Community risk reduction: What is important?

Ryan A. Farrell

Vestavia Hills Fire Department, Vestavia Hills Alabama
Certification Statement

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of others.

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Ryan A. Farrell
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Abstract

Emergency service providers are obligated to reduce the risk of injury within the community when possible. The problem is that the Vestavia Hills Fire Department’s risk reduction programs lack intentional development, which complicates program effectiveness. The purpose of this applied research project is to identify best practices related to risk reduction in order to improve the development and delivery of risk reduction programs by the department. The descriptive research method was used to answer the following research questions (a) What national, local and state guidelines or standards are applicable to risk reduction programs? (b) What are the components necessary for an effective risk reduction program? (c) What considerations should be made when constructing public education messages? (d) In what areas are Vestavia Hills risk reduction efforts lacking or exceeding? A literature review and structured interviews resulted in the identification of the components and considerations necessary for effective risk reduction programs. Recommendations were identified to improve risk reduction programs.
Introduction

The problem is that the Vestavia Hills Fire Department’s (VHFD) risk reduction programs lack intentional development, which complicates program effectiveness. The purpose of this applied research project is to identify best practices related to risk reduction in order to improve the development and delivery of risk reduction programs by VHFD. The descriptive research method was used to answer the following research questions (a) What national, local and state guidelines or standards are applicable to risk reduction programs? (b) What are the components necessary for an effective risk reduction program? (c) What considerations should be made when constructing public education messages? (d) In what areas are VHFD risk reduction efforts lacking or exceeding?

Background and Significance

The City of Vestavia Hills, Alabama was officially incorporated as a town on October 25, 1950 with a population of 607 residents (Whiting, 2000). Following incorporation, residents selected the first elected officials to lead the young town. Shortly after incorporation, the town council realized a need to establish: law enforcement structure, building codes enforcement, and a police and fire committee to provide for the safety of the community (Whiting, 2000). Following that the town began delivering fire protection with a volunteer staff operating used equipment acquired from other departments in the region (Whiting, 2000).

Vestavia Hills has evolved from a community of less than 600 residents and a single volunteer fire station to a city of more than 34,000 today (J.R. St. John, personal communication November 7, 2014). VHFD delivers service to the community 24-hours a day with nearly 100
paid suppression and Emergency Medical Service (EMS) personnel. Line personnel are deployed using a three-platoon shift rotation from five fire stations within the city’s 19 square miles. Assets serving the community on a daily basis include five engine companies, three EMS transport units, one shift commander and one truck company cross-staffed by companies co-located with the apparatus.

Similar to departments nationally, VHFD has expanded services to become an all-hazards agency. Services offered by the department include fire suppression, fire investigation, public education, hazardous materials mitigation, technical rescue (high-angle, swift water, structural collapse, trench and confined space rescue), EMS and EMS patient transport.

Included in the responsibilities of VHFD are public education and building code enforcement. In 1971, VHFD identified the need to take a proactive measure to reduce risks to the citizens of Vestavia Hills. The beginnings of risk reduction within the VHFD began with an inspection program focused on commercial occupancies (A. C. Zaragoza personal communication November 4, 2014). The inspection of commercial occupancies was assigned to the administrative captain of the organization, who at the time, was the second in command of the organization. Several years after the beginning of risk reduction within the department, it became apparent that the flourishing city needed to dedicate a position solely to risk reduction. In 1975, VHFD requested that a full time fire marshal position be added to the administrative staff of the organization. It was at that time that the department began to deliver public education to the community (A. C. Zaragoza personal communication November 4, 2014). Today the fire marshal’s office includes the fire marshal, as well as a full-time fire inspector. The duties of the fire marshal’s office include delivery of public education to elementary school students, older adults and various other community groups whom request the service, business
inspections, construction plan review, fire investigations and numerous other tasks as assigned. January 1, 2015 was the beginning of a focused improvement related to risk reduction. Beginning on that date VHFD committed to ensuring all commercial occupancies are inspected on an annual basis. This is being accomplished using engine companies to perform a majority of the inspections. The fire inspector is charged with managing the program.

In an effort to engage members with a passion for public education, the department explored forming a public education team. Within the past three years, the fire marshal’s office has brought together a group of individuals with an interest in public education. This public education group is charged with delivering a portion of the public education to the community. Services offered by this group include fire extinguisher training, senior adult fire safety and fall prevention, preschool and kindergarten fire alarm familiarization and elementary school public education. This group has had success with the programs delivered, however, many times the delivery falls back to the fire inspector or on-duty suppression personnel. The group consists of individuals who are still assigned to field operations working a rotating shift schedule. Generally, when a request for public education is received for a program delivered by team members, an appointment is made at the convenience of the citizen.

VHFD also delivers American Heart Association Cardio Pulmonary Resuscitation (CPR) certification to the community, as well as child safety seat inspections. The Assistant Chief of Operations schedules CPR classes for citizens which are generally held on Saturday mornings. VHFD also delivers CPR training to many healthcare providers and childcare centers within the community. On-duty suppression personnel conduct all CPR training and many times at the customer’s place of business. With the exception of a description on the department’s website, there is no advertising for this program.
Trained staff assigned to a centrally located fire station performs delivery of the child safety seat program. The program is offered twice weekly and is done on an appointment only basis. Citizens call fire administration to schedule an appointment and to be placed on the calendar, which is available to administrative and the suppression staff.

Public Education delivered to the community, particularly elementary students, is done with the best of intentions by the fire inspector. The message delivered is constructed through historical knowledge of the fire inspector, and is not associated with a curriculum developed in-house or otherwise. This delivery presents issues with delivering a consistent and targeted message for the specific audience.

Effective risk reduction efforts are imperative to ensure the safety of citizens and the stability of the community. Improving risk reduction programming delivered by the VHFD coincides with goal number one of the United States Fire Administration Strategic Plan to reduce risk at the local level through prevention and mitigation. This project will help to identify best practices in risk reduction and improve risk reduction within the VHFD. The authority having jurisdiction is responsible for the safety of the community therefore, VHFD has an obligation to deliver adequate risk reduction programs (Executive analysis of community risk reduction student manual [EACRR] 2013).

**Literature Review**

Literature review began by researching information available at the National Fire Academy Learning Resource Center, as well as researching literature and databases available at the Charles Andrew Rush Learning Center / N.E. Miles Library located at Birmingham-Southern
College in Birmingham, Alabama. The literature review was conducted seeking information related to fire service public education and essential elements of risk reduction.

The need to identify and strategically prevent harm is not a new concept to the society. In the late 18th century, Johaan Peter Frank recognized that injury prevention programs must be established in order for a public health program to succeed. Unfortunately, this message was largely ignored at the time (Christoffel & Gallaghagher, 2006).

“The simplest and most effective method of achieving the goal of preservation of life and property: prevention” (Main, 2010, p. 902). Fire prevention should be a priority equal to suppression within the fire service. Resources must be available to deliver the appropriate programs to the community. Commitment to properly designed and targeted fire prevention programs has the potential to reduce the number of incidents. Lower occurrence of fires in a community makes the community as a whole safer which makes the community a more attractive location to do business in (Senter et al., 2006).

Ancient Babylon brought what is likely one of the first building codes. In approximately 1750 B.C., the Code of Hammurabi was chiseled into a large piece of stone and it stated that if a building was constructed and later falls killing someone, the builder would be punished with death (Cote & Grant, 2008). Early codes such as the Code of Hammurabi focused on punitive actions resulting from construction failures. Throughout history, laws and codes have evolved to better protect citizens, and the intent of these codes has shifted focus from punitive to preventative in nature (Cote & Grant, 2008).

The fire service has long relied on the guidance provided by standards developed by the National Fire Protection Association (NFPA). The late 1800’s brought the birth of the first NFPA standard entitled Rules and Regulations of the National Board of Fire Underwriters for
Sprinkler Equipments, Automatic and Open Systems (National Fire Protection Association, 2013). The NFPA has grown to become the catalyst for best practices within the fire service. The NFPA crafts the majority of consensus standards relevant to fire and emergency services today (International Fire Service Training Association [IFSTA], 2007).

NFPA works to develop consensus standards which provide industry guidance. The development process used to craft NFPA consensus standards follows a process meant to be inclusive to all parties. Individuals with expertise related to the purposed standard are selected to serve on a committee charged with developing or revising a specific standard. The committee works to present a draft which is then made available for public comment. Following the public comment period, additional revisions are made as needed and the standard is released for adoption by governing bodies (IFSTA, 2007). Standards may be modified to fit the needs of the jurisdiction, and once adopted, become enforceable by the adopting body (IFSTA, 2007). The protection of the public from the hazards associated with fire and disasters in The United States is often thought of as a local task and results in a fragmented regulatory system. In some cases, fire safety legislation adopted at a local level may in fact differ from that of other jurisdictions within the geographic region (Potter, 2008). Other parts of the world including Australia, New Zealand, Japan and portions of Africa have made significant strides to strengthen fire protection standards on a national and regional basis (Potter, 2008) (National Fire Protection Association [NFPA 1201], 2010).

Multiple adopted and purposed NFPA standards have direct applicability to community risk reduction. NFPA 1201 Standard for Providing Fire and Emergency Services to the Public has components which date back to 1963. NFPA 1201 stipulates the proper structure and procedures for the delivery of fire and emergency services (NFPA 1201, 2010). NFPA 1201
stipulates that the Fire and Emergency Service Organization (FESO) will identify the level of service to the jurisdiction (NFPA 1201, 2010). Outlined among the many requirements for a FESO contained in NFPA 1201 are several which specify the need for risk reduction. NFPA 1201 (2010) and Bradley (2013) identify activities such as public education, engineering, fire investigation; codes enforcement and adoption as necessary components of a FESO.

Risk reduction efforts must be designed to meet the needs for the community. At a minimum the following programs and procedures must be implemented to accomplish the following:

- “Prevent fires, injuries and deaths from emergencies and disasters
- Mitigate fires, injuries, deaths, property damage, and environmental damage from emergencies and disasters
- Recover from fires, emergencies, and disasters
- Protect of critical infrastructure
- Sustain economic viability
- Protect cultural resources” (NFPA 1201, 2010, p. 1201-5)

NFPA 1730 Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations to the Public further defines the requirements for risk reduction (National Fire Protection Association [NFPA], 2014). It should be noted that NFPA 1730 is currently in a draft stage and will be published in the future. The National Fire Protection Association was generous enough to share the document with this researcher for the benefit of this project. It is of great importance is that the Fire Protection Organization (FPO) “establish a process to identify and analyze community risks that impact the services of the FPO as outlined in 4.1.1.” (NFPA, 2014, p. 6). The product of this
analysis will be a community risk reduction (CRR) plan and programs focused on removing or decreasing identified risks to the community.

Prior to constructing an actionable community risk reduction plan, (CRR) NFPA 1730 suggests the FPO must first conduct a community risk assessment (CRA) to identify the specific areas requiring action within the community. The CRA should be revisited once every five years or as necessary based on the needs of the community. Additionally, the FPO should review statistics related to loss and injury on an annual basis in order to identify emerging trends within the community (NFPA, 2014).

The CRA should consider demographics, geographic overview, building stock, fire experience, response statistics, hazards and the economic profile of the community. Input from stakeholders should be included when crafting the CRA. The FPO should engage stakeholders to better understand their perception of risks within the community and adjust the risks identified by the organization as needed (NFPA, 2014). After the FPO and community stakeholders have defined the risks, the risks should be placed in categories determined by considering probability and potential impact (NFPA, 2014). This document will become the CRA and will be the base for the CRR plan.

After completion of the CRA document the organization must study and understand the needs identified and develop strategies to intervene (NFPA, 2014). Once needs have been prioritized and the necessary resources have been identified, approval to implement the plan must be sought. In order to assist the FPO with the development of a CRA, NFPA 1730 provides a data-gathering tool to guide the FPO through the process. This information is contained in Annex B of the standard, while it is not part of the standard it is intended to assist the FPO
beginning the CRA. Finally, resources should be allocated to deliver the CRR plan (NFPA, 2014).

The CRA analysis plays a part in a number of risk reduction activities within NFPA 1730. Related to public education, NFPA 1730 requires public education programs to address areas identified within the CRR (NFPA, 2014). Public education programming should include citizens of preschool age through senior adult (NFPA, 2014). Additionally, public education should also include a residential safety program (NFPA, 2014). Personnel charged with the delivery of public education programs are required to meet NFPA requirements related to the activity (NFPA, 2014). Ultimately the FPO is required to have a system to ensure the public education is adequate including the necessary “personnel, equipment and resources” to meet the objectives of the program (NFPA, 2014, p. 13).

The CRA plays an important role regarding the code enforcement in existing occupancies. The CRA is used to develop the code enforcement program which is to “ensure compliance with adopted codes and standards” (NFPA, 2014, p. 7). It is a requirement that the authority having jurisdiction have the necessary personnel to complete the inspection process (NFPA, 2014). NFPA 1730 allows for a variable code enforcement inspection cycle. Inspection frequency is based on the risk of the occupancy. Occupancies assessed to be high risk are to be inspected on an annual basis. Occupancies assessed to be of moderate risk are to be inspected on a biennial rotation. Occupancies ranked in the low risk group are to be inspected triennially. Finally, occupancies identified as critical infrastructure are to be inspected at a frequency determined by the department (NFPA, 2014).

NFPA 1730’s recommended inspection cycle differs from the Insurance Services Office (ISO) Fire Suppression Rating Schedule (FSRC). The FSRS along with NFPA standards guide
the operations of fire departments. The most current FSRS stipulates that fire inspections of commercial occupancies must be done on a yearly basis (Insurance Services Office Inc. [ISO], 2012).

NFPA 1730 also requires that the FPO utilize the CRA to develop a plan review process (NFPA, 2014). It is required that properly trained personnel review new construction as well as renovation plans for code compliance related to the following: water supply and fire flow, hazardous materials, fire protection systems, and fire and life safety systems (NFPA, 2014). Additionally, staff shall conduct field acceptance to ensure fire and life safety systems have been installed as designed (NFPA 1730). Once the building is deemed safe for occupancy the appropriate inspections should be conducted as required (1730).

NFPA 1730 directs the FPO to establish a mechanism to identify the “origin, cause and circumstance of any fire, explosion, hazardous materials incident, or other hazardous condition” (NFPA, 2014, p. 9).

Similar to NFPA 1730, ISO’s FSRS gives value to risk reduction activities which are in place. Public education, codes enforcement, fire inspections, and fire investigation are considered when ISO evaluates fire departments (ISO, 2012).

State of Alabama legislation related to community risk reduction is located within the Code of Alabama 1975. Much of the information contained within the Code of Alabama 1975 relates to building construction and building codes as well as the duties and responsibilities of the Alabama State Fire Marshal’s office. The Code of Alabama 1975 broadly defines the duties of the Alabama State Fire Marshal as the enforcement of laws and regulations related to the following:

- Prevention of fires
• Oversight of the storage, sale and use of combustibles and explosives
• Installation/maintenance of automatic fire alarm and fire extinguishing equipment
• Construction, maintenance, and regulation of fire escapes
• Means and adequacy of exits in case of fire from factories, asylums, hospitality, churches, schools, halls, theaters, amphitheaters and all places where people may live or gather (Alabama Firefighter’s Personnel Standards Education Commission [AFPSEC], 2014).

Contractors engaged in the installation or maintenance of fire protection sprinkler systems are required to obtain a permit from the Alabama State Fire Marshal’s Office. Satisfactory completion of minimum standards is required for permit issuance (AFPSEC, 2014). Similar to that of sprinkler contractors, any contractor installing or repairing fire alarm systems must meet minimum standards and be licensed by the Alabama State Fire Marshal’s office. This statute applies to all fire alarm systems with the exception of dual burglary/fire detection systems installed in residential settings (AFPSEC, 2014). In 2009, the state expanded the regulation of fire alarm systems requiring systems installed after August 1, 2009 be tested and maintained as required in the most recent version of NFPA 72, the National Fire Alarm Code (AFPSEC, 2014).

The State Fire Marshal may require that emergency drills be conducted in educational institutions on a monthly basis. Additionally, exit doors in structures where people gather must open out and remain unlocked during times of occupancy. The code also allows the State Fire Marshal to conduct building inspections for fire hazards at whatever frequency necessary. This statute allows the inspector to identify and require remedy to unsafe conditions (AFPSEC, 2014).

Occupancies falling within the jurisdiction of the Alabama State Fire Marshal’s office
must comply with a number of adopted national standards. The adopted standards include:

- 2006 International Building Code
- 2006 International Plumbing Code
- 2006 International Fuel Gas Code
- 2006 Mechanical Code
- 2008 National Electric Code
- 2006 International Fire Code (AFPSEC, 2014)

Alabama State Code allows individual counties to adopt life safety codes at the local level. However, the adoption of codes at the county level are enforceable within the jurisdiction of the adopting county and are not enforceable to municipalities within the county. Additionally, compliance to adopted codes is to be ensured by officials employed by the county (AFPSEC, 2014).

Vestavia Hills, like many other municipal governments, has chosen to adopt and enforce many life safety codes at a local level. Similar to the State of Alabama, Vestavia Hills has adopted into its municipal ordinances the following building codes (City of Vestavia Hills, 2014):

- International Existing Building Code 2009
- International Energy Conservation Code 2009
- International Plumbing Code 2009
- International Mechanical Code 2009
- International Fuel Gas Code 2009
Vestavia Hills adopted the above referenced codes, and in many cases, with additional language to make the codes more effective within its jurisdiction. The adoption of the International Residential code by Vestavia Hills, specifically calls for the deletion of the requirement that one and two family residential structures be constructed with a fire suppression system (City of Vestavia Hills, 2014).

Traditionally the fire service has addressed injury prevention by combatting the issue in three different manners. This method, known as the three “E’s” includes engineering, enforcement and education as a means to prevent injuries (Bradley, 2013). Subsequently, the National Fire Academy recognized the need to expand the three E’s to include economic incentives and emergency response (EACRR, 2013). According to The United States Fire Administration, successful risk reduction efforts include the use of multiple interventions such as the 5 E’s simultaneously ("The Five E’s," 2013). Collectively, each intervention contributes to risk reduction and must be used in conjunction to be effective (Bradley, 2013). In order to examine the organizational framework it is necessary to understand the importance of each principle.

Engineering interventions work to reduce the risk of harm by altering the physical environment (EACRR, 2013). Engineering alterations leading to increased safety are employed in a variety of ways including “improved technology, materials, construction and environmental
change…” (Giesler, 2011, p. 4). In many instances, engineering interventions are passive in nature meaning no action by the consumer is necessary, and the benefits are realized immediately and automatically. It is worth noting that although the benefit is automatic and immediate, in many cases, action is required to continue the benefit (EACRR, 2013). For example, it is necessary to “change the batteries in smoke alarms” and “put seatbelts and helmets on” (EACRR, 2013 p. 3-45). According to Bradley the implementation of “building and fire codes” fall under the component of engineering (Bradley, 2013, p. 4).

Intervention through enforcement is an important component associated with successful risk reduction programs. Enforcement is the creation and application of codes, ordinances or laws in an effort to prevent fires (Jenaway et al., 2012, p. 4). Fire and life safety codes affect the community through building plans review as well as routine codes inspections.

Fire prevention, by way of building plan review, affords the fire department the opportunity to identify and resolve any fire or life safety concerns during the design stages of development. Since the fire department is ultimately responsible for the inspection and will be the agency responding to emergencies within the structure, it is critical that the fire department not pass the responsibility to other departments or organizations (Senter et al., 2006). It is beneficial to the fire department as well as the builder to recognize needed changes when the solution can be found on paper rather than on a jobsite (Senter et al., 2006). Proper building plan review mechanisms work to prevent suppression personnel from being hindered by faults, which can be identified and corrected prior to construction (Senter et al., 2006).

Following the construction phase of a building, scheduled inspections are an integral part of the enforcement component. Fire inspections are conducted “…to discover and correct
conditions that pose a threat to life and property, based on legally adopted code requirements…”

“(The Fire Protection Research Foundation [FPRF], 2008, p. 7). Fire inspections should be performed for a three reasons: inspection of new construction, inspection of buildings being renovated and for routine safety checks (FPRF, 2008). NFPA 1730 and the FPRF suggest the frequency of routine fire inspections may be prioritized using a risk assessment method which evaluates multiple factors to identify high inherent levels of risk (2014, 2008). This differs from past best practices “the 1978 NFPA/UI study team recommended that departments make it a policy to any annually inspect all or nearly all public buildings, as fire rates are lower when inspection rates were higher” (FPRF, 2008, p. 29). Although inspecting each property annually would be beneficial, it is not commonly achieved today (FPRF, 2008).

In order to inspect each occupancy on a yearly basis, the organization needs to staff an adequate number of inspectors. Industry professionals who have studied the work pace of fire inspectors, feel that a fire inspector is capable of performing between four and six fire inspections per day (FPRF, 2008). NFPA 1201 and NFPA 1730 also have a method for projecting the staff needed to perform risk reduction activities. This method requires the organization to identify the various risk reduction responsibilities within the department such as public education, code enforcement, plan review, and fire investigations. After the activities have been identified, the document instructs the user on how to calculate the total number of hours required to complete all of the tasks in one year. The number of times each activity is performed within a year should be identified along with the average number of hours required (NFPA, 2014). The total number of hours the person is available to engage in risk reduction activities is divided into the total hours required to complete tasks for one year. Before making this calculation, the total available hours must be reduced to reflect time away from the job for
events such as illness, vacation, training and holidays (NFPA, 2014).

Another way the fire service addresses risk reduction is through public education. Education is the easiest strategy to implement thus making it is the most common (EACRR, 2013). Education may focus on various groups depending on the situation. It may be focused toward the population as a whole, or it may target an audience with identified risky behaviors (Giesler, 2011, Kirtley & Cote, 2008). Regardless of the message’s target, it is imperative that the target audience be identified and understood. Without understanding the target, it is difficult to deliver a message that will be accepted and help change risky behaviors (Kirtley & Cote, 2008). Fire service educators must be able to identity activities that are educational and entertaining (Kirtley & Cote, 2008). Educational programs result in learning which can lead to a behavior change. Entertainment has a place in risk reduction, but the mission should be focused on learning. Learning should be focused on objectives and delivered in a way that the student has multiple avenues to absorb the information. This is important because not all students learn in the same manner (Kirtley & Cote, 2008). Programs designed with learning as a priority must recognize that reinforcement is necessary. It is important to understand that information delivered by risk reduction programs on an infrequent basis may not be retained by the student (Kirtley & Cote, 2008).

Economic incentives are another mechanism to encourage behavior change. Many successful risk reduction programs have offered economic incentives to residents making positive improvements to fire protection (Bradley, 2013). Common incentives offered include tax incentives for installing home fire sprinkler systems (Bradley, 2013, EACRR, 2013). Negative incentives are also appropriate to encourage positive behavior change through fines and penalties (Giesler, 2011 EACRR, 2013).
Lastly, emergency response interventions influence risk reduction. When other reduction methods have proven ineffective, emergency response personnel who are equipped with the tools and training necessary to mitigate the situation, must be deployed (Giesler, 2011 EACRR). The ability to communicate and deliver a message has long been a difficulty of government. Sir Stephen Tallents once stated, “How is government…to make itself heard, to capture the interest of and attention of the public, upon which there are already so many claims” (Martinelli, 2006, p. 38). Forest Allen of the Tennessee Valley Authority in the 1930’s stated publicity “is as definite and as compelling a need of government as is advertising to a private corporation…” (Martinelli, 2006, p.38). Tallents recognized that public organizations must, “…look well ahead in framing of its programs and not live simply from hand to mouth. It must make its publicity truthful, clear, attractive, and in harmony with its surroundings” (Martinelli, 2006, p. 38).

Forest Allen’s assessment that advertising is critical to the mission of government is one that holds truth in today’s environment as well. The fire service employs a variety of models to construct and deliver important fire and life safety messages to the public. One such model is the Social Marketing model, which was crafted from outside the fire service (Kirtley & Cote, 2008). Social marketing has been applied successfully to a number of social issues including family planning, energy conservation, anti-smoking and the prevention of drug abuse (Fox & Kotler, 1980). This method of delivery seeks long-term change using marketing principles influenced by techniques from “sociology, education, psychology and communications” (Kirtley & Cote, 2008, p. 5-10). The social marketing model employs validated commercial marketing techniques to combat health and safety issues, which require significant behavioral change within the identified audience (Kirtley & Cote, 2008). Social marketing is an effective mechanism to
deliver risk reduction messages to a targeted group, in a manner which they understand (T. Mims, personal communication January 22, 2014).

Social Marketing consists of seven key concepts focused on reducing the risk of fire and injury through personal and social change. First, social marketers believe the objective is having the identified target audience take action. The focus of any social marketing program is to reduce risk by effecting change in behavior within the targeted audience (Kirtley & Cote, 2008). The change in behavior within the target audience is expected to improve decision making, decreasing the risk of fire or injury. Social marketing professionals measure success by the target audience making long-term positive changes in behavior. The target audience becoming aware of a risky behavior with no change in behavior is not a success (Kirtley & Cote, 2008).

The second concept of social marketing is that the target audience should be the focus of the initiative. In many cases, fire prevention programs are delivered based on the perceptions of prevention staff (Kirtley & Cote, 2008). The development of fire prevention programs should incorporate consideration of the “…characteristics, norms, values, and habits of those people involved in the problem” (Kirtley & Cote, 2008, p. 5-10). Kirtley and Cote suggest that programs designed by well meaning fire safety educators may have proven ineffective because the development process did not include study of the target audience (2008). Kirtley and Cote pinpoint the failure by hypothesizing “…this educator-centered approach has worked with white, middle-class issues, the approach has failed miserably with high risk audiences” (2008, 5-10). When properly formed, social marketing campaigns can effect long-term change. However, when exhaustive research is not performed to understand the root cause of the behavior, it is likely that the campaign will fail (Fox & Kotler, 1980).
The third concept of social marketing is the identified target audience must believe the identified change is beneficial to them. This concept is challenging to accomplish because the target audience is asked to substitute an established behavior for a behavior that improves fire safety (Kirtley & Cote, 2008). Kirtley and Cote use the example of smoking in bed to reinforce the challenges of this concept. In this case, the enjoyment of smoking before bed contests with fire safety and the challenge is selling the idea that fire safety outweighs the enjoyment of smoking in bed (Kirtley & Cote, 2008).

In the fourth concept, Kirtley and Cote suggest is that understanding “the target audience is segmented into specific markets that share characteristics” (2008, p. 5-10). Successful social marketing campaigns employ thorough market research to understand the market segments and the behavioral characteristics of each segment (Fox & Kotler, 1980). This thought does not fit with the traditional “one size fits all” approach to fire safety (Fox & Kotler, 1980 Kirtley & Cote, 2008). Social marketing requires the understanding that multiple segments are combined to make a single target audience (Kirtley & Cote, 2008). Kirtley and Cote demonstrate this theory by dissecting the issue of fires resulting from candles. To address this problem, the fire prevention expert must identify the various groups that contribute to identified target audience. Kirtley and Cote suggest that young people using candles to create ambiance, older adults using candles to diffuse pleasant smells, and residents using candles to provide lighting for economic reasons must be targeted individually (Kirtley & Cote, 2008). Each of these groups has unique reasons for burning candles, and the approach to each group must be customized to encourage a positive response (Kirtley & Cote, 2008).
The fifth concept is that social marketers within the fire service must utilize the traditional four P’s of marketing: product, price, place and promotion (Kirtley & Cote, 2008). A basic description of the four Ps as they relate to the fire service is:

- **Product**: The behavior is identified by the marketer as needing change simply, what the target audience is being asked to do (Kirtley & Cote, 2008).
- **Price**: What the identified target audience feels they must pay or give up in order to change the behavior. It is critical that the fire safety educator evaluate the price of the behavior change from the target audience’s point of view and not their own (Kirtley & Cote, 2008).
- **Place**: The method or methods employed to deliver the fire safety message to the target audience (Kirtley & Cote, 2008).
- **Promotion**: The strategy employed to influence the target audience to make the desired change (Kirtley & Cote, 2008).

The four P’s of marketing are traditional guiding principles within the industry. However, Martinelli suggests that when government agencies are engaging an audience the marketing methods should differ from the four P’s (Martinelli, 2006). Martinelli identifies the four C’s as an alternative mechanism to consider. Utilizing the four C’s will cause the marketer to:

- Shift focus from the product in order to understand the needs of the customer (Martinelli, 2006).
- Consider the cost to the customer as well as society rather than focusing specifically on the pricing (Martinelli, 2006).
- Focus on making the information convenient to the customer rather than emphasizing placement (Martinelli, 2006).
• Lastly, communication with the customer intent on gaining feedback rather than simply promoting the product with deaf ears is essential (Martinelli, 2006).

Sixth, the competition to change the behavior is understood and addressed (Kirtley & Cote, 2008). The inflammatory behavior exhibited by the target audience and the importance of changing that behavior is likely obvious to the personnel developing the program. However, the target audience fails to recognize it so easily, and the need to change is often complicated due to competing influences (Kirtley & Cote, 2008). For instance, using the example of teenagers burning candles, the norm for teenagers to burn candles when they gather with friends and the social pressure associated with that norm influences the decision of whether or not to burn a candle (Kirtley & Cote, 2008).

Finally, the program must be monitored and adjusted as needed to achieve the desired effect (Kirtley & Cote, 2008). The target audience, as well as the influencing factors, is fluid and always changing. The initiative must be constantly evaluated to ensure the message is reaching the target with the desired effect. As behaviors begin to change and statistics reflect the change, the initiative must be adjusted and the effort continued in order to achieve long-term change (Kirtley & Cote, 2008).

Interviews were conducted to assist with identifying opportunities to improve current risk reduction efforts. Detailed transcripts of the interviews are located in Appendix A.

An interview with Battalion Chief Gilchrist was conducted because he serves as the Fire Marshal for the VHFD and much of the risk reduction falls under his oversight. His job is focused on plan review, and with the current economy, his workload is tremendous. Gilchrist revealed that in his opinion, codes enforcement was the strength of VHFD risk reduction efforts. Opposite of that, he identifies public education as a weak area related to risk reduction. He feels
the department needs someone focused on public education as their primary job. Employing a person with a background in education, as opposed to the fire service, would be beneficial. Gilchrist feels the use of a public education team is a good idea, however, getting the information delivered by the team has been challenging thus far (G.W. Gilchrist personal communication December 18, 2014).

Gilchrist sees the engine company inspections as a means to meet ISO’s requirement for yearly inspections, although it will be a challenge for the fire inspector to manage in the current deployment. The fire inspector will be charged with overseeing the inspection program and will likely be overwhelmed juggling the inspection of target hazards, business license inspections, and public education. Gilchrist feels there is more liability in citing a commercial occupancy and not following up on the citation than not conducting the inspection in the first place (G.W. Gilchrist personal communication December 18, 2014).

He states VHFD targets elementary students for public education, and currently no program for middle and high school exists. The department also does not test for retention of risk reduction messages (G.W. Gilchrist personal communication December 18, 2014).

Captain Scott Key was interviewed because he serves as the Fire Inspector for VHFD. His job duties include managing the engine company fire inspection program which was started January 1, 2015. Key is responsible for reviewing inspection reports, as they are submitted to the office. He anticipates this new role will consume much of his time because VHFD has implemented a one-year rotation for inspections. In addition to reviewing the inspection reports Key is responsible for conducting follow-up inspections when a violation is submitted. In many cases multiple trips are necessary to correct the violation. The fire inspector is responsible for the inspection of 66 target hazards within Vestavia Hills. An on duty engine company assists
him with this process to ensure they are familiar with the occupancy. Following the inspection of a target hazard the fire inspector walks the other two shifts through the occupancy to ensure they are also familiar with the structure. Key is also responsible for public education activities for VHFD (S.A. Key personal communication December 29, 2014).

VHFD does not have a specified curriculum for community risk reduction. He relies on previous experience to guide the delivery, and he feels that the message is delivered consistently. Key does see value in using a curriculum to guide public education. He identifies public education as the weak point of VHFD risk reduction, and he identifies codes enforcement as a strength. Key feels that there is passion for risk reduction and public education however, the time is simply not there and public education receives the least amount of emphasis. He feels the majority of risk reduction is performed during fire prevention month and when requested by the public (S.A. Key personal communication December 29, 2014).

A group interview was conducted with educators employed by the Vestavia Hills City School System. These teachers both had more than 20 years experience and have been involved in our public education programs multiple times. They asked that their names not be used so an alias was assigned based on the grade each educator taught.

K and S.G. both felt that the programs they have been involved with are of interest to the children. K is exposed to the smoke trailer each year and S.G’s exposure to VHFD risk reduction includes a yearly station visit. Both teachers see benefit to the public education programs they have been exposed to. K feels VHFD does a good job of sharing information and keeping the conversation on the student’s level level (K. and S.G. personal communications January 22, 2015).
S.G. identified several areas which could be improved. In her observations, the VHFD personnel delivering the station tour does not often communicate on the level of a second grader. SG did identify that other city officials also have difficulty with the same thing. S.G. feels VHFD is missing the opportunity to share a fire safety message with the students because they are enamored with the experience and are listening. SG feels that if VHFD met with a few teachers, they would be able to help develop a message which the students would understand (K. and S.G. personal communications January 22, 2015).

Both K and S.G. felt that it would be beneficial to incorporate fire service lessons and visits into the school curriculum. They felt that the subjects would fit well with a number of things which are already in the curriculum. Additionally, S.G. feels it is important to repeat the information on a regular basis in order for it to be retained (K. and S.G. personal communications January 22, 2015).

**Procedures**

The purpose of this applied research project was to identify best practices related to risk reduction in order to improve the development and delivery of risk reduction programs by VHFD. Four research questions were developed in order to accomplish the purpose of the applied research project. Literature review was utilized to identify national, state and local laws, ordinances and best practices, which influence risk reduction programs. Literature review was used to identify the components necessary for an effective risk reduction program. It was also used to understand what considerations should be made when constructing risk reduction methods. The information obtained from answering these three questions was to identify opportunities for VHFD to improve risk reduction efforts.
Individuals who have experienced various risk reduction programs offered by VHFD were contacted and interviewed. The purpose of the interviews was to gain opinion and analysis of the department’s risk reduction programs. Additionally, the interviews underpinned the information collected by the other research questions. Interviewees were selected because of their recent interaction with a risk reduction program offered by the department. The researcher contacted each individual and explained the reason for the interview and established a time which was convenient for the meeting. Transcripts of the interviews may be found in Appendix A.

Interviews were also conducted with both individuals assigned to the Fire Marshal’s office at VHFD. The purpose of these interviews was for the researcher to gain knowledge about the responsibilities associated with the office. Additionally, the individuals were questioned to help identify areas of improvement related to risk reduction.

A phone interview was conducted with Tilda Mims who is recognized in the region for leading her department to achieve outstanding accomplishments related to risk reduction. This interview was used to understand what other organizations are doing to deliver risk reduction programs.

Several limitations should be noted related to the interviews. One limitation was the number of actual interviews conducted. Efforts were made to gather information from individuals with recent experience with VHFD risk reduction thus, eliminating many potential candidates. Second not all parties contacted for an interview were available or willing to participate. Third, it is unknown if all interviews were truthful.
Interviews were conducted both in person and by email. Interviews were guided by a list of questions developed prior to the meeting. However, the subject was given freedom to expand their thoughts or to address information they felt was valuable.

**Results**

National standards were assessed which had relevance to risk reduction. The *Code of Hammurabi* makes it clear that community safety has been a consideration for thousands of years (Cote & Grant, 2008). The fire service in the United States relies on the NFPA for guidance of operations. The first NFPA standard published targeted a component of risk reduction by providing regulation of fire sprinkler systems (NFPA, 2013).

NFPA 1201 identifies the need for public education, engineering, fire investigation and the adoption and enforcement of building codes (2010). With these efforts risk reduction should “prevent fires, injuries and deaths” (NFPA 1201, 2010, p. 1201-5).

NFPA is currently drafting a standard directly targeting community risk reduction. NFPA 1730 *Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations to the Public* is a detailed standard which addresses the requirements of risk reduction. NFPA 1730 relies heavily on the organization performing a detailed assessment as the basis for the development of various risk reduction activities (NFPA, 2014). This assessment should consider demographics, geography, historical call statistics, and economics as components of the risk assessment (NFPA, 2014). The risk assessment is considered when structuring all areas of risk reduction including codes enforcement, public education and investigation (NFPA, 2014).
The Insurance Services Office Fire suppression Rating Schedule identifies the components of risk reduction programs which have value to their assessment of fire departments. Risk reduction components identified include code adoption, public education programs and fire inspections (ISO, 2012).

The State of Alabama addresses risk reduction through legislation contained in the Code of Alabama 1975. Among the duties of the Alabama State Fire Marshal is the prevention of fire (AFPSEC, 2014). The code identifies the State Fire Marshal as the regulation agency for sprinkler and fire alarm contractors. Building codes are identified for occupancies within the jurisdiction of the Alabama State Fire Marshal’s office (AFPSEC, 2014).

Locally, the City of Vestavia Hills enforces building codes as adopted by the Vestavia Hills City Council. Included in the codes adopted by the city is the International Residential Code. However, the requirement for sprinklers to be installed in one and two family structures was deleted (City of Vestavia Hills, 2014).

Literature review was used to determine the components necessary for an effective risk reduction program. Analysis revealed that the three E’s have been used for sometime as a mechanism to prevent injuries (Bradley, 2013). Over time, two more components have been added to more effectively address risk reduction (EACRR). The United States Fire Administration suggests that successful risk reduction efforts include emphasis toward all of the “E’s”. The five E’s include:

- Engineering- Which reduces harm by altering the physical environment (EACRR).
- Enforcement- The creation and enforcement of codes and ordinances with the goal of preventing fires (Jenaway et al., 2012). Enforcement is achieved through
building plan review as well as routine codes inspections. Annual inspections are recommended though not commonly achievable (FPRF, 2008). Methods for calculating the staff needed to achieve the numbers goal of risk reduction programs are demonstrated in NFPA 1730.

- **Education** - This method is the easiest and most common method used in risk reduction (EACRR). The message being communicated must be constructed with the target in mind (Kirtley & Cote, 2008). The goal of education should be long term behavior change which requires the message to focus on learning (Kirtley & Cote, 2008).

- **Economic incentives** - Many successful risk reduction efforts are a result of government offering an economic incentive for displaying a positive fire safety behavior. A commonly used program is tax incentives for the installation of residential sprinklers (Giesler, 2011).

- **Emergency response** - This has a definite impact on risk reduction. When other risk reduction methods fail the ability for emergency services to intervene with the appropriate knowledge and equipment reduces the impact (Giesler, 2011, EACRR, 2013).

Ms. Mims sees great value to using social marketing within the fire service. She feels it is important to deliver the message to the target audience in a manner that has the most meaning to them (T. Mims, personal communication January 22, 2014).

Literature review was conducted to identify the considerations that should be made when constructing a public message. The need to implement injury prevention programs was
recognized many years ago by Johaan Peter Frank. Properly designed and targeted fire prevention programs have the potential to reduce the number of incidents (Senter et al., 2006).

Social marketing has been successful in addressing social problems and has benefited risk reduction efforts when applied properly (Kirtley & Cote, 2008). The use of social marketing to construct and deliver risk reduction methods should follow seven key concepts:

- The objective is to have the audience take action to change a behavior (Kirtley & Cote, 2008)
- The target audience should be the focus of the initiative. The risk reduction practitioners must ignore their perception of the issue and seek to understand the issue from the perspective of the target (Kirtley & Cote, 2008)
- The target audience must believe the change is beneficial to them. This concept is difficult because in most cases the behavior is a part of the target audience’s daily life (Kirtley & Cote, 2008).
- The target audience must be grouped into individual groups based on commonalities (Kirtley & Cote, 2008). The one size fits all approach to fire safety is not effective because different groups are influenced according to underlying factors (Fox & Kotler, 1980).
- Social marketing within the fire service must include the traditional four P’s of marketing which are product, price, place and promotion (Kirtley & Cote, 2008).
- The competition to change behavior must be considered by the social marketer. The need for behavior change is clear to the social marketer, however, it is not recognizable to the target (Kirtley & Cote, 2008).
Finally, the program must be monitored and adjusted to achieve the desired effect. The audience, as well as influencing factors, are always changing. As behaviors begin to change, the program must be adjusted to ensure long-term change (Kirtley & Cote, 2008).

Risk reduction strengths and weaknesses were identified in an effort to provide a direction for improvement as well as knowledge of what should be sustained. Staff from the VHFD Fire Marshal’s office were interviewed because of their responsibility for risk reduction. Two teachers from the Vestavia Hills City School System were interviewed because of their experience with VHFD public education events and the VHFD’s focus on school age children.

The interviews revealed important information that may be used to improve the programs. First, public education is a low priority, not because it is unimportant, but because there are not enough man-hours available to devote to it. The fire inspector is charged with overseeing the engine company inspection program, target hazard inspection, and a variety of other tasks. Public education programs are mostly delivered to the schools by the fire inspector using the smoke trailer. The risk reduction messages are not crafted intentionally to suit a particular audience. The message being delivered to this audience is viewed as being consistent from year to year. (S.A. Key personal communication December 29, 2014).

Interviews also revealed that the staff assigned to risk reduction roles by VHFD have a tremendous workload. Gilchrist sees benefit of having staff assigned to public education with a background in education (G.W. Gilchrist personal communication December 18, 2014).

Students visiting the fire stations enjoy the experience however the students do not leave with a fire safety message. During the station visits with second grade classes, the VHFD personnel leading the experience have some issues communicating with the children. This is not
unique to just the fire department and it occurs with other city officials as well. It is suggested that VHFD staff meet with educators to collaboratively construct a message which will reach and impact students (K. and S.G. personal communications January 22, 2015).

Children participating in these experiences must have the information reinforced to ensure it is retained. If the material is presented adequately and consistently the children will know what to do during an emergency. It would be a good idea to explore having fire fighters visit the class on a more regular basis to deliver fire safety messages (K. and S.G. personal communications January 22, 2015).

Discussion

The subject of this applied research paper led the author to explore the components which make risk reduction programs and messages effective. Literature review provided concrete best practices to assist in improving risk reduction practices. Initially, the author explored laws and standards to determine requirements and best practices related to risk reduction.

Both local and national laws relating to risk reduction were identified. NFPA 1730, which is a draft document at this point, will deliver what is likely the most regulatory guidance related to risk reduction. NFPA 1730 uses a community risk assessment as the guiding mechanism for risk reduction efforts such as public education, fire investigations, code enforcement and plan review (2014). This document identifies the necessary components to each individual program. One area, which will likely be of interest to risk reduction, is the required inspection frequency outlined in NFPA 1730. 1730 uses the risk assessment concept to create a tiered inspection cycle where high risk occupancies are inspected yearly and low risk occupancies are visited once every three years (2014). This differs greatly from the ISO grading
criteria of each occupancy being inspected yearly (ISO, 2012). The author contacted ISO by email in an effort to understand how ISO establishes their grading criteria and the possibility of ISO matching NFPA 1730. The communication received back from Mr. Morash of ISO answered the questions posed but provided little information. He stated ISO does not follow NFPA procedures but they do consider the information when adjusting the schedule (M.C. Morash personal communications January 14, 2015).

State of Alabama laws were reviewed, and it was discovered that a great deal of legislation was related to the duties of the Alabama State Fire Marshal. Legislation does allow counties and municipalities to adopt and enforce building codes for structures outside of the jurisdiction of the Alabama State Fire Marshal (AFPSEC, 2014).

Ordinances passed by the Vestavia Hills City Council were reviewed for relevance to risk reduction. Ordinances adopting building codes were identified. It was also discovered that the requirement for one and two family dwellings to have fire sprinklers was deleted (City of Vestavia Hills, 2014). Not requiring residential sprinklers is common in the region, and is likely influenced by homebuilders. This would be an excellent opportunity for the city to employ economic incentives to encourage fire sprinklers.

Research to understand what considerations should be made when constructing risk reduction campaigns revealed many concepts. The need for government to utilize strategic marketing and advertising when delivering messages is imperative (Martinelli, 2006). One such method utilized by the fire service to deliver risk reduction messages is the social marketing model. This method utilizes concepts from the marketing community to identify and then understand the underlying influences which are factors in a persons decision to make a positive fire safe change (Kirtley & Cote, 2008). Tilda Mims describes this method as critical to the
success of risk reduction efforts within the City of Tuscaloosa, Alabama (T. Mims Personal Communication January 22, 2015). Social marketing focuses on understanding the target audience which is something the fire service has done a relatively poor job of. Kirtley and Cote’s assessment that the message the fire service has put out in the past is well suited for white middle class issues, but the message falls short of meeting the target audience (Kirtley & Cote, 2008). While the target audience may hear the message it is not crafted in a manner, which they can understand making it largely worthless.

Research to determine the components necessary for an effective risk reduction program brought the author to the basics of risk reduction. The original “E’s” were established many years ago and yet they are still applicable to risk reduction today (EACRR). Over the years two more components have been added to make a total of five which include: engineering, enforcement, education, economic incentives and emergency response. Each of these components must be utilized to properly balance the risk reduction program and without one, the success of the effort will be reduced (Bradley, 2013).

Valuable feedback was obtained from the interviews that were conducted. Interviews with the staff of the fire marshal’s office described the many activities which that office plays a part of on a daily basis. The conversation with the fire inspector revealed that his position is much more than simply conducting fire inspections. His position includes overseeing 15 different engine companies, working on three shifts, conducting fire inspections on a daily basis. The responsibility for inspecting target hazards and following up with the other two shifts assigned to that territory is time consuming to say the least. Numerous other duties fall under the umbrella of the fire inspector, all of which involve a great deal of time. Time availability appears to be the complicating factor with the fire inspector. When time runs short, something is
going to suffer, and currently the public education programs get the least amount of attention (S.A. Key personal communication December 29, 2014). This is not because the staff does not have a passion for the craft; it is simply that there is not enough time to complete all of the tasks which need addressing. Gilchrist sees values in having personnel with a background in education assigned to public education (G.W. Gilchrist personal communication December 18, 2014). Mims feels that having someone assigned to public education as a primary responsibility is a good idea but a background in marketing may be of more benefit (T. Mims, personal communication January 22, 2014). Now that engine company inspections have begun the responsibilities of the fire inspector have increased dramatically while the number of personnel and hours in the day have remained constant. Gilchrist stated there is more liability in issuing a violation and not following up on it than there is in not doing the inspection at all. The department needs to be aware of this and closely monitor the work flow of this program.

Interviews with the teachers identified strengths as well as weaknesses. It is evident that public education directed at the schools is received in a positive manner. The children enjoy the interaction, and fire safety messages are being delivered and retained by at least some of the students. The information presented during the smoke house demonstration delivered to kindergarten children appears to be appropriate and is being retained (K. and S.G. personal communications January 22, 2015).

The evaluation of the fire station visits with the second grade students revealed that the children enjoy the experience, but the message delivery method utilized by some VHFD staff appears to be ineffective for two reasons. First, the communion method is not appropriate for children of this age. They do not understand what is being communicated. Second, the fire safety message is absent from these visits. The researcher has had direct observation of these
issues in the past. Public education must focus on learning while incorporating entertainment when appropriate (Kirtley & Cote, 2008). It is apparent that there is an issue with this program, and the teachers offered a simple solution. They suggested that VHFD staff meet with a small group of teachers and work together to construct the objectives in a manner which the children will understand and retain.

The need to reinforce a message to ensure it is understood was identified as being important by the teachers as well as Kirtley and Cote (2008). The idea of VHFD coming into the classrooms on a regular basis with defined objectives was thought by the teachers to be a good idea. They felt several areas of instruction would be applicable to such a program. The information gathered will certainly assist VHFD in adjusting its risk reduction efforts to better suit the community. Evaluation of the organization to identify flaws can be uncomfortable, however, it is imperative that we seek to improve our service to the community.

**Recommendations**

The following recommendations have been identified through review of this research. The culture of the department needs to become more accepting of risk reduction particularly public education. VHFD should work with teachers to mutually construct objectives and communication methods for station visits. VHFD should explore the possibility of developing a program to regularly deliver public education to elementary students. The department should identify the basics of the program and approach school officials for input. Complete program construction should be done with the assistance of grade level teachers and should recognize the importance of social marketing.
Assistance from programs such as Leadership Vestavia Hills should be sought to assist in identifying and developing effective risk reduction programs. Leadership Vestavia Hills would provide a mixture of business professionals with various areas of expertise who could add value and provide outside direction to program and message development. Additionally the VHFD should consider requesting partnering with local colleges to provide an opportunity for marketing internships focused on improving risk reduction.

VHFD should explore the requirements and possibility of implementing an economic incentive program to encourage the installation of residential sprinkler systems.

The addition of company level fire inspections will impact all members of the department, however, the fire inspector will be impacted the most. The organization should closely monitor the ability of this individual to perform all of the tasks required of him. In order to quantitatively capture the demands of the fire inspector, VHFD should customize and employ the assessment tool contained in NFPA 1730. This should begin in March to allow several months for the inspection program to stabilize. The results of the assessment tool, along with the identified level of service selected by VHFD and elected officials, should be used to consider the addition of staff. If staff is added to the organization, it is recommended that a significant portion of the duties be management of public education.
References


http://www.nfpa.org/~/media/Files/Research/Research%20Foundation/Research%20Foundation%20reports/ccereport.pdf


Appendix

Interview with Greg Gilchrist
Battalion Chief/Fire Marshal Vestavia Hills
December 15, 2014

1. Please describe the Public Education in its current state versus where you see the organization needs to be in the future?

Realistically, we do not meet the ISO requirements. We simply don’t have enough time to devote to public education. We need someone to be more involved and to be in each school. Even with splitting it up and having a public education team, if you don’t have someone with public education as their primary focus then something is being missed. Ideally, someone with a primary focus on public education with a background in education rather than a fire service background. There is a model out there that works well with having someone equipped with the tools rather than getting a line fire fighter to cover the education.

To do public education you need someone who is geared more to being an educator rather than a fire fighter trying to figure out how to educate. I look at what Tuscaloosa has done with Tilda Mims and what they have done with her position and think that is probably a pretty good example of were to go.

2. Over the past few years we have developed a public education team, when and how did that start?

It began about three years ago. It was formed in an effort to find people with more time they were willing to donate to public education. People with a direct interest in the program. We have several fire fighters with children in the school system and we were trying to get them the tools
and the freedom that they needed to do public education. Getting the information presented has been difficult.

3. *When a request is received for public education what is the process to schedule and deliver the information?*

We identify periods of the year to present certain materials and divide that workload out among the people presenting the material. Other activities that come in for request are distributed out according to the date the request is for.

4. *Each member of the team has particular interests and comfort zones what are your thoughts on having people pick what mission they are interested in?*

I think it’s a great game plan to get people doing what they are comfortable with. I think it would be beneficial to allow a team member who will be delivering the training to work with the customer to schedule the training rather than letting the customer stipulate the training. In certain cases that would not work, for instance cub scout groups meet at a certain date and time and have no flexibility in there schedule. Events that are simply showing the fire truck to children don’t require extra effort. There are a lot of things we are missing because we don’t have someone who can go and do presentations to specific groups.

5. *Company inspections is a new program to VHFD, we are on a one-year rotation with that program. How was the time cycle determined?*

It is trying to meet the ISO demand of yearly inspection.

6. The reason I ask that the new NFPA 1730 is differs from ISO, will you expand on that? The new NFPA gives some leeway and I think ISO will steer towards that. 1730 allows you to look at target and high-risk hazards on a regular basis and then filter down to lower risk every three years. This will help our inspection situation.
7. *How do you see the fire inspector’s job changing in January once company inspections begin?*

He is going to be overwhelmed trying to achieve compliance. The first part will be establishing the learning curve for the companies out doing inspections for the first time. You throw that in with the fact that he has been in inspections for less than a year and the task of figuring out how we get this done. Supervising multiple groups doing inspections makes it more difficult.

8. *Do you anticipate the fire inspector being able to keep up with the tasks required of the job?*

No, it is going to be a juggling act of trying to keep up with compliance. Once we cite someone there is more liability in citing someone and not following up to ensure it is corrected than in not conducting an inspection.

9. *Do you anticipate an increase in violations with consistent inspections?*

Based on what I have seen over the last ten years you will see the same list of largely insignificant items at a lot of different places. We don’t have a large mix of things going on, we have a bunch of small mercantile businesses with small offices. We don’t have the diversity of a lot of different types of commercial property to look at. We are going to see the same things in a bunch of different shops. With the frequency of inspections increasing we will see the number of re-inspections increase as well.

The challenges will be inspecting target hazards, assisting companies with inspections, follow-ups, complaints, business license inspections it will be a lot to keep up with. The computer software will be beneficial once everyone is up to speed. The difficulty will be, companies doing a new task with a new piece of software. Captain Key has worked to narrow down the scope of the inspections to improve the flow. We will see many of the same violations repeatedly and we
should work to educated them about the problem and have them correct the problem rather than us citing them and having to come out two or three times to correct the issue.

10. What are you job duties?

A lot falls into other items. There are many tasks that are not directly related to this job. When we have a significant fire everything stops until we are done working the fire.

11. What does our public education target?

Generally we target kindergarten and first grade. We don’t have a program for middle school or high school.

12. Do we test for retention?

No we do not but it would be very beneficial. We are fighting the YouTube society, where kids see something on the Internet and want to try it. There is a lot we could address that we are not.

13. Is social media a method we can reach our audience?

We need to have something coordinated with the school system. They have tools that could be beneficial that we aren’t tapping into. The high school and middle school have recording studios that could be used to produce these messages with us serving as technical advisors.

Interview with Scott Key

Captain/Fire Inspector, City of Vestavia Hills Fire Department

December 29, 2014

1. What are your responsibilities?

I do business license inspections as they come in; any time a new business comes in I am assigned to do a complete fire inspection. I review all fire inspection reports done by the engine companies. This will look at accuracy and correcting any inaccuracies. If a repeat issue is
exposed I will assist in retraining the engine company. I handle all revisits for violations submitted by the engine company inspections. Many times a revisit involves multiple trips because the problem has not been corrected in one visit. I will be doing inspections of all 66-target hazards within the city on a yearly basis. This will involve the engine company on-duty assisting with the inspection as well as the other two shifts doing a guided walk thru with me. During this process the fire suppression systems will be identified along with any hazards pertinent to suppression operations. I will also assist Chief Gilchrist with sprinkler inspections, above ceiling inspections and complaint investigations from citizens related to occupancy load violations and code violations. When Chief Gilchrist is away from the office I also fill his role in the organization. All public education falls under me. I do the fire extinguisher training, smoke trailer demonstration, school visits, and civic events. I am also involved in the investigation of fires within the city. Lastly, I perform an observatory role for fire drills at schools and nursing homes looking at evacuation placement and pre-determined staging locations for fire apparatus.

2. Do we use any specific curriculum for public education?

I do not use any specific curriculum for public education; I use what knowledge I have to present the message. We do have literature from the NFA and NFPA available for reference.

3. When doing public education at the schools how is that performed?

I generally do the presentation with the children and an engine company assists me with logistics and management of the event. I feel like the children get a consistent message from group to group.

4. Do you see any value to using a pre-defined curriculum for public education?

I think it would be good to have a common curriculum to go by other than 21 years of experience as a fire fighter and relaying the things that I see as important. If we used a curriculum it would
need to be something that could be adapted to multiple groups based on age level. I don’t know about formalized test but it would be beneficial to determining if the information presented was understandable and retained. The education could be adjusted based on measurement. I wonder sometimes if our delivery method couldn’t be improved?

5. How effective do you feel the fire prevention team is?

I think it is effective. I think younger children aren’t at the age to receive information in an electronic form and I think they kids enjoy interacting with our personnel and seeing the fire truck. What we do is more of a hands-on presentation, which I think it is effective. For instance, a majority of the children coming through the smoke house mention the fire alarm demonstrator. This shows the information is being retained to some extent. Teachers have given good feedback on the program and I feel it is effective.

6. Fire Prevention at VHFD is directed in a lot of different directions what are your thoughts on improving delivery.

Lack of communication seems to be an issue with the program. Communication is generally an issue with anything in the fire service and I don’t mean that to be critical. Me being the fire inspector, I am not told if and when all the schools have been visited through the fire alarm program. I think this office should be the point of contact and the information forwarded to a specific individual for delivery. For instance, I don’t know everyone’s schedule and it would be a lot more controllable for the person doing the public education to work identifying a dated to present the program. I think it should be funneled to an individual who is responsible for that discipline of public education.

7. Do you see benefit to the public education team delivering the material?
Yes, if someone shows interest and passion for an area, they should be the ones delivering the information. Those people should have some input into when the education happens if possible. This will create a consistent delivery method if one or two people are delivering the same class.

8. What do you think our strengths are related to risk reduction?

The biggest strength is from code enforcement. A lot of that rests solely on Chief Gilchrist. He has had a decade in this office and has a good understanding of code enforcement as well as the city ordinances. Second, fire investigations are strong; Chief Gilchrist has a lot of knowledge in this area. I don’t have the experience he has but am working to expand my knowledge. Plan review is another strong area, the knowledge is there but the amount of time it takes to review a set of plans can be enormous. With the economy being on the upturn we are seeing a lot of building construction. Increased construction is a good thing, but we are seeing a lot more plan review work to be done. Fire prevention, I don’t know that it’s a strong suite; it has always fallen on this office to take the lead on public education. I think the passion is there and it is an important activity but there is only so much time in the day and it gets the least amount of emphasis. It is usually reserved to the month of October, which is fire prevention month, or when the public initiates a phone call requesting the service. The delivery has not seemed to change over the years. I see some benefit to delivering information to parents in a manner, which they will receive. A fire drill will not be initiated by a child, while the conversation my but the planning rests on the parents.

9. Thus far with the engine company fire inspections how many are requiring a revisit by you to correct an issue?
I would say a large percentage, between 50-75 percent, mostly minor things like fire extinguishers and electrical cords. Even with minor issues like those they have proven to many times require multiple visits to correct.

Group interview with Vestavia Hills teachers

K is kindergarten teacher

SG is second grade teacher

The participants interviewed asked that their names be withheld. To honor that request each was assigned an alias equivalent to the grade level which they instruct for the transcription.

Interviewer- Provided a brief overview of the EFOP ARP.

Interviewer- Asked for feedback on the public education programs delivered by the fire department that they have been involved in.

K- We participate in the smoke trailer each year for kindergarten. The children love the activity and the interaction with the fire fighters.

Interviewer- VHFD does not use a curriculum or have any significant classroom interaction. Many programs do this and incorporate the lessons into the school curriculum. Is that concept something that would be beneficial and feasible?

K- Absolutely, I think that would wonderful, we can definitely fit that in with our instruction.
COMMUNITY RISK REDUCTION: WHAT IS IMPORTANT?

SG- It would fit in a number of areas, we study community helpers, health and safety.

K- So many times this is the age that they learn this material

SG- They really take the information to heart

K- They really do

SG- Most of them if they were in an emergency and they had learned the information it would come to them and they would know what to do

Interviewer- After we visit the children do the teachers bring up the information that was covered?

K- Yes, but also the children bring it up

Interviewer- What do you think the retention rate is?

K- They are so fascinated they think the whole thing is great. They love the firemen and fire trucks. They ask questions after the program and we follow up by reading books and doing different activities to go along with it. It is one of those things that they are fascinated with and they love it and want to learn about it.
SG- Our angle is we study local and city government. We study community helpers and the government when we visit the fire station.

Interviewer - Year to year there is some structure to the programing for kindergarten when the second graders visit the fire station what are your thoughts on the visit?

SG- (This teacher did not want to discuss the negatives of the program and the interviewer reinforced that this is being used to improve our programming) I wanted you to hire me to run those tours. I do think maybe the person doing it does not know how to communicate with second graders, but why would you? That’s not what you do all day, but at the same time even the mayor has trouble bringing it down to the level of a child. You never have the same people there so it would be difficult to have your people trained in what to say. You might could get a couple of teachers together to develop a few points to hit during the visit.

Interviewer- With the smoke house how is the delivery? For the most part the fire inspector delivers the content, does that help?

K- They have always been great and they can get on their level. We have never had a problem. The firemen do a good job of sharing the information and telling the children about the truck.

Interviewer- How can we better understand how to relate with children of this age?

SG- I think getting with a group of teachers and getting them to tell you some specific things to discuss. Our kids are most fascinated with the kitchen in the fire station but that is not what they really need to know about. They tend to think the station is really cool and the guys tend to talk
about it because they are interested in it. I think it is important that they understand how you live but essentially they are leaving with no fire safety message. When they show them the truck what the guys talk about is sometimes over their heads and we are probably there a little too long also. When we get to the truck it would be good if they would talk about a few things and then incorporate what the children need to know about fire safety. The opportunity to combine the “wowness” of the fire truck with a safety message would be beneficial. I don’t want to be critical because we are thankful for the opportunity to visit and what you do for us.

K- There is not anything I can say critical about our program.

Interviewer- Is the message consistent year to year?

K- Yes, it is they pretty much do the same thing

Interviewer – Would it be a good idea for us to work with the teachers to develop a way to visit the students a few months after the program to assess the retention of information?

SG- Yes I think so but keep in mind the reading level of the students. A lot of our testing is oral at this age.

K- You could come talk to them and get them to answer questions but I really think the information is sticking with the kids.

SG- I would love to see a repeat of information because they are little and they need to hear it over and over to retain the message.

K- If you could follow-up I think it would be great.

Tilda Mims

Public Educator City of Tuscaloosa Alabama Fire Department

January 22, 2015
1. TFD is unique to the region in that they have someone devoted full time to public education, how did this evolve?

In 2004, Chief Martin was hired by TFRS and was committed to fire and life safety education. He wanted someone assigned to that role, for the first few years a fire fighter was assigned to that role. All of the staff that filled that role were successful in some or all areas. However, it became more apparent to Chief Martin to follow what was going on in other parts of the country and hire someone with skills in education and marketing and teach them about the fire service rather than the reverse. In January of 2006, I was hired by TFRS. Previously, I held a similar position with the Alabama Forestry Commission and it was a good fit because the AFC had never used someone who was not a forester to play that role. The idea was to create and fund a position and not turn that position into anything other than what it was designed to do. Basically, Chief Martin recognized the need for public education and he wanted someone to manage the program, not to do the presentations although, I do some of them. It was more to develop, manage and sustain a program rather than just responding to every request that came in over the phone.

2. What benefits do you see from having someone assigned full-time to public education?

When I came here the phone rang constantly and it was different groups wanting the fire department at an event and the practice was to always say yes. Wherever we were getting requests the day before events and to me that was too much. I couldn’t keep up with it and I don’t know the folks in the field kept up with what was going on. They would come in for work that day and think they knew what they were doing and then find out they have an event. A fire and life safety committee was formed with volunteers to help me better understand the department. I knew what I knew but I needed to understand how to make that fit into a fire
Looking back, some of the folks on the first committee are still serving and they were great. I remember one day saying how can we make this more acceptable? I know they knew the value of education and they enjoy what they do but to me this doesn’t look like a good way to manage time and resources. One of them said, if you could get us some notice because the way it is we get a phone call and find out we have a program today. I met with Chief Martin and discussed the current operation. At the time most of our fires and injuries were on the west and east sides of the city. I looked at the requests and they weren’t from those areas. We were doing a great job for the people that call us but Head Start does not call us. So what does that mean? Those are the children at greatest risk, why can’t we have some control over where we go and what we do? He thought that was a good idea and we developed a policy. One of the things in that policy was we have to have a two week notice for everything we do. Priority was given to high and at risk neighborhoods. This gave us a better handle of our time and our time management. The Captain at Station 3 can look on his calendar and see what he is doing 3 or 4 shifts from now. He is not going to come in and find he has something he is not prepared to do. We train people to do everything but springing a program on them is illogical. To sum it up having someone full time helps us manage our time and resources to target our at-risk and high risk audiences so we can hopefully change their risky behavior. The other thing we did was partner with our neighborhood schools. We have five stations that partner with a school and they go every month. Each shift has a grade to visit and they go every month for nine months. They are in the classroom talking about smoke alarms and when to call 911. We are in our ninth year now.

3. Is there a curriculum for this program?
Yes, we developed it ourselves and we meet to tweak as a committee. We look at sequence and have moved some things around. We do the safe house in February when the weather is icky. We have added an EMS element in March because so many of the children are going to see them on an EMS run and not a fire. The benefits are that you have someone who is devoted to that and the educational element of whatever we are trying to do. We have a program in place that we can manage and measure and do a cost benefit analysis instead of being reactive.

4. Are the suppression personnel in the field delivering these programs selected or is whoever working that day?

Whoever is working that day handles it. Everyone is a public educator, different departments do if different ways but that’s the way Chief wanted to do it. It wasn’t an easy thing because change is hard but we’ve been doing it for so long. The stations that we were calling on to do public education were already the busiest ones because they had most of the fires. So here we are asking them to do more public education installing smoke alarms and such. Some of them really embraced it and said, yes we need to get in the prevention end of things, its crazy not to. Over time the positions in those stations were a consideration in all fairness. When it was time to move people around we said, this is one of our project fire schools and we need someone who is really on board with it. Now it is part of their job and nothing different. The crews have a really good relationship with the schools and they are invited to eat lunch and come to Christmas parties. It is really a quality of life thing now.

5. How do you measure knowledge retention?

We do informal pre and post testing. It is nothing written but the practice is we connect the lesson from the previous month to the current month. We structure the program so it builds
on its self. The first lesson is how to dial 911 and is followed with smoke alarms then exit planning. The subjects stay the same but the lesson may vary based on the age of the child so the kid will get the information in kindergarten, second and fourth grade. By the time they are in fourth grade they know the basics and we bring up how we breathe and the SCBA. It is an informal evaluation.

6. So you target Kindergarten, second and fourth?

That’s just in our partner schools. We have five target schools I wish we could do them all, there are others we should be doing but we just don’t have the personnel. It is not about the money its about the people. Someone is covering for these crews while they are out of service.

7. What is the importance of social marketing in fire prevention?

It is critical to what we want to do. We know what they need to be doing. I know what I need to be doing in my life like follow the speed limit, eat well, and all that kind of stuff. We are big on social marketing, taking the message to them in the way that has the most meaning. We have found that using church groups is very effective. Many times pastors are the voice of opinion in a community and it is very helpful when they invite us in to be apart of a program they are doing. We have been involved in identifying different ways to deliver a message and it has been a challenge outside of the schools. Understanding behavior is important, we don’t have to accept it but, we have to understand that it is reality for that person and its a different world to us. For example, I asked the teachers at the schools what is something you want these children to hear other than what the normal fire safety lessons? The teacher said, we really need to talk about cooking. I said we have a policy not to talk about cooking because they don’t need to be cooking. The teacher said she knows they don’t need to be cooking but that doesn’t mean they are not doing it. They come to school all the time with grease burns on their hands and arms
because they are cooking dinner when their parents work until seven. That was a hard sell. I had one of the guys complain to the chief because I was going to do that. I’m not saying encourage them to cook but they are home alone, they are supervising younger siblings, they are cooking dinner for the family whether we think that’s a good idea or not. We have to accept that there are obvious differences and we cannot assume that we are going to change some behaviors. What we can do is try to keep them safe.

8. Once you see statistically, that your interventions are making an impact, how difficult is it to sustain that program to ensure long term behavior change?

I think it is energizing, absolutely energizing. We had three years in Tuscaloosa with no fire fatalities until 2014. We had some change of demographics following the tornados but those people still live in the city and we can see the movement. We have had fewer fires and clearly fewer fire fatalities. When we assessed our efforts the field personnel all say they see a difference in the type of fires. They are getting the call earlier in the stage of fire, which is significant. They all report distinctive improvement of how they are responded to in the neighborhoods. I’m not saying people were mean to them but now people wave at them. The personnel that have adopted schools are recognized off duty in civilian clothes. The nature of fires and early notification has definitely changed. The turning point was we had a young girl, 11 years old from a project fire school had a fire at her home. She got her teenage sisters, grandmother and her 18-month-old sister out of the home. When Engine Six arrived they were standing beside the mailbox. The Captain from Engine Six told me it looked like it was out of a magazine with them standing beside the mail box. When asked if everyone was out the little girl said yes! It smoked up the house and they had to live in a hotel for a period of time. It was a big deal for us, we had Asia Hill day in Tuscaloosa. She came to the City Council meeting and did a
lot of publicity. The Mayor asked how she knew to get out? She said the fire fighters taught me how to, they came to my school and they said don’t go back for anything. The guys that were there, one of them a bit of a pill at times, and he’s upfront about that, looked at me and said, I take back everything that I have ever said. He said we do so many of these and we never know the result. Here is a save, clearly a result of our education efforts. It really energized them. It hasn’t been we’ve got it made and now we can slack off. Now we have another school involved.

9. How was the curriculum developed?

I put together the objectives and talking points along with additional information in a three ring binder. They do what they want to do, they know the kids and they know what the kids already know. For a long time I was the liaison between the stations and the schools and that has changed. Now the station captain handles that one hundred percent. All I have to do is order their handouts.

10. How much involvement is there with the school staff with this program?

When we first started we had schools wanting to do it during different portions of the school day (during PE or different subjects). We had a heck of a time during the first few years tweaking this. I wanted it in the classroom setting and I wanted the teacher in the room so they could hear and reinforce the material. It took us a little while to get to that point. We actually had one school we stopped going to because at the time it was not working. I had a responsibility to make sure our fire fighters are making good use of our time and under these circumstances they were not. Now the teachers are very involved in it and will actually start emailing at the start of school wanting to know when we will be back. They look forward to it,
the administrators love it and they make sure it works. I have always communicated to make sure they are happy.

11. What is your background?

I have an undergraduate degree in speech communication and a masters in education. I have teaching certification and taught public speaking for many years at the community college level. When I was hired by forestry it was an information and education position. Which was the same thing Tuscaloosa did, they were hiring people to do education for forestry and I was lucky enough to get one and loved it. Public education is different than classroom education, it involves more analysis, marketing and planning and I really like that. The position I was hired under was what the position did in the past and that has changed. The guy in the position before me drove the safe house around and did all of the demonstrations and tours. When I was hired there was some misunderstanding that I would be doing that. When I got here and wasn’t doing that it caused some confusion. It took a while and took fine tuning on my end to understand how they manage their time and plan there time. I have had to learn that fire fighters plan things very carefully and do not waste time. Everything has value and everything is scheduled, they are the absolute best.

12. How much has having an education background helped you with this position?

That’s a good question. That is one thing that they took out of the job description. I do hardly any of the programs and I miss that actually. I do a lot of adult programs because there is no point in sending a whole engine company to do it. If someone thinks they are going to be the one who gets to talk to the kids they are going to be disappointed. I spend a lot of time writing. I think something more in marketing and statistics is valuable. The ability to study demographics, needs and risks then develop a plan is important. Not that you can’t do that with
and education background but it might need to be a specific education, special education? I
don’t think just any teaching certificate will prepare you to do this. It really depends on what
your history. For me I think coming from forestry helped. I didn’t know much about structural
fire fighting but I understood the essentials and had worked with starting a program before.

13. What is the value of fire prevention and public education?

It is important to have a plan. I don’t know another way to put it. I think this position is
important to have someone whose job is to all day everyday think about fire and life safety
education. If you do public education and also do inspections or run a fire station something is
going to suffer. Whatever happens around here I am thinking what is the educational element to
that? Everyone does not see it that way. For that reason I think it is important. I think it is
important for prevention but frankly, it is important tool for educating the public on the value of
fire fighters. I think that is extremely important for the public to know what fire fighters do to
improve the quality of life within the community. They do a million other things to help you.
This is another way we can educate the public on where their tax dollars are going.
RE: Info Request Vestavia Hills

See Below for answers! Any further questions please let me know.

Michael C Morash
www.isomlitigation.com

From: Ryan A. Farrell
Sent: Wednesday, January 14, 2015 5:01 PM
To: Morash, Michael
Subject: RE: Info Request Vestavia Hills

Thank you sir!

My project relates to fire prevention and I am taking a comprehensive look at what we do within the Vestavia Hills Fire Department. One area I am looking at is fire prevention inspections.

I wanted see if ISO would talk about the importance of fire prevention inspections to the ISO schedule. What do you mean by talk about, are you looking for a presentation?

Also, how did ISO select a one year cycle for inspections? The 1 year cycle is based on the credit that will be given for this section on a yearly basis that each department performs the functions.

When developing the schedule how much influence do NFPA standards have construction of the schedule? NFPA is a reference point only, as you read through the section you see how it refers to the NFPA or meeting the general criteria.

NFPA 1730 which is in a draft form at the moment and is set to release sometime in the future addresses inspections among other prevention/education components. NFPA 1730 instructs the department to conduct a risk assessment which rates structures either high, medium, low or critical infrastructure. The recommended frequency of inspection is annually for high risk, biannually for moderate risk, triennially for low risk and critical infrastructure is to be set by the jurisdiction.

If this is published by NFPA as written would ISO consider this in future revisions of the schedule. As the schedule is reviewed ISO would look at the NFPA section, but again NFPA is only a reference.

Thank you very much for your help!

Ryan

Ryan Farrell
Lieutenant, City of Vestavia Hills Fire Department