

REGIONAL FIRE STUDY

Beaver Falls City, Big Beaver Borough, Chippewa Township, Darlington Township, and Patterson Township
Beaver County, Pennsylvania
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**Governor's Center for
Local Government Services**
Daniel P. Wauthier
Fire Peer Consultant



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Introduction

The City of Beaver Falls, Big Beaver Borough, Chippewa Township, Darlington Township, and Patterson Township requested technical assistance from the Department of Community and Economic Development, Governor's Center for Local Government Services, to carry out a feasibility study for a regionalization of the fire service.

This *Regionalization Study* was conducted by Daniel P. Wauthier, Fire Peer Consultant. He was assigned to carry out this scope of services and provide a report of observations and recommendations to the Governor's Center, the governing body, and the five fire service organizations.

An initial meeting was held with representatives from the municipalities and fire departments to develop the scope of services. There were no questions as to the personnel, training, or operations of the individual departments. The main objective of all interviewed was to prepare for the future with the increase in call volume and expenses, coupled with the decline of volunteer personnel.

The procedures used to conduct this study included a review of fire service literature including journal articles, national standards, ISO ratings, best management practices, and other various manuals and information available via the Internet. In addition to the initial meeting to develop a scope of services, the consultant visited each fire department and interviewed the chief officers.

Throughout the study, the fire departments were requested to provide specific information related to workload, policies and procedures, practices of each service provider, and staffing. For comparison purposes, the consultant relied on benchmarks and "best practices" developed by the:

National Fire Protection Association (NFPA) - The National Fire Protection Association is an organization that develops, publishes, and disseminates timely consensus standards covering all areas of fire safety. These NFPA standards have been adopted by numerous state and federal authorities, giving them the force of law. In Pennsylvania, NFPA standards are recognized as voluntary consensus standards.

Insurance Services Office (ISO) - The Fire Suppression Rating Schedule (FSRS) is a manual containing the criteria ISO uses in reviewing the firefighting capabilities of individual communities. The schedule measures the major elements of a community's fire-suppression system and develops a numerical grading called a Public Protection Classification (PPCTM).

For the purposes of this study, it is assumed that the information provided by the fire departments and their officials is accurate and complete.

The intent of this report is to improve the organization, operations, deployment, and management of the fire departments. The primary focus of this report is the future of fire service delivery to the residents of the municipalities involved.

Many of the challenges faced by the fire departments regarding fire services delivery have developed over a long period due to a combination of declining volunteerism, time commitments, increased



regulatory requirements, and service demands. The members of each department and the township officials should be commended for their efforts, service to their community, and the commissioning of this study to improve fire services delivery.

In today's busy and litigious society, with the increased service demands and time requirements placed on volunteers, fire departments cannot continue to operate autonomously with little to no oversight, exercising the excuse "we are only volunteers" while local governments look the other way. Accountability for providing adequate fire services delivery is the responsibility of both the township and the fire departments.

The implementation of any or all the recommendations included in this report, either in their entirety or in some other form, can be accomplished in several ways. There is not a "one-size fits all" solution as political will and levels of cooperation often varies greatly from community to community. Also, the contributions of the volunteers in place must be recognized and valued, not just replaced with a paid position. As a part of this philosophy, this regionalization must be done in phases to avoid a) cultural shock, and b) sticker shock.

As groundwork for a regionalized entity on the fire department level, a *functional consolidation*, facilitated by department representative(s), whereby the departments adopt common operating procedures, by-laws, rules and regulations, training requirements, box alarms, etc., yet continue to operate administratively as independent organizations for the near future is recommended.

The consolidation recommendations include:

- **The fire departments shall form a committee(s) to jointly develop or update a set of rules, regulations, operating guidelines, box alarms, and by-laws that are consistently applied to all participating departments, and which are legally sound and follow industry best practices, including ISO and NFPA Standards.**
- **The fire departments shall establish minimum initial and annual training requirements for structural firefighters, fire officers, and driver/operators.**
- **The fire departments shall establish a plan to improve their cumulative ISO Public Protection Classification, including annual testing of fire hose, pumps, and aerials; the implementation of standardized minimum training requirements; and improved recordkeeping.**
- **The municipalities and fire departments shall work towards the eventual merging of all fire departments involved into one entity, a combination Regional Fire District.**

On the municipal side, an agreement must be reached between all municipalities to cooperatively administer and fund a regional combination fire department. This would include, but not limited to, wages and benefits, equipment, vehicles, facilities, and the administration thereof. Again, this concept would be phased in over a period of time.

Additional recommendations are included throughout the body of this report.



Background

Beaver County is in the far western portion of the Commonwealth of Pennsylvania bordering on the states of West Virginia and Ohio. All municipalities in this regional study are in the northwestern section of the county.

The City of Beaver Falls is a community covering 2.36 square miles with a population of 9,005 according to the 2020 census. The city became a Home Rule community as of a referendum held as of January 3, 2022. Fire and rescue emergency services are handled by the Beaver Falls Fire Department, a combination department led by a career fire chief with a mix of career and volunteer staff. According to the NFPA 1720 benchmarks, Beaver Falls is considered an “urban” area. This means that when responding to a structure fire, 90% of the time there should be 15 qualified firefighters on scene within 9 minutes. The city’s ISO rating is a class 3, which is considered above average.

The Township of Patterson is a First-Class township covering 1.64 square miles with a population of 3,132 according to the 2020 census. Fire and emergency services are provided by the Patterson Township Volunteer Fire Department, a 100% volunteer organization. According to NFPA 1720 benchmarks, Patterson Township is also considered an “urban” area with the same expectations as Beaver Falls. The township’s ISO rating is a class 5 or average.

The Township of Darlington is a Second-Class township covering 22.05 square miles with a population of 1,817 according to the 2020 census. Fire and emergency services are provided by the Darlington Township Fire Department, a 100% volunteer organization. The department also provides protection to the Borough of Darlington. According to NFPA 1720 benchmarks, Darlington Township is a “rural” with the expectations for a structure fire set at 6 qualified firefighters within 14 minutes, 80% of the time. The township’s ISO rating is not available currently.

The Borough of Big Beaver covers 18.03 square miles with a population of 1,852 according to the 2020 census. Fire and emergency services are provided by the Big Beaver Volunteer Fire Department, a 100% volunteer organization. NFPA 1720 benchmarks designate the borough as a “rural” area with the same expectations as Darlington Township. The borough’s ISO rating is a class 5, average.

The Township of Chippewa is a Second-Class township encompassing 15.69 square miles with a population of 8,037 according to the 2020 census. Fire and emergency services is provided by the Chippewa Township Volunteer Fire Department, a 100% volunteer organization. According to NFPA 1720, the township is a “suburban” area with the expectation for a structure fire being 10 firefighters on scene within 10 minutes, 80% of the time. The township’s ISO rating is a class 5, average.

All of the fire departments in this study are considered “all hazard organizations” as they are expected to respond to and mitigate any type of emergency situation that they may encounter.



Regionalization - Municipal Requirements

Legal requirements

It is widely accepted that the assurance of the provision of fire services is a local government responsibility. Local government is broadly interpreted to include municipalities, boroughs, cities, towns, villages, and townships.

In February of 2008, amending the Act of February 1, 1966 (1965 P.L.1656, No. 581) entitled “An Act concerning townships of the second class; and amending, revising, consolidation and changing the law related thereto, providing for the establishment of fire and emergency medical services” providing for specific powers of township relating to emergency services, the General Assembly of the Commonwealth enacted House Bill No. 1131 (Appendix B). In amending the Act, a clause was added that the township “shall be responsible for ensuring that fire and emergency medical services are provided within the township by the means and to the extent determined by the township, including the appropriate financial and administrative assistance for these services. The township shall consult the fire and emergency medical service providers to discuss the emergency service needs of the township. The township shall require any emergency services organization receiving township funds to provide to the township an annual itemized listing of all expenditures of these funds before the township may consider budgeting additional funding to the organization.” Similar amendments were also made for first-class townships and boroughs, placing the responsibility for providing fire protection on the local governing body.

To attain the delivery of optimum fire services, it is essential that local government recognize and accept that responsibility to fulfill that obligation to provide appropriate guidance and direction to:

- Oversee the formation process of the organization of fire services.
- Ensure that the fire service organization reflects the public interest.
- Protect the service from undesirable external interference.
- Determine basic policies for providing services.
- Legally define the duties and responsibilities of service providers.

Identification of this authority and responsibility is also defined in Section 3-1 of NFPA 1201, Standard for Delivering Fire and Emergency Services to the Public, as:

“The government agency responsible for establishment and operation of the fire department shall adopt a formal statement (by laws, resolution, or statute) of purpose and policies for the fire department that includes the type and levels of services that are to be provided, the area to be served, and the delegation of authority to the fire chief and other officers to manage and operate the fire department.”

Governance

The regionalization of the fire service requires the abolishment of political boundaries and the, eventual, unification of the existing fire departments into one regional fire organization. The unique characteristic of this is that the operation of the regional organization is outside the direct control of any one



municipality. The regional fire department must operate under the guidance of a Regional Fire District consisting of elected officials of each of the participating communities.

Section 5 of Article IX of the Constitution of the Commonwealth of Pennsylvania serves as the legal and constitutional basis for consolidating fire departments in the state. This section states:

A municipality by act of its governing body may, or upon required by an initiative and referendum in the area affected shall cooperate or agree in the exercise of any function, power, or responsibility with or delegate or transfer any function, power, or responsibility to, one or more other governmental units including other municipalities or districts, the federal government, any state or its governmental units, or any newly created governmental unit.

Act 10, passed by the General Assembly and signed into law by the Governor on July 12, 1976, serves as the enabling legislation that makes cooperation of public services in the Commonwealth a legal process. Contained in the Act are the provisions for initiating the cooperation and identification of the necessary contents of the agreement. Section 1202, clause 34 and 35 of the Borough Code, Section 1502, clause 53 and 54 of the First-Class Township code, and Section 702, clause 40 of the Second-Class Township code also bestow authority upon municipal governments to enter into agreements for the purpose of intergovernmental cooperation.

Governing Law

While there have been no decisions to date on whether specific law, such as the Borough Code, Township Code, Civil Service, and/or others apply, regional fire departments have looked to such acts and codes for guidance and direction in the handling of their affairs.

However, in so doing, they have not deemed in any fashion to have adopted or abide by said acts and codes, by implications or past practices, unless they decide to do so. If such a decision is made, it must be stipulated within the Articles of Agreement or Charter Agreement.

Expressed Authority

The Regional Fire District should have the expressed authority to conduct operations to include, but not limited to, some or all the following:

- Lease, sell, or purchase real estate.
- Lease, sell, or purchase personal property.
- Enter into contracts for goods and services and collective bargaining agreements.
- Hire, terminate, suspend, promote, demote, discipline, set wages, and otherwise deal with issues involving employees.
- Serve as a hearing board for employee grievances.
- Establish and maintain bank accounts and other financial accounts.
- Invest and borrow money.
- Establish and fund employee benefit programs.
- Delegate any of its' powers, expressed or implied, to the Fire Chief or her/his second in command.



Funding

Funding for the Regional Fire District would have to come from the municipalities involved and a fair method of assessing this must be arrived at and agreed upon. Some methods to base this figure on that have been discussed in other areas to accomplish this are: population, assessed property values, or number of incidents responded to.

Recommendations:

- **Set up a steering committee composed of municipal and fire department leadership.**
- **Explore the legal aspects of a regional fire district and the steps needed to come to an agreement to establish the same.**
- **Establish the benchmarks for operations and funding for the regional fire district.**

The Pros of a Regional Fire District

The advantages of and some of the more common arguments for a regional fire department are described below.

Improvement in the Uniformity and Consistency of Enforcement

Fire Department regulations and local law governing fire service practices and performance often vary from community to community. The implementation of the Regional Fire District requires the establishment of uniformed policies, procedures, and regulations across all municipalities involved. This standardization improves the delivery of emergency services to all residents.

Improvement in the Coordination of Fire Services

Frequently, fire service delivery activities are limited by jurisdictional boundaries and the leadership contained therein. Inside a Regional Fire District, geographic boundaries are not a factor. Under a centralized leadership, with uniformity of purpose, procedure, records keeping and policy, a regional district eliminates duplication of services and competition between local departments. This results in a more cost effective and efficient use of limited public funds.

Improvement in the Recruitment and Deployment of Fire Service Personnel

Smaller departments, offering few incentives, are often at a disadvantage in the recruitment and retention of quality firefighters. Consolidation of services across a broader tax base often results in improved recruitment ability. Fire department services should be distributed and deployed based upon the justified demand for services. Small departments cannot maintain the staffing levels required to meet demands at all times. Regional departments have greater flexibility in the scheduling and distribution of personnel necessary to meet service demands because of increased staffing levels.



Where municipalities may currently not be able to provide any paid personnel or part-time services at best, consolidation may permit several local governments to employ full-time firefighters through cooperative financing.

Improvement in Training and Personnel Efficiency

Providing suitable and necessary training is significant in the delivery of quality fire services. The desired minimum annual training is detailed under staffing later in this study.

At the current time, the minimum required time for training is determined by the local fire chief. Small departments find it difficult to meet training requirements and still maintain appropriate staffing levels.

Regionalization means that all personnel will be trained to a given standard. Also, the availability to attend outside trainings, while still having sufficient personnel to cover emergency incidents, should be improved. In many cases, local firefighters can be certified as instructors, thereby reducing the need to send firefighters away from the department for training.

In addition, and this is true both in the career and volunteer sectors, vacations, losses due to sick time, work-related injury, and family obligations erode the ability of any department to properly staff. Regionalization allows for much more flexibility in coverage for such circumstances.

Improved Management and Supervision

In many smaller fire departments, the fire chief and supervisory officers often function in the capacity of firefighter, with little time remaining for administration and supervision. They are unable to devote the necessary time to develop and maintain sound management systems.

A regional district, depending on size, may permit the fire chief to become a full-time manager, thus increasing efficiency in fire administration, management, and supervision, thereby improving the overall function of the department. Regionalized departments are generally better able to offer the salaries and benefit packages which attract high caliber candidates for the position of fire chief.

Reduced Costs

Regionalization of any public-sector service usually results in decreased cost to the individual municipalities involved if the municipality already provided that service. This is nowhere truer than in the fire service. There are established minimum costs involved in the development and continued funding of any fire department. These costs are centered in the fire stations, communications, vehicle fleet, office equipment, records system, and administrative services.

Also, there are usually many instances where closely adjoining departments duplicate infrastructure and support services. Consolidation results in decreased individual costs by reducing duplication of infrastructure and support requirements within the proposed service area.



The Cons of a Regional Fire District

Arguments against consolidation of fire departments are basically the same.

Loss of Local Fire Department Services

Firefighters in Pennsylvania, as well as in every other state in the United States, routinely perform many duties, which are not typically considered to be a fire service function. These duties are generally traditional in many communities and were assigned to the fire department by default - there was basically no one else available at the time. These miscellaneous duties are still very much a part of the everyday job of a local firefighter. Public service details, flood mitigation, fire code enforcement, and issuing permits and licenses are some of the extra tasks “inherited” by local fire departments. Typically, when consolidation occurs, the fire department discontinues many of these tasks at the local level to allow firefighters to focus on response, training, fire prevention, code enforcement and more fire service-related functions.

Loss of Local Control

In the traditional fire service delivery situation, where each municipality creates and maintains its own fire department, the entire governing body is often directly involved in the day-to-day operations of the fire department. Regional fire departments are governed by a fire commission, which provides broad policy guidance to an administrative fire chief, who is then directly responsible for all day-to-day operations of the department. The fire chief has broad authority and responsibility and is accountable to the commission. The commission consists of an established number of representatives from each participating community. Direct political and personal control over the department is considerably reduced.

Loss of Citizen Contact

Occasionally there is a concern that the citizens of a participating community will not have as close a relationship with the members of a regional fire department as they do with their “own” firefighters. If this situation develops, it will be temporary and will exist only until the

firefighters become acquainted with their “new” area. Furthermore, many of the firefighters in a regional fire department will have previously answered calls for service, provided back-up, or participated in community functions in each of the other municipalities. With this being the situation now in these communities, the transition to a regional department should proceed very easily and with no major concerns for the firefighters or the citizens.

Loss of Position

Members of the local fire department, current chiefs, and elected officials may initially fear a loss of position if regionalization efforts prevail. While it is certainly true that every current chief can’t retain the top position in the regionalized department and that some officers may choose not to participate in



the new venture, regionalization is not intended to eliminate individual positions. Such concerns can be addressed through negotiations and discussion.

In this arrangement, however, it is not recommended that any full-time positions be eliminated. All current positions should be retained and will be utilized in this newly structured regional department.

Calls per Municipality

FIRE/EMS

	Beaver Falls	Big Beaver	Chippewa	Darlington	Patterson
Beaver Falls					
2021	531/938	9	18	2	10
2022	497/763	26	34	3	10
Big Beaver					
2021	45	60/5	39	13	0
2022	27	62/10	55	12	0
Chippewa					
2021	17	26	691/508	8	18
2022	30	17	641/506	12	10
Darlington					
2021	1	5	2	57/5	0
2022	1	13	6	62/3	0
Patterson					
2021	72	3	73	0	27/85
2022	3	3	72	0	22/88



Staffing

Certified Personnel

	Essentials w/ SBS	Firefighter 1	Firefighter 2
Beaver Falls		8	18
Chippewa		8	7
Big Beaver	5	6	1
Darlington	4	10	3
Patterson	15	1	1

Essentials of firefighting with a Structure Burn Session (SBS) is the basic training for interior firefighters in Pennsylvania. It consists of four (4) firefighting modules, plus hazardous materials curriculum, basic first aid, and CPR. The structure burn session is the last module in the program and consists of 8 hours classroom instruction and 8 hours of actual live burn scenarios. The commitment for the student to complete all necessary aspects of this training is well over 200 hours.

Fire Fighter I certification is administered through the Pennsylvania Office of the State Fire Commissioner (OSFC) and involves prerequisite training, a 100-question written examination, and a 12-station practical skills test, all of which need to be passed successfully.

Fire Fighter II certification, also through the OSFC, involves prerequisite training, the pre-plan of a commercial structure, a 100-question written examination, and a 6-station practical skills test, all of which need to be passed successfully.

Besides 48 hours of in station fire department training, along with 6 hours of Haz Mat refreshers, NFPA standards recommend all interior firefighters participate in 24 hours of structural training annually. This places a very high demand on a volunteer firefighters time and availability, especially when they must fundraise also.

Currently, the Beaver Falls Fire Department is the only entity with paid, career staffing 24 hours a day, 365 days a year supplemented by volunteers. The preferred level of career personnel on duty is three on any given shift.

All other departments in the study rely on volunteers to answer emergency incidents. Volunteer firefighters are a highly valued community resource. It is estimated that volunteers save communities over 139.8 billion dollars annually. The 2019 estimated value of a volunteer's time was \$25.43 per hour. With the average volunteer firefighter spending 8 hours per week, volunteer firefighters contribute \$10,580 worth of their time annually to their community.



One of the issues identified, not only in Beaver County, but also nationally, is declining volunteerism. Recruiting enough qualified members has become one of the greatest challenges facing volunteer fire departments today. At one time, most communities had little difficulty attracting members. Often, multiple generations of the same family would belong to departments for long terms. Frequently, many of the firefighters worked locally and on rotating shifts. In many cases local businesses would allow firefighters to leave work to attend fires. This was sustainable because only a small number of fires would occur during work hours.

At the same time, demands on firefighter's time were minimal. Required training was nonexistent in many departments and minimally required in others. Fundraising was important, but the relative cost to run a fire department was low.

Today, this has all changed. Fire departments face tremendous competition for firefighter's time. Most families have two wage earners or have the main breadwinner working two or more jobs. More opportunities exist for children today than ever before. Just transporting children to and from their activities consumes a large amount of a parent's time. Today's workforce is far more transient than previous. As the region's industrial base has eroded, less people work in the communities where they live and smaller numbers work shifts. Additionally, fewer employers allow employees to leave work to fight fires.

These changes have taken place at a time when firefighter time demand has increased dramatically. Firefighter training has rightfully become mandatory in most departments. Minimum required training to become a basic firefighter now runs well over 200 hours. Standards now stipulate minimum levels of hazardous materials, right-to-know and incident management training. Safety was once given nothing more than lip service. Today it has become a cornerstone of fire department training programs. Concurrently, calls for service have increased substantially. Connected alarm systems, carbon monoxide detectors, vehicle accidents, medical assists and service calls are all responsible for creating a demand overload at a time when fire department membership is dwindling.

Another issue that was brought up by all parties concerned was that of Emergency Medical Services and the current state of disarray not only in this local area, but in Beaver County as a whole. The majority of the departments in this study either run or are considering starting a Quick Response Service to assist their residents before the medic unit arrives. But this does not address the systemic problem and is consuming valuable resources that the departments must utilize without reimbursement. An EMS study should be performed for the County of Beaver to address this issue, sooner rather than later.

Your effort with fire and emergency services is applauded with recognizing the issues with relying on volunteers and taking a proactive approach to protecting your residents. But the contributions of the volunteers cannot be overlooked and thrown to the side by replacement with paid staff. Also, the number of paid positions required and the "sticker shock" associated with this would be overwhelming to the taxpayers.



The following are recommendations to initialize the process, once the Fire District is established, and allow it to evolve as the need and funding becomes available.

Recommendations:

- **Hire four (4) firefighters to staff the Chippewa (2) and Darlington (2) stations 40-hours a week, Monday through Friday daytime, while volunteer numbers are at their lowest. Estimated cost \$244,000 to be shared by Big Beaver, Chippewa, Darlington, and Patterson.**
- **Firefighter staffing would be increased to 24/7 coverage as funding and necessity dictates. But the volunteers should always have an integral part in the organization.**
- **For QRS, hire 3 firefighter/medics working 24/48 shifts (1 per) to run primarily medical incidents in all 5 municipalities on a 24-hour basis based out of the Chippewa or Big Beaver station. If needed, this person would be backed up by the career or volunteers available. Estimated cost of \$243,000 to be shared by all five municipalities.**

Stations

There are currently six stations being utilized by the five fire departments in this study. An onsite visit was conducted with five of these stations. For the purposes of this regional study, it should be assumed that some of these stations will no longer be needed in the future.

Beaver Falls main station:

- masonry construction,
- good location in city,
- older building but appears very functional for its' intended purpose.

Beaver Fall substation:

- masonry construction,
- used more as a storage facility.

Big Beaver main station:

- masonry construction,
- older building,
- bay area is extremely cramped with current apparatus,
- needs major upgrades.

Chippewa Township main station:

- masonry construction,
- older but in good condition with ample room,
- needs updating and modernization.

Darlington Township main station:

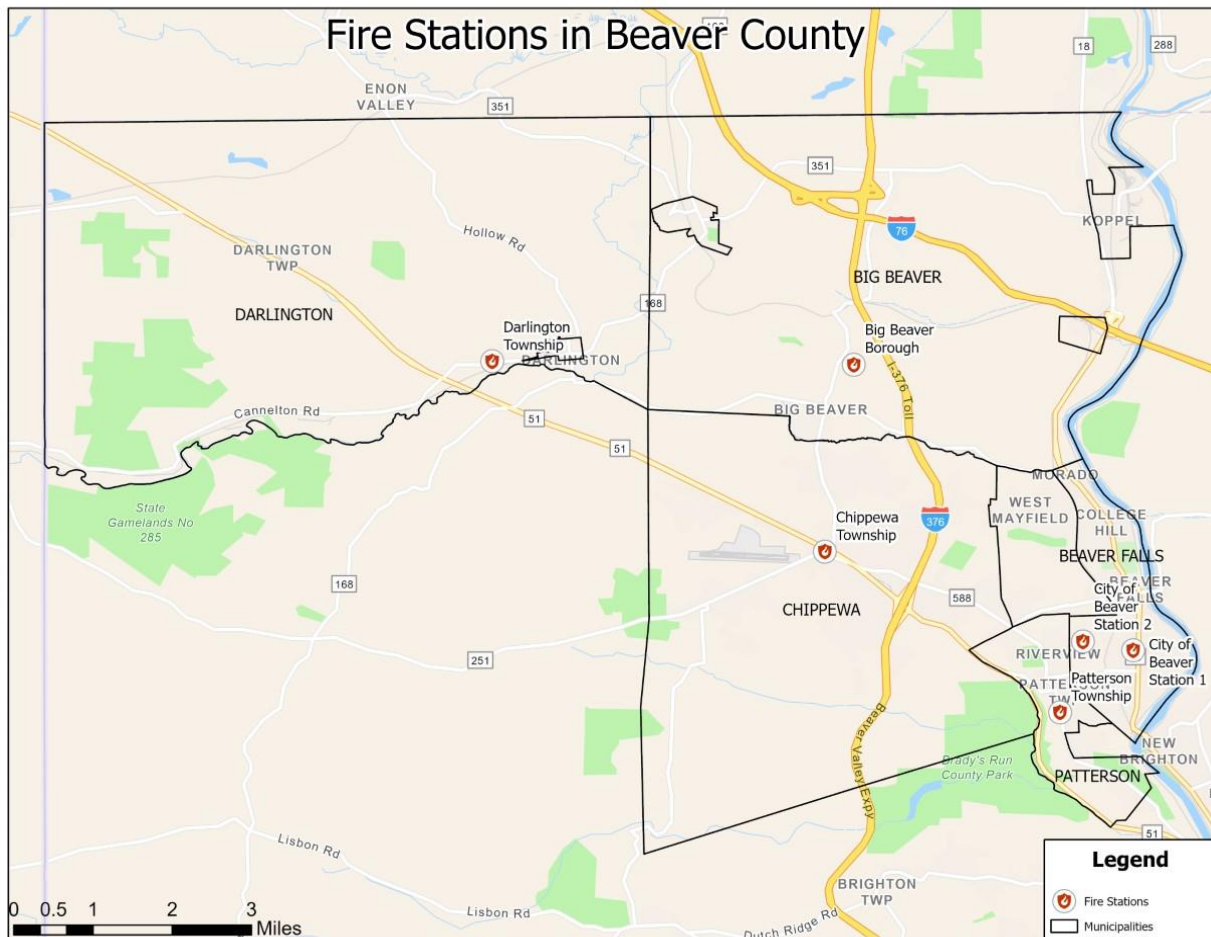
- newer steel construction adjoined with municipal offices,
- large space.



Patterson Township main station:

- older masonry construction,
- bay area is extremely small with current apparatus.

Again, in the initial stages of this regionalization, all stations would remain in place. Stations must be in proximity to where the volunteer work force is located. However, looking forward, for area coverage and with full-time staffing, the following will strategically position stations along the Route 51 corridor with eastern, central, and western locations. Elimination of stations would lower overall expenses through utilities and maintenance reductions.





Recommendations:

- **The Beaver Falls substation would be closed.**
- **The Patterson Township station would be closed.**
- **Although the Chippewa station is in good condition, a new station built at a halfway point between the Chippewa and Big Beaver station would be ideal. Both Big Beaver and Chippewa stations would be closed and merged into the new “Central” station.**
- **The Beaver Falls main station would remain as is, “Eastern Station.”**
- **The Darlington Township “Western Station” would remain, but considerations for 24-hour staffing would have to be made.**

Apparatus

It is a generally accepted fact that fire apparatus, like all types of mechanical devices, have a finite life. The length of service depends on many factors, including mileage and engine hours, preventive maintenance programs, driver's training programs, and quality of workmanship of the apparatus among many others.

In the fire service, there are fire apparatus with 8 to 10 years of service that are worn out from use. Then there are units that have responded to a minimal number of incidents with excellent maintenance that are still in serviceable condition well after 20 years.

For the purposes of this study, we are concentrating on the main firefighting vehicles and not the auxiliary equipment such as squads, etc.

National Fire Protection Association Standards for Apparatus Replacement

The National Fire Protection Association (NFPA) Standard on Automotive Fire Apparatus, Guidelines for First Line and Reserve Fire Apparatus, recommends that apparatus greater than 15 years be placed in reserve status and upgraded to incorporate as many features as possible of the current fire apparatus standard. The recommended age for reserve apparatus is between 20 and 23 years, with applicable upgrades.

Definition of first-line fire apparatus: First-line fire apparatus must be manufactured to NFPA 1901 and must be maintained in accordance with NFPA 1912 and 1915.

Definition of reserve fire apparatus: Reserve fire apparatus is defined as apparatus manufactured to applicable NFPA 1901 editions, after 1991 and prior to the 2009 edition. Such apparatus must have been upgraded to include as many of the features as possible found in 2009 or newer units.

While NFPA Standards are not mandatory, they establish a datum point for age of apparatus and updating guidelines. Fire Departments that do not follow NFPA Guidelines assume full liability of retaining known deficient apparatus in service. To knowingly operate or approve of the operation of a vehicle that could kill or injure the public or a firefighter severely exposes fire department officials to liability.



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

Based on NFPA recommendations, the regions existing apparatus would be replaced on the following schedule:

Apparatus	Year	Mileage	Condition	Maintenance and Repair	NFPA Review
Beaver Falls					
E11	2019	12,966	Excellent	new	-16
T11 Truck	1999	33,162	Poor	poor	+4
R11	2004	16,566	Good	average	-1
E11-2	2006	60,367	Good	average	-3
Chippewa					
E22	2003	21,448	Good	above average	0
R22	2003	17,240	Good	above average	0
T22 Truck	2003	17,268	Good	above average	0
B22	1999	80,934	Good	average	+4
Big Beaver					
E-14	2019	5,437	New	average	-18
E-142	2010	26,767	Good	average	-7
E-143	1996	41,305	Average	average	+7
T-14 Tanker	2012	7,891	Good	average	-9
B- 14	2010	7,723	Good	average	-7
Patterson					
E90	2021	2,400	Excellent	new	-18
R90	1999	11,116	Good	average	+4
Darlington					
E18-2	2009	18,500	Good	average	-6
R18	1997	23,700	Good	above average	+6
T18 Tanker	1988	34,000	Fair	above average	+15
B18	1991	88,000	Fair	average	+12



American Public Works Association (APWA) Vehicle Replacement Guide

The American Public Works Association vehicle replacement guide uses a weighted point system based on age, usage, type of service, maintenance and repair costs and overall condition of the vehicle.

Age	1 point for every year of chronological age, based on in-service date.	
Miles/Hours	1 point for each 10,000 miles or 1,000 engine hours of use.	
Type of Service	1, 3, or 5 points based on type of service the unit is exposed to. First-line fire apparatus are classified as severe duty service.	
Reliability	1, 3 or 5 points based on the frequency that the vehicle is in the shop for repair. A five would be assigned to a vehicle that is in the shop two or more times per month on average while a 1 would be assigned to once every 3 months or less.	
M&R Costs	1 to 5 points based on total life maintenance and repair costs.	
Condition	This category takes into consideration body condition, rust, interior condition, accident history, anticipated repairs, etc. A scale of 1 to 5 is used with 5 being poor condition.	
Point Ranges	Fewer than 18 points	Excellent
	18 to 22 points	Good
	23 to 27 points	Qualifies for replacement
	28 points of above	Needs immediate consideration



The APWA vehicle replacement guide is as follows:

Apparatus	Year	Mileage	Condition	Maintenance and Repair	APWA
Beaver Falls					
E11	2019	12,966	Excellent	new	12
T11 Ladder	1999	33,162	Poor	poor	41
R11	2004	16,566	Good	average	31
E11-2	2006	60,367	Good	average	34
Chippewa					
E22	2003	21,448	Good	above average	34
R22	2003	17,240	Good	above average	33
T22 Ladder	2003	17,268	Good	above average	33
B22	1999	80,934	Good	average	43
Big Beaver					
E-14	2019	5,437	New	average	11
E-142	2010	26,767	Good	average	27
E-143	1996	41,305	Average	average	42
T-14 Tanker	2012	7,891	Good	average	22
B- 14	2010	7,723	Good	average	22
Patterson					
E90	2021	2,400	Excellent	new	9
R90	1999	11,116	Good	average	34
Darlington					
E18-2	2009	18,500	Good	average	24
R18	1997	23,700	Good	above average	39
T18 Tanker	1988	34,000	Fair	above average	51
B18	1991	88,000	Fair	average	53

In both instances, the guides recommend that most of the major apparatus used by the fire departments should be replaced at the earliest time possible. But, is all of this apparatus truly needed or is there duplication that can be eliminated thus saving funding both currently for maintenance and for future apparatus purchases? There are nineteen (19) pieces of capital equipment that, I doubt, are ever used in totality at any one incident in the region. Savings should be realized by the following recommendations without compromising the public's safety.



Recommendations:

- **Eastern Station: 1- quint, 1-engine, 1-rescue engine**
- **Central Station: 1- quint, 1 heavy rescue, 1- engine tanker, 1- brush**
- **Western Station: 1- rescue engine, 1- engine tanker, 1- brush**

Standards of Cover & Municipal Expectations

Fire Department performance is generally graded against two benchmarks – Standards of Cover (NFPA 1710 or NFPA 1720) and the Insurance Services Office (ISO) Public Protection Classification Grading Schedule.

The basic premise behind Standard of Cover is that to control a building fire with minimal life and property loss, a fire department must be able to place an adequate number of firefighters and equipment on the fire scene, ready to engage an emergency, within a given timeframe.

The resource needs and timeframe are driven by the growth process of a typical fire. Once ignition occurs, a fire does not grow in a linear fashion, it grows exponentially. Unchecked, it ultimately reaches a point known as “flashover.” At flashover, a fire changes from involvement of a limited area of the room to a full fire involvement of the space. This event occurs almost explosively. Flashover is a critical stage of fire growth for two reasons. First, a person in a flashover room cannot survive. Others within the building will likely be injured and possibly trapped. Second, the rate of combustion and fire spread increases dramatically, making victim location and rescue far more difficult. Fire control will require more hose lines and water flow.

Control of a pre-flashover fire can be safely accomplished with a minimum number of resources. When a small crew of firefighters can begin fire control activities on a small appliance fire, a cooking accident, an overheated motor, a smoldering mattress or similar incident prior to flashover, the chance of injury or loss of life is low, and damage is usually minor.

On the other hand, once a flashover occurs, a large complement of firefighters will be needed for fire control and the likelihood of life loss or injury to both occupants and firefighters is high. Damage will be substantial often resulting in destruction of the building and contents. Clearly, a fire department’s best opportunity to alter the course of the emergency, stop loss and minimize the negative consequences is to intervene as early as possible in the fire timeline.

Recognizing that a quickly arriving unit may be able to engage a fire before flashover, Standard of Cover for career fire departments establishes two-time benchmarks, one for the arrival of the first unit, and a second for arrival of the remaining resources. Therefore, in a suburban community, the standard expects an initial firefighting unit staffed with a minimum of four personnel and at least six additional personnel on a subsequent unit(s) to arrive within a total of 10 minutes from the time of dispatch. Setup time is a function of the magnitude of the fire upon arrival, the ease of deployment of



hose lines, and the number of firefighters arriving and their level of skill and training. Thus, setup time will be longer for more serious incidents and in situations with personnel shortages.

Substantial research on resource needs for fire control has been conducted by the National Fire Protection Association (NFPA), the Commission on Fire Accreditation International (CFAI), and several large city fire departments. The data collected determined that at a fire in an occupied structure, a minimum of eight tasks must be simultaneously conducted to stop the loss of civilian lives, stop further property loss and keep the risk to firefighters at a reasonable level. The critical tasks on the initial alarm are for a response to a structural fire in a typical 2,000 ft², two-story, single-family occupancy without a basement and with no exposures (detached home) is as follows:

- (1) Establishment of incident command outside of the hazard area for the overall coordination and direction of the initial full alarm assignment. A minimum of one individual shall be dedicated to this task.
- (2) Establishment of an uninterrupted water supply of 400 gpm for 30 minutes. Supply line(s) shall be maintained by an operator who shall ensure uninterrupted water flow application.
- (3) Establishment of an effective water flow application rate of 300 gpm from two hand lines, each of which shall have a minimum of 100 gpm. Each attack and backup line shall be operated by a minimum of two individuals to maintain the line effectively and safely.
- (4) Provision of one support person for each attack and backup line deployed to provide hydrant hookup and to assist in line lays, utility control, and forcible entry.
- (5) A minimum of one victim search and rescue team shall be part of the initial full alarm assignment. Each search and rescue team shall consist of a minimum of two individuals.
- (6) A minimum of one ventilation team shall be part of the initial full alarm assignment. Each ventilation team shall consist of a minimum of two individuals.
- (7) If an aerial device is used in operations, one person shall function as an aerial operator who shall always maintain primary control of the aerial device.
- (8) Establishment of a Rapid Intervention Crew that shall consist of a minimum of two properly equipped and trained individuals.

Based on this scenario, the hazards presented of which are not unusual, as all communities respond to fire incidents in this type of structure on a regular basis, a minimum of 15 firefighters are needed to accomplish these tasks. Other occupancies and structures in the community that present greater hazards should be addressed by additional firefighter functions and additional responding personnel on the initial full alarm assignment.

The ability of adequate fire suppression forces to greatly influence the outcome of a structural fire is undeniable and predictable. Data generated by NFPA provide empirical data that rapid and aggressive interior attack can substantially reduce the human and property losses associated with structural fires.



Table 7 – Fire Extension in Residential Structures 1994 - 2004

Rate per 1000 Fires			
Extension	Civilian Deaths	Civilian Injuries	Dollar Loss per Fire
Confined to the room of origin	2.32	35.19	3,185
Beyond the room but confined to the floor of origin	19.68	96.86	22,720
Beyond the floor of origin	26.54	63.48	31,912
Note: Residential structures include dwellings, duplexes, manufactured homes (also called mobile homes), apartments, row houses, townhouses, hotels and motels, dormitories, and barracks.			

National Fire Protection Standard 1720, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments* was developed in 2001 as the benchmark standard for defining levels of service, deployment capabilities, and staffing levels for substantially volunteer fire departments. The purpose of this standard is to specify the minimum criteria addressing the effectiveness and efficiency of the volunteer public fire suppression operations, emergency medical service, and special operations delivery in protecting the citizens of the jurisdiction. The requirements of the standard address functions and outcomes of fire department emergency service delivery, response capabilities, and resources. The standard also contains minimum requirements for managing resources and systems, such as health and safety, incident management, training, communications, and pre-incident planning.

NFPA 1720 Response Benchmarks for Volunteer Departments

Demand Zone	Demographics	Staffing and Response Time	Percentage
Urban	>1,000 people/mi. ²	15 / 9	90
Suburban	500 – 1,000 people/mi. ²	10/10	80
Rural	<500 people/mi. ²	6 / 14	80

Combining the time benchmarks and resource needs, a fire department should be able to place at least one firefighting unit and a minimum of ten firefighters at a fire scene within ten minutes of dispatch in suburban areas and at least one firefighting unit and six firefighters at a fire within fourteen minutes of dispatch in rural areas. These response goals should be met at least 80% of the time. It must also be noted that these are the minimum acceptable standards for substantially volunteer departments and they are based on a fire in a relatively small, detached dwelling.



Public Protection Classification Rating

The second measure of fire department service is the Insurance Services Office (ISO) Public Protection Classification (PPC) Rating System. Using a scale of 1 to 10 (1 being best, 10 being no protection), the ISO rates fire protection in thousands of communities throughout the country. The rating is used by insurance companies to set premiums on properties it insures. Commercial, industrial, mercantile, institutional, and multi-family dwellings are the most highly impacted properties when a municipalities rating changes.

The formulas that homeowner's insurance companies use to determine their insurance rates are complex and constantly changing. But all other things being equal, a lower PPC score for your area will translate to a lower home owner's insurance premium, as it means your home is at a lower risk for serious fire damage. Home insurance companies offer lower rates if you have a good ISO rating because a well-prepared fire department should be able to put out your home's fire more quickly.

However, how the ISO rating impacts your homeowner's insurance premium varies by insurer, and it's often only one of many factors it considers with regards to fire safety. For example, some companies will ask about your home's proximity to a fire station or fire hydrant, as well as whether you have a fire alarm or sprinkler system. And some insurers, namely State Farm, do not use the ISO's score to set homeowners' premiums at all. Instead, they use their own metrics based on factors like historical fire data.

Divergence is a reduction in credit to reflect a difference in the relative credits or Fire Department & Water Supply. Each component is evaluated using a fractional point scale and added together to establish the community point total. Additionally, points are subtracted, known as Divergence, when the water supply is relatively better than the fire department or vice versa. The thinking is that a good water supply would be underutilized with an ineffective fire department and conversely, the best fire departments would be less effective with a sub-standard water supply.

The ISO conducted a community classification survey of Patterson Township in August of 2022. These classifications have been developed for use in property insurance premium classifications. The municipality received the following ISO Public Protection Classifications:



	Credit Available	Credit Earned
Telephone Service	3	2.55
Operators	4	4
Dispatch Circuits	3	2.91
Total Communications	10	9.55
Engine Companies	6	4.74
Reserve Pumpers	.5	0
Pump Capacity	3	3
Ladder/Service Co.	4	1.09
Reserve Ladder/Service	.5	0.39
Deployment Analysis	10	6.43
Personnel	15	1.29
Training	9	.88
Operational considerations	2	1
Total Fire Department	50	18.82
Water System	30	28.26
Hydrants	3	3
Hydrant Inspection	7	4
Total Water Supply	40	35.26
Divergence		-10.10
Community Risk Reduction	5.5	.61
Total	105.5	54.05
Classification		5

When an ISO representative conducts a fire department assessment, areas examined include recordkeeping practices; pumper, aerial, and hose tests; apparatus equipment; personnel training, and deployment protocols. Receiving and handling fire alarms reviews the facilities provided for the public to report fires, and for the operator on duty at the communications center to dispatch fire department companies to the fires.

The fire department section reviews the engine and ladder-service companies, equipment carried, response to fires, training, and available firefighters.



In lieu of purchasing and maintaining the full complement of ISO required apparatus, a community can receive 90% of the credit from a neighboring community for automatic aid engines and ladders.

Recommendations:

- **The fire departments should continue or start annual testing of fire hose, fire pumps, ground ladders, and aerial devices, not only to meet ISO requirements, but also to ensure proper working condition and firefighter safety.**
- **All new apparatus purchased should include the required tools and equipment identified in NFPA 1901, Standard on Automotive Fire Apparatus.**

The most important ISO factor is firefighter response to structural fires. The grading schedule's premise, much like the Standard of Cover, is that fires will be controlled quicker and with less damage when large numbers of firefighters are available in a short timeframe. As such, the single largest point factor is awarded for firefighter response. Because of immediate availability, full credit is given for any on-duty firefighters. Since it is assumed that any firefighter not on-duty at the station will have a longer response time, only one-third credit is given for any firefighter who responds to the station (volunteers).

By either measure, Standard of Cover or ISO Grading, an inadequate number of firefighters not only reduce the effectiveness of rescue and firefighting efforts, but it also significantly increases the dangers to the firefighters. Operating understaffed at fires invariably results in safety short-cuts, freelancing on the fire ground and increased physical stress. Nationally, firefighter injury studies consistently show a link between personnel shortages and increased injury rates.

Recruitment and Retention

As stated previously, volunteerism is on the decline in our country. But, there are still a substantial number of people who are willing to become volunteer firefighters if the right incentives are in place. To recruit members, a community needs to identify what they are offering potential members. Recruiting for the fire department should not be all that difficult because the service has a lot to offer: excitement, friendship, respect, the chance to save a life, and a host of other positives. But these things alone are often insufficient to attract new members. There also must be flexibility that allows people to volunteer in a manner that fits their needs or meets their schedule. There must also be a marketing effort to reach out to potential candidates and illustrate the benefits of membership. Initiatives that have worked for other fire departments include:

- Implement a "Duty-shift Program". This initiative can often pay dividends by attracting individuals to volunteer who prefer to schedule blocks of time to serve rather than be subjected to being always on call. This is not unlike performing volunteer work for hospitals, nursing homes and schools. With this program, the fire department establishes minimum participation guidelines and minimum training requirements. Persons wishing to become a "Duty-shift Member" would agree to be at the fire station for a specified number of time blocks per month. In return, the volunteer would receive a small stipend, and be entitled to all the benefits of volunteer membership.



This program is not for everyone and is a departure from the traditional volunteer fire department model. As such, it would not be rapidly accepted. That said, many departments in the suburban Washington, DC area have found great success by implementing a “Duty-shift Program”. They have found that there is a segment of their population that is willing to volunteer, but is too busy with family, jobs and other obligations to participate on an on-call basis. An additional benefit to the “Duty-shift” program is additional credits for personnel in the Insurance Services Office (ISO) Grading Schedule.

- A successful firefighter recruiting campaign must create a community awareness of the fire department and its needs. To accomplish this, the department should be marketed via as many media sources as possible. Publish a fire department web site; send direct mailings; distribute flyers in the schools; create a speaker’s bureau for community groups; consider lawn signs and billboards; produce an informational video to air on the local cable access channel. Most, if not all these initiatives can be accomplished with community talent at little or no cost.
- Engage the community by conducting a “Citizen’s Fire Academy”. There are several benefits to such a program. Conducted like a major league baseball “fantasy camp”, a Citizen’s Fire Academy provides the opportunity for interested citizens to participate in a multi-faceted program of instruction of the activities of a fire department. Typically, there are eight to twelve sessions on topics ranging from fire operations to rescue operations, emergency management, CPR and AED usage, department history and operations, fire prevention, etc. Participants can take part in many activities within their physical abilities and safety.

The programs tend to be self-sustaining from favorable word of mouth and minimal advertising. Most people who participate are amazed at the depth and breadth of fire department activities and the dedication and commitment of the firefighters. They invariably become strong supporters of the fire department. They also share their experiences with friends and relatives which results in a great deal of good will in the community.

- Develop incentives. Volunteer firefighters are not free, just less expensive than career firefighters. To compete for people’s time, many departments have created a package of incentives and rewards. Some of the components a total benefits package might include:
 - Tax incentives. Reduced property or earned income taxes or waived occupational privilege taxes are possibilities. Recently, Pennsylvania passed Act 172-2016, the Volunteer Firefighter Tax Credit legislation allowing communities to provide tax credits to volunteer firefighters.
 - Free use of local recreation facilities.
 - Education/tuition assistance plans.
 - Individual and team recognition awards.
 - Length of service (LOSAP) remuneration plans.
 - Retirement plans.
 - Life and health insurance policies.
 - Credit union memberships.
 - Wellness programs.



- Training and fire conference attendance.
- Clothing and uniform provisions.
- Accident insurance.
- College tuition credits.

Recommendations

- **Form a region-wide recruitment and retention committee.**
- **The departments should jointly apply for Staffing for Adequate Emergency Response (SAFER) Funding to support recruitment and retention programs, including baseline medical evaluations for all active firefighters.**
- **Upon implementation of the Regional Fire District, a SAFER grant could be used to offset the salary expenses for new hires for up to four years.**

Cancer Presumption

Firefighting is a dangerous profession, and a growing body of research and data shows the contributions that job-related exposures have on chronic illnesses, such as cancer and heart disease. The National Institute for Occupational Health (NIOSH) recently undertook two large studies focused on firefighter cancer and concluded that firefighters face a 9 percent increase in cancer diagnoses, and a 14 percent increase in cancer-related deaths, compared to the general population in the U.S. The cancers responsible for this higher risk were respiratory (lung, mesothelioma), GI (oral cavity, esophageal, large intestine), and kidney.

NIOSH researchers did report a two-fold excess of malignant mesothelioma, a very rare cancer. Put another way, firefighters have a 100% increased risk of getting mesothelioma and a 129% increased risk of dying from mesothelioma.

Generally, in the case of work-related illness or injury, the burden is placed on the worker to prove their ailment is a result of occupational exposures. With the advent of presumptive legislation, that burden shifts; the employer must prove that the firefighter's working conditions were not a significant contributing factor to the development of cancer. With presumptive legislation, the line-of-duty claim, and subsequent benefits, can be automatically approved if the specific criteria are met under the state's regulations.

A majority of states now cover firefighters for one or more cancers under workers' compensation because of presumptive legislation. In many states, the presumptive legislation contains broad or nonspecific language that can be interpreted to cover any cancer experienced by a firefighter. In other states, only specific cancers are covered. Most commonly those are leukemia, non-Hodgkin lymphoma, brain cancer, bladder cancer, and gastrointestinal cancer.

Pennsylvania's Cancer presumption Law provides compensation pursuant to cancer suffered by a firefighter shall only be to those firefighters who have served four or more years in continuous firefighting duties, who can establish direct exposure to a carcinogen referred to in section 108(r) [FN1] relating to cancer by a firefighter and have successfully passed a physical examination prior to asserting



a claim under this subsection [FN2] or prior to engaging in firefighting duties and the examination failed to reveal any evidence of the condition of cancer.

The presumption of this subsection may be rebutted by substantial competent evidence that shows that the firefighter's cancer was not caused by the occupation of firefighting. Any claim made by a member of a volunteer fire company shall be based on evidence of direct exposure to a carcinogen referred to in section 108(r) as documented by reports filed pursuant to the Pennsylvania Fire Information Reporting System and provided that the member's claim is based on direct exposure to a carcinogen referred to in section 108(r).

The Township and fire department's leadership should encourage behavior changes that reduce the risk of developing cancer by:

Recommendations:

- **Installing exhaust removal systems in fire station - NIOSH considers whole diesel exhaust emissions to be a potential occupational carcinogen. In addition to the potential carcinogenic effects, eye irritation and irreversible lung function changes have been experienced by workers exposed to diesel exhaust. The cost to install a diesel exhaust removal system in a fire station is approximately \$60,000.**
- **Provide equipment to decontaminate dirty protective clothing. It is established that firefighter exposure to personal protective equipment that is dirty, soiled, and contaminated presents increasing concern for long-term firefighter health. Cancer and other diseases, resulting from chronic exposure to contaminants, have become a leading industry issue, and they are presumed to be associated with protection/hygiene practices and persistent harmful contaminants found in firefighter PPE after fire ground exposure. To allow for immediate decontamination of dirty protective clothing, each station should be equipped with a washer/extractor and dryer for protective clothing. Members should be required to clean their gear following each structural fire incident.**
- **Support annual medical evaluations for all members. Annual physicals are a critical component of firefighter health and safety. Medical evaluations can provide early detection of heart disease, diabetes, cancer, and other conditions and risk factors. Early detection and treatment can in turn prevent line-of-duty deaths, injuries, and disabilities by making sure personnel are healthy and ready to respond. Assistance for initial testing of all members can be obtained via an Assistance to Firefighters Grant.**



Summary

In reviewing the data and statistics provided, the region has a trained, dedicated, and willing volunteer and career base in its' fire departments. All attempt to maintain newer equipment and fundraise for their needs to service the community. Each has personnel trained to handle varying emergency situations, not only for firefighting, but many different aspects of emergency services.

But they also recognize that the future and volunteerism is uncertain and plans to continue providing emergency services to their communities must be planned for now. Also, the cost for equipment and apparatus is skyrocketing and quickly approaching levels where most volunteer fire departments will not be able to sustain their existence.

It is also a compliment to the municipal officials involved for their pro-active thinking in serving their residents.

A Regional Combination Fire District utilizing both career and volunteer staff, funded by the municipalities, is the only logical course of action to guarantee this necessity of its' future. This venture will not have an overnight solution and will take time, patience, cooperation, and most of all, the willingness to compromise, by all parties involved.