Fire Apparatus Assessment for Upper Dublin Township, Montgomery County, Pennsylvania

July, 2009

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Preface

During the period of May through July 2009, a consulting team from Emergency Services Education and Consulting Group (ESECG, a division of VFIS, Inc.) conducted a documentation review and site analysis of the fire apparatus in service in Upper Dublin Township, Montgomery County, Pennsylvania. This work effort was consistent with the scope of work described in the proposal agreed upon between Upper Dublin Township and ESECG, as detailed later in this report.

The Board of Commissioners of Upper Dublin Township is to be congratulated for this proactive initiative to evaluate its fire apparatus needs and in developing a plan for the future. Too frequently communities undertake such activities following major adverse events, functioning reactively, instead of proactively such as Upper Dublin officials have done.

It must be noted that the interests expressed by the Board of Commissioners (through initiating this study), the township staff and the members and staff of the fire company were focused upon providing quality service to the residents, workers, and visitors to Upper Dublin Township. There were many positive apparatus related efforts and programs found to be in place. While much of this report centers upon action to be taken to enhance long term performance, everyone recognized the fire company performs the work that needs to be conducted at the time of an emergency.

There were seven (7) primary activities involved in this project:

1. An introductory meeting was held with the Township Fire Administrator to establish an understanding of project involvement and expectation as well as a timeline to complete the project. The fire company and township were provided with self-assessment tools and a series of questions to complete in order to establish baselines of performance. A list of necessary documents needed for review and people to contact was also submitted.
2. "Self Assessments" and "Statements of Issues and Concerns" were obtained, and a compilation and analysis of the data provided, were completed.
3. Site visits to each fire station were made to confirm self assessment information, review commentaries submitted, and establish a structure for possible solutions to identified issues. The fire company officers and township staff were open and provided applicable documentation to the teams and provided "tours" of facilities and apparatus.
4. A number of documents were reviewed as submitted by the township, including, but not limited to:
    - Insurance Services Office Report
    - Various fire company response summaries and documents
    - Existing apparatus related documents
    - Miscellaneous pertinent information

5. Specific meetings were conducted and self-assessments were completed and analyzed. In addition, meetings were conducted with various township and fire company staff. Their input was compiled and integrated into this document.
6. Follow-up activities were conducted as necessary.
7. This document is the result of the completed and consolidated efforts of the six aforementioned activities.

We wish to complement the Board of Commissioners of Upper Dublin Township, and the officers and membership of the Fort Washington Fire Company for their proactive initiative to evaluate long term needs of the community's fire services; and for their willing and active participation in the process of completing the evaluation.

Statement of Work

PHASE I – Initiate Project

- Upon award of contract, hold joint planning meeting of the Upper Dublin Township and ESECG leadership teams to develop project plan. The meeting will result in a plan that defines:
  1. Primary tasks to be performed.
  2. Person(s) responsible for each task.
  3. Timetable for each task to be completed.
  4. Method of evaluating results.
  5. Resources to be utilized.
  6. Possible obstacles or problem areas associated with the accomplishment of each task. This plan will be completed within 14 days of the awarding of the project to the consultant. This plan will list actions of proposed interviewees.
  7. Data requirements will be made to the Upper Dublin Leadership Team.

- Through a series of meetings and similar activities, gather information from the following:
  1. Township Fire Administrator
  2. Chief, President and Chief Engineer of the Fort Washington Fire Company #1
  3. Others as they may contribute to this project with approval of staff

- **The Fort Washington Fire Company and Upper Dublin Township will be asked to complete selected components of an NFPA 1720 self-evaluation questionnaire (based on current industry best practices and a propriety analytical tool developed by ESECG), and Commission on Fire Accreditation Self Assessment Criteria which will then be correlated and validated by the consultants working on this project. These need to be returned and correlated before meetings are held with the fire company officials.**

From these interviews, the consultants will obtain an additional perspective on operational, staffing, economics, and policy issues facing the fire service regarding the fleet program. In addition the consultant will learn more about availability of data necessary to meet projected goals.

PHASE II – Emergency Services Information Review

- Data received by ESECG will be evaluated in concert with additional documents received from each agency meeting, including but not limited to:
  1. Strategic Plans
  2. Annual Plans (including goals and objectives)
  3. Response Data
  4. Standard of Response Cover

5. Township Documents (Fire/EMS documents)
6. Risk Assessment/Target Hazards, Etc.

- Opportunities will be identified for standardization, benchmarking and service delivery. They will include analysis of:
  1. ISO Report
  2. Prior Consulting Reports

- As part of this review, ESECG will review the current organization's operational and management structure to include policies, procedures and organizational guidelines, as it relates to the use of vehicles and related staffing. If no standard of cover exists, data will be analyzed to develop a hypothetical standard of response cover for consideration by the township and fire companies.

- ESECG will also use its proprietary products of budget analysis and capital planning to analyze income stream and incurred expense relationships with regard to capital expenditures.

PHASE IIIA – Site Visits and Meetings

- ESECG will conduct a series of site visits and meetings in Upper Dublin at the convenience of the staff and volunteers, to assure the project team meets with those individuals/groups indicated in Phase I.

- These visits will enable ESECG to acquire physical observations and assessments, enable interviews with various company officers.

- This effort will include the Fire Services function, staffing, vehicle performance and maintenance, level of impact/effectiveness, and options to enhance community fire safety.

- Upon completion of all visits and data gathering the consulting team will validate/redefine assumptions, recommendations, and re-query as needed.

- A comparison will be made to national and regional benchmarks, if appropriate.

PHASE IIIB – Evaluation Items and Report Components

Activity:
Upon completing phase IIIA, a summary evaluation will be prepared which will discuss the following aspects:

- Management Issues
- Staffing of Apparatus
- Operator Qualifications & Training
- Standard of Cover Response Times
- Capital Funding & Spending Plan
- Apparatus & Equipment
- Facilities
- Standard Operating Guidelines/Procedures
- Record Keeping
- Mutual Aid Agreement & Relations

Specific questions to be responded to include those identified in the RFP as indicated below:

UPPER DUBLIN TOWNSHIP – FIRE SERVICES
APPARATUS / MAJOR EQUIPMENT EVALUATION

Description

The primary fire services in Upper Dublin Township, emergency and non emergency, are afforded to the Fort Washington Fire Company, No.1 and the Upper Dublin Township Fire Department. A breakdown of the particulars is included in this packet depicting staffing, building locations, apparatus and general duties expected of the entities. The intent of this evaluation is to focus on the current apparatus fleet and "major equipment," while taking into consideration the demographics of the Township and the actual services provided. Major equipment shall be defined as those serving a unique, essential role, and purchased as a Capital Expenditure.

Upper Dublin Township intends on engaging the services of an independent objective expert, to serve as a consultant, who has experience with purchasing fire apparatus, identifying vehicle replacement plans, NFPA Standards, and general fire services experience. The selected individual is expected to provide a multifaceted report to the Fire Services Administrator, who in return will disseminate the information and provide it to the Board of Commissioners, FWFC, and Township staff. The consultant is expected to evaluate the physical condition of the existing fleet and major equipment, evaluate the current replacement schedule, analyze the services provided and correlate to the existing types of apparatus, and provide an objective opinion enhancing the services provided to the residents, and neighbors, of Upper Dublin Township.

The Fort Washington Fire Company, No.1 currently maintains a fleet of twelve (12) operational pieces of apparatus. The classification is as follows; two (2) Rescue Pumpers (Squads), two (2) Engines, one (1) Tower Ladder, one (1) Rescue, one (1) Command Vehicle, one (1) Special Service, one (1) Fire Police Vehicle, two (2) Boats, and one (1) Rescue Trailer. The apparatus details can be found on the enclosed attachment labeled "Apparatus Inventory 2/5/2009." There is a current apparatus replacement plan of fifteen (15) years in effect. The exceptions to this plan are as follows: Command vehicle is at ten (10) years, and the boats and rescue trailer are undefined. The aforementioned apparatus and their associated "major equipment" are purchased from Township Capital funds derived by the Fire Tax. The Upper Dublin Township Fire Department fleet currently consists of a 2000 Chevy Tahoe, assigned to the Fire Marshal and 2006 Chevy Colorado assigned to the Fire Administrator, which is on a ten year replacement plan consistent with the Township program managed by the Director of Fleets and Facilities.

Specific items to be included in the consultant's report include, but are not limited to the following:

1. Is the existing fleet adequate?
2. Do the classifications meet the needs of the fire services for Upper Dublin Township?
3. Is each piece of apparatus equipped appropriately for the function they are intended to serve?
4. Does the existing replacement plan operationally and financially best meet the demands of the Township?
5. What is the overall condition of the existing apparatus?
6. What is the overall condition of the existing major equipment?
7. Is each piece of apparatus compliant with NFPA and other recognized industry standards at the time of purchase?
8. Is each piece of major equipment compliant with NFPA and other recognized industry standards?
9. What repairs/alterations are required to gain compliance with current standards to ensure proper safety for the firefighters?

PHASE IV – Prepare Draft Report

A draft report will be submitted to Upper Dublin Township that will undergo a process review for accuracy by key Upper Dublin representatives and the consultant in preparation for the production of the final report. The editorial and critical comments obtained shall be considered as essential information in the final report.

PHASE V – Prepare Final Report

Adhering to the parameters as established by the Township, ESECG will prepare and present an oral (in a meeting environment if requested) and written report, focused for stakeholders in the process (public and fire/EMS) and local elected officials. ESECG will also provide an electronic/PDF version of the final report suitable for posting and distribution on a public access website. The report will detail the data and information acquired during the engagement and the consultant's analysis and recommendations.

Introduction

The nation's volunteer fire service is changing. Given the extent of these changes and at times the lack of awareness or even unwillingness to accept external forces on the volunteer system, it is important to help drive change before it drives an organization.

Longtime volunteers often look back on the "way it used to be." They recall a time when training was much less demanding and time consuming and the local fire department had fewer responsibilities. Fires and accidents were pretty much the game. Attendance and training standards were achievable. There were fewer calls but each was an event that required the assistance of neighbors, who took great pride in their membership in the local department. The community appreciated their neighbors' help, local businesses supported the volunteer fire department, and the call volume was small enough so as not to interfere with the requirements of the members' jobs. The system was manageable, the emergencies were mitigated, and it was fun to be a member.

The reality today is that in many communities, to be a contributing, effective firefighter, a person has to meet significantly higher standards physically, in terms of training, and in terms of time "on the job" gaining experience. Not everyone has the luxury of time or in some cases the inclination, to meet those requirements in today's hectic environment. Anymore, the fire department is not just a group of people trained to suppress fire and render first aid. It has become the premiere provider of choice for different levels of emergency medical services and in many cases transportation, as well as the provider of just about every other service that is not provided by the police department—hazardous materials response, high-rise and below-grade rescue, inspections, prevention and education, and community emergency planning and management, to name a few.

This is not to say that volunteers can't handle the job, for their abilities and successes are demonstrated daily in many places from coast to coast and border to border. But where they can not, community and fire leaders are challenged to meet their community's needs. In some cases, they will find ways to reinvigorate the volunteer members of their departments and improve their performance. In others, they will recognize the need for another type of change, moving to some form of partial or fully paid department, and they will set out to make it happen.

Upper Dublin Township

Upper Dublin dates back to the Colonies in 1684, when Edward Tanner named his land grant from William Penn "Upper and Lower Dublin." The "lower" portion has since been absorbed by Philadelphia. The "upper" portion has continued to exist around the original survey for the laying out and naming of Susquehanna Road. Upper Dublin Township was established in 1701, when William Penn ordered a survey of all townships in the Commonwealth. It was first settled in 1698 and was incorporated in 1719 according to records from the Pennsylvania Historical and Museum regarding Montgomery County municipalities. The county itself was formally created on September 10, 1784. The

Township was granted its current status of First Class Township in the Commonwealth of Pennsylvania on January 1, 1946. Originally the area started as a farming community with additional activity in the mining of limestone. Limekiln Pike today continues to be an important travel artery. Historically the Township boasts of George Washington's headquarters at the Emlen House in 1777. This was during the Whitemarsh Encampment, prior to the fateful march to Valley Forge. George Emlen, a Philadelphia Quaker, had built this family summer house around 1745.

Upper Dublin became a First Class Township in 1946. In accordance with the Pennsylvania First Class Township Code, the elected representatives (Commissioners) serve 4 year terms. The government is a Council/Manager type. There are seven Commissioners, one for each ward. The manager runs the day to day operations with his staff. There are 6 departments: Administration, Finance, Public Works Services, Police, Parks and Recreation, and Code Enforcement. The fire protection is provided primarily by the Fort Washington Fire Company No. 1, which is an all volunteer organization with dispatch from the Montgomery County Emergency Dispatch Center.

The School District of Upper Dublin is a separate governmental body guided by the statutes of the Commonwealth of Pennsylvania. It has a Board of School Directors elected by the residents with the power to levy taxes within state guidelines. A superintendent is in charge of day to day operations as well as strategic planning. There are 4 elementary schools (K-5), one middle school (6-8) and one high school (9-12), which are fully accredited by the Middle States Association of Colleges and Schools. The professional staff has an average of 16 years teaching experience and approximately 85 percent hold advanced degrees.

The primary center of business and industry in the Township is the Fort Washington Office Park. It occupies 536 acres. There is about 6 million square feet of building area in the park. There are more than 65 buildings of various sizes up to 658,535 square feet. There are other centers of business and industry as well throughout the Township.

Upper Dublin has major road arteries passing through it. The Pennsylvania Turnpike (Interstate 276) intersects with State Route 309 in Fort Washington. Route 309 is a limited access highway and has four intersections in the Township in addition to the Turnpike, at Butler Pike, Highland Avenue, Pennsylvania Avenue and Susquehanna Road. Some of these intersections are currently under construction. Other major roadways include: Limekiln Pike (State Route 152), Welsh Road (State Route 63), Butler Pike (Montgomery County), Norristown Road and Fitzwatertown Road. Train service is available nearby (Ambler, Fort Washington, Fenwick, Oreland, North Hills and Ardsley stations) provided by SEPTA (South Eastern Pennsylvania Transportation Authority). Bus service is available from the Fort Washington station to the Fort Washington Office Park.

Upper Dublin Township has produced an Open Space and Environmental Resource Protection Plan in accordance with the requirements set forth by Montgomery County. Through meetings with Upper Dublin's Citizens Advisory Committee, a set of five goals

for the Plan were agreed upon. The following goals are specific to neighborhood parks and playgrounds, geared to serving local needs. They are the focus for serving the open space and recreation needs of neighborhoods into the future.

Upper Dublin Township is located in eastern Montgomery County, Pennsylvania. Settled: 1698; Established: 1701; Incorporated: 1719; First Class Township: 1946 Total Area: 13 square miles (8,320 acres). Developed Land is listed at 90.5%, undeveloped Land at 9.5%, as follows:

- Residential: 59.6%
- Commercial: 2.4%
- Industrial: 3.6%
- Utilities: 1.5%
- Recreational: 11.6%
- Institutional: 8.4%

The 2000 census population was 25,878, with 9,174 households and a population density of 1,990 per square mile. The age structure, based on the 2000 census was:

- Ages 0 to 4: 6.0%
- Ages 5 to 19: 23.1%
- Ages 20 to 24: 3.2%
- Ages 25 to 44: 25.4%
- Ages 45 to 64: 28.5%
- Ages 65 and Older: 13.7%

Per Capita Income was listed at $37,994, median household income: $80,093, and median family income: $91,418.

All of this presents the backdrop for a community which provides a plethora of hazards and potential incidents that emergency forces must be prepared for.

To this day, the fire company has remained a volunteer fire service organization serving the community with state-of-the-art equipment. The company has progressed significantly since that era. Today the company continues to proudly serve, however challenges posed today present many more risks requiring capabilities for not only structure fires, but various rescue scenarios, hazardous materials incidents, mass casualty incidents, brush fires and more; all of which require specialized training, equipment and capabilities. In addition, fire and injury prevention services are provided to help mitigate potential incidents, with children, as well as adults, learning on a continuous basis about the dangers of fire and how best to avoid and prevent the devastation that fire can cause.

As this report is written, the fire company serves an estimated population of 28,000 residents covering 13.0 square miles, involving schools, libraries, houses, businesses, places of worship, a college, community centers, business and industry, educational facilities, residences and cultural and historic buildings, responding to over 500 fire incidents a year within Upper Dublin Township.

Signals of Change[1]

As noted earlier, the volunteer fire service is changing. Two recent studies by the Commonwealth of Pennsylvania, as well as two studies by the International Association of Fire Chiefs – Volunteer/Combination Officer Section have validated reasons for these changes and what can and should be done to manage the future changes impending on the volunteer fire service. Given the extent of these changes and at times the lack of awareness or even unwillingness to accept these external forces on the volunteer system, we thought it would be appropriate to begin this report with "Signals of Change".

"Signals of Change" presents an interesting look at the changing system of volunteer emergency services. It is excerpted from the document "Lighting the Path of Evolution, The Red Ribbon Report, Leading the Transition in Volunteer and Combination Fire Departments", a 2005 publication of the International Association of Fire Chiefs – Volunteer/Combination Officer Section.

Indicators for change

A natural evolution for a volunteer department is the growth in services and added responsibilities as the demographics of the community change. When the system develops problems, people generally know about them long before they are willing to admit that they need serious attention. For fire department managers and local government leaders, it is critical that they recognize the signs of problems ahead and prepare for change before it is forced on them by external circumstances. It is helpful when they recognize these pointers to change:

Community Growth: Emergency services are directly impacted by community growth—more people, more businesses, more emergencies. The larger a community, the higher level of service people expect. In many areas people moving to "suburbs" assume wrongly that emergency services are delivered in the same way they are provided in the more established cities and towns. A history of community growth and projected increases in demand can help managers forecast and plan for changes in the delivery of emergency services. In some cases, population growth projections might even help a department determine to limit its services based on available staffing.

Community Aging: A fire department's ability to recruit new members in part depends on the supply of new, younger people who can be tapped for service. A community's age profile, can he an indicator of problems ahead. The age factor in your community is revealed by data showing the age of those moving in and moving out. If the younger people are moving away, or if schools are showing or expecting declining enrollment, the fire department may have a difficult time maintaining appropriate levels of service in the future.

[1] International Association of Fire Chiefs – Volunteer/Combination Officer Section, "Lighting the Path of Evolution, The Red Ribbon Report, Leading the Transition in Volunteer and Combination Fire Departments", IAFC-VCOS, Fairfax, VA, 2005, Pages 3-6.

Missed Calls: When an emergency call goes unanswered—a "scratch" on the East Coast or in other communities a "did not respond"— the fire department has a serious problem, not just because life and property are at stake, but also because it is a failure highly visible to the public. Equally serious is a department's over-reliance on mutual aid for coverage and the lack of adequate personnel to handle subsequent calls when primary units are on an assignment

Extended Response Times: When units regularly fail to get out of the fire station in a timely manner because of inadequate staffing resources, the community is endangered and fire department managers have a reliability problem. Response time is a critical factor or any fire department determined to provide appropriate service to the public. It is especially critical for medical calls when the first-due company fails to respond for whatever reason and an EMS unit responds but fails to meet the response-time standard, a common occurrence even when mutual aid is not involved.

Reduced Staffing: Units responding with fewer than the required number of people needed to perform that unit's functions pose a serious problem for the safety of citizens and the responders. This is another indicator of reduced service capability.

All of these situations indicate an inconsistency in a department's ability to provide necessary service, though not all are necessarily caused by a shortage of volunteer members. Staffing deficits can be related to other factors, such as changes in local business and industry policies regarding employees leaving the workplace, the number of volunteers who are employed outside their response areas, a lack of understanding on the part of new corporate managers of the community's needs, a tight labor market driven by rapid community growth, or even members' apathy. Where workforce restrictions are at play in the community, they typically lead to daytime response shortages and a significant challenge for the department.

Other Considerations: While employment issues tend to be the major factor in volunteer staffing shortages, other factors also contribute. Decreased interest among members who fail to participate could be the result of unreasonable community expectations, some problem with the fire department's internal requirements, or other organizational issues, such as:

- *Responsibilities outpace capabilities:* Mandated and selected responsibilities and response commitments exceed the department's capability to manage outcomes properly. Mandated responsibilities may have their basis in state statutes or local resolutions, proclamations and ordinances. Selected responsibilities are response categories that result from self-imposed obligations to provide a service.
- *Inability to raise funds:* Growth in the department as it faces new demands outpaces the volunteers' ability to raise capital and operational funds.
- *Waning political support:* A once-supportive political climate begins to falter and less emphasis is placed on the volunteer-staffed fire company. This

becomes noticeable when apparatus is not replaced, new purchases are postponed, or local government wants the volunteer company to operate less expensively. The volunteer-staffed fire company needs to be a vital, supportive and healthy part of the local governmental infrastructure.

- *Internal conflict.* A department has internal struggles over its mission in the community and that conflict involves the preservation of the system as a fraternal organization rather than a service-delivery system.
- *Officers filling lower operational positions:* Staffing shortages that result in the fire chief driving the fire truck or fulfilling the responsibilities of other line firefighters is another sign of a serious staffing problem.
- *Mission creep*: When first-responder programs that once managed to provide essential services and also extra staffing for critical events and rescues become subject to all kinds of other assignments, or to policies that dictate that fire units respond every time an ambulance is dispatched, chronic staffing shortages can be a problem.
- *Controversy*: When internal controversy becomes the focal point and public image of the department, its effectiveness is impaired. Controversy can he inflamed by a poorly managed emergency, an event that exceeds the capabilities of the volunteers, or public criticism that home response is no longer adequate for the number of emergency calls handled by the department. The problems are exacerbated when the volunteers are unable to reorganize and meet the increased demands, or when the news begins to publicly question the effectiveness of the service. Few volunteers join the department to fail or be exposed to a community philosophy that "they tried hard, but they are just volunteers."
- *Too many jobs, too little time:* Another indicator, the department cannot provide fire prevention, public education or inspection responsibilities because of training and response demands occupy the time volunteers have to commit.
- *Kingdoms come first:* Some jurisdictions consider their response areas their "kingdoms." Boundary disputes can occur when department leaders fail to understand that the public does not care what color or name is on the fire truck. The "kingdom" attitude also leads to contentious working environments with neighboring agencies.
- *Lack of budget support.* Failure by elected officials to approve budgets that include capital expenditures for the department is an ominous sign.
- *Missed deadlines.* When critical administrative deadlines, such as daily response reports, training records, and legally required documentation are not completed or budget deadlines are not met, the department's effectiveness is compromised.
- *Catastrophic losses:* Catastrophic events, such as the loss of a firefighter or a civilian fatality, focus great attention on the department, and perhaps its problems and deficits, which can discourage members.
- *Volunteers priced out of the community:* In many communities the price of homes and property taxes makes it difficult for the children of current volunteers or others who have time to volunteer to live in the community,

thus reducing the pool of potential members.

- *Demographic Changes:* Shifts in the community that drive decisions by current members to purchase homes outside the fire district are a detriment to member retention.

When the time for change has come

Once a department recognizes there is a need for change, it must examine carefully both the organization and the options available to it. It is essential that all members of the organization identify the department's mission and core values. Whether in the end the change is a revitalized volunteer organization or a move to some type of paid or part-paid organization, a careful articulation of core values is critical to the success of the organization. Those core values must be incorporated and reinforced as employee strategies in new career positions and the core values must be carried throughout the evolution process. If the members expect the organization to be a mirror of what it once was, everyone must believe in and apply its core values. If you expect to maintain big city services with small town pride, the organization must maintain the focus on their core values and reinforce those values at every opportunity.

Once it is clear that change is necessary to preserve the department's ability to engage in its core mission, creating a paid staff is not necessarily the first option to consider. Having the answers to a number of key questions may help resolve a department's staffing issues.

Does the department have the right leadership? An initial examination of problems should always include a review of the fire department's leadership. The lack of dynamic, adequately prepared leaders has long been identified as a significant issue for the volunteer fire service. Poor leadership has a significant impact on the retention rate of volunteers, on a department's desire and ability to meet new levels of service demand, and on the quality of the service provided.

Does the department offer benefits and incentives? Benefits are safeguards provided by the community or the department to protect firefighters and their families against unexpected financial strain should the firefighter be injured, disabled or killed while on the job. As demands for service increase, so do the chances that firefighters will be injured or worse at the emergency scene. Departments need to provide protection—such as insurance and retirement or wage supplement plans—to ensure that the health, welfare and financial stability of firefighters and their families are protected. Such benefits are essential to assure that members are treated as valuable assets.

Incentives can provide motivation for members to improve personal performance and participation. These are defined by personal or team recognition programs or awards. Young people today, the future lifeblood of all fire departments, are interested in immediate feedback and that includes benefits and incentives. It is more cost-effective to pay for benefits than it is to pay people. It is imperative that the community be involved in determining the level of support for volunteer or part-time firefighters. How willingly

the community provides benefits for them now may help department leaders gauge its willingness to sustain a combination system, if one is needed.

Are department membership standards appropriate? Fire department leaders should review membership standards to ensure that they are appropriate for the services provided. Do you need to increase requirements to ensure that volunteers have adequate skills to deal with the dominant types of calls to which the department responds? Does the department really need a requirement that all members have the expertise and the responsibility to respond to all types of calls?

Can you use diversification strategies? It is critical for department leaders to understand that not everyone is equal in skills or abilities. Diversification strategies—essentially, not everyone in the department has to be proficient in all the jobs in the department—can be helpful in attracting new members. Diversification strategies are fairly simple. Recruit subject-matter experts for the different disciplines within the department. You can take advantage of that to attract new members and take pressure off of a small group of dedicated responders. For example, you might recruit from a number of professions within the community that deal with hazardous materials. Attract and train those individuals as volunteers and use them when chemical emergencies are dispatched. By implementing diversification strategies, you may actually improve your volunteer base by reducing the demand on all your members and enhancing their subject-matter expertise.

Trim the non-essentials. Review your organization's mission and values and identify the essential functions and services it is required to deliver. A review can, in some cases, lead to reducing or eliminating non-essential services. Remember, you can't be all things to all people.

These "Signals of Change" presented by the International Association of Fire Chief's Volunteer-Combination Officers Section, provide a sound basis for questions and concerns as one evaluates its emergency service delivery system. This information is incorporated into the assessment process for Upper Dublin Township.

Project Findings

The project findings were compiled as a result of document review, self assessment reviews, and comparisons of observations to information and analyses provided, and input on concerns, issues, and problems.

The team was quick to observe that the Township Officials and the fire company officers have the safety of the public as a prime concern. The interest in providing a quality service to the people who live, work and visit Upper Dublin Township was quite obvious. The relatively low fire experience in the township is also a testament to the overall performance of the Fire Company.

Personnel, officers, and township staff were afforded the opportunity to identify concerns and issues of current operational practices. These items were part of the analytical process and were validated by the assessment team and have all been reflected in this report. All involved are to be commended regarding their competence, candor and interest in performance improvement by raising the issues for discussion and recognizing that the issues raised will result in recommendations to change current methods of operation.

As the project team analyzed and observed operations, it quickly became clear that the fire company has independent long-standing values, philosophies and operational success. It was also apparent that change in the community and community expectations will drive operational demands in the future

The township fire services structure is a valuable approach to assure an adequate emergency response system. This approach is considered consistent with the Township Code.

There were several prior studies considered in this current apparatus assessment.

The findings indicate that Upper Dublin Township has slightly more apparatus than communities of similar size. The findings also indicate the plan for considering, funding, and purchasing replacement vehicles has value and merit. The risk assessment conducted and the risk/hazard related ISO evaluation/suggestions become the basis for fire-flow, laddering, and related service and equipment capabilities. Related recommendations are provided within the report.

While not a direct part of the scope of work, the evaluation will lead the project team into operational issues, which will result in comments in the report which will assist in identifying the priority and level of service provided in specific operational areas, and can

assist in addressing adequacy and performance, and align specific divisional needs with organizational expectations and the strategic plan.[2]

The development of this report discusses the concept of a "standard of cover" which includes a correlation of response to hazard and uses data to establish priority in dispatching and response. These are based on criteria established jointly by the International Association of Fire Chiefs and the International City Manager's Association. These referenced recommendations have been restated at various points within this document.

The Insurance Services Office (ISO) report, completed in 1998, was reviewed. ISO is the leading supplier of statistical, underwriting, and actuarial information for the property/casualty insurance industry. Most insurers use the Public Protection Classification (PPC) survey for underwriting and calculating premiums for residential, commercial and industrial properties. The report detailed the analysis conducted of the structural fire suppression delivery system provided in Upper Dublin Township. The resulting classification of Class 4, while considered very respectable for a community such as Upper Dublin Township, was found to indicate several apparatus related areas of suggested improvement. With respect to the apparatus, the ISO report indicated deficiencies due to:

- Insufficient pump testing program.
- Insufficient equipment.
- Insufficient record keeping.

Further details are indicated in Appendix 4 of this report.

The fire company and the administrator were requested to complete a self-assessment of apparatus related issues using National Fire Protection Association (NFPA) Standard 1720 as a baseline. NFPA 1720, entitled the "Standard for the Organization and Deployment of Fire Suppression, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments", the standard was developed as a national consensus document to identify minimum requirements related to the organization and deployment of volunteer fire service agencies. While there is no mandate to use this document, it is the closest definition of expected service delivery by volunteer fire agencies. Areas of positive and deficient performance were identified by this assessment. The self assessment addressed the following areas which are detailed further in the report, with recommendations provided where deemed needed:

- physical facilities – exhaust systems, new station
- planning, specifying and purchasing of apparatus
- apparatus maintenance
- accident management
- record keeping/information management
- mutual aid (use of apparatus)

[2] "Strategic Planning: One Plan Type o f Many", Chief Fire Officer's Desk Reference, Jones and Barltett Publishers, Inc. Sudbury, MA, 2005, Page 26.

The full review is provided in Appendix 2, as a consolidated "Upper Dublin Township" document.

Similarly, a review of existing apparatus related Standard Operating Procedures/Guidelines (SOPs/SOGs) was conducted based on information provided. In addition, a comparison based upon the NFPA 1720 self-assessment and the results of the interviews conducted by the assessment team, a comprehensive set of recommended vehicle safety related SOPs/SOGs is provided later in this report (Appendix 8). There is an excellent opportunity to use existing SOPs/SOGs and those of other agencies as the basis for the development of updated SOPs/SOGs, by providing existing programs that work and eliminate extensive research time. This should help expedite the time it would take to develop and implement a SOP/SOG.

The observations, analyses, and subsequent recommendations are provided in the following categories:

- Management Issues
- Staffing of Apparatus
- Operator Qualifications & Training
- Standard of Cover Response Times
- Capital Funding & Spending Plan
- Apparatus & Equipment
- Facilities
- Standard Operating Guidelines/Procedures
- Record Keeping
- Mutual Aid Agreement & Relations

The project team has developed 4 primary recommendations as a result of this project. These recommendations are:

09-01 A standardized approach to vehicle related information management should be established. This will enable the Township to demonstrate the need for expending funds by providing data for analysis in determining spending priorities. This should be part of a more comprehensive information technology policy for all facets of the Fire and EMS system. Firehouse software, currently in use within the township, can assist in facilitating with this.

09-02 Adopt a conceptual replacement schedule based on 15 years for pumpers and 20 years for all other vehicles. However, the replacement plan should be a guide and actual replacement should be based on the condition of the vehicle being replaced.

09-03 Implement a vehicle analysis process consistent with Appendix 5. If the vehicle evaluation deems the vehicle adequate for service, it should remain in service another year and be re-evaluated at that time. At no time should the safety of the

vehicle be compromised, and if deemed unsafe, it should be taken out of service immediately and repaired or replaced as appropriate.

09-04 Establish an agreed upon funding system that will accommodate the implementation of a standardized replacement process for fire apparatus.

Additional items are suggested for implementation through out the report and noted as shaded areas in the text.

Assumptions and Current Trends

Any conceptual project begins with a set of assumptions and analysis of current trends within the industry. This project is no exception. There were three (3) basic assumptions established prior to the assessment and development of a report for Upper Dublin Township. The assumptions included:

- The desire is to maintain a volunteer system to deliver fire and rescue services as long as possible.
- Nationally recognized standards would be used as the baselines for any recommended changes in operations.
- Programs, best practices policies, guidelines, etc. recommended for use, should be recognized as successful programs, best practices policies, guidelines, etc. in other volunteer fire and rescue service agencies.

In addition, time was taken to compare Upper Dublin Township to fire services in similar sized communities around the Unites States. A national study was conducted by the National Fire Protection Association entitled "U.S. Fire Department Profile through 2007", printed in 2008, measured service provision in several key areas. These are compared in the following chart.[3]

Nationwide Area of Comparison	***National Result****	***Upper Dublin Township***
Percentage of communities between 25,000 and 49,999 population with all volunteer fire services	See below*	All Volunteer
Number of volunteers per 1,000 population	1.7 (median) 2.67 in the Northeast	66 volunteers 2.31
Number of stations per 1,000 population	.081	.071
Number of pumpers per 1,000 population	.081	.142
Number of aerial trucks per 1,000 population	.016	.035
Number of other fire department vehicles per 1,000 population	.039	.143
% Departments in communities between 25,000 and 49,999 population with 3-4 or more Pumpers	48.4%	4 pumpers
% Departments in communities between 25,000 and 49,999 population with 1 Aerial	49.8%	1 aerial truck
% Departments in communities between 25,000 and 49,999 population with 5 or more other suppression vehicles	17.2%	4 miscellaneous vehicles

[3] Michael J. Karter, "U.S. Fire Department Profile Through 2007", NFPA, Quincy, MA, 2008, 30 pages.

Nationwide Area of Comparison	*National Result**	*Upper Dublin Township*
% Departments in communities between 25,000 and 49,999 population with 2 or more Stations	23.9%	2 stations
% Departments in communities between 25,000 and 49,999 population where fire department provides EMS Service.	NO EMS – 17% BLS – 38% ALS – 45%	No EMS

In the United States, within the population range of 25,000 to 49,999, there are 1,277 fire departments:

- 41.2% of the departments are all career
- 28.2% of the departments are mostly career
- 22.5% of the departments are mostly volunteer
- 8.0% of the departments are all volunteer

As there are paid EMS personnel within the Upper Dublin Township Fire and Rescue System, you would be classified in the "mostly volunteer" category.

Throughout the United States, in communities with populations between 25,000 and 49,999, the % of fire service membership by age range is as follows:

- Under Age 30 = 24.2%
- Age 30-39 = 32.4%
- Age 40-49 = 26.8%
- Age 50 and up = 16.6%

The comparison of Upper Dublin Township to communities of similar size demonstrates the services available to Upper Dublin Township to have more than the equipment, facilities and staffing provided in similar sized communities throughout the United States.

**Comparison was against communities with populations between 25,000 and 49,999.*

Management Issues

The personnel of the fire company do their best to provide emergency response services to the community. As stated earlier, the lack of significant major loss events is a tribute to the performance of the organization. Consistent with the Upper Dublin Risk Assessment and Standard of Cover Document develop by ESECG, the information which follows provides for a backdrop of the compliance with legal requirements and establishment of professional service goals and objectives, as well as a Standard of Cover.

Based upon the risks observed and described within this document and the Self Assessment Manual, the fire company, developed a strategic plan which included the type and level of service to be provided for the community.

The agency has developed a mission statement, core values and responsibilities based upon the challenges posed within Upper Dublin Township, and based on the input of residents, township officials and staff, the business community, as well as fire personnel.

Vision Statement

The Company established its Vision and Mission with membership approval on August 12, 2004. A vision was adopted to reflect what the organization would strive to emulate over time, which states:

> **"The Fort Washington Fire Company No. 1 is focused on providing dedicated service in carrying out its intended mission. We will continue to maintain the highest level of emergency service through ongoing recruitment, training, and education while striving to be on the cutting edge of fire suppression, rescue services, and fire prevention."**

Mission Statement

Two critical steps in the development of a strategic process were completed by the development of a mission statement and a standard of response cover for fire and rescue services, which states:

It shall be the mission of the Fort Washington Fire Company #1 to protect the lives, property and environment of the citizens and visitors of Upper Dublin Township and its neighboring communities. This mission is accomplished through vigilant training, aggressive fire prevention education, personal and professional development of our volunteers, strong moral character, pride and teamwork. We shall continue to provide the highest quality of service that our community deserves

This mission statement provides the organization's purpose, business and value and is intended to provide a concise statement of the what, how, and why of an organization.

Standard of Response Cover

A major component of the delivery system of Upper Dublin's Fire and Rescue Services' is to provide an assurance to the public that it is organized and capable of responding to emergencies with qualified personnel, in an appropriate time frame, with the proper equipment. To accomplish this, Upper Dublin's Fire and Rescue Services has adopted the following operational philosophy, known in the industry as a "Standard of Response Cover". It reads for fire services:

"One unit shall respond by leaving the fire station within six (6) minutes of dispatch and by mustering a crew of four (4) qualified firefighters to the scene of the incident, upgrading for additional apparatus and personnel as appropriate. This standard should be maintained for 90% of structure fires and rescue calls."

The application of this standard of response cover is to assure the services directed by Upper Dublin Township are achieved in a fashion to comply with the mission statement and the needs of the community, and be consistent with the Pennsylvania First Class Township Code Section 1502 (fire protection provisions) which states:

Section 1502

***XV** – Fire and Water Districts, Bond Issues and Taxes. To create, by ordinance, fire and water districts in any portion or portions of townships when, in their opinion, the same is necessary for the safety and convenience of*

the inhabitants of said township; to issue bonds restricted to the districts so created, for the purpose of procuring and maintain the necessary supply of water to said district; and to levy such special tax restricted to said district as may be necessary to redeem any bonds so issued. To pay the cost or part of the cost of such water supply or water lines, the township commissioners may charge for any such water supply or water lines by an assessment of a special water or fire tax on all surface properties or real estate located in the water or fire district, which tax shall be based on the assessment for county purposes as established for general taxation. Such tax may be levied for a single year or for a term of years as the township commissars may determine, but in the case f fire districts, shall not exceed two miles per annum, and shall be collected in the same manner as other taxes. In lieu of the foregoing provision, or in order to defray part of the cost of such water supply or water lines, in all cases where said township shall have established a water system and shall construct main water lines in said township, the board of township commissioners may charge the cost of construction in any municipal water lines or lateral lines, upon any streets or highways adjacent to main lines, or such portion of the cost of construction as the board may deem proper, upon the properties benefited or accommodated thereby. The ordinance, providing for such charge, shall be adopted by the board within six months from the date of the final completion of such system water lines. Dias charges shall be assessed and collected in the manner provided in (The First Class Township Code) for the assessment and collection of charges for the construction of sewers.

XVI – *To make regulations within the township or within such limits, as may be deemed proper, relative to the cause and management of fires and the prevention thereof to purchase or contribute to the purchase of fire engines and fire apparatus for the use of the township and to appropriate money to fire companies for the operation and maintenance thereof and for the construction, repair and maintenance of fire company houses, to ordain rules and regulations for the government of such fire companies and their officers and to regulate the method to be followed in the extinguishment of fires.*

XVII – *Fire houses – to provide and maintain suitable places for the housing of engines, hose carts and other apparatus for the extinguishment of fire. No such building shall be erected or maintained without obtaining the assent of the electors thereof, expressed at an a election to be held at the place, time, and under the same regulations as provided by law for the holding of municipal elections.*

XXXIV – *To acquire and to operate and maintain motor vehicles for the purposes of conveying sick and injured persons of such township and the vicinity to and from hospitals, and , for such purposes , to appropriate and expend moneys of the township or to appropriate money annually towards ambulance and rescue and life saving service, and to enter in to contracts*

relating thereto. All appropriates of money heretofore made and contracts theretofore entered into by any township for such service are hereby validated and confirmed.

The Fort Washington Fire Company #1 is responsible for a periodic review of measurements related to these standards of response cover, and should work with the township for data coordination, review, and planning purposes.

It should be stated that Upper Dublin Township enjoys a very low fire rate. The standard of response cover should be evaluated on an annual basis.

As a group the Fort Washington Fire Company #1 have identified the most important functions and services it provides and offers. It is important to identify these functions in order to assure they are consistent with the critical needs of its customers. The core services and supporting programs provided by the Fort Washington Fire Company #1 are defined as follows:

FIRE-RESCUE OPERATIONS
- Fire Suppression
- Rescue (light, heavy, tactical)
- Hazardous Materials (Operations Level)
- Fire Police
- Storm Management
- Community Care Calls

EMERGENCY MEDICAL SERVICES
- Mass Casualty Incident Support

FIRE & INJURY PREVENTION
- Public Education
- Community Culture Support

In evaluating how these services are delivered the following providers of service were defined:

- *Fire Suppression* – Fort Washington Fire Company with mutual aid as indicated via run cards.
- *Supplemental Water Supply* - Fort Washington Fire Company with mutual aid as indicated via run cards.
- *Foam Capability* – Fort Washington Fire Company
- *Hazardous Materials Awareness Level* – Fort Washington Fire Company
- *Hazardous Materials Operations Level* – Fort Washington Fire Company and Montgomery County Haz Mat as necessary.
- *Fire Police* – Fort Washington Fire Company
- *Rescue* – Fort Washington Fire Company

- *Technical Rescue* – Fort Washington Fire Company and Weldon Fire Company as necessary
- *Water Rescue* – Fort Washington Fire Company and Second Alarmers as necessary
- *Wilderness Rescue* – Fort Washington Fire Company and Greater Philadelphia Search & Rescue as necessary
- *High Angle Rescue* – Second Alarmers
- *Basic Life Support – EMS* – Ambler Community Ambulance and Second Alarmers
- *Advanced Life Support – EMS* - Ambler Community Ambulance and Second Alarmers
- *QRS* – Upper Dublin Police
- *Mass Casualty Incident* – Fort Washington Fire Company, Montgomery County D.E.S. Terrorism Incident Response – FWF with county and state assets

The basic management practices, applied to the volunteer fire service, provide for efficient long term focus and help facilitate result orientation. Upon establishment of specific actions to maintain and achieve these key organizational deliverables, the leaders of the organization can solicit appropriate input and guidance from key service stakeholders and plan for change in a future oriented fashion.

RECOMMENDATIONS

09-01 A standardized approach to vehicle related information management should be established. This will enable the Township to demonstrate the need for expending funds and provide data for analysis in determining spending priorities. This should be part of a more comprehensive information technology policy for all facets of the Fire and EMS system. Firehouse software, currently in use within the township, can assist in facilitating with this.

Staffing of Apparatus

The fire company indicated their initial response is four (4) personnel responding on one (1) piece of fire apparatus. Depending upon the nature of the call, the staffing may ultimately reach twenty-plus (20+) members.

Apparatus are typically designed to hold from four to eight (4 to 8) persons, in riding positions.

Thus, staffing for the first responding units appears adequate and justifies the type of apparatus cabs (for engines and the ladder-tower) being purchased. While there will always be a potential to respond with more than twenty (20) people, the general use of a maximum of three (3) vehicles per incident is probable.

This staffing was confirmed by information provided by the fire administrator's office.

Operator Qualifications and Training

The fire company indicated a pride in training of their members, and apparatus operator qualifications were no exception.

Training ranged from typical emergency driving training to specific vehicle training.

There is a standard operating guideline regarding vehicle training.

Under separate cover, a suggested program was provided "Emergency Vehicle Driver Training", provided by VFIS. This should be coupled with specific apparatus driving training and pump operator/aerial apparatus operator training, for the specific unit being driven. While no specific recommendation is provided, this should be strongly considered to assure a standardized approach to training, coupled with standard operating guidelines.

Standard of Cover/Response Times

The fire company and the administrator submitted independent analyses of current responses data and deployment practices which can be integrated into the development of both a Standard of Response Cover and Service Delivery Statement.

The following Service Delivery Statement/Standard of Cover is recommended for consideration of adoption in Upper Dublin Township. These are consistent with the current delivery of service to the community.

SERVICE DELIVERY STATEMENT
STANDARD OF RESPONSE COVER
***(proposed draft for review, agreement, and revision*)**

Fire company response to a structure fire or rescue in Upper Dublin Township will be provided by the Fort Washington Volunteer Fire Company #1. One unit shall respond by leaving the fire station within six (6) minutes of dispatch and by mustering a crew of four (4) qualified firefighters to the scene of the incident, upgrading for additional apparatus and personnel as appropriate. This standard should be maintained for 90% of structure fires and rescue calls.

Additional support and explanatory data is provided in Appendix 1.

The Insurance Services Office process uses the approach for response time that road distance criteria for engines (1.5 miles), ladders (2.5 miles) and in Pennsylvania a maximum distance (5 miles) translates into response time. The distances are based on a formula developed years ago by the RAND institute, and use the equation:

$$T = 0.65 + 1.7D$$

T = travel time in minutes
D = distance in miles

The formula is based on an average 35 mph road speed, which is quite realistic for most areas considering road conditions and type, weather, intersections, traffic, etc. Mathematically, this converts to engines 3.2 minutes, ladders 4.9 minutes, and a maximum response distance of 9.15 minutes. It is easy to see that times much greater than these are pushing the limits of the fire department's ability to successfully control a fire (especially considering that these are only travel times, not dispatch and turnout time

etc). It is very easy to see why for most states the Insurance Services Office has a maximum 5 road mile distance for which a protected class (class 1 through 9) will apply; and anything over 5 road miles is almost a known higher loss and insurance industry data supports that.

While not part of this study, the distribution impact does indicate further consideration should be given, when stations are to be rebuilt, to move them further into non-covered areas, or consolidated if appropriate. In addition, any fire stations located outside Upper Dublin Township, but closer to properties in Upper Dublin Township, than one of the five Upper Dublin Township fire companies, should be included on the initial dispatch to said properties.

The Risk Analysis and Fire Station location study previously conducted in the Township indicates potential fire station locations.

Capital Funding & Spending Plan

At the present time, the township has a plan to replace fire apparatus owned by the township at a regular interval. There is no specific funding mechanism to meet these purchases therefore funding must be via:

- loan
- grant
- leasing
- some periodic payment process
- fundraising
- bond issuance

This is a common approach to the payment of fire apparatus. However, reserving of funds over time (in advance of the purchase) is becoming more and more accepted as the best practice.

In today's world of tighter budgets, rising costs, and want versus need, the idea of a vehicle being able to perform effectively for an additional year or two, makes good business sense. However, in the world of the volunteer fire service, in many cases the idea of receiving a new vehicle, which they custom design, on a regular basis is a deep motivating factor for members to remain as volunteers. We affectionately call this scenario "volunteer retention vehicles" (VRV) as they bring a significant intangible value. However, that value may not be able to offset the reality of the financial ability of the community to pay for a vehicle that may indeed have additional performance life remaining. Or for the fire company to staff it. A political decision has to be made as to what amount of expense per year is felt to be and effective investment in vehicles to retain volunteers and offset the cost of career staffing.

In addition, there has to be a township decision on the desired percentage of resale value they desire on a piece of fire apparatus. If a 30% of purchase price value is desired, the vehicle has to be replaced sooner rather than later. If a 10% value of purchase price is desired, then the vehicle can be replaced later in its service life.

Apparatus and Equipment

As a general rule, vehicles are very well maintained and in operable condition. All of the chiefs indicated that they were well satisfied with maintenance provided by the Township staff, and supplemented as necessary by manufacturer mechanics and third-party testing services used.

The pump and aerial testing was indicated to now be conducted on a regular basis, with documents maintained by the Fire Company. Maintenance is performed:

- by vendors
- by company members

Based on the nature and complexity of the maintenance issue.

The Township should have each township-owned vehicle on a master schedule for inspection and annual maintenance. The basis for maintenance of vehicles is:

1. manufacturer's recommendation maintenance
2. annual testing & inspection as required by state law and ISO
3. as needed

This approach to maintenance typically works well in general, and is considered appropriate for Upper Dublin Township. Recordkeeping/data management must be enhanced.

The Chief and Administrator indicated that they feel the replacement process of fifteen (15) years for pumpers, and twenty (20) years for aerials and rescues to be acceptable. The project team concurs with this as a guideline, based upon actual use, maintenance, reliability and functionability of each vehicle at those time intervals.

The purchasing process was indicated to involve the company, the township maintenance director and ultimately the Board of Commissioners.

A more comprehensive approach for consideration is provided as follows:

1. Develop a basic rescue-pumper* body style (exhibit) for pumpers that are consistent among each station for compatibility/consistency of operations at the fire ground. If multiple agencies/stations are responding as a "team" concept, all vehicles, consistently designed and equipped provides for ease of operation on the emergency scene.
2. All vehicles should be purchased using the Co-Stars or some similar group purchasing program to save expense.
3. The recommended apparatus purchasing schedule should be adopted, with the caveat that, if the vehicle is in good operating condition reliable, and functional when it is scheduled for replacement, consideration should be given

to extending the life of the vehicle use, consistent with the policy on estimated return of value, etc.

The apparatus have also been replaced per the schedule without consideration of the remaining performance life of the vehicle. The company has essentially bought apparatus based on needs, risk awareness, and to some degree "wants", and have requested apparatus based on the aforementioned time schedule.

In the future, prior to the request for new apparatus there should be:

- A definition of the mechanical/operational status of the vehicle, based on completion of the assessment for that piece of equipment (per Appendix 5).
- A definition of why that particular vehicle is still needed and demonstration that it can be staffed.
- If an additional or new type of vehicle is requested, an assessment of the risks in the fire response district should be submitted to demonstrate a change in need, that the vehicle is best served by a purchase rather than by mutual aid, and that it can be adequately staffed.

The project team has developed a 15-year replacement guideline for fire apparatus; it is more feasible to recognize that there is a projected need for the following minimum vehicles in the township:

- Two (2) pumpers
- Two (2) Rescue- Pumpers (Squads)
- One (1) Ariel Device
- One (1) Medium Service Truck
- One (1) Light Service Truck

This would be consistent with the number of vehicles in service in similar sized communities (excluding officer/administrative staff vehicles).

Baseline apparatus costs were used incorporating 2009 pricing, with an estimated 5% increase each year to that base cost of apparatus. It is projected that this would result in a fifteen-year capitalization requirement of $4,500,000. Appendix 6 provides a spreadsheet illustration of spending and financial needs and incorporates a $250,000 annual contribution to an apparatus acquisition fund.

To effect this spending would necessitate use of group purchasing programs currently available in Pennsylvania. This not only drives a more standardized vehicle, but controls the cost of each vehicle. As noted above, it would also be advantageous to agree on an apparatus style to provide for a standardized compartmentation and equipment design, thus assuring no matter where, a vehicle was dispatched to or who was operating on that apparatus, equipment can be found in a consistent location. This would also ease the fire apparatus design and purchase process, enabling the group purchasing system to be even more efficient. This can be facilitated by a "not to exceed" type of performance specification process.

A review of the 1998 ISO report found some equipment deficiencies in the evaluation, however, these deficiencies are not considered to be significant due to the performance requirements within the township. In essence, the apparatus were found to be well-equipped. Copies of ISO required equipment are provided in Appendix 9.

The inventory of apparatus and key equipment was updated during the project team visits and is included as Appendix 3.

The project team suggests that a schedule be established based on the age of the vehicle, consistent with the recommendation of the Chief. The project team also suggests that an analytical process be instituted on each vehicle beginning its fifth year of service to evaluate the vehicle at inspection time each year. Appendix 5 provides the components to be evaluated, at the suggested replacement. Upon reaching the replacement age, the analysis of vehicle performance should be conducted. If the vehicle has no major mechanical issues, has relative low mileage, and is felt by the Township Fleet Manager, the company chief, the Township Manager, and the Fire Service Administrator, that the vehicle life can be extended, it should be kept an additional year and re-evaluated for replacement according to the recommendation of that team.

The project team was asked to provide input on a shift of apparatus purchases to a quint versus a pumper, a replacement for the rescue truck and the use of a duty vehicle.

The project team considered the use of a quint at great length. However, given the current standard of cover, sprinkler ordinance, staffing capability, and use of mutual aid companies; the project team suggests each station continue to house and deploy an engine and squad, and maintain one aerial device as the "second out" vehicle from its assigned station. Again the staffing, primary work demand and therefore vehicle demand remains Engine Company oriented. Given the use of two "squads" which provide light rescue service coupled with specialized rescue equipment on each truck preclude the need for a traditional "heavy rescue." The current rescue truck does not rescue special services. If it continued to be deemed necessary (not provided by mutual aid) the vehicle can be replaced with a commercial chassis vehicle with crew and equipment carry capability for approximately $300,000. CO-STARS should be used for all purchasing efforts. The project team normally does not recommend duty officer vehicles until the 700 annual response target is maintained for 3 years. However, given that the addition of residential automatic alarm responses will be added to the existing workload, the use of a duty officer and a related vehicle need is reasonable. The vehicle should be first provided via a used township vehicle being replaced and upon replacement time for the current command vehicle, it becomes the duty vehicle.

RECOMMENDATIONS

09-02 Adopt a revised conceptual replacement schedule using 15 years for pumper replacement and 20 years for other vehicles, as a guide.

09-03 Implement a vehicle analysis process consistent with Appendix 5. In the future, prior to the request for new apparatus there should be:

- A definition of the mechanical/operational status of the vehicle, based on completion of the assessment for that piece of equipment (per Appendix 5).
- A definition of why that particular vehicle is still needed and demonstration that it can be staffed.
- If an additional or new type of vehicle, an assessment of the risks in the fire response district should be submitted to demonstrate a change in need, that the vehicle is best served by a purchase rather than by mutual aid, and that it can be adequately staffed.

09-04 Develop a funding system that will accommodate the implementation of a standardized replacement process for fire apparatus.

Facilities

The facilities were evaluated to determine compatibility with housing the type and nature of fire apparatus being purchased. The current Summit Avenue station has a variety of limitations ranging from door height to interior maneuverability, to length and width of apparatus bays, to a lack of a source-capture vehicle exhaust removal systems. All of this may impact on the purchase of specific types of specialized apparatus, which supports a position of standardized basic apparatus being purchased, to assure compatibility with housing of the vehicles. It is suggested that Township and Fire Company pursue the construction of a new fire station.

The township should consider replacing the general exhaust removal system at the Burn Brae Station, replacing it with a source-capture exhaust removal system. A similar system should be installed at the new station to be constructed.

Standard Operating Guidelines/Procedures

The Fort Washington Fire Department has developed several standard operating procedures related to vehicle operations. The standard operating procedures developed illustrate state of the art approaches to many issues, but are limited in number and type compared to the comprehensive set suggested by the United States Fire Administration and the National Volunteer Fire Council.

The format that is generally found to be most effective including the indication of the date adopted, date of review, and date posted as well as the following components of a standard operating procedure:

- purpose
- scope
- responsibility
- safety
- definitions
- references and attachments
- guideline

These should be comprehensive and consistent with the various training, implementation, performance, and monitoring components that standard operating procedures should include. However they should be flexible enough to assure situational awareness is used to make the appropriate decision.

Standard Operating Procedures serve several functions in today's emergency services. Not only do they provide an understanding of how certain activities are to be accomplished, but they establish basic training criteria. A plan needs to be established to review the existing Standard Operating Procedures and begin the development of township wide standard operating procedures.

In today's society it is essential that all emergency service organizations develop, adopt, and implement standard operating procedures and guidelines. The principal of public kindness is no longer acceptable practice. Concepts, such as sovereign immunity (individual vs. government) have been significantly limited and narrowed by the courts.

Many of the federal, state, and provincial laws allow for suits against individual leaders of emergency service organizations. Terms such as "duty of care," "breach of omission or commission," and "joint and several liability" are entering the vocabulary of emergency service personnel.

One important way to prepare for this challenge is to develop, adopt, and implement a comprehensive set of Standard Operating Procedures/Standard Operating Guidelines (SOP/SOGs.)[4] Standard Operating Procedures/Standard Operating Guidelines are a

[4] Developing and Implementing SOP and SOG for Emergency Service Organizations, VFIS, York, PA 2001, Page 2.

fundamental safety practice, not only for emergency services, but business and industry as well.

During the process of compiling SOP/SOGs, the difference between these varied documents may become blurred. For instance, often the distinction between policy and procedure do not seem so clear. Policy is different from a SOP/SOG. All procedures and guidelines are based on an over-riding policy. Policy should be viewed as the attitude, philosophy and intent of top management to the organization's personnel. It provides a framework and guidance to organization personnel in making decisions. To aid in the development of SOP/SOGs, understanding specific definitions of terms is essential.[5]

The following SOG/SOPs are currently in place for the Fort Washington Fire Department which have application to vehicle operations:

- Apparatus Crashes
- Blue Lights
- Responding to Calls
- Red Lights
- Response Order
- Driving and Operating Apparatus
- Backing
- Personal Cars
- Return to Service
- Driver Training

A comprehensive set of SOGs as recommended by the United States Fire Administration and the National Volunteer Fire Council is provided in Appendix 7 for reference and use in developing an appropriate set of guidelines in Upper Dublin Township.

[5] Ibid, Page 9

Recordkeeping

The records being maintained regarding each vehicle meet the basic needs of the maintenance and replacement purchasing system. However, the lack of computerized data limits the ability to analyze the data and make purchasing decisions.

It is critical that the recordkeeping of maintenance of vehicles be defined by the township maintenance department and the finance director and a simple computer database be developed and implemented.

Information on minimum data to record was provided by the project team, to the FWFC and the Fire Service Administrator.

Mutual Aid Agreements & Relationships

A mutual aid/automatic aid program is in place for the response district. This is provided via the Montgomery County Emergency Dispatch Services CAD system, using neighboring community fire companies when needed. Given the response data and personnel availability, the availability of an average 6 people per call, suggests two (2) to four pieces of apparatus may be the maximum that can be staffed, thus more apparatus can best be provided via mutual aid.

As noted in the section under Standard of Cover, the closest fire station to an incident should always be dispatched, whether that station is a Upper Dublin Township or not.

Recommendation Action Plan

Based upon the input, findings and assessments conducted as part of this project, the assessment team provides the following recommendations. Each recommendation is provided with a problem statement and reason that it is a problem, and a solution. Where possible, a priority level is assigned, a projected completion time is provided, and if costs are foreseen, an estimate of that cost is provided.

The recommendations are submitted with the following considerations; the findings and improvement recommendations of the Insurance Services Office; state of the art best practices in risk assessment, standard of response cover, strategic planning; and practices and protocols defined within the reference documents for this project which are detailed in the References section of this report.

It must be recognized that the purpose of this process is to facilitate discussion and action on the problem. In reality, you may find alternative solutions which are more (or less) efficient, more (or less) costly, more (or less) politically expedient, take more (of less) time, and have more (or less) success. However, the fact that elected municipal officials, municipal administrative staff, and municipal fire and rescue service provider officers develop a consensus approach to managing the risks posed is the ultimate goal. The use of these recommendations as discussion and action points should assist you in achieving local progress in the management of fire and rescue services.

RECOMMENDATION 09-01

ISSUE/PROBLEM

There is no definition or statement of information to be maintained or provided to the Township on a regular basis.

SUGGESTED ACTION

The information technology needs and function for the fire companies, as needed by Upper Dublin Township, should be consolidated in the administrative function of the organization as a process that provides data to all facets of the fire companies. The overall IT function should be coordinated through the Fire Administrator's office, the Fleet Manager's office and the Township Information Technology Manager. Suggested data for maintenance by the companies and the fire marshal includes:

- fire inspection management and record keeping
- pre-emergency planning
- permit issuance
- personnel information
- apparatus maintenance
- building maintenance
- incident reporting
- training information
- training programs

Monthly reporting on specific data should be provided by the companies to the Fire Administrator.

PRIORITY – 2

TIME FRAME – 6 TO 9 MONTHS

COST – NONE ANTICIPATED AT THIS TIME, HOWEVER, SOME COSTS MAY NEED TO BE INCURRED BY THE FIRE COMPANY OVER TIME AS PART OF ROUTINE INFORMATION MANAGEMENT COSTS.

JUSTIFICATION/SUPPORT – NFPA 1201 STANDARD ON PROVIDING EMERGENCY SERVICES TO THE PUBLIC, NFPA 1250 EMERGENCY SERVICE ADMINISTRATIVE RISK MANAGEMENT, VFIS TEXT "MANAGING VOLUNTEER AND COMBINATION EMERGENCY SERVICE ORGANIZATIONS", and THE COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS.

RECOMMENDATION 09-02 and 09-04

ISSUE
A capital purchase/improvement plan for apparatus exists and is modified per this document.

PROBLEM
Similar to an annual operating budget, capital spending plans must be known to effectively allocate funds, plan income needs, project revenue services. Otherwise, cash flow challenges exist and planning and operations become adversely affected.

SUGGESTED ACTION
Develop capital plans for any expenditure over a fixed amount. A decision is required as to the source of funding, be it:

- bond issuance
- direct payment from tax dollars
- leasing
- annual reserving/establishment of a fire tax
- some other method, deemed appropriate/lawful within a first class township of Pennsylvania.

The amount is at the discretion of the township officials, based on the accounting principles in place to define capital purchases (apparatus). Appendix 7 is provided for potential use.

PRIORITY – 1

TIME FRAME – 6 MONTHS (to implement 1/01/10)

COST – NONE ANTICIPATED TO DEVELOP THE PLAN, ACTUAL COSTS WOULD BE DEVELOPED AS ANNUAL/CAPITAL BUDGETARY ITEMS

JUSTIFICATION/SUPPORT – PENNSYLVANIA SENATE RESOLUTION 60 COMMISSION REPORT and COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS.

RECOMMENDATION 09-03

ISSUE/PROBLEM

There is no defined process by which to determine the need for replacement of a piece of apparatus, other than time.

SUGGESTED ACTION

Develop a vehicle assessment method to evaluate apparatus mechanical performance on a regular basis and match the assessment process to the major repair policy, as well as vehicle replacement policy. Appendix 5 provides additional guidance.

PRIORITY – 1

TIME FRAME – 6 TO 9 MONTHS

COST – NONE ANTICIPATED AT THIS TIME, HOWEVER, SOME COSTS MAY NEED TO BE INCURRED BY THE FIRE COMPANY OR THE TOWNSHIP OVER TIME AS PART OF ROUTINE MAINTENANCE COSTS.

JUSTIFICATION/SUPPORT – NFPA 1201 STANDARD ON PROVIDING EMERGENCY SERVICES TO THE PUBLIC, NFPA 1250 EMERGENCY SERVICE ADMINISTRATIVE RISK MANAGEMENT, VFIS TEXT "MANAGING VOLUNTEER AND COMBINATION EMERGENCY SERVICE ORGANIZATIONS", and THE COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS.

APPENDICES

APPENDICES

APPENDIX 1	**Municipal Fire and EMS Service Delivery Model**
APPENDIX 2	**NFPA Standard 1720 Self Assessment – Apparatus related items**
APPENDIX 3	**Upper Dublin Township/Fort Washington Fire Company #1 Fire Apparatus Inventory**
APPENDIX 4	**Insurance Service Office Evaluation – Apparatus related items**
APPENDIX 5	**Apparatus Evaluation Form**
APPENDIX 6	**Apparatus Replacement Plan Apparatus Replacement**
APPENDIX 7	**Standard Operating Guidelines - Apparatus related**
APPENDIX 8	**Emergency Vehicle Safety Best Practices Self Assessment**
APPENDIX 9	**ISO Fire Apparatus Equipment Lists**
APPENDIX 10	**Consulting Team**
APPENDIX 11	**References**

APPENDIX 1

MUNICIPAL
FIRE AND
EMERGENCY MEDICAL SERVICE
DELIVERY MODEL

ESECG
Emergency Services Education & Consulting Group
A Subsidiary of VFIS

MUNICIPAL FIRE/EMS SERVICE DELIVERY CHART

Based upon a meeting of the undersigned, this summary chart identifies the primary provider of services to the community.

Fire Suppression*	**FORT WASHINGTON VFC #1 WITH MUTUAL AID AS INDICATED VIA RUN CARDS**
Hazardous Materials – Awareness Level	**FORT WASHINGTON VFC #1**
Hazardous Materials – Operations Level	**FORT WASHINGTON VFC #1 & MONTGOMERY COUNTY HAZ MAT AS NEEDED**
Fire Police	**FORT WASHINGTON VFC #1**
Rescue (vehicle, elevator, light entrapment)	**FORT WASHINGTON VFC #1**
Technical (structural collapse) Rescue	**FORT WASHINGTON VFC #1 & WELDON FIRE CO.**
Water Rescue	**FORT WASHINGTON VFC #1 & SECOND ALARMERS AS NEEDED**
High Angle Rescue	**SECOND ALARMERS**
Basic Life Support – EMS	**AMBLER COMMUNITY AMBULANCE & SECOND ALARMERS**
Advanced Life Support – EMS	**AMBLER COMMUNITY AMBULANCE & SECOND ALARMERS**

.

APPENDIX 2

QUESTIONNAIRE RESPONSE SUMMARY

UPPER DUBLIN TOWNSHIP
FIRE APPARATUS ASSESSMENT QUESTIONNAIRE

As part of the "Fire Apparatus Assessment" process for Upper Dublin Township, the project team requested these questionnaires be completed by the Fort Washington Fire Company No. 1, and the Upper Dublin Township Fire Administrator. The data provided is summarized in this Appendix.

Agency: **Upper Dublin Township**

Officer completing questionnaire: **Fire Administrator and Fire Company**

STANDARD OF COVER

Does the fire company or the township have an established "Standard of Cover"? (Standard of cover indicates what response (apparatus/staff) you will provide in what time period, over what percentage of all calls).

☒ **Yes** _____ No If so, please state. _____

_4__ staff

_6 minute__ response time from dispatch

____ arrival time after response from station

__1_ number of apparatus

__90_ % of calls goal

Do you believe apparatus is located to meet the stated standards of response coverage and service level objectives?

☐ Yes ☒ **No** If so, please state why.

Currently there is poor coverage in Maple Glen.

If the township continues with the plan to construct a new firehouse at 1245 Ft. Washington Avenue, and the FWFC continue to use mutual aid, it is believed that the Standard of Cover and the objectives will be met.

Are the individual pieces of apparatus designed to meet the agency's mission goals?

☒ **Yes** If so, please state why. ☐ No

However changes could be made.

They could be refined; however, goals are being met.

PHYSICAL FACILIITES

Do you feel the physical facilities are adequate and properly distributed to meet service demands?

☐ Yes ☒ **No** Why/Why Not?

The location and physical condition of the Summit Avenue Station does not currently meet the fire services demands. There are some limitations with the Burn Brae Station concerning space accommodations for existing and future apparatus as well as some incidental capital improvement programs that should be implemented for the structure itself.

Do you believe your facilities comply with all federal, state and local regulations?

☐ Yes ☒ **No** Why/Why Not?

Summit Avenue as a whole, anticipated to being brought into compliance upon design and construction of the new firehouse. The exhaust system that is in place in the Burn Brae Station is not that of a "source capture system".

Who own the buildings used by the fire/rescue services?

☐ Fire Company ☒ **Township** ☐ Other: _____

APPARATUS

Please complete the following table: **(refer to Appendix 3)**

Does the fire department/company have a systematic apparatus replacement program with replacement of all major apparatus predicted on planned service life and cost effectiveness?

☒ **Yes** ☐ No

If, so, please provide a copy.

Identified replacement plan of 15 years for all major apparatus with the exception of support vehicles (i.e. command) at 10 years. However, this is viewed as a recommended scheduled and each recommended replacement unit needs to be brought before the Board of Commissioners the year prior to purchase for approval. An objective of this evaluation is to further define the program to present to the Board of Commissioners.

Is there a method used to develop specifications, procure apparatus and equipment identified in the organization's policies and procedures?

☐ Yes ☒ **No**

Please provide a copy of any existing policy, SOG, or related document

Excluding small day-to-day items, are all apparatus and equipment procured under properly drawn specifications, including applicable provisions for performance requirements, national standards, and federal and state regulations?

☒ **Yes** ☐ No

Please provide a set of previously drawn apparatus/vehicle specifications

Provided with information on site by FWFC.

Is there a process used to collect input from the staff officers and departmental members in the preparation of specifications?

☒ **Yes** ☐ No

Committee representative of the overall officers and members, coupled with a vote from the entire membership for recommendation to the Township. There was not a unified consensus or presentation from the FWFC at last year's budget time concerning the replacement of Rescue 88.

Are written apparatus specifications developed through a user committee process?

☒ **Yes** ☐ No

If minutes are taken of Apparatus committee meetings, please provide an example.

How are the recommendations of staff or committees used in the preparation of the final specifications?

Describe:

All FWFC members may attend the meeting of and voice their opinion to the Apparatus committee and the committee makes a recommendation to the body of the membership.

Is apparatus designed to meet a nationally recognized standard?

☒ **Yes** ☐ No What Standard(s): ***All NFPA applicable guidelines***

Do you believe your apparatus types are appropriate for the functions served, i.e. operations, staff support services, specialized services, and administration?

☐ Yes ☒ **No** Why or why not?

Committee believes that we may be able to combine and downsize, and a duty officer vehicle should be added.

The fleet should be reevaluated. In some circumstances there is an opportunity for potential consolidation, some for different apparatus to meet the identified function, and potentially the demand for an additional unit (Duty Officer Vehicle). If it is not beneficial to use existing apparatus.

Is all non-front line (reserve) apparatus in good working condition and proven to be in satisfactory condition through annual service tests?

☐ Yes ☐ No ☒ ***Not applicable, no reserve apparatus***

Have any front-line apparatus been completely rebuilt and updated?

☐ Yes ☒ **No** If yes, please describe, and include how refurbishment firm is chosen

Do all new pumpers have an Underwriters' Laboratories Certificate of Compliance or similar certifications?

☒ **Yes** ☐ No

Please have a copy of the Certificate of Compliance available when the project team visits your station.

The Fire Service Administrator does not have all recommended certifications on file. Through this process, the township recommended FWFC provide the Township with records on file for "check and balance system" as each entity has a vested interest in the referenced documentation.

Are all road performance tests conducted in accordance with a nationally recognized standard, such as NFPA 1901, on all new apparatus prior to acceptance?

☒ **Yes** ☐ No

Other than Squad 88 the Fire Service Administrator does not have documentation readily accessible, however, there is an understand that performance tests are completed and documented prior to acceptance of individual units.

Are aerial ladders, elevating platforms and water towers tested periodically in accordance with a nationally recognized standard?

☒ **Yes** ☐ No

If yes, please have a copy of the last two (2) Certificates of Compliance available when the project team visits your station.

From the records available, the tests were conducted, however, there are not two (2) certificates on file showing full compliance. The township recommends that the FWFC and the Township discuss and agree on future tests, responses, and documentation.

What type of management information system in place that supports the apparatus maintenance program and provides for analysis of the program?

The township does not believe one is in use, however a formal preventative maintenance system (i.e. Firehouse Software).

Are maintenance records, including cost of servicing and repair, maintained for each piece of apparatus?

☒ **Yes** ☐ No

Please have the vehicle maintenance files with cost information available for review by the project team when they visit your station.

The FWFC indicates it has indicated that they have the records but have never compiled a year to year expense report for each apparatus.

The Township does not have such records on file and suggests this is an example of a program the Fire Service Administrator can work with the FWFC to support the mission and potentially alleviate some of the burden on the volunteer fire fighters.

At what frequency are personnel required to complete in-station checks and to submit those reports to the maintenance officer/chief?

☒ Frequency - ***Monthly***

☒ Person/position responsible for checks – ***All Drivers***

☒ Position to whom info is provided – ***Chief Engineer***

All are completed and housed within the FWFC.

Is an annual report of all work done, including the nature and cost of repairs?

☐ Yes ☒ **No** If so, by whom? ☐

Please have a copy available for review by the project team when they visit your station.

Does the department have documentation of all annual service tests?

☐ Yes ☒ No

A*pparatus Pumper Test Results and Aerial test results, fire hose test results, ground ladder test results.*

Please have the results for the last three (3) years available for review by the project team when they visit your station.

For future programming, the Fire Service Administrator request annual certifications to be conducted on pumps, hose, ground ladders, aerial, SCBA, hydraulic tools, air compressor with "closure reports" on file with both the FWFC and the Fire Service Administrator. The Fire Service Administrator would like to discuss and define a process offering assistance from the Township Staff.

Do you believe there is adequate supervision to manage the vehicle specification, procurement and maintenance program?

☒ **Yes** ☒ No

There is an opportunity to formalize, document and implement additional programs.

Who has the final approval in awarding procurement contracts to successful bidders?

Upper Dublin Township Commissioners

MAINTENANCE

Does the agency have a formal preventative maintenance program for all apparatus?

☒ Yes ☒ No

Please provide a copy of the SOG or related forms.

Please have the records available for review when the project team visits your station.

Has never been written down.

Do you believe the inspection, testing, preventive maintenance, replacement schedule, and emergency repair of all apparatus to be well established and meeting the needs for service and reliability of emergency apparatus?

☒ Yes ☒ No Why or why not? ☐

Have been working on updating FWFC policy.

Does the fire department have a specific officer or individual in charge of apparatus and equipment maintenance?

☒ Yes ☐ No Title ***Chief Engineer***

Please provide a copy of the person's job description.

There is no job description.

Is there a system in place for emergency repair of all fire apparatus and equipment?

☒ Yes ☐ No Please describe ☐

Please have a copy for review by the project team when they visit your station.

The FWFC has an internal process of notification to the Engineering Staff, if an in house repair cannot be made, depending on the magniture of the repair, the appropriate shop is called.

Is there a vehicle maintenance and support service entity (internal or vendor) that can ensure timely and appropriate repairs?

☒ **Yes** ☐ No Indicate who ☐

A number of certified repair shops are available when additional resources are necessary.

Is non-front line (reserve) apparatus equipped with basic equipment ready for use?

☐ Yes ☐ No ☒ ***N/A – No reserve apparatus***

Does non front-line (reserve) apparatus have regular testing and servicing?

☐ Yes ☐ No ☒ ***N/A – No reserve apparatus***

What type of management information system in place that supports the apparatus maintenance program and provides for analysis of the program?

Not provided

Are maintenance records, including cost of servicing and repair, maintained for each piece of apparatus?

☒ **Yes** ☐ No

Please have the vehicle maintenance files with cost information available for review by the project team when they visit your station.

Not maintained, however copies of treasurer documents were obtained for review by project team.

At what frequency are personnel required to complete in-station checks and to submit those reports to the maintenance officer/chief?

Frequency – ☒ ***N/A***

Person/position responsible for checks – ☒ ***N/A***

Position to whom info is provided – ☒ ***N/A***

Not conducted.

Is an annual report of all work done, including the nature and cost of repairs?

☐ Yes ☒ **No** If so, by whom? ☒ ***N/A***

Please have a copy available for review by the project team when they visit your station.

Does the department have documentation of all annual service tests?

☐ Yes ☐ No ☒ ***N/A***

Apparatus Pumper Test Results and Aerial test results, fire hose test results, ground ladder test results.

Please have the results for the last three (3) years available for review by the project team when they visit your station.

Do you believe there is adequate supervision to manage the vehicle specification, procurement and maintenance program?

☐ Yes ☐ No ☒ ***N/A***

No answer provided

To whom is responsibility for maintaining non-front line (reserve) apparatus assigned?

No answer provided

INFORMATION MANAGEMENT

Does the current information management system provide for analysis of repairs and common problems occurring with apparatus?

☐ Yes ☒ No ☒ ***N/A***

In the past two (2) years, indicate number of apparatus experiencing mechanical failure while attending an incident or training:

Unit	Year of problem	Type problem	Avg. # hours that year	Total responses that year for unit	Comments

If any units were out of service due to mechanical defects during the last year for more than 48 hours please describe the situation:

Tower 88 did not pass all the aspects of the UL test. Some of the items in question were found to be within the manufacturer specification and a section test was done by a third party.

Tower 88 was taken out of service as a result of a 2008 UL Inspection report until items were addressed and re-inspected by a different recognized entity.

What is the approximate average number of hours each apparatus was out of service for routine maintenance during the last 24 months:

Engines 48 hour Tower 96 hours for scheduled maintenance and state inspection

Unknown by the township.

Please indicate the routine maintenance cost per year for each apparatus:

2006

Unit #	Material Costs	Labor Costs	Total	Comments

2007

Unit #	Material Costs	Labor Costs	Total	Comments

2008

Unit #	Material Costs	Labor Costs	Total	Comments

Data not readily available.

Who is the identified maintenance supervisor for your organization?

FWFC Chief Engineer

Are vehicle maintenance guidelines printed:

☐ Yes ☒ No

Please have available for the project team when they visit your station.

Is the maintenance and repair facility area provided with sufficient space and equipped with appropriate tools.

☐ Yes ☒ No

In house could use more room.

Considering the extent of the in house PM and or repairs, additional space should be dedicated for the new firehouse.

Does the fire department have access to a shop for the repair and servicing of apparatus?

☒ Yes ☐ No

If there is an SOG or contract provisions for maintenance, please have available for the project team when they visit your station. If there a separate section of a municipal shop or a contract with a private vendor may also be an appropriate resource, so indicate.

Does the fire department have 24-hour, 365-day-per-year emergency maintenance service?

☒ Yes ☐ No

Engineering staff can be reached anytime by phone, and outside vendors will come out anytime depending on problems.

Provide a copy of any related SOGs

Are there an adequate number of trained and certified maintenance personnel available to meet the objectives of the established program?

☒ Yes ☐ No

Internal ☒

External ☒

Are the mechanics and maintenance personnel who work on the apparatus specifically trained and certified to deal with specialized fire equipment (including pumps, hydraulic hoists, etc.)?

☒ Yes ☐ No Briefly describe training/qualifications

Please have their Job descriptions, training records, certification documents available for review by the project team when they visit your station.

Certified outside shops, depending on issue

Do maintenance personnel respond to major fires and emergencies to assist with the effective operation of apparatus?

☒ Yes ☐ No If so, please describe

Engineering staff are active members of the FWFC.

Does each piece of apparatus undergo complete servicing and inspection at least semi-annually?

☒ Yes ☐ No

Contracted service ☒ ***Yes – Depending on state and NFPA Guidelines***

In-house ☒ ***Yes***

Please have related documentation available for review for the project team, when they visit your station.

Not on file for Fire Service Administrator to answer.

Do pumps have foam or wetting agent proportioners?

☐ Yes ☒ No If yes, describe servicing/maintenance procedures.

Is there a written policy or procedure for taking units 'out of service'?

☒ Yes ☐ No

Please provide a copy of any related SOGs

Is there a policy and/or a written agreement for the towing of disabled departmental vehicles with a vendor?

☐ Yes ☒No If so, please describe or provide a copy of the related SOG.

If not, please describe how this would be handled.

In the past the FWFC has called on the help of local towing companies.

There is no information on file with the Fire Service Administrator

Exhibit: Copy of policy or contract for towing services

Does the fire department or city carry liability insurance protecting both the city and the apparatus operators in case of accidents?

☒ Yes ☐ No

Is every vehicle accident, no matter how slight, completely investigated with photographs supplementing the detailing report?

☒ Yes ☐ No

If yes, please have a copy available for review when the project team visits your station.

Please complete the following chart for the years 2006-7-8.:

Unit #	Year of Incident	Type Accident*	Amount of damage ($)	Action taken with driver	Comment (include who was at fault – FD or other driver)

*e.g. intersection, backing, rear-end

The Fire Service Administrator indicated the FWFC is required to contact the UDPD for al accidents, which is in accordance with Township Policy. One incident was reported that occurred on Fire Company property. It was referred to police reports.

MUTUAL AID RESPONSE PROGRAM

Is there a mutual aid/automatic aid program in place for your response district? Please provide a description of that program.

Yes, three (3) engines and two (2) ladders for structure fires utilizing mutual aid from surrounding entities based on the FWFC established box system.

GENERAL COMMENTS

Please provide any comments you believe may be of importance to this project, or be prepared to discuss them when the project team visits your station. Use additional pages as necessary.

In this day and age it is imperative to not only complete certain tasks, but to be able to maintain records showing what you have done. If the FWFC and the Fire Service Administrator work in concert with one another, recordkeeping, implementing a formal preventative maintenance program and document certification maintenance can be achieved.

The overall fleet should be evaluated with a focus of adding a Duty Officer vehicle, defined the need for 2 engines, 2 squads, and 1 rescue based on the function they fulfill. The replacement schedule should be defined and presented to the Board of Commissioners to limit further miscommunication assisting the FWFC with moving forward in a more expeditious manner. It is evident that there has been a great effort on the FWFC behalf to limit "gingerbread" expenses.

Bottom line: well run program by the FWFC. This program, as others, would be less arduous if the Fire Service Administrator and FWFC worked more in concert. The Fire Administrator stands ready to assist FWFC with apparatus/equipment programs.

APPENDIX 3

UPPER DUBLIN TOWNSHIP/ FORT WASHINGTON FIRE COMPANY #1 APPARATUS INVENTORY

FORT WASHINGTON VOLUNTEER FIRE COMPANY #1

Unit #	Manufacturer	Year	Pump Size	Tank Size	Aerial Length	Opinion Of Condition*	Comments
Squad 88	Pierce	2008	1500	750		5	2,319
Engine 88	American LaFrance	2005	1500	750		5	9,387
Tower 88	American LaFrance	2001			93’	4	11,515- long list of repairs fixed
Rescue 88	Mack 1994	1999				2	4,454- function needs to be evaluated, no seatbelts in back
Traffic 88	Chevrolet	2005				5	4,190
Marine 88	Avon Rover	1998					
Special Fire 88	Chevrolet	2007				5	4,400
Squad 88-1	Spartan RD Murray	1999	1250	500		4	Runs well but showing age
Engine 88-1	Spartan RD Murray	1996	1250	500		2	21,522
Marine 88-1	Avon Rover	1998					
Command 88	Chevy Tahoe	2007				5	

* use a scale of 1 to 5 with 5 being excellent and 1 being poor

UPPER DUBLIN TOWNSHIP FIRE DEPARTMENT

Unit #	Manufacturer	Year	Pump Size	Tank Size	Aerial Length	Opinion Of Condition*	Comments
	Chevy Tahoe	2000				2	Fire Marshal 92,742
	Chevrolet Colorado	2006				4	20,000

* use a scale of 1 to 5 with 5 being excellent and 1 being poor

Notes:
Questions arose to consider options to long term use of 2 squads, 2 engines, quint or rescue.

APPENDIX 4

INSURANCE SERVICES OFFICE APPARATUS RELATED SUMMARY FINDINGS OF UPPER DUBLIN TOWNSHIP, MONTGOMER COUNTY, PA

(Information extracted from report of January 2003, the most recent ISO report for this fire district)

INSURANCE SERVICES OFFICE
EXCERPTED FIRE DEPARMENT SUMMARY FINDINGS 1/2003

The 1998 Insurance Services Office (ISO) evaluation of Upper Dublin Township confirmed a 4 rating upon the community, which is considered consistent with this type and nature of suburban living.

FIRE APPARATUS EVALUATION

Specifically relating to the fire apparatus evaluation, their report found:

"For maximum credit, 3 engine companies are needed in your township, for the basic fire flow of 3,500 gallons per minute. Three engines are in service as defined below:

Engine 88 – 78% credit, due to insufficient equipment, and lack of an adequate pump testing program

Engine 88-2 – 52% credit because of insufficient equipment and lack of an adequate pump testing program

Engine 88-1 – 84% credit because of insufficient equipment and lack of an adequate pump testing program.

For maximum credit, 1 fully equipped reserve pumper is needed. You have 1 reserve pumper as defined below:

Squad 88-1 – 70% credit because of insufficient equipment and lack of an adequate pump testing program.

For maximum credit, 1 ladder company is needed in your township, with one ladder in service as defined below:

Ladder 88 – 95% credit because of insufficient equipment and lack of an insufficient ladder testing.

For maximum credit, 1 fully-equipped reserve ladder company is needed in your township, with two reserve ladder trucks in service as defined below:

Squad 88 – 26% because of insufficient equipment

Rescue 88 – 39% because of insufficient equipment and insufficient ladder length.

For maximum credit, all sections of the township with hydrant protection should be within 1 ¼ miles of a fully-equipped engine company and 2 ½ miles of a fully

equipped ladder, service, engine-ladder or engine –service company, with the distance to be measured along all weather roads.
The township received a 1.55% of a maximum 4.00% rating.

There is nothing abnormal regarding these findings, as compared to communities of similar size. The distribution % is driven by station location and travel miles to various parts of the community, which may exceed the guidelines of ISO, but not necessarily be problematic. Only a station location assessment would determine this. A station location assessment is not part of this project.

FIRE FLOW AND PUMP CAPACITY

Water Supply requirements were defined by a maximum required fireflow of 3,500 gallons per minute, based upon a series of tests throughout the township. This would indicated a need of 3 pumpers with 1500 gpm pumping capacity each to meet the theoretical need. Reality of water supply/pressure deficiencies may conceptually necessitate twice this number, due to water pumping/distribution at the scene of a major fire. As noted in the report, the four pumpers currently in service provide a minimum of 7,500 gpm pumping capacity, which meets the needs indicated above.

APPENDIX 5

VEHICLE ASSESSMENT FORM

ESECG
Emergency Services Education & Consulting Group
A Subsidiary of VFIS

VEHICLE ASSESSMENT
(Conducted every 3 years)

Unit # _____ Date _____

Vehicle _____ VIN _____

Mileage _____

Vehicle Component	**Rating***	**Adversely Affects State Inspection**
Engine	_____	☐
Chassis	_____	☐
Transmission	_____	☐
Axles	_____	☐
Electrical	_____	☐
Pump	_____	☐
Tank	_____	☐
Steering	_____	☐
Body	_____	☐
Aerial Device	_____	☐
Ability to access parts & readily repair vehicle	_____	☐

Comments _____.

_____.

Projected Life _____ Years Signed _____ EVT

*Rating Definition:	1 = works well, no problems 2 = any problems resolved by routine maintenance 3 = problem is manageable 4 = major repair required in next 12 months, costing over $5,000 5 = not functional

APPENDIX 6

UPPER DUBLIN TOWNSHIP
SUGGESTED
APPARATUS REPLACEMENT PLAN

		UPPER DUBLIN TOWNSHIP TOWNSHIP BUREAU OF FIRE APPARATUS REPLACMENT PROGRAM - SUGGESTED															
		Base Cost															
		2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	
Unit to Purchase		**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**	**Year 11**	**Year 12**	**Year 13**	**Year 14**	**Year 15**	
Squad 88		0	0	0	0	0	0	0	0	0	0	0	0		0	909,130	x
Engine 88	x	0	0	0	0	0	0	0	0	0	0	0	808,213	0	0	0	x
Tower 88		0	0	0	0	0	0	0	1,052,745	0	0	0	0	0	0	0	
Rescue 88 = Service 88		0	300,000	0	0	0	0	0	0	0	0	0	0	0	0	0	
Traffic 88		0	0	0	0	0	0	0	0	0	0	0	69,275	0	0	0	
Marine 88		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Special Service 88		0	0	0	0	0	0	0	0	0	0	0	0	0	74,928	0	
Squad 88-1		0	0	0	0	0	638,743	0	0	0	0	0	0	0	0	0	x
Engine 88-	x	0	0	567,840	0	0	0	0	0	0	0	0	0	0	0	0	x
Command 88		0	0	0	0	0	0	0	74,928	0	0	0	0	0	0	0	
Vehicle Cost		0	300000	567840	0	0	638743	0	1127673	0	0	0	877488	0	74928	909130	0
Income		250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	0
Fund Balance Subtotal		250,000	500,000	482,500	164,660	413,807	26,702	344,730	-531,995	-165,771	80,071	328,372	579,156	920,196	1,101,970	459,602	0
Sale of Vehicles (assume 1		0	30000	56784	0	0	63874.3	0	112767.3	0	0	0	87748.8	0	7492.8	90913	0
Interest Income		0	2500	0	-853.4	1638.066	4154.447	947.3041	3456.777	-4157.71	-1699.29	783.7179	3291.555	6701.959	9268.978	11187.32	0
Balance		250,000	232,500	-85,340	163,807	415,445	94,730	345,678	-415,771	-169,929	78,372	329,156	670,196	926,898	1,118,732	561,702	0
Based on 4% cost increase per year, based on multiple manufacturer input																	10,314,055
Assumes $250,000 allocated each year to a fire apparatus acquisition fund																	
Assumes a 1% interest on account balance each year																	
Sale of Vehicles (assume 10% of purchase price)																	

APPENDIX 7

STANDARD OPERATING GUIDELINES

ESECG
Emergency Services Education & Consulting Group
A Subsidiary of VFIS

MODEL POLICIES

EMERGENCY VEHICLE RESPONSE

Upper Dublin Township

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The *Model Policies and Procedures for Emergency Vehicle Safety* constitute general guidelines for the safe operation of emergency vehicles. Users should consult with their departmental counsel and/or other appropriate resource to assure compliance with any state or local requirements as well as determining the applicability to their equipment and individual circumstances. These policies and procedures in and of themselves do not constitute a standard subject to enforcement.

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Vehicle Policies Overview

This document provides model policies and procedures required to support the safe and effective operation of all fire and emergency vehicles; this includes fire apparatus, rescue vehicles, ambulances, command and support units, privately owned vehicles (POVs), and any other vehicles operated by fire department members in the performance of their duties.

- **Basic Driving Policies –** Driver qualifications and training, skills maintenance; duties and responsibilities; general traffic laws; reporting safety problems and violations.

- **Emergency Response Policies –** Authorized emergency response, special driver qualifications, applicable traffic laws, and fire department driving policies, use of warning devices.

- **Riding Emergency Vehicles –** Permitted vehicle occupants, passenger behavior, and safety in emergency vehicles.

- **Special Safety Considerations –** Scene safety, backing up, parking, operation in high-risk areas.

- **Vehicle Accident Reporting and Investigation –** Accident scene procedures (information gathering, injury assessment, notification, etc.), reporting forms and documentation requirements, post-accident investigation (examination of scene, interviews with participants and witnesses, etc.), report preparation and dissemination.

- **Use of Personal Vehicles –** Authorized use and response, driver behavior, roadway operations, permitted vehicle occupants, reporting safety problems and violations.

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Seatbelt Policy

Purpose:
To establish appropriate and safe behavior regarding the use of safety belts when operating or riding in an emergency vehicle.

Scope:
All personnel.

Policy:
All persons driving or riding in fire department vehicles shall be seated in approved riding positions with seatbelts or safety restraints fastened at all times when the vehicle is in motion.

The driver shall not begin to move the vehicle until all passengers are seated and properly secured. All passengers shall remain seated and secured as long as the vehicle is in motion. Seatbelts shall not be loosened or released while enroute to dress or don equipment.

Members shall not attempt to mount or dismount from a moving vehicle under any circumstances.

Exception:
A fire department member who is providing direct patient care inside an ambulance shall be permitted to release momentarily the seat belt while the vehicle is in motion – **IF IT IS ESSENTIAL TO PROVIDE PATIENT CARE**. When the procedure has been completed, the fire department member shall refasten the seatbelt. Time without the protection of a seat belt shall be minimized.

Note– NFPA 1500 allows this exception for the ambulance patient compartment; however, effective restraint systems are now available for ambulances. NFPA 1500 also permits exceptions to the seat belt policy for hose loading and tiller training, however, strict guidelines must be applied to these activities if the exceptions are included in a departmental policy. The fire department should carefully consider whether these exceptions should be included in the departmental policy statement.

Emergency, Non-Emergency Response Policy

Purpose:

To prioritize the response of emergency vehicles to ensure maximum utilization of resources and that units respond in a mode that corresponds with the prioritization level of the emergency request.

Scope:
All personnel

Policy:

The fire department should adopt a written policy to define the specific types of incidents and situations for which emergency response is authorized. The state traffic laws should be consulted to determine the legal definitions that apply to authorized emergency response.

The determination of which types of calls justify emergency response must consider local factors and traffic conditions. In some cases, the difference between emergency response and non-emergency response could be measured in seconds, while in other cases the difference could be several minutes. In jurisdictions where traffic congestion is a major problem, a "reduced speed policy" could be implemented to reduce the risks of emergency response, while maintaining the ability to move through traffic.

Standardized triage protocols should be used to classify medical incidents. Policies should also define when emergency response is authorized for the transportation of patients to medical facilities. The following recommendations apply to the classification of medical incidents for emergency or non-emergency response.

Regulatory & Statute Compliance

The insert state traffic laws include specific provisions for emergency vehicles, while they are engaged in emergency operations. The XYZ Department policies and procedures specify when and how these exceptions will be applied. The fire department driving policies and standard operating procedures may be, in some cases, more restrictive than state traffic laws.

Responding to emergency incidents does not in any manner reduce the responsibility to operate vehicles safely. While prompt response to emergency incidents is an organizational priority, safety is always a higher priority. The responding units must arrive safely at the location where they are needed before they can deliver the required services. Unsafe operation of an emergency vehicle creates an unacceptable risk to fire department members, to the public, and to the individuals who are in need of assistance.

The motor vehicle laws of insert state grant specific allowances and exemptions to emergency vehicles, when they are responding to emergency incidents and using the required warning devices. These provisions only apply to officially recognized emergency vehicles, while they are responding to emergency incidents in compliance with all of the applicable laws and regulations.

Notwithstanding such allowances and exemptions, the driver of the emergency vehicle is required to operate responsibly at all times. The emergency vehicle driver has a duty to drive with due regard for the safety of all other persons and property.

The insert state traffic laws require an emergency vehicle to be equipped with warning lights and audible warning devices *(refer to the applicable state law to determine what is required, what is permitted, and what is prohibited.)* The traffic laws also require drivers to yield the right-of-way to an emergency vehicle when the warning lights and audible warning devices are in operation.

The use of warning lights and audible warning devices does not automatically grant the right-of-way to an emergency vehicle. These devices are intended to make other drivers aware of the presence of an emergency vehicle. Other drivers are required to yield the right-of way to an emergency vehicle; however, they cannot be expected to yield the right-of-way if they do not see or are not aware of the emergency vehicle.

The emergency vehicle driver must never assume that another vehicle will yield the right-of-way; it is always the emergency vehicle driver's responsibility to ensure that the other driver has yielded the right-of-way. The emergency vehicle driver is responsible for operating in a safe and prudent manner, recognizing that other drivers could be distracted, inattentive, or simply uncooperative. The emergency vehicle driver is not permitted to employ aggressive driving techniques to force another driver to yield the right-of-way.

While responding in an emergency mode, drivers are required to make their presence evident using audible and visual warning devices. Emergency vehicle drivers should also endeavor to make their intentions as clear as possible and their vehicles as visible as possible to other drivers.

Traffic Laws – Emergency Vehicles

The XYZ Department has established the following policies that apply to employees/members who are driving fire department vehicles in an emergency response mode. (The same policies apply to the emergency operation of any other vehicle within the scope of a driver's fire department duties.)

Use of Warning Device Policy

Purpose:
To establish a policy on the use of warning devices.

Scope:
All personnel.

Policy:
Warning lights and audible warning devices shall be used when fire department vehicles are responding in an emergency mode. Both warning lights and audible devices must be operated in order to meet the legal definition of an emergency vehicle.

Warning lights shall be used at all times when fire department vehicles are operating in an emergency response mode. Audible warning devices (siren and/or horn) shall be used as necessary to warn other drivers and pedestrians of the approach of an emergency vehicle and request the right-of-way. Audible warning devices shall be used in moderation when they are not required to provide warning (light traffic or open road situations).

Audible warning devices shall not be used when a vehicle is operating in a non-emergency mode. Warning lights shall be used when the fire department vehicle is maneuvering or stopped in a location where it creates a traffic hazard.

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Speed Limitations Policy

Purpose:
To establish practices that address the speed of emergency vehicles to increase the ability of the driver/operator to maintain safe control the vehicle at all times.

Scope:
All personnel.

Policy:
The driver shall never exceed a speed that is safe and prudent, based on road and weather conditions and other circumstances, including the design and capabilities of the vehicle. The posted speed limit may be exceeded only when the required warning devices are in use and when weather, traffic, and road conditions are favorable. The posted speed limit shall not be exceeded under any other conditions.

- The maximum speed for any XYZ Department vehicle, under favorable conditions, shall not exceed the posted speed limit by more than insert your departments maximum speed miles-per-hour.

- When conditions are unfavorable, the posted speed limit shall not be exceeded and actual speed shall be determined by the conditions.

- The posted advisory speed for a curve shall be considered the maximum allowable speed under all conditions, regardless of response condition.

- Water tenders shall not respond in emergency mode unless specifically directed by a command officer or dispatch.

Intersection Navigation Policy

Purpose:
To establish procedures and guidelines for the safe operation of all emergency vehicles and apparatus when negotiating intersections.

Scope:
All personnel.

Policy:
The fire department emergency vehicle shall come to a full stop before entering a negative right-of-way intersection (red light, flashing red light, or stop sign), blind intersection, or any intersection where hazards are present and/or the driver cannot account for all oncoming traffic lanes. The emergency vehicle shall not enter the intersection until all approaching traffic has yielded the right-of-way and it is safe to proceed. The emergency vehicle driver shall ensure that all approaching vehicles in all lanes have yielded the right-of-way before advancing.

If necessary, due to traffic conditions or visual obstructions, the emergency vehicle driver shall cross the intersection in stages, treating each lane as a separate intersection. The driver shall stop the vehicle, as necessary, to ensure that each lane may be crossed safely

When passing through an intersection where the emergency vehicle has the right-of-way, by virtue of a green light in the direction of travel and/or a stop signal (stop sign) for cross-traffic, the emergency vehicle shall not exceed the posted speed limit. Emergency vehicle drivers should not assume that oncoming/opposing traffic has stopped, even when facing a green signal or “clear” route; emergency vehicle drivers must visually confirm that oncoming/opposing traffic is stopped while approaching any intersection, and be prepared to stop immediately, if necessary.

Traveling in Opposing Traffic Lanes

Purpose:
To establish practices that address when an emergency vehicle must travel in an opposing lane.

Scope:
All personnel.

Policy:
Operating emergency vehicles in opposing traffic lanes is extremely hazardous under all conditions and should only be considered under exceptional circumstances (i.e., if there is no alternate route of travel).

When an emergency vehicle must travel in an opposing traffic lane, or in a center turn lane to maneuver around slow moving or stopped traffic, the emergency vehicle shall not exceed insert your departments maximum speed miles-per-hour, at a maximum. If there is a median separating the emergency vehicle from the slow or stopped traffic, the emergency vehicle shall not exceed a maximum of insert your departments maximum speed miles-per-hour. (Actual speed should depend on the road, traffic, and weather conditions.)

When approaching a controlled intersection (traffic lights or stop signs) in an opposing traffic lane or center turn lane, the emergency vehicle shall come to a full stop before entering the intersection, even if the traffic light is green in the direction of travel.

Note– Please refer to your state motor vehicle code to ascertain whether or not emergency vehicle travel in opposing traffic lanes is allowed under the law.

Travel in an Opposing Direction

Purpose:
To establish safe practices that address when an emergency vehicle must travel against the traffic flow on a one-way street.

Scope:
All personnel.

Policy:
Operating emergency vehicles against the normal flow of traffic is extremely hazardous under all conditions and should only be considered under exceptional circumstances (i.e., if there is no alternate route of travel).

Travel against the normal direction of traffic flow on a one-way street shall be limited to short distances. Emergency vehicle drivers must proceed slowly and with extreme caution in these situations.

The emergency vehicle must come to a full stop before entering an intersection while traveling in an opposing direction.

Note– Please refer to your state motor vehicle code to ascertain whether or not emergency vehicle travel against the normal traffic flow (i.e., the "wrong way" along a one-way street) is allowed under the law.

Passing Traffic in an Emergency Vehicle

Purpose:
To establish safe practices that address when an emergency vehicle must pass traffic moving in the same direction.

Scope:
All personnel.

Policy:
When overtaking traffic that is moving in the same direction, the emergency vehicle driver shall give other drivers an opportunity to yield the right-of-way before passing. If it is necessary to pass a vehicle that has not yielded the right-of-way, the emergency vehicle shall provide as wide a clearance as possible.

A fire department emergency vehicle shall not overtake another emergency vehicle that is traveling in the same direction unless the driver of the lead vehicle has indicated that the other may pass. A following vehicle may contact a leading vehicle by radio to request permission to pass.

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Railroad Crossing Policy

Purpose:
To establish safe practices that address when an emergency vehicle comes to an unguarded railway grade crossing.

Scope:
All personnel.

Policy:
The emergency vehicle shall come to a full stop at unguarded railway grade crossings. Caution shall be exercised at grade crossings where warning lights and/or gates are provided.

It is not always possible to hear an approaching train, due to the Doppler Effect* and the type of locomotives used on some rail lines (particularly electric locomotives); otherwise "normal" appearing highway vehicles, equipped with rail wheels, are also used by railroads and may be encountered at grade crossings. Emergency vehicle drivers should become familiar with the specific characteristics of the rail lines in their area.

Warning devices and crossing gates are generally reliable, but can fail due to the harsh conditions to which they are exposed—these devices are designed to fail in the "safe" mode. When approaching a grade crossing with lowered gates and/or active lights and no apparent rail traffic, the emergency vehicle shall come to a full stop prior to the crossing; before proceeding, the emergency vehicle driver shall visually confirm that no train or other rail vehicle is approaching on the tracks. Complete confirmation may require that members physically dismount the vehicle to visually check the tracks.

**The "Doppler Effect" is the perceptible change in the frequency and wavelength of a sound wave as it moves relative to an observer.*

Stopped School Bus

Purpose:
To establish safe practices that address when an emergency vehicle comes to a school bus that has stopped with red lights flashing.

Scope:
All personnel.

Policy:
The emergency vehicle shall not pass a school bus that has stopped with red lights flashing to load or discharge passengers, unless the bus driver clearly signals that it is safe to pass.

When clearly signaled by the bus driver that it is safe to pass a stopped school bus, the emergency vehicle shall proceed slowly and with extreme caution past the school bus; all members must be vigilant for children while approaching and passing the bus. The emergency vehicle driver must be prepared to stop immediately while approaching, passing, and leaving the area in which the school bus is stopped.

Pedestrian Crosswalk

Purpose:
To establish safe practices that address when an emergency vehicle comes to a pedestrian crosswalk.

Scope:
All personnel.

Policy:
The emergency vehicle shall not exceed the posted speed limit when approaching a pedestrian crosswalk. If the crosswalk is occupied, the emergency vehicle shall slow down and be prepared to stop if the pedestrian does not yield the right-of-way.

Law Enforcement Directions

Purpose:
To establish safe practices that address when a law enforcement officer gives directions to an emergency vehicle.

Scope:
All personnel.

Policy:
The emergency vehicle shall comply with the directions of a sworn law enforcement officer, including a signal to stop.

Law enforcement officials may also direct the specific positioning, or repositioning, of emergency vehicles on an incident scene to maintain traffic flow, reduce bottlenecks, enhance scene safety, and prevent secondary collisions. Compliance with such direction is generally required of emergency vehicle drivers and their supervisors or chiefs; if a difference of opinion regarding scene safety arises, it should be raised in a cooperative fashion with the ranking law enforcement officer on the scene.

Note– State motor vehicle codes may contain provisions describing the onscene relationships between various public safety entities including fire departments, rescue squads, law enforcement agencies, highway departments, and others; fire department managers, supervisors, chiefs, and emergency vehicle drivers must become familiar with these specific provisions. Establishing positive and mutually supporting relationships, through training and exercises, with law enforcement and other members of the public safety community is highly recommended.

Aggressive Driving

Purpose:
To establish safe practices that address when an emergency vehicle driver employs aggressive driving techniques.

Scope:
All personnel.

Policy:
Emergency vehicle drivers shall not employ aggressive driving techniques to force other drivers to yield the right-of-way.

Emergency vehicles must be operated with due regard for the safety of civilian traffic at all times, and under all circumstances; the elimination of aggressive driving techniques is also critical for protecting the safety of other crew members assigned to the vehicle.

Emergency vehicle drivers have been cited, fined, and sentenced to imprisonment for causing harm through aggressive driving.

Special Driving Procedures

Backing Policy

Purpose:
To establish safe practices to ensure emergency vehicles are safely moved when operating in reverse mode.

Scope:
All Personnel.

Policy:
Before backing a fire department vehicle, the driver shall ensure that the intended path is clear of hazards or obstructions.

One or more spotters shall be employed as guides in all situations where the driver does not have a clear vision of the path of travel. Two spotters should be assigned when backing large or heavy apparatus–one covering each side of the vehicle. When available, a third spotter can be used to monitor traffic or, especially in the case of aerial apparatus, watch the front of the vehicle for overhead obstructions.

A spotter is responsible for guiding the driver and ensuring that any potential hazards are avoided. Standard signals shall be used to communicate with the driver during the backing maneuver; hand signals or voice signals transmitted over a portable radio can be employed for this purpose. The spotter shall direct the driver to stop at any time the backing maneuver cannot be completed safely.

The spotter(s) shall be on the ground, to the rear of the vehicle, and shall remain visible to the driver at all times. If the driver loses sight of the spotter(s) at any time, the driver shall immediately stop the vehicle. Portable radios or tethered vehicle-mounted intercom systems are recommended for spotters' safety. In no case are cameras or safety devices a substitute for a spotter. (NFPA 1500 requires at least one spotter to have contact with the driver.)

If it is essential to back a vehicle with limited rearward visibility and no spotter is available, the driver shall stop, dismount, and visually perform a 360-degree check around the vehicle before backing, with emphasis on the area behind and to both sides. After checking the area, the driver shall back the vehicle at slow speed and with extreme caution, prepared to stop immediately if necessary.

Signals

- **Straight Back**: One hand above the head with palm toward face, waving back. Other hand at your side. (Left or right hand optional)

- **Turn**: Both arms pointing the same direction with index fingers extended. (Driver will advise the spotter which way the turn will be made. The spotter then assists the driver in backing apparatus. The driver's intentions must be verbally communicated to the spotter.)

- **Stop**: Both arms crossed with hands in fist. Be sure to yell the stop order loud enough that the driver can hear the warning.

Night Backing

Signals will be the same. The spotter will ensure that the spotlights on rear of apparatus are turned on before allowing apparatus to be backed. A flashlight may be carried, but at no time will it be directed toward the mirror.

Maneuvering at an Incident Scene

Purpose:
To establish safe practices that address when maneuvering an emergency vehicle at an incident scene.

Scope:
All personnel.

Policy:
Drivers shall exercise extreme caution while maneuvering emergency vehicles at an incident scene; other drivers and pedestrians may be distracted or preoccupied by events and a variety of hazards (e.g., downed or low-hanging wires, limited visibility, hazardous materials, etc.) may be encountered. Vehicles shall be moved slowly and cautiously, with spotters assigned to guide the driver in tight situations.

When streets have been closed to regular traffic, the emergency vehicle driver remains fully responsible for the safe and prudent operation of the vehicle at all times.

When operating at an incident scene where the streets have not been closed to regular traffic, fire department vehicles shall be positioned, parked, or staged in a manner that considers safety as a primary factor.

Check for Unsecured Personnel: Before moving an emergency vehicle in any location, the driver shall ensure that all occupants are seated and properly secured in approved riding positions. The driver shall also ensure that no one is in the process of mounting, dismounting, standing on top of, or on the outside of, the vehicle.

Under no circumstances shall members be allowed to ride on the outside of a moving apparatus, including the tailboard, roof, aerial platform/bucket, or a top-mounted pump panel.

Return to Roadway

Purpose:
To establish safe practices that address when an emergency vehicle needs to return to the roadway when the wheels leave the paved surface of the roadway.

Scope:
All personnel.

Policy:
Fire department vehicle operators shall be aware of the actions to be taken if the wheels of the vehicle leave the paved surface of the roadway. In these situations, the vehicle shall be slowed to a speed below 20 miles-per-hour before any attempt is made to return it to the roadway.

Depending on road conditions and the condition of the off-road surface on which the vehicle is moving, it may be necessary to carefully bring the vehicle to a complete stop before attempting a return to the roadway; under many circumstances, particularly involving heavy apparatus, this may be the safest course of action.

Emergency Vehicle Drivers

Basic Driver Training

Purpose:
To establish a comprehensive basic driver training and education program that must be successfully completed by all drivers in the organization.

Scope:
All personnel who drive light duty vehicles in non-emergency mode.

Policy:
Basic driver training shall be completed before a member is authorized to drive any fire department vehicle or to drive a privately owned vehicle on fire department business. The fire department shall ensure that the individual is properly licensed and insured and has the necessary knowledge, skills, and abilities to operate a vehicle safely. The initial driver training program shall include:

- Traffic laws
- Traffic and highway safety
- Basic vehicle dynamics
- Inspection and maintenance procedures
- Competency course
- Over-the-road evaluation

Upon completion of the basic driver program, a member is authorized to drive light duty vehicles in a non-emergency mode. This classification includes passenger vehicles, SUVs, vans, and pick-up trucks. Additional training shall be required before the member is qualified to drive larger vehicles or to operate any vehicle in the emergency response mode.

The department shall periodically review the performance of each member who is authorized to drive fire department vehicles. The authorization to drive may be suspended or revoked as a result of such reviews and/or additional training may be required to maintain driving status. Members, who repeatedly fail to comply with fire department driving policies and procedures or violate traffic laws while driving fire department vehicles, should be re-evaluated or disciplined, if necessary.

Driver Training Program

Purpose:
To offer a comprehensive and advanced driver training program to provide members with the skills and knowledge necessary to reduce vehicle accidents and limit injuries to themselves and the public.

Scope:
All personnel who drive department vehicles in emergency mode.

Policy:
Department vehicles shall only be driven/operated by individuals who comply with the applicable state driver's license requirements and have been trained and certified to operate the particular vehicle or type/class of vehicle through the Fire Department Driver Training Program.

The Department will train drivers on all apparatus used by the XYZ Department, including, but not limited to pumpers, ladders, off-road vehicles, command vehicles, and specialty units.

The Driver Training Program will meet or exceed the guidelines set forth by the insert state Department of Motor Vehicles Commercial Driver License Program and will prepare drivers to meet the requirements of NFPA 1002 Standard for Fire Department Vehicle Driver/Operator Professional Qualifications.

The State of requires ….

The Department shall periodically review the performance of each member who is authorized to drive fire department vehicles. The authorization to drive may be suspended or revoked as a result of such reviews and/or additional training may be required to maintain driving status. Members, who repeatedly fail to comply with fire department driving policies and procedures or violate traffic laws while driving fire department vehicles, should be re-evaluated or disciplined, if necessary.

Emergency Vehicle Operator's Course

Purpose:
To set forth requirements to be a driver for emergency vehicles for the XYZ Department.

Scope:
All personnel who drive emergency vehicles for the organization.

Policy:
Before being authorized to operate any fire department vehicle in an emergency response mode, the member shall successfully complete an Emergency Vehicle Operator's Course (EVOC). Following completion of the EVOC program, the individual must demonstrate an appropriate understanding of the specific policies, procedures, and considerations that apply to emergency response, before being authorized to operate vehicles in an emergency response mode. A refresher EVOC training class is required at intervals of not more than three (3) years to maintain emergency vehicle operator status.

Driving Record Review

Purpose:
To set forth qualifications and requirements to be a driver for emergency vehicles for the XYZ Department.

Scope:
All personnel who drive emergency vehicles for the organization.

Policy:
The fire department shall obtain and review a copy of the member's motor vehicle record from the state Department of Motor Vehicles prior to allowing an individual to begin driver training. Each authorized driver's Motor Vehicle Record shall be reviewed periodically (at intervals of three years or less, with annual reviews recommended) to ensure that the individual maintains safe driving habits.

An individual who has been charged with an offense that could result in a suspension or revocation of his or her driver's license should notify his or her supervisor or chief within 48 hours. The individual may be suspended from driving emergency vehicles pending judgment, depending on the circumstances and existing department policy. Such charges would include:

- Driving while intoxicated or under the influence of drugs
- Negligent homicide or gross negligence
- Aggravated assault with a motor vehicle
- Reckless driving
- Leaving the scene of an accident

Alcohol & Substance Abuse Policy

Purpose:
To eliminate the abusive use of alcohol and illegal drugs through education, rehabilitation, and supervision techniques.

Scope:
All personnel.

Policy:
Fire department members are not permitted to be on duty, to respond to emergency incidents, to drive or operate fire department vehicles, nor to perform any other duty-related functions while under the influence of alcohol or drugs.

Fire department members shall not perform any duty-related functions for a minimum of eight (8) hours following the consumption of any alcoholic beverages. A longer period waiting period may be required to ensure that the individual is free of impairment. A blood alcohol concentration of 0.02 percent or higher, while on duty, shall create the presumption that the member is under the influence of alcohol.

The driver and the officer in charge of any fire department vehicle that is involved in an accident that causes measurable property damage, injury or death shall be tested for the presence of alcohol or drugs with the least possible delay. In addition, a chief officer may require a member to be tested for the presence of drugs or alcohol at any time, upon reasonable suspicion that the member could be under the influence of such substances.

Privately Owned Vehicle Response

Privately Owned Vehicle Response Policy

Purpose:
To establish guidelines governing the response to department events/incidents in privately owned vehicles (POVs).

Scope:
All personnel.

Policy:
Personnel must follow all laws and regulations for the State of XYZ that apply to non-emergency vehicles, unless the state statute allows POVs to operate as an emergency vehicle.

Please reference the following state regulation:

[INSERT STATE REGULATION HERE]

Authorization to Operate a POV as an Emergency Vehicle

Purpose:
To establish guidelines governing the official authorization allowing personnel to respond to department events/incidents in privately owned vehicles (POVs).

Scope:
All personnel.

Policy:

- Driver must own and operate a vehicle that complies with all state and local regulations, including, but not limited to; valid insurance & inspection.
- Driver must read and demonstrate an understanding of the Department's policies regarding use of "lights & sirens."
- The POV must be in proper mechanical condition and the warning devices in compliance with the applicable laws.
- Driver must wear a seatbelt at all times while operating the vehicle.
- Driver must complete an Emergency Vehicle Operator Course (EVOC).
- Driver must submit to a medical examination, skills evaluation, and driving record check.

Courtesy/Warning Light Policy

Purpose:
To establish guidelines governing the use of a “Courtesy/Warning Light” in privately owned vehicles (POVs) responding to an incident.

Scope:
All personnel who are authorized to respond to an incident in a POV.

Policy:
To ensure the safety of its members, the authorization for use of a “Courtesy/Warning Light” must be approved by the department.

Installation and use of warning lights on privately owned vehicles must be in accordance with state laws and regulations.

An authorized driver may use colored warning lights on privately owned vehicles to request the right-of-way when responding to emergency incidents. The use of a courtesy/warning light does not provide any special privileges or exemptions to traffic laws. Other drivers are not required to yield the right-of-way to a vehicle that has a courtesy light in operation. The only purpose of the warning light is to request that other drivers yield the right-of-way; the POV driver is required to comply with all traffic laws.

[INSERT APPLICABLE STATE REGULATIONS HERE]

The Department will revoke the authorization to use a warning/courtesy light if a member fails to comply with all of the requirements and legal limitations.

Accident Reporting & Investigation

Purpose:
To provide a standard system to report and investigate all department vehicular accidents and near misses (departmental or personal). (A near miss incident is defined as an incident in which no property damage and no personal injury occurred, but where, given a slight shift in time, position, or other circumstances, damage or injury would or may have occurred.)

Scope:
All personnel.

Policy:
All Department vehicular accidents should be reported to the communications center immediately.

The report should include the following:
- Unit ID or Apparatus Number
- Exact accident location
- An indication for need for additional medical assistance (e.g., BLS, ALS, etc…)
- An estimate of the extent and nature of the injuries and vehicle damage
- Indication on whether the vehicle is drivable
- Indication of need for cover assignment

While at the accident scene:
- Initiate appropriate medical care
- Do not discuss the incident with anyone other than fire and police representatives
- Do not move your vehicle unless it is creating a traffic hazard
- If you must move your vehicle, chalk the position of your tires prior to moving.
- Obtain witness names and contact information
- Remain at the scene until the police and fire representatives have completed their investigation

Based on the reported information, the Communications Center will:
- Dispatch any needed medical assistance
- Notify the Police Dispatcher of the incident
- Notify Department Chief Officers

All department vehicle accidents will be investigated. The process will include the following:

- Fact Finding Review
  - Separate interviews with the driver, all crew members, accident witnesses
  - Notes recorded at each interview
  - Contact Information recorded at each interview
- Notification of any applicable City/Town Agencies (e.g., Risk Management, Insurance Adjuster, etc…)
- Department employees involved in the incident should be isolated from the general public, the other parties involved in the incident, and the media.
- Members may be placed on Administrative Leave or directed to take a leave of absence during the initial investigative process.

The investigating officer should attempt to collect the following:

- Photographs/Video of the incident
- Police Report
- Name and badge of investigating Police Officer
- Names and contact information for all parties involved (including witnesses)
- Applicable City/Town/Department Accident Reports/Forms

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Roadway and Roadside Scene Safety Policy

Purpose:
To establish guidelines for protection of personnel and incident victims at all roadway or roadside incident scenes.

Scope:
All personnel.

Policy:
This procedure identifies parking practices for fire department apparatus and vehicles that will provide maximum protection and safety for personnel operating in or near moving vehicle traffic. It also identifies several approaches for individual practices to keep firefighters safe while exposed to the hazardous environment created by moving traffic.

It shall be the policy of the XYZ Fire Department to position apparatus and other emergency vehicles at a vehicle-related incident on any street, road, highway, or expressway in a manner that best protects the incident scene and the work area. Such positioning shall afford protection to fire department personnel, law enforcement officers, tow service operators and the motoring public from the hazards of working in or near moving traffic.

All personnel should understand and appreciate the high risk that personnel are exposed to when operating in or near moving vehicle traffic. Responders should always operate within a protected environment at any vehicle-related roadway incident.

Always consider moving vehicles as a threat to your safety. At every vehicle-related emergency scene, personnel are exposed to passing motorists of varying driving abilities. At any time, a motorist may be driving without a legal driver's license.

Approaching vehicles may be driven at speeds from a creeping pace to well beyond the posted speed limit. Some of these vehicle operators may be vision impaired, under the influence of alcohol and/or drugs, or have a medical condition that affects their judgment or abilities. In addition, motorists may be completely oblivious to your presence due to distractions caused by cell phone use, loud music, conversation, inclement weather, and terrain or building obstructions. Approaching motorists will often be looking at the scene and not the roadway in front of them. Assume that all approaching traffic is out to get you until proven otherwise.

Nighttime incidents requiring personnel to work in or near moving near traffic are particularly hazardous. Visibility is reduced and driver reaction time to hazards in the roadway is slowed.

Terminology

The following terms shall be used during incident operations, post-incident analysis, and training activities related to working in or near moving traffic.

- *Advance Warning*- notification procedures that advise approaching motorists to transition from normal driving status to that required by the temporary emergency traffic control measures ahead of them.
- *Block*- positioning a fire department apparatus on an angle to the lanes of traffic creating a physical barrier between upstream traffic and the work area. Includes 'block to the right' or' block to the left'.
- *Buffer Zone*- the distance or space between personnel and vehicles in the protected work zone and nearby moving traffic.
- *Downstream*- the direction that traffic is moving as it travels away from the incident scene.
- *Flagger*- a fire department member assigned to monitor approaching traffic and activate an emergency signal if the actions of a motorist do not conform to established traffic control measures in place at the highway scene.
- *Shadow*- the protected work area at a vehicle-related roadway incident that is shielded by the block from apparatus and other emergency vehicles.
- *Taper*- the action of merging several lanes of moving traffic into fewer moving lanes.
- *Temporary Work Zone*- the physical area of a roadway within which emergency personnel perform their fire, EMS and rescue tasks at a vehicle-related incident.
- *Transition Zone*- the lanes of a roadway within which approaching motorists change their speed and position to comply with the traffic control measures established at an incident scene.
- *Upstream*- the direction that traffic is traveling from as the vehicles approach the incident scene.

Safety Benchmarks

All emergency personnel are at great risk of injury or death while operating in or near moving traffic. There are several specific tactical procedures that should be taken to protect all crew members and emergency service personnel at the incident scene including:

- Never trust approaching traffic
- Avoid turning your back to approaching traffic
- Establish an initial "block" with the first arriving emergency vehicle or fire apparatus

- Always wear structural firefighting helmet
- Always wear the Class II or Public Safety highway safety vest at all vehicle-related emergencies or when working in or near a roadway
- Turn off all sources of vision impairment to approaching motorists at night time incidents including vehicle headlights and spotlights
- Use fire apparatus and police vehicles to initially redirect the flow of moving traffic
- Establish advance warning and adequate transition area traffic control measures upstream of incident to reduce travel speeds of approaching motorists
- Use traffic cones and/or cones illuminated by flares where appropriate for sustained highway incident traffic control and direction
- Establish a fire department member assigned to the “Flagger” function to monitor approaching traffic and activate an emergency signal if the actions of a motorist do not conform to established traffic control measures in place at the highway scene

Apparatus and Emergency Vehicle Benchmarks

Listed below are benchmarks for Safe Parking of apparatus and emergency vehicles when operating in or near moving traffic.

- Always position first-arriving apparatus to protect the scene, patients, and emergency personnel.
- Initial apparatus placement should provide a work area protected from traffic approaching in at least one direction.
- Angle apparatus on the roadway with a “block to the left” or a “block to the right” to create a physical barrier between the crash scene and approaching traffic.
- Allow apparatus placement to slow approaching motorists and redirect them around the scene.
- Use fire apparatus to block at least one additional traffic lane more than that already obstructed by the crashed vehicle(s).
- When practical, position apparatus in such a manner to protect the pump operator position from being exposed to approaching traffic.
- Positioning of large apparatus must create a safe parking area for EMS units and other fire vehicles. Operating personnel, equipment, and patients should be kept within the “shadow” created by the blocking apparatus at all times.
- When blocking with apparatus to protect the emergency scene, establish a sufficient size work zone that includes all damaged vehicles, roadway debris, the patient triage and treatment area, the extrication work area, personnel and tool staging area, and the ambulance loading zone.
- Ambulances should be positioned within the protected work area with their rear patient loading door area angled away from the nearest lanes of moving traffic.

- Command shall stage unneeded emergency vehicles off the roadway or return these units to service whenever possible.

At all intersections, or where the incident may be near the middle lane of the roadway, two or more sides of the incident will need to be protected.

Law enforcement vehicles must be strategically positioned to expand the initial safe work zone for traffic approaching from opposing directions. The goal is to effectively block all exposed sides of the work zone. The blocking of the work zone must be prioritized, from the most critical or highest traffic volume flow to the least critical traffic direction.

For first arriving engine or truck companies where a charged hoseline may be needed, block so that the pump panel is “down stream,” on the opposite side of on-coming traffic. This will protect the pump operator.

At intersection incidents, consider requesting law enforcement response. Provide specific directions to law enforcement officers as to exactly what your traffic control needs are. Ensure that law enforcement vehicles are parked in a position and location that provides additional protection of the scene.

Traffic cones shall be deployed from the rear of the blocking apparatus toward approaching traffic to increase the advance warning provided for approaching motorists. Cones identify and only suggest the transition and tapering actions that are required of the approaching motorist.

Personnel shall place cones and flares and retrieve cones while facing oncoming traffic.

Traffic cones shall be deployed at 15-foot intervals upstream of the blocking apparatus with the furthest traffic cone approximately 75 feet upstream to allow adequate advance warning to drivers

Additional traffic cones shall be retrieved from law enforcement units to extend the advance warning area for approaching motorists.

Incident Command Benchmarks
The initial-arriving company officer and/or the Incident Commander must complete critical benchmarks to ensure that a safe and protected work environment for emergency scene personnel is established and maintained including;

- Ensure that the first-arriving apparatus establishes an initial block to create an initial safe work area.
- Assign a parking location for all ambulances as well as later-arriving apparatus.

- Lanes of traffic shall be identified numerically as “Lane 1”, “Lane 2”, etc., beginning from the right to the left when right and left are considered from the approaching motorist’s point of view. Typically, vehicles travel a lower speed in the lower number lanes.
- Directions “Right” and “Left” shall be as identified as from the approaching motorist’s point of view left or right.
- Instruct the driver of the ambulance to “block to the right” or “block to the left” as it is parked at the scene to position the rear patient loading area away from the closest lane of moving traffic.
- Ensure that all ambulances on-scene are placed within the protected work area (shadow) of the larger apparatus.
- Ensure that all patient loading into ambulances is done from within a protected work zone.
- The initial company officer and/or Incident Commander must operate as the Scene Safety Officer until this assignment is delegated.
- Command shall ensure that traffic signal preemption strobe systems (if so equipped) are turned OFF and that other emergency lighting remains ON.
- At residential medical emergencies, Command shall direct ambulances to park at the nearest curb to the residence for safe patient loading whenever possible.

Emergency Crew Personnel Benchmarks

Listed below are benchmarks for safe actions of individual personnel when operating in or near moving vehicle traffic.

- Always maintain an acute awareness of the high risk of working in or near moving traffic. Act as if they are out to get you!
- Never trust moving traffic
- Always look before you move
- Always keep an eye on the moving traffic
- Avoid turning your back to moving traffic
- Personnel arriving in crew cabs of fire apparatus should exit and enter the apparatus from the protected ‘shadow’ side, away from moving traffic.
- Officers, apparatus operators, crew members in apparatus with individual jump seat configurations and all ambulance personnel must exit and enter their units with extreme caution remaining alert to moving traffic at all times.
- Class II or Public Safety vest and helmet must be donned prior to exiting the emergency vehicle.

- Always look before opening doors and stepping out of apparatus or emergency vehicle into any moving traffic areas. When walking around fire apparatus or emergency vehicle, be alert to your proximity to moving traffic.
    - Stop at the corner of the unit, check for traffic, and then proceed along the unit remaining as close to the emergency vehicle as possible.
    - Maintain a 'reduced profile' when moving through any area where a minimum 'buffer zone' condition exists.

- Law enforcement personnel may place traffic cones or flares at the scene to direct traffic. This action builds upon initial fire department cone deployment and can be expanded, if needed, as later arriving law enforcement officers arrive. Always place and retrieve cones while facing on-coming traffic.

- Placing flares, where safe to do so, adjacent to and in combination with traffic cones for nighttime operations greatly enhances scene safety. Where safe and appropriate to do so, place warning flares to slow and direct approaching traffic.

High-Volume, Limited Access, Highway Operations

High-volume limited access highways include the expressways, toll ways, freeways, and multi-lane roadways within the fire department response area. Typically, law enforcement and Department of Transportation (DOT) agencies have a desire to keep the traffic moving on these high-volume thoroughfares. When in the judgment of fire department command it becomes essential for the safety of operating personnel and the patients involved, any or all lanes, shoulders, and entry/exit ramps of these limited access highways can be completely shut down. This, however, should rarely occur and should be for as short a period of time as practical.

Unique Safe Parking procedures at expressway, toll way, freeway, and limited-access, high-volume multi-lane roadway incidents;

- First-arriving engine company apparatus shall establish an initial block of the lane(s) occupied by the damaged vehicle plus one additional traffic lane.

- A ladder truck apparatus shall be automatically dispatched to all vehicle-related incidents on all limited-access, high-volume expressways, tollway, freeway, and highways.

- The primary assignment of this Truck company apparatus and crew shall be to;
    - Establish an upstream block occupying a minimum of two lanes plus the paved shoulder of the highway or blockage of three driving lanes of traffic upstream of the initial block provided by the first-due apparatus.
    - The position of this apparatus shall take into consideration all factors that limit sight distance of the approaching traffic including ambient lighting conditions, weather-related conditions, road conditions, design curves, bridges, hills and over- or underpasses.
    - Traffic cones and/or cones illuminated by flares should be placed upstream of the ladder truck apparatus by the ladder truck crew at the direction of the company officer.

    - Traffic cones on limited-access, high-volume roadways shall be placed farther apart, with the last cone approximately 150 feet "upstream", to allow adequate warning to drivers. Personnel shall place cones and flares and retrieve cones while facing the traffic.
    - Assign a Flagger person to monitor the response of approaching motorists as they are directed to transition to a slower speed and taper into merged lanes of traffic.
    - Notify Command on the incident operating channel of any approaching traffic that is not responding to the speed changes, transition, tapering and merging directions.
    - Flagger shall activate a pre-determined audible warning to operating personnel of a non-compliant motorist approaching.
    - Driver operator of ladder truck apparatus shall sound a series of long blasts on the apparatus air horn to audibly warn all operating personnel of the concern for the actions of an approaching motorist.

- Law enforcement vehicles will be used to provide additional blocking of additional traffic lanes as needed. Ambulances shall always be positioned within the safe work zone.

- Staging of additional companies off the highway may be required. Ambulances may be brought onto the highway scene one or two at a time. An adequate size multi-patient loading area must be established.

- Command should establish a liaison with law enforcement as soon as possible to jointly coordinate a safe work zone and to determine how to most efficiently resolve the incident and establish normal traffic flows.

- The termination of the incident must be managed with the same aggressiveness as initial actions. Crews, apparatus, and equipment must be removed from the highway promptly, to reduce exposure to moving traffic and minimize traffic congestion.

Officer's Safe Parking "Cue Card"

- "Block" with first-arriving apparatus to protect the scene, patients, and emergency personnel
- Block at least one additional lane
- Block so pump panel is "down stream"
- Block most critical or highest traffic volume direction first
- Consider requesting additional law enforcement assistance
- Crews wear proper PPE w/Helmet
- Wear helmet at all times
- Always wear Class II or Public Safety vest when operating in or near a roadway
- Establish more than adequate advance warning
- Traffic cones at 15' intervals
- Deploy minimum 5 cones upstream
- Cones only "Suggest" they do not Block!
- Expand initial safe work zone
- Direct placement of ambulances
- Ensure ambulances park within shadow of larger apparatus as directed
- Lane 1 is furthest right lane, next is Lane 2, then Lane 3, etc. from approaching motorist's point of view
- Direct ambulance to "block to the right" or "block to the left" to protect loading doors
- Place ambulance patient loading area facing away from closest lane of moving traffic
- All patient loading into ambulances is done from within a protected work zone
- You are the Scene Safety Officer
- Consider assigning firefighter as upstream "Spotter" as necessary for approaching traffic

Night or Reduced Light Conditions

- Turn OFF vehicle headlights
- Turn OFF traffic signal preemption strobes (if so equipped)
- Provide overall scene lighting
- All personnel in PPE with helmets
- Illuminate cones with flares if possible
- Consider additional Truck company for additional upstream “Block”
- Limited access, high-volume highway incidents
- Establish initial block: minimum two lanes
- Ladder truck establishes upstream block
- Two lanes plus paved shoulder or three driving lanes
- Place cones and/or cones illuminated by flares upstream of ladder truck apparatus, last cone approximately 150 feet “upstream” of apparatus
- Establish Flagger position, monitor approaching traffic sound emergency signal as necessary
- Driver operator of ladder truck apparatus sound a series of long blasts on apparatus air horn as necessary
- Use law enforcement vehicles for additional blocking
- Stage additional companies off highway
- Establish liaison with law enforcement
- Terminate incident aggressively

For more information regarding safety for responders working in or near a roadway, refer to the following website: http://www.respondersafety.com

Note– Public Safety reflective vests were under development at this time of publication. An ANSI standard is expected which will provide a specialized reflective vest for responders that includes a “breakaway” feature and optional color coding by discipline.

Note– Departments must comply with Section 6i of MUTCD (Manual of Uniform Traffic Code Devices) and ensure their SOPs are compliant.

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Safe Driving Program

Purpose
To establish a safe driving program to provide incentive to Department personnel to engage in safe driving habits.

Scope
All Personnel.

Policy:
Recognition awards will be offered to Department personnel that have no preventable accidents involving a department vehicle for a specified period of time. Recognition awards will also be offered to Department personnel that have no preventable accidents and no traffic violations while responding to the station or emergency incident in an authorized POV.

The awards schedule is as follows:
3 Years = Insert chosen award here
5 Years = Insert chosen award here
10 Years = Insert chosen award here
15 Years = Insert chosen award here
20 Years = Insert chosen award here
25 Years = Insert chosen award here

Preventability of a vehicle accident will be determined by the Department's Accident Investigator and/or Accident Review Committee, police reports and/or other internal investigations.

A vehicle accident is determined to be preventable if the Department member failed to exercise any reasonable defensive driving options and/or has operated the vehicle in any unsafe manner or violated any procedures.

Traffic Pre-Emption Policy

Purpose:
To make responses by emergency vehicles safer and timelier, the jurisdiction has committed to installing and maintaining traffic signal pre-emption systems at various signalized intersections throughout the jurisdiction.

Scope:
All vehicle operators and officers.

Policy:
Department personnel must use the traffic pre-emption system on all dispatched emergency responses and when transporting all emergency class patients to medical facilities to prevent death, injury and property damage. Use of the emitter system DOES NOT GUARANTEE or GRANT right-of-way. Drivers must:

- Use traffic preemption devices, when warning lights/sirens are activated
- Turn off the traffic pre-emption emitter and warning devices when ordered to "reduce speed", or any order that means there is no longer an emergency
- Not use the emitter during non-emergency functions, e.g., parades, community functions, store/food runs, etc.
- Attend training before operating a vehicle with an emitter
- Install the emitter device so that it will automatically turn off when transmission is in the park position, or when the vehicle parking or emergency brake is applied, the emitter is turned off automatically

The Department must ensure:

- There is a method for checking the system periodically to ensure it works
- All emitters must have on/off switch to allow unit to be turned off when vehicle is in parade, for example
- Ensure that pre-emption equipped vehicles have parking brake or transmission automatic shutoffs

Vehicle Inspection Policy

Purpose:
To ensure vehicle and equipment are in working order and that the vehicle is safe and ready to respond.

Scope:
All Personnel.

Policy:

Fire apparatus shall only be operated when their mechanical condition makes it safe to do so. The following list of vehicle defects has been developed to guide apparatus operators in making decisions related to the operational safety of a fire department vehicle. If an "out-of-service" condition is discovered, the vehicle shall be placed out of service and the condition of the vehicle shall be reported to the responsible officer. The vehicle shall not be returned to service until the problem condition is resolved by a qualified individual.

The following defects and deficiencies of the driving and crew areas, the apparatus body, and the compartmentation reduce the operational safety and performance of the fire apparatus and shall be considered out-of-service criteria:

- Body mounting that is defective
- Cab mounting that is defective
- Seat belts that are torn or have melted webbing, missing or broken buckles, or loose mountings. Due to the extreme safety-related consequences of a defective seat belt, and the fact that one defective seat belt (unless it is the driver's seat belt) does not render a piece of apparatus unusable, the authority having jurisdiction shall take any seating position with a defective seat belt out of service
- Cracked or broken windshield that obstructs the driver's/operator's view
- Missing or broken rear-view mirrors that obstruct the driver's/operator's view
- Windshield wipers that are missing or inoperable
- Steering wheel that has a deficiency
- Oil pressure gauge or engine or transmission temperature gauges that have failed
- Air gauge or audio low air warning device that has failed
- Door latches that are defective
- Defrosters that are defective
- Foot throttle that is defective

The following defects and deficiencies of the chassis, axles, steering and suspension systems, driveline, wheels, and tires reduce the operational safety

and performance of the fire apparatus and shall be considered out-of-service criteria:

- Tires that have cuts in the sidewall that penetrate to the cord
- Tires that are defective
- Tires that have a tread depth of 4/32 in. (3.2 mm) or less on any steering axle or 2/32 in. (1.6 mm) or less on any non-steering axle at any two adjacent major tread grooves anywhere on the tire
- Suspension components that are defective
- Wheel fasteners that are missing or broken
- Wheels that are defective
- Axle flanges that have Class 3 leakage
- An axle that has any Class 3 leakage
- Steering components that are defective
- A steering component that has Class 3 leakage
- Driveline components that are defective

The following defects and deficiencies of the *engine systems* reduce the operational safety and performance of the fire apparatus and shall be considered out-of-service criteria:

- Air filter restriction indicator that shows maximum restriction
- Engine that won't crank or start
- Engine system that has Class 3 leakage of oil
- Engine that is overheating
- Oil that contains coolant
- Oil that is diluted with fuel
- A fuel system component that has Class 2 leakage of fuel
- Fuel tank, mountings, or straps that are defective
- Stop-engine light that fails to turn off after engine is started

The following defects and deficiencies of the *engine cooling system* reduce the operational safety and performance of the fire apparatus and shall be considered out-of-service criteria:

- Cooling system component that has Class 3 leakage
- Coolant that contains oil
- Radiator that is defective
- Water pump bearing that is defective
- Cooling fan that is defective
- Coolant system components that are defective

The following defects and deficiencies of the *transmission and clutch* reduce the operational safety and performance of the fire apparatus and shall be considered out-of-service criteria:

- Clutch components that are defective
- Transmission components that are defective
- Shift linkages that are defective
- Automatic transmission that overheats in any range
- Automatic transmission that has a “Do not shift” light on
- Transmission components that have Class 3 leakage of transmission oil

The following defects and deficiencies of the l*ow voltage electrical system and the line voltage electrical system* reduce the operational safety and performance of the fire apparatus and shall be considered out-of-service criteria:

- Federal Department of Transportation lighting that is defective
- Ignition system that is defective
- Charging system that is defective
- Grounding and bonding of the line voltage electrical system that is defective

The following defects and deficiencies of the *air brake system* reduce the operational safety and performance of the fire apparatus and shall be considered out-of-service criteria:

- Service brakes that have an air pressure drop of more than 2 psi (13.8 kPa) in 1 minute for single fire apparatus or more than 3 psi (20.7 kPa) in 1 minute for combination fire apparatus, with the engine stopped and the service brakes released
- Leak-down rate (time) of the applied side of the air brake that is more than 3 psi (20.7 kPa) in 1 minute for single fire apparatus or more than 4 psi (27.6 kPa) in 1 minute for combination fire apparatus, with the engine stopped and the service brakes applied
- Brakes that are out of adjustment
- Braking system components that are defective
- Braking operation that is ineffective
- Parking brake operation that is ineffective
- Air compressor that fails to build air pressure
- Air compressor that fails to maintain 80-90 psi (552-621 kPa) pressure in the system with the service brakes applied and the engine at idle, or air compressor that fails to fill the air system to the air compressor governor cutout pressure with the service and parking brakes released

- Friction surfaces, brake shoes, or disc brake pads that have grease or oil on them
- Brake lining or pads that are worn beyond the brake system manufacturer’s minimum specifications
- Rotors and drums that are worn beyond the brake system manufacturer’s minimum specifications
- Antilock braking system (ABS) warning indicator that is activated

The following defects and deficiencies of the *hydraulic brake system* reduce the operational safety and performance of the fire apparatus and shall be considered out-of-service criteria:

- Brake system components that have Class 2 leakage of brake fluid
- Friction surfaces, brake shoes, or disc brake pads that have grease or oil on them
- Braking system components that are defective
- Braking operation that is ineffective
- Parking brake operation that is ineffective
- Brake warning light that is activated or brake pedal that falls away or drifts toward the flooring when brake pressure is applied
- Brake lining or pads that are worn beyond the brake system manufacturer's minimum specifications
- Rotors and drums that are worn beyond the brake system manufacturer's minimum specifications
- ABS warning indicator that is activated

The following defects and deficiencies of the *fire pump system* reduce the operational safety and performance of the fire apparatus and shall be considered out-of-service criteria:

- Pump test results that fall below 90 percent of the original rating of the pump when tested in accordance with NFPA 1911, *Standard for Service Tests of Fire Pump Systems on Fire Apparatus*
- Pump that will not engage
- Water tank that will not hold water
- Pressure control system that is not operational
- Pump transmission components that have Class 3 leakage of fluid
- Pump transmission lubricant that is contaminated
- Pump panel throttle that is defective

The following defects and deficiencies of the *aerial device and its systems* reduce the operational safety and performance of the fire apparatus and shall be considered out-of-service criteria:

- Power takeoff (PTO) that will not engage
- Stabilizer system that is defective
- Aerial device that is defective
- Hydraulic system components that are defective
- Cable sheaves that are defective
- Cables that are defective or frayed
- Base and section rails that show ironing beyond the manufacturer's recommendations
- Aerial device that is structurally deformed
- Torque box structure or fasteners that are defective

- Turntable fasteners that are defective or missing

The visual inspections, operational tests, and load tests defined in NFPA 1914, *Standard for Testing Fire Department Aerial Devices*, shall be conducted at the following times:

- At least annually
- After major repairs or overhaul
- Following the use of the aerial device when the aerial device could have been subjected to unusual operating conditions of stress or load
- When there is reason to believe that usage has exceeded the manufacturer's recommended aerial device operating procedures

The complete inspections and tests including the non-destructive testing (NDT) defined in NFPA 1914, *Standard for Testing Fire Department Aerial Devices*, shall be conducted at least every 5 years. NDT shall be conducted whenever visual inspection or load testing indicates a potential problem or when there is a desire to further confirm continued operational safety.

If the fire apparatus is equipped with a *fire pump*, the pump shall be service-tested in accordance with NFPA 1911, *Standard for Service Tests of Fire Pump Systems on Fire Apparatus*, at least annually and whenever major repairs or modifications to the pump or to any component of the apparatus that is used in pump operations have been made.

Testing of the braking system, including antilock brake systems and auxiliary brake systems, shall be conducted at a prescribed interval, not to exceed the manufacturer's recommendations, at least annually, or whenever adjustments, repairs, or modifications have been performed on any component that can affect the proper operation of the braking system or systems. All testing shall be conducted at a location and in a manner that does not violate local, state, or federal traffic laws.

Vehicle Design & Construction

Purpose:
The purpose of this procedure is to ensure that fire department vehicles incorporate safety features that will protect firefighters.

Scope:
This procedure is intended to govern the purchase of all fire department vehicles.

Policy:
Firefighter safety shall be a primary consideration in the specification and purchase of fire department vehicles.

Vehicles purchased by the fire department shall comply with applicable emergency service minimum standards. Fire apparatus shall comply with the latest edition of NFPA 1901, *Standard for Automotive Fire Apparatus*. Ambulances shall comply with General Services Administration standard Triple K-A-1822(E). These standards have numerous safety-related requirements.

When possible, supplemental safety systems such as air bags, stability systems, and antilock braking systems shall be incorporated into fire department vehicles.

Fire department vehicles shall be designed to limit the opportunity for firefighters to ride in unauthorized or unsafe positions on the vehicle.

Large vehicles that are likely to be operated by one person should be equipped with devices to aid the driver while in reverse. These devices may include cameras, sonic sensors, and other devices designed to minimize or eliminate backing crashes.

Fire apparatus with a Gross Vehicle Weight Rating (GVWR) of 32,000 pounds or greater should be equipped with an auxiliary braking device such as a transmission retarder, exhaust retarder, or driveline retarder.

Fire apparatus and fire department vehicles shall be designed to allow the driver to concentrate on the task of driving with both hands on the steering wheel. The operational controls for emergency warning devices shall be oriented to allow operation by the officer in vehicles that will normally accommodate more than one firefighter. For vehicles that normally respond with one firefighter, the controls for emergency warning devices shall be designed to require minimal attention on the part of the driver to operate.

A speedometer shall be supplied and installed to be in the full view on the right side of all fire apparatus to allow the officer to effectively monitor the speed of the vehicle.

For vehicles with high centers of gravity, such as aerial ladders and ARFF apparatus, a rollover warning system should be provided to give the driver feedback on the stability of the vehicle, especially in turns.

For fire apparatus, an emergency brake activation switch shall be mounted within the reach of the officer to allow the vehicle to be stopped in the event that the driver becomes incapacitated.

Seat belt extensions shall be provided on the female end of seat belts in fire apparatus to allow firefighters to more easily connect seat belts while wearing protective clothing.

Provisions shall be made to carry equipment normally contained within the passenger compartment of fire apparatus and ambulances in brackets or compartments, which will limit damage and injury in the event of a collision.

When specifying and purchasing fire apparatus, particular attention shall be paid to the ability of firefighters to mount and dismount fire apparatus. Step heights and step depths shall be managed to provide for safety.

A placard with the height and loaded weight of fire apparatus shall be displayed in plain view of the driver of the vehicle. The weight of the loaded apparatus shall be expressed in pounds and in tons.

A small convex mirror shall be provided which permits the officer to view the firefighters riding in the rear of any fire apparatus cab with rear seats.

Vehicle Safety Program Implementation

Purpose
To establish guidelines for the organization and operation of a vehicle safety program.

Scope
All Personnel.

Policy:
The vehicle safety program will handle the following responsibilities:

- Establish Vehicle Safety Procedures
- Provide safety input on the design of apparatus
- Assist Driver Training Officer with driver safety education/training
- Review vehicle accident/injury reports
- Develop intervention methods
- Manage and award the Recognition Awards

APPENDIX 8

EMERGENCY VEHICLE SAFETY BEST PRACTICES SELF-ASSESSMENT

ESECG
Emergency Services Education & Consulting Group
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Emergency Vehicle Safety - Best Practice Self Assessment

Best Practice	In Place Yes	In Place No	Effective Yes	Effective No	Products To Use Agencies to Contact for Possible Materials/Reference	How can Program Be Enhanced
Responsible Party						
Champion					Canadian Safety Council National Fallen Firefighter Foundation National Fire Academy/US Fire Administration/FEMA National Volunteer Fire Council National Highway Traffic Safety Administration National Safety Council National Fire Protection Association NIOSH VFIS USFA Emergency Vehicle Safety Initiative	
Authority					Emergency Service Organization Governing Body, e.g. City Council, Fe District Board, County or Township Board, Fire Department Executive Board NFPA 1451, *Fire Service Vehicle Operations Training Programs* NFPA 1500, *Standard on Fire Department Occupational Safety and Health Programs* Fire Protection Publications – *Fire Department Pumping Apparatus Maintenance*	
Responsibility					Emergency Service Organization Governing Body, e.g. City Council, Fe District Board, County or Township Board, Fire Department Executive Board	
Accountability					Emergency Service Organization Governing Body, e.g. City Council, Fe District Board, County or Township Board, Fire Department Executive Board	
Collision Investigation						
Of Each Incident					Emergency Services Accident Investigation, VFIS, 1999 Risk Management for EMS, VFIS, 2001 Fire Department Loss Control, Jenaway B., ISFSI, 1987 Pennsylvania Department of Health – EMS Office, EMS Vehicle Collision Report Form and Policy, 2003, http://www.dsf.health.state.pa.us/health/cwp/view.asp?a=170&q=203353 Accident Investigation, Safetyworks, National Safety Council, 2004 NFPA 1500, Fire Department Administration, Chapter 4 Workplace Safety Is No Accident, An Employer's Online Toolkit to Protect Employees and Volunteers, www.nonprofitrisk.org	

					Public Risk Entity Institute www.riskinstitute.org National Institute for Occupational Safety and Health www.niosh.gov National Safety Council, www.nsc.org	
Of Each Near-Miss					Emergency Services Accident Investigation, VFIS, 1999 Risk Management for EMS, VFIS, 2001 Fire Department Loss Control, Jenaway B., ISFSI, 1987 Pennsylvania Department of Health – EMS Office, EMS Vehicle Collision Report Form and Policy, 2003, http://www.dsf.health.state.pa.us/health/cwp/view.asp?a=170&q=203353 Accident Investigation, Safetyworks, National Safety Council, 2004 NFPA 1500, Fire Department Administration, Chapter 4 Workplace Safety Is No Accident, An Employer's Online Toolkit to Protect Employees and Volunteers, www.nonprofitrisk.org Public Risk Entity Institute www.riskinstitute.org National Institute for Occupational Safety and Health www.niosh.gov National Safety Council, www.nsc.org	
Loss Analysis						
Identify Program Needs					Emergency Services Accident Investigation, VFIS, 1999 Risk Management for EMS, VFIS, 2001 Fire Department Loss Control, Jenaway B., ISFSI, 1987 Safety Program Management, NSC Safetyworks, National Safety Council, 2004 NFPA 1500, Fire Department Administration, Chapter 4 Workplace Safety Is No Accident, An Employer's Online Toolkit to Protect Employees and Volunteers, www.nonprofitrisk.org Public Risk Entity Institute www.riskinstitute.org National Institute for Occupational Safety and Health www.niosh.gov	
Regulatory Compliance						
State					Applicable Laws of Each State or Province State or Provincial Training or CEU Requirements	
DOT					Title 49, *Code of Federal Regulations*, Part 571, Subpart B, "Federal Motor Vehicle Safety Standards" Federal Highway Administration MUTCD	
Other					Society of Automotive Engineers Publications National Truck Manufacturers Association American Society of Safety Engineers - ANSI Z15 "Safety Regulations for Motor Vehicle Fleet Operations"	
Training						

SOP/SOGs					VFIS SOP/SOG Program USFA FA-197PDF , FA – 160 Communications, USFA SOP/SOG Manual NVFC-CD "Developing Effective Standard Operating Procedures for Fire & EMS Departments", Firehouse.com lists of SOPs/SOGs, Phoenix Fire Department Operations Manual Vol. II, Check various emergency service organization websites for vehicle related SOPs/SOGs	
Personal Accountability					VFIS - SOP/SOG Training Program, Emergency Vehicle Driver Training Program, Risk Management for Fire / EMS, Firefighter Safety NFPA - 1451 All of document specifically sec. 7.1, 1002 Specifically Chapter 4, 1500 Chapter 4 & 6 specifically sec. 4.4.9 FEMA - Risk Management Practices in the Fire Service, FA-166 Dec 1996 IFSTA - Pumping Apparatus /Driver Operator Handbook *Fire Service and the Law*, Charles W. Bahme, A.B. , J. D.	
EVOC Initial/Basic					VFIS Emergency Vehicle Driver Training USFA Emergency Vehicle Driver Training FA110 National Safety Council Defensive Driving Course IFSTA Pumping Apparatus Driver/Operator Handbook IFSTA Aerial Apparatus Driver/Operator Handbook National Safety Council - Coaching the Emergency Vehicle Operator – Fire – Driver Response Book National Safety Council - Coaching the Emergency Vehicle Operator Ambulance Maneuvering Skills National Safety Council – Coaching the Emergency Vehicle Operator II – Fire – Instructor Kit National Safety Council - Coaching the Emergency Vehicle Operator II – Ambulance – Instructor Kit VFIS – Paratransit Driver Operator Training Program US DOT – EVOC Course – Ambulance Emergency Vehicle Operations – Michael Wilbur – www.emergencyvehiclerespnse.com	
EVOC Refresher					VFIS Dynamics of Emergency Vehicle Responses VFIS – Emergency Vehicle Response Safety VFIS – Highway Safety	
On-Line					National Safety Council – Coaching the Emergency Vehicle Operator II – Ambulance Online National Safety Council – Coaching the Emergency Vehicle Operator II – Fire Online Target Safety	
CD ROM/Video Programs					VFIS – Rollover Prevention VFIS – Intersection Safety VFIS – Preventive Maintenance for Emergency Vehicles VFIS – Highway Safety for Emergency Services VFIS – EZ EVOC for Fire	

					VFIS – ES EVOC for EMS Action Training Systems – Pumping Apparatus Driver/Operator Series Action Training Systems – Safe Operations of Emergency Vehicles Action Training Systems – Positioning Apparatus Action Training Systems – Apparatus Inspection and Maintenance – Pumper Series Action Training Systems - Aerial Apparatus Series Action Training Systems – Aerial Apparatus Driving Techniques Action Training Systems – Positioning Aerial Apparatus Action Training Systems – Aerial Apparatus Maintenance Action Training Systems – EMS Series – Behind the Wheel Action Training Systems – Developing Safe Driving Attitudes Action Training Systems – Controlling EMS Response Vehicles Action Training Systems – EMS Vehicle Preventive Maintenance National Wildfire Coordinators Group USDA Forest Service – Focus of the Mission USDA Forest Service – Transporting Wildland Firefighters USDA Forest Service – Backing Up on Forest Roads USDA Forest Service – Driving Mountain Roads	
Additional Resources					VFIS – Driver Accident Reporting Packet VFIS – Safety Posters VFIS – Safety Form Kit	
Over the Road Evaluations					VFIS – Over the Road Evaluation Form Smith System – Over the Road Evaluation – www.smith-system.com	
Standards					NFPA 1002 – Fire Department Vehicle Driver/Operator NFPA 1451	
Agencies					Key word search – Emergency Vehicle Driver Training Programs State and Local Training Academies Universities and Colleges Vocational/Technical Institutions Public Safety Training Centers CDL Driver Training Schools Private Training Consultants Specialized Driver Training	
Vehicle Design/Operations					Fire Engineering Books Publication – *Fire Apparatus Purchasing Handbook, Introduction to Fire Apparatus and Equipment*	
Each New Vehicle					IFSTA Manuals – *Pumping Apparatus Driver/Operator Handbook,* *Aerial Apparatus Driver/Operator Handbook* NFPA 1911, *Standard for Service Tests of Fire Pump Systems on Fire Apparatus* NFPA 1914, *Standard for Testing Fire Department Aerial Devices*	

					NFPA 1915, *Standard for Fire Apparatus Preventive Maintenance Program* Action Training System Video Series – *Pumping Apparatus Driver/Operator* *Aerial Apparatus* *EMS – Behind the Wheel* National Safety Council – Fact Sheets, Defensive Driving Course National Academy for Professional Driving Training from Apparatus Manufacturer	
Loss Prevention Practices						
On the Quiet Response					Emergency Vehicle Safety Initiative, FEMA, August 2004 Position Paper – "Use of Warning Lights and Sirens in Emergency Medical Vehicles", National Association or EMS Physicians and National Association of State EMS Directors, 1994, reconfirmed 2002 Patient Outcome Using Medical Protocol to Limit "Lights and Siren" Transport, Douglas F. Kupas, MD, David J. Dula, MD FACEP, Bruno J. Pino, 1994 Quiet is Safer, Frank Schaper, Greg Gerner, 1995 Risk Reduction in Emergency Response, Federal Signal Corporation, 1992 NFPA 1500, Section 6.2.3 states that you need to develop Rules for response and 6.2.6 states you must obey all traffic laws. Fire Department Occupational Safety, Second Edition, published by Fire Protection Publications at Oklahoma State University, Stillwater, Oklahoma, Chapter 8 - "En Route Hazards and Response." Starting at Page 213 NFPA 1500, Fire Department Administration, Chapter 4 NFPA 1500, Emergency Operations, Chapter 8	
Driver Selection					VFIS EVDT Program, VFIS EVRS Program, VFIS Communiqué Driver Selection, USFA FA-110, NFPA 1500 and 1002	
Vehicle Inspection					State: Refer to State specific Motor Vehicle Inspection Laws Vehicle Manufacturers: Refer to specific manufacturers instructions VFIS Emergency Vehicle Driver Training Program VFIS Risk Management Video Series : Vehicle Inspection VFIS downloads of vehicle forms www.vfis.com WEB Search - Favorite search engine type: department of motor vehicles , inspection, emergency vehicles IFSTA: Pumping Apparatus /Driver Operator Handbook NFPA: Documents 1002, 1451, 1500, 1901 provide input for the development of your vehicle Inspection practices.	

Routine Maintenance					Fire Apparatus Manufacturers Association @ fama.org - Comprehensive list of manufacturers with individual links. Manufacturer recommendations that came with vehicle	
Reflective Striping					VFIS EVRS Course, NFPA 1901, Emergency Vehicle Safety Initiative FEMA FA272 August 2004, FAMA White Paper Report to the American Fire Service "A report on Application of New Technology To modern Fire Apparatus"	
SOP/SOG's					VFIS SOP/SOG Program USFA FA-197PDF , FA – 160 Communications, NVFC-CD "Developing Effective Standard Operating Procedures for Fire & EMS Departments", Firehouse.com lists of SOPs/SOGs, Phoenix Fire Department Operations Manual Vol. II, Check various emergency service organization websites for vehicle related SOPs/SOGs	
Electronic Monitoring					Road Safety International @ roadsafety.com (go into emergency vehicle section) DRIVECAM - www.insins.com	
Substance Abuse Program					VFIS Pamphlet on Substance Abuse, USFA Library, Phoenix Fire Employee Assistance Program, NFPA 1582 , 2003 edition, National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism, IAFF Fire Service Joint Labor Management Wellness-Fitness Initiative, Phoenix Fire M.P. 105.01A 06/94-R Employee Assistance Program, www.samhsa.gov/index.aspx	
Speed Limitations					VFIS Emergency Vehicle Driver Training Program VFIS SOP / SOG Training Program VFIS Risk control Communiques (www.vfis.com) VFIS Risk Management Video Series , Intersections , Rollover Prevention NFPA Standards 1002 and 1500 State specific motor vehicle laws pertaining to emergency vehicle response www.respondersafety.com www.firefighterclosecalls.com	
Backing Apparatus					VFIS EVDT Program, VFIS Dynamics of Emergency Vehicles Response Program, USFA Library FA – 110 and FA- 272, NFPA 1500, IFSTA 36320 EVDT Manual,	
Warning Devices					State - Research specific state vehicle codes for applicable requirements VFIS - Emergency Vehicle Driver Training Publications- All Fire Service magazines & publications "Buyers Guides" Organizations – FEMSA, FAMA FEMA - www.usfa.fema.gov/research/safety/vehicle.shtm Vendors - Whelen www.whelen.com Federal signal www.commnetc.com/federal.htm	

					Web search - Favorite search engine type: traffic pre emption devices NFPA 1500	
Priority Dispatching					Emergency Vehicle Safety Initiative, FEMA, August 2004 Principles of Emergency Medical Dispatch, Second Version 10.3 Priority Press Author(s): Jeff J. Clawson, M.D. & Kate Boyd Dernocoeur, EMT-P, 1998 Standard Practice for Emergency Medical Dispatch, ASTM Designation F-1258-90 Position Paper – Emergency Medical Dispatching, National Association of Emergency Medical Services Physicians, 1989 Fire Department Occupational Safety, Second Edition, published by Fire Protection Publications at Oklahoma State University, Stillwater, Oklahoma, Chapter 8 - "En Route Hazards and Response." Beginning on Page 213 NFPA 1500, Fire Department Administration, Chapter 4 NFPA 1500, Emergency Operations, Chapter 8 National Academy of Emergency Dispatch, www.naed.org	
Reduced Responses					Emergency Vehicle Safety Initiative, FEMA, August 2004 NFPA 1500**,** Section 6.2.3 states that you need to develop Rules for response and 6.2.6 states you must obey all traffic laws. Fire Department Occupational Safety, Second Edition, published by Fire Protection Publications at Oklahoma State University, Stillwater, Oklahoma, Chapter 8 - "En Route Hazards and Response." Starting on Page 213 NFPA 1500, Fire Department Administration, Chapter 4 NFPA 1500, Emergency Operations, Chapter 8	
Alcohol Use Policy					VFIS Communiqué on Alcohol Use, VFIS Safety Packet, IAFC policy on Alcohol, National Institute on Alcohol Abuse, www.samhsa.gov/index.aspx (this is considered as the Gold Standard on Substance (Drug and Alcohol) abuse	
Traffic Pre-emption					Emergency Vehicle Safety Initiative, FEMA, August 2004 A Safer Journey for Emergency Response Vehicles Strategic Management of Change Martin, Wayne J., November 1996, p.15 Support for High Priority Traffic Using Preemption, http://www.cstp.umkc.edu/~beardc/BeardXiao_Preempt.pdf#search='Traffic%20Preemption%20Research' NFPA 1500, Fire Department Administration, Chapter 4 NFPA 1500, Emergency Operations, Chapter 8 U.S. Intelligent Transportation Systems, http://www.its.dot.gov/ Intelligent Transportation Systems, www.ITS.com 3M Opticom, www.Opticom.com MTP Priority One. http://mtp-gps.com	

					TOMAR Electronics, www.tomar.com Oregon Department of Transportation, http://www.odot.state.or.us/traffic/signalpre.htm	

Best Practice	In Place Yes	In Place No	Effective Yes	Effective No	Products To Use	How can Program Be Enhanced
Manage Driver Behavior						
MVR Checks					State specific regulations and statues exist to assist emergency service agencies with MVR reports. Organizations must check with local/state authorities for guidance, for example: New York - License Event Notification System (LENS) - LENS can give you important information about the driver records of your employees or volunteers. LENS automatically notifies you of any driver license events that occur. This program is free to volunteer fire departments in New York. nydmv.state.ny.us VFIS Risk Communique – "Driver Selection", www.vfis.com SAMBA.biz	
Enforce SOP/SOGs					VFIS Website @ vfis.com VFIS Manual - "Developing and Implementing Standard Operating Procedures and Guidelines VFIS Risk Communique - "Driver and Officer Responsibility" VFIS Risk Communique - "Emergency Vehicle Response Guidelines" VFIS Risk Communique - "Vehicle Roll-over Prevention" VFIS Risk Communique - "Vehicle Backing Practices" USFA FA-197PDF , FA – 160 Communications USFA SOP/SOG Manual NVFC-CD "Developing Effective Standard Operating Procedures for Fire & EMS Departments" Firehouse.com lists of SOPs/SOGs Phoenix Fire Department @ phoenix.gov - Both references below are listed on the website and all documents are contained within. -Rules & Regulations Volume 1 -SOPs Volume II	
Monitoring					VFIS Over the Road Evaluation VFIS EVDT Program Drive Cam – Electronic method www.drivecam.com VFIS Obstacle Course 1-800 How's My Driving.com – National Program National Safety Council Driving Simulators Refer to State Specific Motor Vehicle Laws, DMVR checks IFSTA Pumping Apparatus /Driver Operator Handbook Favorite search engine type: driver monitoring, emergency vehicles NFPA Standards 1002, 1451, 1500	

					www.safetyvision.com www.roadsafety.com	
Speed Limitations					VFIS - Emergency Vehicle Driver Training Program, SOP / SOG Training Program, Risk control Communiques (www.vfis.com) VFIS Risk Management Video Series , Intersections , Rollover Prevention NFPA – 1002/1500 STATE - State specific motor vehicle laws pertaining to emergency vehicle response WEB sites – www.respondersafety.com www.firefighterclosecalls.com Favorite search engine type: speed limitations, emergency Vehicles Favorite search engine type: truck speed control devices	
Award Program					VFIS - LOSAP (consider awards as part of the point program) NVFC - www.nvfc.org/retention FEMA - *Recruiting & Retention in the Volunteer Fire Service, Problems and Solutions*, Final Report , Dec 1998 Books - *Recruiting, Training, & Maintaining Volunteer Firefighters* : Snook , Olsen Web Searches - Favorite search engine type, fire service awards, Favorite search engine type : length of service awards Sites - www.perks.com www.safety-council.org/info/traffic/truck-1 www.theincentiveshop.com	
Over the Road						
Evaluation					VFIS – Over the Road Evaluation Form Smith System – Over the Road Evaluation – www.smith-system.com Standards – NFPA 1002 – Fire Department Vehicle Driver/Operator NFPA 1451	
Hot Topics						
Seat Belts					VFIS - Several emergency vehicle driver training programs, Firefighter safety programs, Communiques, Guidelines www.vfis.com NFPA - Statistics, standards www.nfpa.org FEMA/USFA - Several driver safety manuals, brochures, programs, statistics www.usfa.fema.gov NIOSH - Case studies, statistics, LODD www.cdc.gov/niosh National Highway Traffic Safety Administration - Statistics, traffic safety information www.nhtsa.gov National Academy of Sciences - Statistics, studies www.nas.edu National Safety Council - Emergency vehicle driver training programs, safety Information www.nsc.org American Ambulance Association - Statistics, programs www.the-aaa.org	

					U.S. Department of Health and Human Services – Statistics www.hhs.gov National Association for Professional Driving - Driver training programs, driving safety information www.napd.com Fire & Emergency Television Network - Video programs www.fetn.com NASA - Pre-emption device information www.nasa.gov Firefighter Close Calls - Incident reports & training www.firefighetrclosecalls.com National Volunteer Fire Council - Resources, training www.nvfc.org	
Intersection Safety					VFIS – www.vfis.com - Several emergency vehicle driver training programs, Firefighter safety programs, Communiques, Guidelines NFPA – www.nfpa.org – statistics and standards FEMA/USFA – www.usfa.fema.gov – several driver safety manuals, brochures, programs and statistics NIOSH – www.cdc.gov/niosh – statistics, case studies, and LODD information National Highway Traffic Safety Administration – www.nhtsa.gov – statistics and traffic safety information National Academy of Sciences – www.nas.edu – statistics and studies National Safety Council – www.nsc.org – emergency vehicle driver training programs, safety introduction American Ambulance Association – www.the-aaa.org – statistics and programs US Department of Health and Human Services – www.hhs.gov - statistics National Association for Professional Driving – www.napd.com – driver training programs, driving safety information Fire & Emergency Television Network – www.fetn.com – video training programs NASA – www.nasa.gov – pre-emption device information Firefighter Close Calls – www.firefighterclosecalls.com – incident reports and training programs National Volunteer Fire Council – www.nvfc.org – resources and training.	
Rollover					NFPA - Statistics, standards www.nfpa.org Firehouse Magazine – Articles USFA/FEMA Several driver safety manuals, brochures, programs, statistics www.usfa.fema.gov VFIS - Several emergency vehicle driver training programs, Firefighter safety programs, Communiques, Guidelines www.vfis.com NIOSH - Case studies, statistics, LODD www.cdc.gov/niosh National Highway Traffic Safety Administration - Standards, statistics www.nhtsa.gov American Ambulance Association - Statistics, programs www.the-aaa.org Pierce Manufacturing - Rollover protection system www.piercemfg.com Rolltek - Rollover protection system www.rolltek.com Federal Aviation Administration - Heavy rescue rollover www.airporttech.tc.faa.gov Firefighter Close Calls - Incident reports, training programs www.firefighetrclosecalls.com	

Personal Vehicle					NFPA - Statistics, standards www.nfpa.org VFIS - Several emergency vehicle driver training programs, Firefighter safety programs, Communiques, Guidelines www.vfis.com IAFC - Volunteer and Combination Officers Section Resources, information, SOPs www.vcos.org National Highway Traffic Safety Administration - Standards, statistics www.nhtsa.gov FEMA/USFA - Several driver safety manuals, brochures, programs, statistics www.usfa.fema.gov National Association for Professional Driving - www.napd.com	
Highway Safety					Highway Responder Safety Institute - VFIS - Several emergency vehicle driver training programs, Firefighter safety programs, Communiques, Guidelines www.vfis.com Emergency Responder Safety Institute - "Best Practices" www.respondersafety.com National Highway Traffic Safety Administration - Standards, statistics www.nhtsa.gov National Academy of Sciences - Statistics, studies www.nas.edu Phoenix FD - Video programs, information www.phoenix.gov USFA/FEMA - Several driver safety manuals, brochures, programs, statistics www.usfa.fema.gov Federal Highway Administration - Guidelines, statistics, information www.fhwa.dot.gov IAFC - Volunteer and Combination Officers Section Resources, information, SOPs www.vcos.org IFSTA - Incident Management System Guide Consortium www.ims-consortium.org National Safety Council - Training resources, statistics www.nsc.org Firefighter Close Calls - Incident reports, training programs www.firefighetrclosecalls.com	
Collisions of other ESOs					Website and news service reports	
Report Incidents						
Timely reporting Of incidents					Emergency Services Accident Investigation, VFIS, 1999 Risk Management for EMS, VFIS, 2001 Fire Department Loss Control, Jenaway B., ISFSI, 1987 Safety Program Management, NSC Safetyworks, National Safety Council, 2004 NFPA 1500, Fire Department Administration, Chapter 4 NFPA 1500, Training and Education, Chapter 5 NFPA 1500, Emergency Operations, Chapter 8 Occupational Safety and Health Administration www.osha.gov National Highway Transportation Safety Administration www.nhtsa.gov Workplace Safety Is No Accident, An Employer's Online Toolkit to Protect Employees and Volunteers, www.nonprofitrisk.org Public Risk Entity Institute www.riskinstitute.org National Institute for Occupational Safety and Health www.niosh.gov	

Vehicle Design and Construction						
Performance Specifications					NFPA 1901, NFPA 1911, NFPA 1914 GSA KKK-A1822E Fire Protection and Geographical Considerations of the Community Fire Apparatus Manufacturers Association Equipment Weight & Cube Calculator	
Quality Expectations defined					ISO 9000 Certification Fire Engineering Books Video – *Factory Inspections of New Fire Apparatus*	
Manufacturer designs vehicle and explains safety pluses and minuses					NFPA 1901, *Standard for Automotive Fire Apparatus* NFPA 1901, Appendix NFPA 1906, *Standard for Wildland Fire Apparatus* NFPA 1231, *Standard for Suburban & Rural Water Supplies (for Mobile Water Supply Apparatus*) Ambulance Performance Standards from the Ambulance Manufacturers Division of the National Truck Manufacturers Association National Truck Equipment Association Publications Manufacturers' Recommendations and Literature Drawings	

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APPENDIX 9

ISO FIRE APPARATUS EQUIPMENT LISTS

ESECG
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APPARATUS AND EQUIPMENT FORM

Jurisdiction _____ Date _____ Type (Engine, Ladder, Other) _____ No. _____

Make _____ Year Built _____ F.S. Location _____

VIN #: _____ Insured by: _____ Policy #: _____

In Service _____ Reserve _____ Pump Capacity _____ gpm Height of Aerial Ladder or Elevating Platform _____ ft

Is pump tested? Yes _____ No _____ List 3 most recent pumper service test dates _____ , _____ , _____

Date of last Nondestructive Test for Aerial Device _____ List 3 most recent service dates _____ , _____ , _____

Hose carried : 2" _____ ft. 2½" _____ ft 3" _____ ft 3½" _____ ft 4" _____ ft 5" _____ ft

Is hose tested? Yes _____ @ _____ psi No _____ List 3 most recent dates _____ , _____ , _____

Tool	Engine Size/Quantity	Ladder Size/Quantity
*Water Tank (gals)		
Hose (feet):		
*Booster or Preconnect		
*1½" or 1¾" carried		
1½" or 1¾" spare		
2½ or larger spare		
Elevated stream device		
*Heavy-stream device (min 1,000 gpm)		
Large spray nozzle (min 500 gpm)		
*Distributing nozzle		
*Foam eductor carried		
*Foam supply carried (gal)		
*Spare foam (in fire station)		
*Solid-stream nozzle 2½ "		
*Combination nozzle 1 ½"		
*Combination nozzle 2 ½"		
*Self-contained breathing equip		
*Spare cylinders		
*Salvage covers		
*Electric generator (kw)		
*Floodlights – portable		
*Smoke ejector		
*Oxyacetylene cutting unit		

Tool	Engine Size/Quantity	Ladder Size/Quantity
*Power saw		
*Handlights		
*Hose clamp		
*Hydrant hose gate (2½")		
*Burst hose jacket		
Hose hoist		
*Pike poles 6'		
8'		
12'		
*Gated wye 2½ " x 1½" x 1½"		
Radio Mounted		
Portable		
*24 ft extension ladder		
*14 ft extension ladder		
*24 ft or 28 ft extension ladder		
35 ft extension ladder		
*40 ft extension ladder		
*12 ft or 14 ft roof ladder		
16 ft roof ladder		
*20 ft roof ladder		
*10 ft collapsible ladder		
Aerial Ladder or Elevating Platform		
Availability of Test Records	Pump Test ☐ Hose Test ☐ Aerial Test ☐	

*Equivalencies are listed on the following "FSRS Equipment Equivalencies" page.

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FSRS Equivalency List

Pumper Equipment (Table 512.A)		
FSRS Item	**Needed**	**Equivalency**
Booster tank	300 gallons	300 gallons or larger
Booster hose	200 feet	1-1/2" or 1-3/4" pre-connected hose
1-1/2" hose	400 feet	1-3/4" or 2" hose
2-1/2" or larger hose	1,200 feet	The first 400 feet can be 2", 2-1/2" or 3"; the remaining 800 feet must be 2-1/2" or larger hose.
Heavy-stream appliance (1,000 gpm)	1	Not needed when the Basic Fire Flow is less than 1,500 gpm. A mounted, elevated, or portable attack monitor is acceptable. May be prorated in 250 gpm increments.
Distributing nozzle (1-1/2" min.)	1	• 1-1/2" or 2-1/2" piercing nozzle • 1-1/2" or 2-1/2" distributing nozzle, cellar nozzle
Foam nozzle (1-1/2" minimum)	1	• 1-1/2" or 2-1/2" eductor • Built-in proportioning system • CAFS
Foam	25 gallons, of which 10 gallons is carried on the pumper	• Any foam listed in the "UL Fire Protection Equipment Directory" as foam liquid concentrate (GFGV) • Class A foam Wetting agents, emulsifiers, and surfactants are *not* acceptable for credit as foam.
2-1/2" playpipe with shutoff	2	• Portable attack monitor with solid-bore tip
2-1/2" straight stream & spray with shutoff	2	• 200 gpm nozzles • 1-3/4" combination vari-nozzle tip nozzles with a 2-1/2" adapter • Portable attack monitor with fog tip
1-1/2" straight stream & spray with shutoff	2	1-3/4" combination nozzle with 1-1/2" coupling

Pumper Equipment (Table 512.A) continued		
FSRS Item	**Needed**	**Equivalency**
Breathing equipment (SCBA) (30-minute minimum)	4	4 @ 30-minute or longer duration
Spare SCBA cylinders (30-minute minimum)	4	4 @ 30-minute or longer duration Portable air cascade or air filling station is *not* deemed equivalent.
Salvage covers (12-ft. x 18-ft.)	2	12-ft. x 14-ft. canvas or rip-stop plastic
Handlight (4v wet, 6v dry)	2	Rechargeable handlight mounted in a bracket on the apparatus
Hose clamp	1	2-1/2", 3", or LDH hose clamp
Hydrant hose gate (2-1/2")	1	4-way valve, LDH manifold, trimese
Burst hose jacket (2-1/2")	1	2-1/2", 3", or LDH hose clamp
Gated wye 2-1/2" x 1-1/2" x 1-1/2"	1	Water thief, 2-1/2" gated wye with 1-1/2" reducers
12- or 14-ft. roof ladder	1	16-ft. roof ladder
24-ft. extension ladder	1	28-, 30-, or 35-ft. extension ladder

Ladder/Service Equipment (Table 544.A and 544.B)		
FSRS Item	**Needed**	**Equivalency**
Elevated stream device	1	1,000-gpm or larger
Large spray nozzle (500-gpm minimum)	1	500-gpm or larger (may be carried on a pumper)
Breathing equipment (SCBA) (30-minute minimum)	6	6 @ 30-minute or longer duration
Spare SCBA cylinders (30-minute minimum)	6	6 @ 30-minute or longer duration Portable air cascade or air filling station is *not* equivalent.
Salvage covers (12-ft. x 18-ft.)	10	12-ft. x 14-ft. canvas or rip-stop plastic
Electric generator (2500-watt)	1	• PTO driven inverter – prorated based upon its capacity • Mini-generator floodlight – prorated in 500w increments • Mini-generator ventilation fan – prorated in 1,000w increments
Floodlight (500-watt)	3	• Tripod floodlight • Mini-generator floodlight
Smoke ejector	1	• Positive pressure ventilation (PPV) fan • Mini-generator ventilation fan • Thermal imaging device
Oxyacetylene cutting unit	1	• Hydraulic, pneumatic or electric cutting tool • Plasma cutting tool • Oxy-gasoline cutting torch • Circular saw with composite blade • Thermal imaging device
Power saw	1	• Chain saw with carbide tip cutting blades • Thermal imaging device
Handlight (4v wet, 6v dry)	4	Rechargeable handlight mounted in a bracket on the apparatus

Pumper Equipment (Table 512.A) continued		
FSRS Item	**Needed**	**Equivalency**
Breathing equipment (SCBA) (30-minute minimum)	4	4 @ 30-minute or longer duration
Spare SCBA cylinders (30-minute minimum)	4	4 @ 30-minute or longer duration Portable air cascade or air filling station is *not* deemed equivalent.
Salvage covers (12-ft. x 18-ft.)	2	12-ft. x 14-ft. canvas or rip-stop plastic
Handlight (4v wet, 6v dry)	2	Rechargeable handlight mounted in a bracket on the apparatus
Hose clamp	1	2-1/2", 3", or LDH hose clamp
Hydrant hose gate (2-1/2")	1	4-way valve, LDH manifold, trimese
Burst hose jacket (2-1/2")	1	2-1/2", 3", or LDH hose clamp
Gated wye 2-1/2" x 1-1/2" x 1-1/2"	1	Water thief, 2-1/2" gated wye with 1-1/2" reducers
12- or 14-ft. roof ladder	1	16-ft. roof ladder
24-ft. extension ladder	1	28-, 30-, or 35-ft. extension ladder

APPENDIX 10

PROJECT TEAM

STAFF ASSIGNED TO THE PROJECT

William F. Jenaway, Ph.D., CFO, CFPS, Principal Consultant, Project Manager.

Dr. William F. Jenaway, CFO, CFPS will serve as Project Manager for this engagement. Dr. Jenaway is the CEO of ESECG responsible for training, education and consulting services provided to client of VFIS and ESECG. His organization provides training to over 20,000 fire/EMS personnel annually and provides technical guidance and consultation to over 200 agencies annually. He has served as Chief and Fire Marshal of the East Bethlehem Township, Pennsylvania Volunteer Fire Department; and as Chief and President of the King of Prussia, Pennsylvania; Volunteer Fire Company, as well as being Chairman of the municipality's Fire and Rescue Services Board. Under Chief Jenaway's leadership, the department became the first all volunteer Accredited Fire Service Agency in the US. Fire Chief Magazine named him the "Volunteer Fire Chief of the Year" in 2001. Bill's background includes 30-plus years of volunteer fire and EMS experience.

In 2004 he was named to Chair the Pennsylvania Senate Resolution 60 Commission to evaluate and provide recommendations to the Pennsylvania legislature and fire service on strategic approaches to the state's fire and EMS delivery system.

Over the years, Bill has authored over 200 articles, seven texts and provided over 100 speeches on fire and life safety issues. He holds Certified Fire Protection Specialist and Certified Fire Officer designations as well. In 1999 he was named to the Presidential/Congressional Commission known as the "Advisory Panel to Assess preparedness for Terroristic Acts Involving Weapons of Mass Destruction" (a/k/a Gilmore Commission). Dr. Jenaway also serves as President of the Congressional Fire Services Institute and is Past President of the Pennsylvania Fire Services Institute. He serves on the National Fire Protection Association Committees of Emergency Services Risk Management; Providing Emergency Services to the Public; Fire Department Apparatus, and Fire Service Training. Dr. Jenaway is in his second, three-year term as a Commissioner on the Commission on Fire Department Accreditation.

Robert Drennen, M.S. CFPS, Consultant.

Robert Drennen is the Director of the St. Joseph's University Public Safety and Environmental Protection Master's Degree Program. Within this program Mr. Drennen directs the students' development and the course program. Research papers of the students serve to broaden the perspective of Mr. Drennen and his team in the development of new techniques and procedures for fire service. Under the direction of Mr. Drennen, St. Joseph's worked with Dr. Jenaway in the development of an efficient and effective model for businesses to utilize in the preparation, prevention, response and recovery to emergencies as well as projects for the National Volunteer Fire Council involving volunteer recruitment, retention and cost savings. Mr. Drennen is responsible for student research projects, many of which involve specialized evaluations of their local emergency service organization. This provides him with a unique insight and understanding of current trends in volunteer and combination fire service operations in

the Mid-Atlantic states. Mr. Drennen holds a Masters Degree, is a Certified Fire Protection Specialist and is a retired Chief Officer of the Philadelphia Fire Department, currently serving as Safety Officer of the Willow Grove, PA, Fire Company, and Fire Marshal of Upper Moreland Township, PA.

Daniel B.C. Gardiner, M.S., CFPS, Consultant.

Daniel B.C. Gardiner retired as the Chief of the Department of Fire-Rescue Services, in Fairfield, Connecticut, serving there for 31 years. Fairfield is a combination (career and volunteer) fire/EMS department. Prior to his appointment as Chief, he was the department's Budget Control Officer, in charge of a budget of over eight million dollars. Chief Gardiner holds a Bachelor's Degree in Fire Science and holds two Masters Degrees, one in Public Administration and one in Fire Science Technology, from the University of New Haven, Connecticut. He serves on the NFPA 1021 Committee (Fire Officer Standard). Chief Gardiner has been extensively involved in fire department consulting projects as well as managing and conducting assessment center activities for various positions throughout the Northeast. He has also provided testimony before numerous fire commissions, boards of inquiry and study panels, in addition to serving on a number of review boards as well. An author of a number of fire service texts and articles, Chief Gardiner edited the book, *Managing Fire Department Operations*, and co-authored the best selling text, *Fire Protection in the 21st Century*. Now serving his fifth term as a Director of the Certified Fire Protection Specialist Board, Chief Gardiner speaks nationally on fire protection, and fire service finance. He is a past president of the International Society of Fire Service Instructors and a past president of the Fire Department Safety Officers Association.

David A. Bradley, B.S., NREMT-P, Staff Consultant.

David is responsible for EMS related issues for VFIS/ESECG, a subsidiary of the Glatfelter Insurance Group. His responsibilities include: research of EMS issues, and related delivery of educational and training programs, curriculum development, and information analysis and representation on major organizations and committees. Prior to joining VFIS, Dave managed a large EMS agency.

Dave has over twenty-eight years of experience in Emergency Services. He has functioned in many roles during his career from volunteer EMT to Career EMS Chief. Dave's involvement includes IAFC, NFPA, NAEMT, and NAEMSE, along with several state-level organizations. He is a Nationally Registered Paramedic and holds a Bachelors Degree in Safety Engineering.

Dave has presented on various topics in the areas of emergency service, risk management, health, and safety. He remains active as a Paramedic at First Aid & Safety Patrol, Lebanon PA.

APPENDIX 11

REFERENCES

REFERENCED USED IN THIS PROJECT

- NFPA 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"
- NFPA Standard 1201, "Standard for Providing Emergency Services to the Public"
- Insurance Services Office Fire Suppression Rating Schedule
- Insurance Services Office Report of June 2009 for Upper Dublin Township, Montgomery County Pennsylvania.
- Fire and Emergency Service Self Assessment Manual, 7th Edition, (Vehicle Related criteria), Commission on Fire Accreditation International.
- International Association of Fire Chiefs Volunteer Combination Officer Section Report, "Lighting the Path of Evolution; the Red Ribbon Report; Leading the Transition in Volunteer and Combination Fire Departments"
- International Association of Fire Chiefs Volunteer Combination Officer Section Report, "A Call for Action; The Blue Ribbon Report; Preserving and Improving the Future of the Volunteer Fire Service"
- International Association of Fire Chiefs Volunteer Combination Officer Section Report, "Keeping the Lights On, the Trucks Running and the Volunteers Responding; The White Ribbon Report; Managing the Business of the Fire Department"
- "Pennsylvania Senate Resolution 60 Report"