughout the Iron-range area. In any emergency, especially EMS, response time is everything; followed only by the level of care provided to the patient upon arrival of the EMS service.

The only fire department ALS provider in the Iron-range is the Virginia Fire Department. The other departments provide BLS services. The BLS providers are paid-on-call departments; whereas the members must leave work or home, respond to the fire station, staff the emergency vehicle, before even responding to the emergency. Obviously, this takes several minutes after PSAP notification. The consultants witnessed EMS calls to one of the BLS departments that had to "page" (radio signal received by members) twice, and one time three times, before a unit was able to respond. This was an obvious delay in providing emergency care.

St. Louis County PSAP – Priority Dispatching

The St. Louis County PSAP does not utilize "priority dispatching" which would classify the EMS response into five categories as illustrated below:

Table 49: EMS Priority Dispatching Codes

Type	Capability	Response Mode	Nature
Alpha	BLS	Cold (single unit)	Non-Life Threating
Bravo	BLS	Hot/Cold (multiple units)	Non-Life Threating (IV needed)
Charlie	ALS	Cold (single unit)	Possible Life Threating
Delta	ALS	Hot (multiple units)	Life Threating
Echo	ALS & Special Units	Hot (multiple units)	Life Threating = Closest unit

Response Mode: Hot = lights and siren; Cold = no lights or sirens

If the PSAP were to implement "priority dispatching", an EMS call outside of the Virginia City limits that required advance life support resources e.g. Delta and/or Echo, would then dispatch Virginia EMS simultaneously with the BLS service provider; thereby, saving critical time in getting ALS to the patient in need.

The Virginia Fire Chief is most concerned with the processing time taken by the St. Louis County PSAP. Those times far exceed NFPA 1221 standards. In order to improve EMS response times outside the City of Virginia limits, it will require a cooperative approach between the service providers and the County PSAP; resulting in a regional multi-tiered EMS system.

What Will A Regional Fire Service Bring?

Consolidation of resources will allow for a strategically located staffed sub-station. A staff sub-station will improve response times by having on-duty personnel respond immediately and can be supported by paid-on-call for additional resources when needed. Mountain Iron will benefit from a higher level of EMS (ALS vs. BLS), organized fire prevention bureau, unified training – increasing the service provider a higher level of safety, unified service delivery, single administration, benefit of future cost avoidance, reduce apparatus/equipment redundancy, increase in public safety education, and financial management in operational and capital budgets.

The consolidation of Mountain Iron and Virginia fire departments would provide Mountain Iron with a full-time training officer, which would allow for a unified training program resulting in state certifications and competency assurance of the responders. Paid-on-call members could sign up for shifts to become part of the first responder unit.

The Mountain Iron First Responder group, which is separate from the Fire Department, has had staffing issues that require multiple notifications and extended response times. The First Responder group should be incorporated back into the Fire Department, and under a proposed merger would be aligned with the newly formed organization's training, certification and continuing education opportunities and requirements.

Recommendation – Consolidation

- *During the process of creating a Full Consolidation "District", efforts to increase the already use of Functional Consolidation should occur.* ***Priority 2***

Final Study Recommendation

- *The Mountain Iron and Virginia Fire Departments should consolidate into a Full Consolidation "District" which will serve as the foundation for future consolidations which could improve the emergency fire and EMS services throughout the Iron-range.* ***Priority 1***

Recommendation Summary

Priority	*Report Title*	*Recommendation*
1	Competency Testing	*Mountain Iron Fire Department needs to implement a competency testing component within their training curriculums. These findings must be documented and any deficiency should be addressed immediately*
1	Competency Testing	*All career shift personnel should be required to obtain the ISO 192 hours of fire training plus the mandatory EMS training.*
1	Emission Exhaust Removal	*The fire station should be equipped with an OSHA approved vehicle emission exhaust removal system which accomplishes 100% capture and removal of exhaust emissions to the outside.*
1	Mountain Iron Station	*At minimum the facility needs to be brought up to code ensuring adequate egress from the station in case of an emergency*
1	PSAP processing Time	*The St. Louis PSAP Director and the Virginia Fire Chief should meet and establish a program that would ensure that the PSAP is meeting the processing times provided in the NFPA 1221 standard*
1	**Summary Recommendation**	*The Mountain Iron and Virginia Fire Departments should consolidate into a Full Consolidation "District" which will serve as the foundation for future consolidations which could improve the emergency fire and EMS services throughout the Iron-range.*
2	Consolidation	*During the process of creating a Full Consolidation "District", efforts to increase the already use of Functional Consolidation should occur*
2	Mountain Iron Apparatus	*The department needs to repair or replace it primary engine.*
2	NFPA	*Each department should ensure that the governing officials understand the significance of the current standard that applies to their department.*
2	Training Certifications	*It is essential that the Mountain Iron Fire Department track and encourages members to seek certifications approved by the Minnesota Fire Service Certification Board.*
2	Virginia Staffing	*The volume of calls per day handled by eight on-duty personnel @ maximum staffing to five on-duty personnel @ minimum staffing with simultaneous/overlapping incidents at 41.7% requires additional daily on-duty staffing at a minimum of two Firefighter/Paramedics per shift.*
2	Virginia Station	*The City and fire department are in serious need for a new fire/EMS facility. There is inadequate room to accomplish the many support tasks needed to maintain emergency services at adequate state of readiness.*

Priority	Report Title	Recommendation
3	Fiscal - Mountain Iron	*The question to be answered is if the annual fire department budget is $109,000, does investing over $135,000 in 2017 and $115,000 in capital equipment in 2018 a good investment of tax dollars?*
3	Fiscal - Virginia	*The fire department and ambulance operations should be combined into one budget to make administering and managing the budget more efficient for the Fire Department and Fire Chief.*
3	Fiscal - Virginia	*The City of Virginia should consider eliminating the use of the Enterprise Fund for Ambulance Services budget. It does appear that this change has been implemented.*
3	Fiscal - Virginia	*Overtime costs could be reduced by increasing the number of full-time personnel, but it can be an issue that changes annually. Overtime is also affected by items such as vacations, holidays, sick leave, family medical leave and other reasons.*
3	Fiscal - Virginia	*The costs for medical insurance increased by over 50% from 2016 to 2018 and accounts for about 22% of the total fire and ambulance budgets. The City should focus on solutions to the problem of the medical insurance costs since if they are not addressed the problem is only going to grow.*
3	Fiscal - Virginia	*The issue of future capital needs for both fire and the ambulance services need to be addressed. The City should work with their financial advisors to discuss long-term borrowing options and/or options for doing lease purchases of vehicles especially fire apparatus.*
3	Mountain Iron Station	*Either the facility needs to be enlarged or the amount of apparatus be reduced to provide some much needed room.*
3	Officers Stipends	*The City should clarify if there is a seventh position of Safety Officer and is that individual receiving a monthly stipend?*
3	Virginia Apparatus	*Aerial apparatus needs to be replaced. The issue that the current facility isn't large enough to house aerial apparatus does not procure the need for this type of apparatus.*
4	Age Categories	*Mountain Iron Fire Department leadership should record the age categories of the members to identify potential future gas in skill sets of employees.*
4	Virginia Apparatus	*Ambulances should have an initial life expectancy of five-years and at that point the chassis should be replaced (titled as new) and the patient compartment renovated and repaired as needed. This could result in a 50 to 60% cost savings over a new ambulance.*
5	CFAI Accreditation	*The fire department should not seek international accreditation (CFAI) at this juncture; rather, the CFAI performance indicators and core competencies should be utilized as a model for quality and a benchmark for opportunities*
5	Fiscal - Virginia	*Operational costs for the fire department are about 50% of the operational cost of the ambulance service.*

Priority	Report Title	Recommendation
5	Fiscal - Virginia	*Operational cost for the fire department fluctuate substantially. The difference for the fire department operational costs resulting in the 2018 budget having about $83,000 less than in 2017. This is about a 30% reduction in one year and it makes managing and operating the fire department difficult. Most operating costs are almost fixed from year to year such as utilities, fuel, training, etc. and a 30% reduction in a single year can affect fire department operations in a negative manner*
5	Mountain Iron Staffing	*The staffing methodology for Mountain Iron Fire Department is appropriate and should remain as the staffing methodology in the future*
5	NFPA	*Neither department should adopt their respective NFPA standard. Adoption would include the adoption of all OSHA and NFPA standards by reference included in the document. However, a plan should be developed to meet as many of the NFPA standards as possible in the future*

Appendix A – Data Request

Data Requested – McGrath Consulting Group, Inc.

-Fire/EMS Component

Show each year data separately i.e. 2015, 2016, and 2017 – do not group years together

We request data in an electronic format on a flash drive or disk

If an area does not apply simply indicate NA

Do not send this information. Once collected we will meet with you on site to review it.

Call if you have any questions – especially before conducting hand counts

- **General Information**
  - Overview of the department
    - History
  - Overview of the area protected
    - District
    - City/Village
  - Population – Residents of Protection Area

- **Response District –**
  - Map of Coverage Area
  - Map of Contiguous Surrounding Area Showing Department Stations Locations
  - Total Square Miles Protected

- Square Miles of Hydrant Area
- Square Miles of Non-Hydrant Area

- **Personnel Management/Human Resources**
  - Current Roster of Members
  - Personnel (information needed for all employees)
    - List of members (sworn and non-sworn)
      - Hire date
      - Age or date of birth
  - Organizational Chart
  - # of Career
  - # of Paid On Call
  - # of Paid On Premise
  - # of Volunteers
  - # of Other Employees (Include civilian)
  - Rank Structure (Number of Employees in Each Category)
  - Spreadsheet – name, rank, current salary,
  - Department's By-Laws (if corporation)
  - Police & Fire Commission or Civil Service Regulations
  - Employee Policy & Procedure Manual (prefer electronic version)
  - Promotional Process – including forms utilized
  - History of Turnover (All Employees Last 3 Years – Include Reason and/or Exit Interview Data)
  - Recruiting/Retention Programs
  - Hiring Process (all forms)
    - Application
    - Hiring packet
    - Reference questions
    - Interview questions
    - Etc.
  - Performance Evaluation process and forms
  - Last year's overtime by employee – include rank
  - FLSA pay cycle (if not in contract)
  - SOG/SOP Manual – prefer electronic copy – (sure to include HR policy section)
  - Department Employee's Handbook
  - New employee Orientation Process – (packet and/or forms)

- **The Department**
  - Department SOG's
  - Department Rules & Regulations
  - Annual Reports – Last 3 Years
  - Current ISO Rating

- Last ISO On-Site Evaluation (copy of point distribution sheet)
  - Last On Site Evaluation

- **Emergency Activities –**
  - Total calls last ten years (no breakdown just total calls per year)
- **<u>Last 3 Years</u> (All Sub-Sections)**
  - # Of Emergency Responses
  - **NFIRS)** Type of Responses: *For each of the 3 years*

NFIRS Series	Nature of Call	2015 Calls	2016 Calls	2017 Calls
100	Fires			
200	Overpressure/Explosion			
300	Rescue/EMS			
400	Hazardous Conditions			
500	Service Calls			
600	Good Intent Calls			
700	False Alarm/False Calls			
800	Severe Weather			
900	Special Incidents			
	Total Calls			

  - EMS Responses # of:
    - 1st Responder
    - ALS
    - BLS
    - Non-emergency Transports/Transfers, etc.
  - Incidents by Time of Day
  - Incidents by Day of the Week
  - Incidents by Month
  - Calls Breakdown by Area (City, District, Town, Etc.)
  - Distribution by Shift
  - Distribution by Station
  - Response Times: (include documentation from dispatch)
    - Notification time
    - Turnout time
    - Drive time
    - Mitigation time
  - Mutual Aid – Auto Responses (Given & Received) – With Whom? – Copy(ies) of Written Agreement
  - Simultaneous (Overlapping) Call Data

- **Dispatch (PSAP)**
  - Who provides dispatch

- Location (address) of dispatch center
- Cost
- Dispatch <u>data</u> – time from receiving call to FD notification
  - *A data printout showing CAD verification times - from call received until agency is dispatched. CAD shows minutes and seconds.*
- Who answers 9-1-1
- Who answers cellular 9-1-1
- # of Employees
- # of Shifts
- Staffing per Shift (minimum & maximum)
- EMD Program
- Dispatchers/Call Taker Certifications

- **Fire Station(s) – *<u>include mailing address for each station – include City & Zip</u>***
  - Current Facilities
    - # Of Stations – Street Address
    - Square Footage – (Floor Plans for each if available)
    - Age
  - Future Facility Plans/Needs Documents

- **Apparatus & Equipment –**
  - Type of Apparatus (I.E. Engine, Ambulance, Utility, Tender, Truck – Include Manufacturer)
  - Apparatus department ID number
  - Pump & Tank sizes
  - Mileage
  - Engine Hour Reading (if appropriate)
  - Age of Apparatus
  - Replacement Schedule
  - Apparatus maintenance records
    - Internal
    - External
  - Special Teams Apparatus
  - Specialized Equipment: Haz Mat, Water Rescue, Etc.
  - Radio, Type and Frequencies
  - Computers (Number of, Type, Age, Replacement Plan)
    - In Apparatus?
    - Software Programs

- **Training**
  - Training Records (Last 3 years) for each member
    - Training schedule

    - Training hours per month per employee
    - Training Curriculum & Lesson Plan
    - Instructors qualifications
  - Training Manual
  - Certifications Categories (state)
  - Special Teams – certifications
  - All current employees' certification level

- **Fire Prevention –**
  - Number of inspectable occupancies
  - History of Inspections & Re-Inspections (Last 3 Years)
  - Identification of Codes Adopted

- **Safety Education**
  - Public Safety Education Programs
  - Public Safety Education Data (Last 3 Years)

- **Fiscal**
  - Past three years of audited year financial statement
  - Current year audited financials
  - Past three years budget
    - Operating – include all revenue and expenses
    - Capital - include all revenue and expenses
  - Financial policies and procedures
  - Purchasing policies
  - Equipment or Capital reserve fund ledger
  - Overtime records
  - Ambulance information –
    - Ambulance revenue current year and two previous years
    - Ambulance billing contract
    - Copy of ambulance rates charged and authority for those rates i.e. ordinance
  - Identification of all accounts for the department
    - Account details for each of the above accounts – last three years

  - **Revenue**
    - List of grants applied for and/or received for current year and two previous years
    - List 2% fire dues received current year and two previous years
    - List and explanation of any other department revenue received i.e. inspections fees, permit fee, etc.
  - Other information needed:

- Equalized Assessed Valuation (EAV) if multiple communities for all

- **Resource Hospital**
  - Project Medical Director contact information
  - Involvement level with resource hospital
  - Breakdown of where patients are transported (3-year period)

Any Additional Information Deemed Important

Revised: February 2018

Appendix B – NFPA 1500 Emission Exhaust Standards

NFPA 1500 A.10.1.5 2018 edition

The operation of a fire department requires the storage and indoor operation of the fire apparatus that are generally housed in an enclosed building. The need to keep the apparatus and other vehicles ready for immediate service and in good operating condition, which requires the indoor running of vehicles for response and routine service/pump checks, makes storage in an enclosed area, such as an apparatus bay necessary. The exhaust from all internal combustion engines, including diesel and gasoline-powered engines, contains over 100 individual hazardous chemical components that, when combined can result in as many as 10,000 chemical compounds. A large majority of these compounds are today listed by state and federal regulatory agencies as being cancer causing or suspected carcinogens. The target components listed by NIOSH/OSHA consist of both hydrocarbon carbon components and compounds, which are produced as both gas-phase and particulate-phase compounds. The gases and particulates, which are viewed by NIOSH and OSHA as life threatening, consist of a cancer-causing substance known as polynuclar aromatic hydrocarbons (PAHs). Gases in diesel exhaust, such as nitrous oxide, nitrogen dioxide, formaldehyde, benzene, sulfur dioxide, hydrogen sulfide, carbon dioxide, and carbon monoxide, can also create health problems. According to NIOSH, human and animal studies show that diesel exhaust should be treated as human carcinogen (cancer-causing substances). In accordance with the NIOSH Pocket Guide to Chemical Hazards, as it pertains to diesel exhaust, NIOSH recommends that occupational exposure to carcinogens be limited to the lowest feasible concentration. NIOSH uses OSHA's classification, outlined in 29 CFR 1990.103, Definitions, which states in part, "Potential occupational carcinogen means any substance, or combination or mixture of substances, which causes an increased incidence of benign and / or malignant neoplasm, or a substantial decrease in the latency period between exposure and onset of neoplasm in humans or in one or more experimental mammalian species as the result of any oral, respiratory or dermal exposure, or any other exposure which results in the induction of tumors as a site other than the site of

administration." This definition also includes any substance that is metabolized into one or more potential occupational carcinogen by mammals.