


Reducing Repeat False Fire Alarms with a Fee-Based Enforcement System in Fairlawn

Steven W. Brant

Fairlawn Fire Department, Fairlawn, Ohio

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Steven W. Brant

Abstract

The problem was that the Fairlawn Fire Department responds to an inordinate number of repeat false fire alarms each year, all while overlooking the enforcement of the City's current "Nuisance Alarm" ordinance, resulting in an increased risk of injury and complacency to all stakeholders, who are not reacting appropriately to activated fire alarms. The purpose of this research paper was to identify whether a fee-based enforcement system provides an incentive to business owners to repair their alarm system and also, if justified, create a fire department policy on "nuisance alarm" fee enforcement. The action research method was used to develop the above policy if justified and designed to answering the following research questions: a.) What is the risk to the community when the Fairlawn Fire Department responds to a false alarm? b.) What have other departments found when measuring the effectiveness of fee-based enforcement systems in order to reduce the number of repeat false alarms? c.) What common or best practices have other departments identified in administering repeat false alarm fees? d.) What are the political implications if a fee-based enforcement system were to be implemented for repeat false alarms in the City of Fairlawn? The procedures used were an evaluation of the department's response data, an interview with the Fairlawn Police Department Alarm Administrator, and a survey sent to the Fire Department, the City Administration, and outside departments. The results confirmed Fairlawn has a repeat false alarm problem and that changes need to be made relative to training, enforcement, investigating, and reporting false alarm, all focused on the common goal of reducing false alarms/repeat false alarms. Recommendations from this study include additional training for responding units to investigate and report false alarms, a continued evaluation of the false alarms problem and enforcement program, and the creation of the "False Alarm Enforcement" policy in Fairlawn.

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The City of Fairlawn, despite being a strong economic and financially stable city, was not immune to the real estate market crash of 2008. In Ohio, the embattled political atmosphere has also caused a reduction in governmental funding for many municipalities. The Fairlawn Fire Department (FFD) has been fortunate to have avoided a decrease in full-time staffing. The department has maintained full-time firefighter staffing levels from 2008, increasing total full-time staffing by two, from 14 to 16 in 2016. FFD did, however, suffer from reduced shift-staffing levels, going from six firefighter/paramedics 24-hours a day to five. The FFD is a combination department which backfills its station with part-time personnel, so the staff reduction affected shifts available to part-time firefighters. These staffing challenges have fostered the “do more with less” mentality in Fairlawn and has become the common and acceptable practice of today’s fire service.

FFD, along with many other organizations in the fire service, needs to not only identify but also implement practices that reduce the risks caused by the ever-increasing demands on members of the fire service, risk that is compounded by needless false alarms. The problem is that the Fairlawn Fire Department responds to an inordinate number of repeat false fire alarms each year, all while overlooking the enforcement of the City’s current “nuisance alarm” ordinance, resulting in an increased risk of injury and complacency to all stakeholders, who are not reacting appropriately to activated fire alarms. The purpose of this research paper is to identify whether a fee-based enforcement system provides an incentive to business owners to repair their alarm system and also, if justified, create a fire department policy on “nuisance alarm” fee enforcement. The action research method will be used to develop the above policy if justified, through literature review, interviews, and a survey/questionnaire aimed at answering

the following research questions: a.) What is the risk to the community when the Fairlawn Fire Department responds to a false alarm? b.) What have other departments found when measuring the effectiveness of fee-based enforcement systems in order to reduce the number of repeat false alarms? c.) What common or best practices have other departments identified in administering repeat false alarm fees? d.) What are the political implications if a fee-based enforcement system were to be implemented for repeat false alarms in the City of Fairlawn?

The research proposed is to determine whether a fee-based enforcement system is an effective tool in reducing the number of repeat false alarms in the City of Fairlawn. Reducing the number of false alarms would reduce the risks to the community and firefighters from the recurring complacency, increased response times, and simultaneous alarms that challenge a limited resource single station department. The results of this research will benefit the Fairlawn Fire Department by motivating the department to develop policy with the goal of reducing repeat false alarms while increasing compliance and safety for Fairlawn's firefighters and its community.

Background and Significance

The FFD provides an all-hazard emergency service to the community as expressed by the department's mission statement, "The mission of the Fairlawn Fire and EMS System is to provide its community sensitive, cost-effective protection against the threat to life and property due to fire, medical emergencies, and other disasters" (Fairlawn Fire Department, 2009-2015, p. 3). Established in 1971, the City of Fairlawn is a small city located in Northeast Ohio that covers 5.2 square miles with approximately 7,500 residents. The FFD was commissioned in 1981 to provide fire and emergency medical services (EMS) to the citizens of Fairlawn. The first fire

chief was hired in 1981; he began the development of the emergency services providing Fairlawn its own station in 1982 with paid and volunteer personnel.

There is no manufacturing in Fairlawn; however, the city is home to many large corporations, a retail mall, and a diverse base of successful businesses and has been designated as a medical corridor in Ohio. This strong corporate community adds demands on the FFD due to an influx of over 40,000 people who work, shop, or eat in Fairlawn. The department is a combination department with 16 full-time personnel and 33 part-time personnel that operate out of one station. The station houses one engine/pumper, one ladder truck, three ambulances, and four support vehicles. Station staffing is a minimum of four personnel 24 hours a day, 365 days a year. The allotted daily staffing is currently five; prior to 2008, it was six, 24 hours a day. FFD primarily has three shift complements that full-time personnel work 24/48, and then shifts are backfilled with the goal of maintaining five personnel at all times with part-time personnel.

False alarms, because of their frequency, have become a detractor from department operations, contributing to firefighter complacency, increased response times, increase wear on equipment, and a strain on department resources. False alarms also place the community at risk; when emergency vehicles are responding to false alarms, they can become involved in motor vehicle accidents or, at very least, are delayed in response times when actual needs arise. Too, fire department operations can be compromised. On the chance that a given call might be false, Fairlawn officers contemplate deviating from the standard response, leaving firefighters back at the station, changing the response dynamics by taking the engine response from four firefighters to three. Should the call turn out to be an actual structure fire, as experienced in Fairlawn the number of respondents is one fewer, resulting in greater risk for those firefighters and members of the community, as well as communication and accountability issues.

Fairlawn is what would be described as a limited resource department and generally has the capabilities to respond to initial calls. Therefore, any second, third, or simultaneous call would require a mutual aid response from a neighboring community. In 2015 alone, the FFD had 1,925 calls of which 399 calls (21% of the total calls) were simultaneous responses. Of those 1,925 calls for service, 1521 were EMS runs and 404 were classified as a Fire Response. When motor vehicle accidents (MVA), medic assist, and other incidents not intended as a response to a fire were removed from the total, the actual number of fire responses was 275. Of these 275 fire responses, the data indicated that there were 145 false alarms or unintentional activations with 95 of those originating as repeat false fire alarms from 18 different occupancies. When combined with the fact that FFD's emergency medical calls for service have nearly doubled from 2009 to 2015, going from 913 calls to 1,521 calls for service with no increase in daily station staffing, it's clear that the FFD needs to identify and address ways to prevent unnecessary repeat false alarm responses.

Another issue is that the FFD does not currently enforce, nor has it ever enforced, the City's ordinance to address "nuisance alarms" or repeat false alarms. The ordinance has been in place for over 18 years, and the police department has enforced it from the time it has been introduced for repeat/excessive burglar alarms. The police department's alarm administrator tracks, identifies, and writes letters to the occupancies with repeat/excessive alarm occupancies. The associated fees are then billed and collected through the City's finance department and deposited into Fairlawn's general funds.

The Fire Prevention Bureau (FPB) in Fairlawn has never been given the authority to be constables in the City's jurisdiction. Therefore, they are able to write hazard notices but have no authority to write tickets or impose fines on the spot. The process to enforce a fine has never

been defined nor does the process have a formal department policy. Whenever there is an infraction that needs immediate enforcement such as closing an establishment for safety reasons, or even something as simple as excessive alarms, the FPB has been required to file paperwork with the legal department in the City. From that point, multiple meetings would be scheduled, and other outside lawyers or experts would be brought in for discussion. The legal department would draw up the formal paperwork and then file through the appropriate legal or court system. Once through litigation, the corrective action would take place and be enforced. Under the authority of the Fire Chief there can be immediate orders for vacating a premise based on life-safety conditions. This paper seeks to identify some best practices and, if justified, develop a department policy specific to the enforcement of repeat fire alarms, giving direction to the FPB and streamlining enforcement of repeat false alarms.

These false alarms not only put a strain on the FFD's resources but come at a cost to the department, the city, and the community as well. When comparing the 2015 budget to the department's call volume, the per-person per-response cost equals \$258.18. At Fairlawn, the standard response is five personnel to all fire responses for a total cost of \$1,290.90 per false alarm. FFD responded to a total of 145 false alarms in 2015, which equates to \$187,180.50. Other budgetary concerns resulting from false fire alarms include replacing equipment due to increased use, a cost that steadily rises each year.

This research project meets two of the United States Administration's (USFA) strategic goals: "Goal 1: Reduce fire and safety risk through preparedness, prevention and mitigation" (United States Fire Administration, 2013a, p. 10) and "Goal 3: Enhance the fire and emergency services' capability for response to and recovery from all hazards" (United States Fire Administration, 2013a, p. 12). The project goal is to reduce the number of repeat false alarms

through identifying the repeat false alarm problem in Fairlawn, measuring the effectiveness of a fee-based enforcement system, and if justified, creating a department policy for enforcement of repeat false alarm occupancies; thereby reducing the risk to firefighters and the community, as well as enhancing the capabilities for response to all hazards within the community.

Furthermore, the significance of the project directly relates to two of the National Fallen Firefighter (NFFF) 16 Firefighter Life Safety Initiatives: “Goal 3, “Risk Management – Focus greater attention on the integration of risk management with incident management at all levels, including strategic, tactical and planning responsibilities” (National Fallen Firefighters Foundation (U.S.). International Fire Service Training Association. International Association of Fire Chiefs ((NFFF)), 2004, p. 3) and “Goal 15, Code enforcement and sprinklers” (NFFF, 2004, p. 18). This project seeks to evaluate enforcement and the methods of enforcement. Enforcement is only one aspect of reducing risk; there is a need also to recognize that other aspects, such as education, are equally as important when reducing risk.

Finally, this research project will benefit the FFD by preventing and reducing the number of repeat false alarms through enforcement. Fairlawn is not alone in the trend of false alarms or, to be specific, repeat false alarms. This problem is shared across the fire service and adversely affecting the communities. Also making this project directly related to the Executive Analysis of Community Risk Reduction (EARCC) class because it not only deals with enforcement, one of the five E’s of community risk reduction, but also focuses on reducing the risks to both the community and the FFD that are encountered due to false alarms. If ignored, the repeat false alarm problem will persist and continue to burden the department’s resources, adding additional negative influences to the risk factors involving the firefighters and the community when responding to false alarms. This research project is targeted at reducing the number of repeat

false alarms in the city of Fairlawn through enforcing a fee-based enforcement system. The researcher does recognize the importance and the value of the other five E's of community risk reduction. However, this project is measuring the enforcement aspect. For all the stakeholders involved, it is imperative for Fairlawn to reduce unnecessary risk caused by repeat false alarms.

Literature Review

The false alarm problem is not a new issue in the fire service. It has been around since the early 1970s when Duane Pearsall made smoke detectors affordable for homes and businesses (Johnson, 2013, para. 1). Over time these first detectors have developed into sophisticated and complex fire-, smoke-, and heat-detection systems. Even though detection and suppression systems have been a game changer in the fire industry in terms of life safety and reducing fire deaths, there are costs involved. Those who work in the fire industry are well aware of the problem of false alarms and the huge costs associated with them (Simons, 2013, p. 54). Graham Simons (2013) recognized in *Fire Risk Management* that false alarms not only affect the fire service, "... but also that false alarms disrupt the productivity of businesses" (p.54) and "in the retail world, this can also be an opportunity for thieves"(p.54). He also concluded that lives are at risk when people lose confidence in fire alarm systems and become complacent. Simons (2013) found that, due to the frequency of fire alarms, people may not behave as they should in the event of an actual alarm.

The National Fire Protection Association (NFPA): *Standard on national fire alarm and signaling* defines false alarms as "unwanted alarms, where any alarm that occurs that is not the result of a potentially hazardous condition" (NFPA, 2016, p. 33) and identifies four categories

into which they are classified. When fire departments respond to false alarms or the “unwanted alarms” they are reported to the national database by the following four categories:

3.3.304.1-Malicious Alarm. *An unwanted activation of an alarm-initiating device caused by a person acting with malice.* (NFPA, 2016, p. 33)

3.3.304.2-Nuisance Alarm. *An unwanted activation of a signaling system or an alarm-initiating device in response to a stimulus or condition that is not the result of a potentially hazardous condition.* (NFPA, 2016, p. 33)

3.3.304.3-Unintentional Alarm. *An unwanted activation of an alarm-initiating device caused by a person acting without malice.* (NFPA, 2016, p. 33)

3.3.304.4-Unknown Alarm. *An unwanted activation of an alarm-initiating device or system output function where the cause has not been identified.* (NFPA, 2016, p. 33)

Hank Clemmensen (2013) reported that there were 2.18 million false alarms in the U.S according to the National Fire Protection Agency (NFPA). He went on to describe how these false alarms burden the local fire departments, increase the risk of injury, and have also attributed to firefighter deaths. Roughly 20% of firefighter deaths each year are due to vehicle accidents or being struck by vehicles. (Clemmensen, 2013, p. 16)

Marty Ahrens (2004) indicated that false alarms and nuisance activations in all occupancies are problematic for both the fire service and building occupancies (p. 56). Ahrens (2004) further explains that “nuisance alarms” lead people to ignore the early warning of smoke alarms and are the leading cause for deliberate smoke alarms disabling. His report estimated that in 2003, U. S. fire departments responded to 2,189,500 false alarms, which equals about 10 % of all fire department responses. Ahrens (2004) also summarizes the problem in other countries: New Zealand had the highest false alarm response percentage with 40% of its fire responses being false. His report also recognized that, because the growing trend of fire departments responding to false calls more than any other fire response, communities began to consider imposing fees on property owners for false alarms.

Michael Karter (2013), in his NFPA report, indicated that U.S. fire departments responded to 2,238,000 false alarms in 2012, decreasing by 6.1% from the year before. The data provided by Karter (2013), noted there were 31,854,000 reported fire responses in the U.S., and 2,238,000 were attributed to false alarms (7% of the total reported fire responses). The data in Karter's (2013) NFPA report also noted that most false alarms were the result of unintentional activations.

According to Bryan (2013), the Rancho Cucamonga Fire District, in California, dropped the number of false alarms from 816 to 711 in a nine-month period. Rancho Cucamonga designed a plan in which a fire inspector identifies and investigates fire alarm deficiencies and imposes a fine on the responsible party involved. Bryan (2013) noted that the penalty fees are not used as a revenue stream, but rather a means to reduce response costs.

When reporting the City of Columbus' data, Decker (2013) summarized that the city logged 12,298 false alarms in 2012 and 13,326 in 2013, a total that was markedly lower than the early 2000s. The article also disclosed that a Columbus Police study revealed that 99% of the 57,000 alarm calls in 2000 alone were false, costing the city over \$3 million. Decker (2014) also estimated that Columbus collected \$274,750 in 2012 and \$253,989 in 2013, which was deposited to the City's general fund.

Although numerous search engines were utilized, as well as the help of an NFA LRC research assistant, no educational articles, studies, or data measuring the effectiveness of a fee-based system for repeat false alarms were located.

There was, however, literature describing the shortfalls in fire service data and evidence-based studies. Apfelbeck (2016) confirmed that one of the greatest challenges to solving the false alarm issue is the lack of service-wide data and research studies (para.16). He said the service

needs to look deeper at unwanted alarms, provide better data, and produce more evidence-based studies on effective false alarm prevention methods. This limitation of literature compelled the author to investigate this concept further through a survey sent to outside perspective departments in Ohio. The author also wanted to explore Apfelbeck's (2016) contention that the fire service falls short in providing evidence-based studies and data on reducing false fire alarms.

In *Fire Engineering*, Peter Bryan (2013) describes how the demands for the fire service are now far exceeding their available resources. His article defines a three-step process in reducing unnecessary alarms. Step one suggested that fire departments recommend system upgrades to business and property owners. Step two includes developing inspection programs specific to fire alarms. Step three was to investigate alarms for the cause of activation and then to bill the responsible party. Developing a fee for unnecessary alarms with a zero tolerance will quickly reduce unwanted responses (Bryan, 2013, p. 88). Bryan (2013) summarized cost recovery fees for apparatus and personnel by writing, "when the system malfunctions, the alarm company is responsible; contractors are responsible when their actions result in an unnecessary alarm, and the occupants are held responsible when their actions cause the alarm" (p.88).

According to the City of Hilliard, Ohio, website (2016) code section 709.02 requires any residence or business owner equipped with an alarm system to obtain a two-year permit for \$25. This fee is waived for any residents over the age of 65. Along with the permit process, any occupant with an alarm system can have a fee assessed up to \$150 if more than two false alarms occur in a six-month period.

Theodore Decker (2013) said that Columbus has struggled for years to find ways to reduce false alarms. His article notes that Akron was no longer going to respond to alarms unless it was a "verified response." In the article, Decker (2013) also described the burden of false

burglar alarms on the police and the risks placed on residents under a “verified response” where no public service responds unless, “the alarm company can confirm intrusion through eyewitness, live audio or video, or tripped perimeter alarm followed quickly by an activated motion sensor inside” (para. 4). According to the article, the City of Columbus chose to implement a tiered system of fines for repeat false alarms. In this tiered system, Decker (2013) noted that an alarm user will not be charged for the first two false alarms, but that for each subsequent alarm thereafter, “penalties accrue and keep climbing, maxing out at \$800 for the tenth alarm” (Decker, 2014, para. 7).

According to Sandusky’s City Ordinance (2004), if more than two false alarms occur at a location in a calendar year, the fine is \$25 for the third false alarm, \$50 for the fourth false alarm, and \$100 for five or more false alarms in a calendar year. It also specified in the ordinance that the fire chief or police chief shall invoice the alarm user, placing the responsibility on each department.

The Ohio Revised Code (ORC) addresses false alarms, specifically those caused by commercial establishments. In section 505.391 (2006), the code allows municipalities to charge up to \$300 per false alarm and specifies after three false alarms in a calendar year. Ohio’s code also states that the fire department must notify the commercial establishment in writing, by certified mail that it may charge up to \$300 per false alarm prior to imposing the fee. The ORC only addresses false fire alarm calls at commercial establishments, whereas in section 505.511(2011) the ORC provides police departments the ability to charge fees for false security system calls both at residential properties and commercial establishments. Again, there is an allowance of three false calls and a written notification prior to imposing fees, and the fee

schedule is more specific with a \$50 fee for fourth false alarm, \$100 fee for fifth false alarm, and \$150 for each subsequent false alarm.

By comparison, the City of Fairlawn, Code of Ordinance 1606.05 (2010) allows no more than four false alarms in a six-month period. Fairlawn's ordinance includes a \$75 fee for every subsequent false alarm and combines the police department with fire department under one ordinance in terms of false alarms. The ordinance further states the City will have a designated alarm administrator through which all fees can be appealed.

The literature review also revealed the negative result of imposing fees for false alarms. John Glidden (2016) expressed that residents and business owners felt the fees were too excessive and complained to city council. When Glidden interviewed Vallejo Police Captain Lee Horton, Horton explained that the ordinance was no longer effective because residents and businesses chose not to install alarms or requested police not to respond to their alarms. Horton noted that a grocery store owner requested police not to respond to his store so he would not receive a fine. Upon arrival, the store owner found the store had been burglarized. According to Glidden, due to the citizen and business owner complaints and the increased risks of business owners not wanting police to respond to alarms, the council chose to cut the fees for false alarms by more than half. Also not pleasing the residents and business owners was how city council introduced the ordinance imposing fees for false alarms as a means to generate money for the City's finances, as they were struggling through bankruptcy. The literature revealed in many articles that this trend became a negative political influence for many municipalities where false alarms fees were introduced to mend shortfalls of budgets rather than with the goal of prevention.

Brian Fresko (2012) indicated that, after Wilmington began to bill property owners for false alarms, their annual call volume dropped from 14,000 calls in 2010 to 8,000 calls in 2012. He

also recognized these fees fueled criticism and some felt that they were nothing more than a money-making scheme. Fresko (2012) said some business owners stated the fees were a burden and unfair, resulting in some owners putting filters in their systems to reduce sensitivity. Local alarm companies also criticized the ordinance because it only allowed one free false alarm, noting that other municipalities allowed two “freebies” a year. In conclusion, Fresko (2012) reported that city officials were aware of the criticisms, but they felt the reduction of false alarms from 2010 to 2012 was evidence that the ordinance is working.

The Unwanted Conundrum (Ahrens et al., 2016) notes that unwanted alarms have taken an increasing toll on the fire service and that by solving this issue, life safety will be enhanced and fire protection will improve for every stakeholder involved (para. 3). This article provided perspectives from education, industry, fire service, the authority having jurisdiction, and NFPA. In his introduction, Ahrens (2016) discussed that the IAFC, out of frustration caused by the false alarm problem, submitted 43 changes of NFPA 72, *National Fire and Alarm and Signaling Code* (para. 4). Hammerberg (2016), in the industry perspective, expressed that unwanted alarms create a negative view of fire alarm systems by the authorities having jurisdiction (AHJ) and the end users (para. 9). He went on to note that most of the problems boil down to money. Hammerberg (2016) expressed how some engineers create and develop alarm plans to be installed, although they meet building and fire code requirements, they are motivated to do so in the least-expensive way possible. They will purchase cheaper equipment as a means to cut corners, thereby increasing their own profit. Hammerberg (2016) also identified when contractors solicit bids for work such as installing fire alarm systems, the company with the lowest bid will often get the job – again, increasing profits for those building the structures at the expense of safe systems. Apfelbeck (2016) on the AHJ perspective said the greatest challenge to

solving the false alarm issue is the lack of service-wide data and studies (para.16). He expressed that the service needs to look deeper at the unwanted alarms, provide better data, and produce more evidence-based studies on effective prevention methods to reduce false alarms. Haan (2016) in the industry perspective indicates “ordinances that financially force end user behavior usually have a positive impact” (para. 32). Monica Colby (2016) on the education perspective, said that the more often someone experiences false alarm activation, the less like they will be to evacuate on the next alarm (para, 36). Richard Roux (2016) on the NFPA perspective summarizes that unwanted alarms are caused by both equipment issues and people issues. He also explains that today’s modern and complex systems all contribute to unwanted alarms, but the majority can be attributed to improper application and lack of maintenance.

The literature review also confirms the fire service is not alone in the problem of false alarms, that it is equally as taxing on the police service. In Rana Sampson’s (2011) report *False Burglar Alarms*, it was reported that, in 2002, the United States police service responded to 36 million alarm activations, costing an approximate \$1.8 billion. It was also estimated that 94 to 98% of the activations were false (p.7). Sampson (2011) identified that the three leading causes of false burglar alarms are user errors, faulty or inappropriately selected equipment, and poor installation (p. 9). Sampson (2011) also noted that “most jurisdictions are unable to recoup costs through fines, and that many officers have been injured due to false alarms” (p. 11).

Looking at this issue closer to Fairlawn, Brandon Blackwell (2014) reported that Cleveland responded to 23,000 residential and commercial security alarms, of which 98% were false alarms. In Blackwell’s (2014) article, the City of Cleveland estimated that these false alarms equaled over 8,000 police hours and cost the taxpayers nearly \$750,000. When Blackwell (2014) discussed the false alarm problem with Cleveland’s former safety director, Martin Flask,

Blackwell defined a term called “alarm fatigue” and described it as “... the potential for excessive false alarms to lull officers into a distorted sense of security, thereby decreasing vigilance” (para. 5).

Blackwell's (2014) article included information garnered from an interview with Mike Sievers, president of Cleveland-based Sievers Security: “Half the battle is installing the equipment so it's least likely to create a false alarm” (para. 9). Sievers went on to explain how security installers need to use stronger window and door magnets on older constructed homes and that system owners need to be more vigilant about re-calibrating their systems as its needs change. Sievers gave an example of a single-family home in which motion detectors were installed before there were pets in the house. In time, the family added a pet but never had their system calibrated to account for the animal’s movements. This caused an unwanted activation.

Procedures

The purpose of this research paper is to identify whether fee-based enforcement systems provide an incentive to business owners to repair and/or maintain their fire alarm system and, if justified, create a fire department policy on “nuisance alarm” fee enforcement using the action research method. The American Psychological Association Publication Manual 6th edition was the required format for this research paper. Literature review, even though not often included in the research aspect of applied research projects, was very beneficial in providing background information and insight for creating surveys/questionnaires aimed at answering the following research questions: a.) What is the risk to the community when the Fairlawn Fire Department responds to a false alarm? b.) What have other departments found when measuring the effectiveness of fee-based enforcement systems in order to reduce the number of repeat false

alarms? c.) What common or best practices have other departments identified in administering repeat false alarm fees? d.) What are the political implications if a fee-based enforcement system were to be implemented for repeat false alarms in the City of Fairlawn?

The literature review was begun in March 2016, at the National Emergency Response Center's (NERC) Learning Resource Center (LRC), located in Emmitsburg, Maryland. While attending the Executive Analysis of Community Risk Reduction at the National Fire Academy (NFA), the LRC online card catalog (<http://usfa.kohalibrary.com/app/search>) was utilized to search for literature on reducing false alarms, fee-based fire prevention enforcement, automatic fire alarm system, and false alarm data. These same search efforts were continued electronically via the Internet utilizing Google Scholar (<http://scholar.google.com>) and Google (<https://google.com>), which provided several books, articles, reports, research papers, and national standards for review.

The literature review first noted that repeat false alarms are a problem in the fire services, in the community, and with end-user occupants as well. Next, the review focused on whether fee-based enforcement systems provide incentives for business owners to repair, replace, and maintain their automatic fire alarm systems. Then the review focused on the identification of any common or best practices in terms of imposing fees for repeat false alarms. Finally, the review considered the political implications of fee-based enforcement with regard to repeat false alarm occupancies.

This ARP included an extensive evaluation of Fairlawn's Firehouse Record Management System. This detailed assessment looked back to 2009 and measured all calls of service to identify systemic responses to a specific type. After false alarms had been designated as the highest volume of fire response, the author continued to break the data down even further. Due to

a software change, the data was no longer available prior to 2009 in the record management system. This investment of time in data evaluation was an attempt to identify root causes of false alarms to create a better corrective system with a goal of reducing these repeat false alarms in the form of a policy, if justified.

Three separate surveys were sent out to obtain feedback. These surveys were developed using the Survey Monkey website (www.surveymonkey.com) to measure internal and external feedback. The first survey consisted of five questions and was sent electronically via email internally to the full-time firefighters and officers at the FFD (Appendix A). The first three questions were relative to false alarms in Fairlawn and intended to measure whether Fairlawn's firefighters feel that false alarms are a problem. The next question sought to get answers on fee-based enforcement systems and whether respondents believe fees are an effective tool in reducing false alarms. The final question was used as a training needs assessment, asking if FFD full-time personnel felt they have been trained adequately on automatic fire alarms systems. The potential respondent size for the internal survey was 14 and took place August 2016. All information provided by respondents in surveys was non-identifiable, to maintain anonymity, giving the respondents an opportunity to answer all questions as honestly and accurately as possible. This population was selected to give internal department perspective on false fire alarms as a problem and fee-based enforcement systems.

The second survey was distributed the City of Fairlawn's city administration, which included the mayor, council president, law director, zoning department administrator, and finance department manager (Appendix B). The City administration survey consisted of eight questions and was sent electronically via email with instruction and a cover letter August of 2016. Questions 1-6 were closed ended, designed to elicit answers providing feedback on whether false

alarms are a problem in Fairlawn; whether a fee-based enforcement system can reduce the number of false calls; and whether the city administration would support the fire department applying a fee-based enforcement system for repeat false alarm occupancies. The last two questions were open ended, asking for their insight on possible political implications of a fee-based enforcement system in Fairlawn and for any additional feedback they may have regarding these topics. The potential respondent size for this survey was five; all respondents received an email containing a cover letter with instruction and a direct web link to the survey on Survey Monkey. All information provided by respondents in surveys was non-identifiable in order to give the respondents an opportunity to answer all questions as honestly and accurately as possible. This population was selected to give the political perspective on the false fire alarms as a problem and on fee-based enforcement systems.

The final survey was an external survey that was distributed to fire chiefs and officers from fire departments in Summit and Stark counties, Ohio (Appendix C). The potential respondent size for this external survey was 50. This survey was distributed August 2016, through the Summit/Stark County Fire Chief's Associations, electronically via email containing a cover letter (Appendix D) with instructions and a direct web link to the survey on Survey Monkey. The external survey consisted of 14 closed-ended and open-ended questions intended to get feedback regarding whether there is a false alarm problem at their department; if they feel a fee-based false alarm enforcement system would be or is an effective tool in reducing false alarms; whether or not their department has a false alarm ordinance/policy and, if so, whether it is currently enforced; if they were able to differentiate any primary factors for false alarms in their response district; and what, if any, the political implications were regarding imposing fees for false alarm responses. All information provided by respondents in surveys was non-identifiable, to maintain

anonymity giving the respondents an opportunity to answer all questions as honestly and accurately as possible. This population was selected to give outside department perspective on false fire alarms as a problem and fee-based enforcement systems.

The researcher also conducted an interview with the Fairlawn Police Department's alarm administrator. The purpose of this interview was to gather information regarding police department policy on repeat alarms, how they administer the fee-based enforcement system for repeat false alarms, and the political implications of imposing fees for repeat false alarms. The interview format was an open-ended discussion, and a copy of the interview transcript is included (Appendix E). Permission was obtained at the time of interview from the participants for the researcher to use names and information provided as part of the ARP. The FPD alarm administrator was selected to provide feedback on implementing, administering, and enforcement perspectives on false fire alarms as a problem and fee-based enforcement systems specific to the City of Fairlawn.

There were several limitations encountered throughout this ARP process. The first limitation was the inconsistency of the FFD data on false alarms. Analyzing Fairlawn's data became a very time-consuming and daunting task due to the inconsistencies in how false alarms are reported in the department's Firehouse Record Management Software. It is the responsibility of Fairlawn's officer in charge to input reports into the RMS, and most reports either having missing information or failed to report what caused the false alarm. The typed notes often did not report anything other than "FFD responded to a false call" with a classification of a general false call. These inconsistencies led the researcher to ask the FFD in the internal survey if they feel they have been trained appropriately to investigate, identify, and report false alarms based on the NFIRS data points. The researcher was unable to determine a primary factor for false alarms

activations in the City of Fairlawn due to the shortfalls in data entry. Being able to identify root causes of false alarms, especially for repeat false alarms, would be imperative for implementing corrective action. There is a big difference between device malfunction and human error in terms of developing corrective action. The thought is the fee-based enforcement system provides accountability and incentive to the fire alarm's owner, where knowing the root cause is equally important in creating follow-up corrective action preventing future false alarms. This shortfall will be addressed in the recommendation portion of ARP.

Another identifiable limitation was the number of responses from the Summit County and Stark County Fire Chief's Associations. The researcher decided to keep the survey/questionnaire more localized due to regulating ordinances and state laws. The researcher had attempted a more global survey in previous ARP with extremely low response rate and hoped a more localized survey would produce a better response rate. A table for determining the sample size needed for a randomly chosen population, found in the *Research Self-Study Course* (Q123), was used for reference. According to Krejcie and Morgan's (1970) chart (USFA, 2012b, p.35) the total population surveyed was 50 and, to assure a 95% confidence level, the sample size needed to be 44. Of the 50 surveys that were sent out by email in two different attempts, 24 were received, resulting in a response rate of 48%. This was a disappointing result that did not yield the desired depth and variety of responses from local departments. There were a few questions in the external department perspective population that involved statistics and data from perspective departments; this may have discouraged some from completing the survey. If similar research projects are performed in the future, one suggestion would be to change the mechanism of the survey to a phone survey rather than an electronic email survey.

The following terms and definitions are specific to false alarms and the types of false alarms. Service-wide, the term “false alarm” is used. However, NFPA uses the term “unwanted alarm” and breaks these alarms into categories.

- “**Unwanted alarms,**” where any alarm that occurs that is not the result of a potentially hazardous condition (NFPA, 2016, p. 33) and identifies four categories of which they are classified. When fire departments respond to false alarms or the “unwanted alarms” they are reported to the national database by the following four categories:
 - **3.3.304.1-Malicious Alarm.** *An unwanted activation of an alarm-initiating device caused by a person acting with malice.* (NFPA, 2016, p. 33)
 - **3.3.304.2-Nuisance Alarm.** *An unwanted activation of a signaling system or an alarm-initiating device in response to a stimulus or condition that is not the result of a potentially hazardous condition.* (NFPA, 2016, p. 33)
 - **3.3.304.3-Unintentional Alarm.** *An unwanted activation of an alarm-initiating device caused by a person acting without malice.* (NFPA, 2016, p. 33)
 - **3.3.304.4-Unknown Alarm.** *An unwanted activation of an alarm-initiating device or system output function where the cause has not been identified.* (NFPA, 2016, p. 33)

Results

The action research method was used to answer research questions. The research involved data from Fairlawn’s record management system to be analyzed, surveys sent to three to three different populations, and an interview with Fairlawn Police’s alarm administrator. The results found within this project are targeted to not only identify the repeat false alarm problem in Fairlawn but measure the effectiveness of fee-based enforcement system for repeat false alarm occupancies. If justified, the common and best practices identified in these results will be used in creating a department policy on administering a fee-based enforcement system for repeat false alarms.

The three different repeat false alarm survey groups included the FFD for internal department perspective, other fire departments in Stark and Summit County for external department perspective, and the City of Fairlawn city administration for the political perspective. Fourteen FFD surveys were distributed with 14 being returned: a 100% response rate. The external department perspective survey was distributed to 50 fire departments with 24 being returned: a 48% response rate. Even though the outside department perspective survey was listed as a limitation due to response rate, the researcher found their results shared common trends with the other two groups and included their feedback. The political perspective survey had five surveys distributed with five being returned: a 100% return rate.

The first research question was, “What is the risk to the community when the Fairlawn Fire Department responds to a false alarm?” The researcher felt compelled first to answer this question by conducting an extensive evaluation of data from FFD record management system to identify any statistical risk of repeat false alarms and the false alarm problem:

Table 1

Year	Total Emergency Runs	# of Fire Responses	# of False alarms	% of false alarms	# of repeat false alarms	alarm % of repeat alarms	# Repeat False alarm Occupancies
2009	913	189	59	31.2%	40	67.8%	10
2010	1414	284	112	39.4%	64	57.1%	15
2011	1440	292	133	45.5%	95	71.4%	18
2012	1597	280	102	36.4%	61	65.7%	14
2013	1648	274	113	41.2%	74	65.5%	14
2014	1699	313	120	38.3%	55	45.8%	16
2015	1925	404	145	35.9%	95	65.5%	18

Fairlawn has exhibited a steady increase in total runs a year, as well as an increase in fire responses a year from 2009 to 2016. Even though the total numbers of false alarms and repeat false alarms show no consistent rising pattern, from 2009-2015, FFD false alarm responses

accounted for 38.3% of the total fire responses. Even more concerning is that 62.7% of the false alarms to which Fairlawn responds are repeat false alarms. The City of Fairlawn has over 1,200 occupancies in the city's limits; from 2009-2015 repeat false alarms on average originated from 15 different occupancies. The statistics also indicated that in 2015, FFD responded to 1,925 calls for service, of which 404 were identified as a Fire Response. After removing vehicle accidents (MVA), medic assist, and other incidents not intended as a response to a fire from the total, the actual number of the FFD's response to fire calls where "fire" was the intended purpose of response was 275. When evaluating these 275 fire responses, the data indicated that there were 145 false alarms or unintentional activations and 95 of those originating as repeat false fire alarms from 18 different occupancies. The data could not indicate or identify a root cause of fire alarms and is limited by how the alarm was input into the record management system.

Below are the responses from the survey questions designed to answer this research question:

The FFD survey asked if the respondent feels false alarms are a problem for their department. FFD respondents indicated, "yes, false alarms are a problem" in nine out of the 14 surveys or 69% of respondents. Similarly, in the external department surveys, 62% of the respondents said they believe false alarms are a problem at their department.

The internal and outside department perspective groups were both asked whether false alarms cause distractions to their fire department operations (i.e. increasing firefighter complacency, increasing simultaneous alarms, and/or challenging to response dynamics, etc.). The research found that 92.9% of FFD respondents said false alarms had interrupted fire department operations, whereas 61.9% of the external department perspective said yes.

The internal and outside groups were both asked if they have experienced occupancy complacency (neglect to react to activated fire alarm systems) while responding to false alarms. One hundred percent of the FFD respondents and 77.6% of the external department perspective indicated they had experienced occupant complacency, failing to react to fire alarm activation while responding to false alarms.

For the political perspective on false alarms, respondents were asked if they feel that emergency responses to false alarms put the fire department and members of the community at risk. The research found that 80% of the political perspective populous said false alarm responses do put both the fire department and the community at risk.

The second research question was, “What have other departments found when measuring the effectiveness of fee-based enforcement systems in order to reduce the number of repeat false alarms?” This question was asking for feedback from outside departments that impose fees for false alarms if they experienced a negligible reduction in false alarms and/or repeat false alarms. The interview with alarm administrator from the Fairlawn Police Department (FPD) did not provide any data or statistics on burglar alarms. Officer Conway (personal communication, 8/9/2016) did, however, explain, “There is no way for me to look back statistically to when we first started imposing fees for false alarms due to changes in software for our record management system. I do believe fees have been beneficial in keeping repeat false alarms at bay, because rarely do I get the same address in violation after sending the first violation notice. I also feel if no one were to enforce the false alarm as we currently do, that the FPD would be experiencing a much bigger false alarm problem than we have today.”

The outside department perspective populous was limited due to a response rate of 21 out of 50. The outside department perspective group was asked, “If your department imposes fees for

‘nuisance alarms’ or repeat false alarms, has there been a noticeable reduction in repeat false alarms or false alarms in general?" The research found that six of the 23 outside department perspective enforce fees for false alarms, whereas 15 of the respondents said that their municipality has an ordinance that imposes fees for repeat false alarms. Of the six outside department respondents, only five answered the above survey question regarding whether they have seen a false alarm/repeat false alarm reduction secondary to the fees being imposed. The following is a sampling of survey responses.

- 8/29/2016 – “We still go to a considerable amount of false alarms, but I would assume that businesses have changed knowing that they will be charged money.”
- 8/30/22016 – “Initial implementation in the early 1990s resulted in a marked decrease in false alarms and a marked improvement in system maintenance.”
- 9/2/2016 – “The imposed fee and letter saying the fee is coming if the system is not fixed helps drive the repair.”
- 9/5/2016 – “Just started to impose fees in April of 2015. Our false calls decreased from 238 in 2014 to 187 in 15. This year up through August we are at 115.”

The third research question was, “What common or best practices have other departments identified in administering repeat false alarm fees?” This question was also designed and directed at the outside department perspective group attempting to identify common and/or best practices in administering repeat false alarm fees. The interview with Officer Conway (personal communication, 8/9/2016), FPD alarm administrator, revealed:

- “When burglar alarms are dispatched, they are logged by dispatch and the responding officer fills out an alarm card. The officer at the end of their shift place the card in a box in the basement of the police station. Every Monday, I go

through the alarm cards in the box and compare it to a weekly alarm report that dispatch sends me.”

- “The ordinance allows four false alarms in a six-month period on a rolling calendar. Any address that has incurred more than four false alarms in a six-month period ... they will be receiving a bill for \$75 for every occurrence after four.”
- “... I generate a letter to the police chief notifying him of the addresses, the number of false alarms they have incurred, and notification that they will be receiving a bill for \$75 for every occurrence after four. I then generate a letter to the occupancy that is in violation. This letter, which I can give you a copy of, explains to the alarm owner that they are in violation, what their fine is, and to submit payment to the Fairlawn Finance Department. One copy is sent to the alarm owner, one copy to the finance department, and I keep one copy on file at FPD.”
- “... the finance department handles it from there. They receive and process the payments and, if there is no payment received, they send out second notices to alarm owners. There have been a few instances when the finance department has contacted me to ask if there is any reason not to send someone to collect for non-payment. Those we have to look at case-by-case basis.”

The external respondents were asked if their municipalities have an ordinance that imposes fees for “nuisance alarms” or repeat false alarms; 15 of the 21 respondents said yes. However, only six of the respondents replied that they are currently enforcing their ordinance imposing fines for false alarms.

All three populous groups were asked if they believe a fee-based enforcement system provides an incentive to businesses or owners to repair their alarm. Overwhelmingly, all three groups responded in the affirmative, with 33 of the 41 total respondents saying yes. Interestingly, this 80% respondent average was identical when looking at the three respondent populous groups individually.

When the external departments were asked at what number of response to false alarms they begin to impose the fees, there were myriad answers, including “two a year,” “three a month,” “three a year,” and “five a year.” From the outside perspective departments, the most common response was “three a year,” which was the answer from 15 (46%) of the respondents.

In an open-ended question format, the outside department perspective group was asked, “What are some common and best practices your department has identified for administering fee-based enforcement for repeat false alarms?” The following is a sampling of the survey responses:

- 08/29/2016 (1:14 p.m.) – “We use a fire protection engineer to monitor and send out fines and other warnings as appropriate.”
- 08/29/2016 (2:37 p.m.) – “We have an assessment division that tracks and does actually bill for any false alarm over three in a month.”
- 08/29/2016 (3:29 p.m.) – “False alarms are tracked by the dept.; invoices are tracked by the clerk's office.”
- 08/29/2016 (3:47 p.m.) – “We have an alarm coordinator who keeps track of false alarms. She sends letters and provides follow-up.”

- 08/29/2016 (6:39 p.m.) – “The ability to waive fines if repairs are made. This can be discussed with the owner/occupant. They must have a time frame to make the repairs.”
- 08/29/2016 (10:37 p.m.) – “All stakeholders must buy in, including city legislatures and mayor/city manager.”
- 08/30/2016 (9:41 a.m.) – “Fire prevention has established a good relationship with many of our businesses and will help them find a solution to their alarm system issues.”
- 08/30/2016 (2:45 p.m.) – “Fire Prevention Bureau does the follow-up.”
- 09/02/2016 (9:06 a.m.) – “We are small enough that the chief tracks and monitors the number of alarms and the cause.”
- 09/05/2016 (6:02 a.m.) – “The fire chief is responsible for enforcement, and there is an appeals process which is through the city's safety director. The chief reviews the weekly call report from RMS then generates letters through administrative offices.”
- 09/05/2016 (12:48 p.m.) – “Having the prevention bureau follow up with consecutive false alarms and advising the owner that the problem needs to be followed up on.”
- 09/05/2016 (12:55 p.m.) – “Formal letter notifying business owners that next false alarm will result in fees being charged for the false alarm, in-person follow-up.”
- 09/05/2016 (12:59 p.m.) – “Follow-ups through fire prevention bureau allows for tracking and knowing what is causing false alarms.”

The fourth and final research question evaluated was, “What are the political implications if a fee-based enforcement system were to be implemented for repeat false alarms in the City of Fairlawn?” This question was designed to identify any political problematic areas when administering a policy such as a citizen and business complaints, political pressures, City development complaints, economic hardships, etc. When asked about the political implications of administering the fee-based enforcement system while being interviewed, Officer Conway (personal communication, 8/9/2016) responded:

- “I have never had any issues with the city administration or the police administration.”
- “... the letter I send out has my contact information on it so people will call me directly with questions or complaints. I have fielded very few complaints; for the most part, people just pay the fee.”
- “We feel that there is an ordinance in the city which is law, and we enforce the law.”
- “I provide the police chief with a letter that lists whom I have sent notices to, so he is informed if they were to call him with any questions or complaints.”

The external department perspective and political perspective populous was asked, “What, if any, are the political implications of a fee-based enforcement system for false alarms?” The following is a sampling of political implications listed by the external department group:

- 09/05/2016 (12:59 p.m.) – “Administration not allowing the fire department to implement a fee and following through and collection from repeat false alarms and companies not fixing their systems.”
- 09/05/2016 (12:55 p.m.) – “Trustees who own business in the township.”

- 09/05/2016 (12:48 p.m.) – “Knowing there is a fee-based system and realizing it’s not being enforced due to a lack of communications.”
- 09/05/2016 (6:02 a.m.) – “When we started to implement fees for false alarms there were some initial complaints from business owners. We educated owners through the inspection division to explain the false alarm problem and discussed these are not a punishment rather a means to push owners to maintain alarm systems.”
- 08/30/2016 (2:45 p.m.) – “None significant. A careful explanation of the risk/benefit perspective, either face-to-face or written, to reasonable people, seems to resolve most issues.”
- 08/30/2016 (9:41 a.m.) – “We’ve never implemented any fees, mainly because when the police attempted to use a fee-based system for recovering costs at MVA’s, the public, and the political outcry was enormous.”
- 08/29/2016 (10:37 p.m.) – “Restrictions on full enforcement.”
- 08/29/2016 (6:39 p.m.) – “ ‘Connected’ people complaining.”
- 08/29/2016 (3:47 p.m.) – “None, since it is a part of our ordinances and they were aware of the process.”
- 08/29/2016 (2:37 p.m.) – “None that we have noticed.”
- 08/29/2016 (1:14 p.m.) – “None so far, but if a business ever truly fought the fines politically there may end up with an issue.”

The following is a sampling of responses the political respondent group identified as the political implications of fee-based code enforcement for false alarms:

- 09/04/2016 (9:40 p.m.) – “There needs to be a sense of reasonability involved of all parties. The alarm owners need to understand that these false alarms are very costly to City, department resources, and community.”
- 09/05/2016 (5:43 a.m.) – “The ordinance should definitely be used in extreme cases, but we should also focus on creating partnerships with our business community.”
- 09/05/2016 (5:48 a.m.) – “Should be instituted for repeat offenders. I struggle with the context of the schools, nursing homes, and mall and repeat false alarms. Their systems are inherently more complex. I would be more cautious with billing the school. Find means to expedite results versus fines. They equally should accommodate repairs as soon as possible.”
- 09/05/2016 (1:02 p.m.) – “I would need more insight on occupancies such as the schools and the mall. I could see how it could be construed in a negative outlook but also feel if occupancies are making strides to repair the system if fees could be waived.”
- 09/05/2016 (1:02 p.m.) – “It is learning how to balance. We have the ordinance in place for a reason and should be enforced. There are also times when you have to be reasonable, fair and learn how to balance enforcement with creating partnerships in the community. Sometimes I believe it is as simple as communicating and education, but sometimes no matter what you do there is going to be someone complaining or dissatisfied with what you are trying to accomplish.”

Discussion

The first research question evaluated was, “What is the risk to the community when the Fairlawn Fire Department is dispatched to a false alarm?” Simons’ (2013) observation was paramount in evaluating the first research question, in stating, “Those who work in the fire industry are well aware of the problem of false alarms and the huge costs associated with them” (p. 54). In terms of false alarms, Fairlawn is not alone in the trend. False alarms have been identified as a global problem throughout the fire service and the police service. FFD along with many other organizations need to not only identify the problem but implement practices that reduce the false alarm response risk in numbers of the ever growing demands on the fire service. Research also confirmed that 69% of FFD respondents and 62% of the external department perspectives indicated their belief that false fire alarms are a problem for their department. Also established by both the FFD and the external department perspective groups was that “false alarms cause distractions to fire department operations (i.e. increasing firefighter complacency, increasing simultaneous alarms, and/or challenging to response dynamics, etc.)”; with 92.9% of FFD respondents saying yes, compared to the 61.9% of the external department perspective saying yes.

The data evaluation reinforced the seriousness of the problem. In 2015, Fairlawn responded to 1,925 calls for service, of which 404 were indicated as a Fire Response. After removing motor vehicle accidents (MVA), medic assist, and other incidents not intended as a response to a fire from the total, the actual number of FFD’s fire calls was 275. The data indicated of the 275 fire calls, there were 145 false alarms or unintentional activations and 95 of those originating as repeat false fire alarms from 18 different occupancies. This project is focused on reducing the repeat false alarms from those 18 different occupancies, accounting for 95 fire responses in 2015.

These false alarms come at a significant cost to the City, the fire department, and the community. When evaluating FFD's 2015 budget compared to the emergency response request for the year, the per-person per-response cost equaled \$258.18. The FFD standard response is five personnel to all fire calls for a total cost of \$1,290.90 per false alarm. FFD responded to a total of 145 false alarms in 2015, which equates to \$187,180.50. Fairlawn would be described as a limited resource department and generally has the capabilities to respond to the initial calls, where overwhelming the department handles simultaneous calls more than 20% of the time. Fairlawn can no longer view these false alarms as the cost of doing business. Fairlawn's "nuisance alarm" ordinance is something that can be enforced today and can make a difference tomorrow.

Hank Clemmensen (2013) reported that there were 2.18 million false alarms in the U.S according to the National Fire Protection Agency (NFPA) and defined how these false alarms burden the local fire departments, increase the risk of injury, and have also attributed to firefighter deaths. In comparison to the police service, Rana Sampson (2011) reported that police in the U.S. responded to 36 million alarm activations, costing an approximate \$1.8 billion, of which it was estimated that 94 to 98% were false (p.7).

Michael Karter (2013) reported that in 2012, U.S. fire departments responded to 31,854,000 reported fire calls, of which 2,238,000 were false alarms. After Karter evaluated the data, he concluded that false alarms accounted for 7% of the total reported fire responses in 2012. By comparison, Fairlawn's fire response data indicated a far higher incidence of false alarms in 2012: 36.4%, more than five times the national average, and averaged 38.2% from 2009-2015. The goal for Fairlawn should be to reduce false alarm responses to at least the national average, between 6 and 7%. In 2015, FFD responded to 404 reported fire calls, and 145

of those calls were false alarms. In retrospect, if the FFD had been able to reduce false calls down to the national average of 7% in 2015, it would have decreased the total number of fire responses by 116 and false alarm responses from 145 to 29.

The literature review also indicated "... false alarms and nuisance activations in all occupancies are problematic for both the fire service and building occupancies" (Ahrens, p. 56). Graham Simons (2013) also recognized that false alarms not only affect the fire service, "... but that false alarms disrupt the productivity of businesses" (p.54) and "in the retail world this can also be an opportunity for thieves" (p.54). Ahrens (2004) further explains that "nuisance alarms" lead people to ignore the early warning of smoke alarms, put people's lives at risk, and create a loss of confidence in fire alarm systems; people may not behave as they should in the event of an alarm. The research agreed with these observations in which the FFD and the outside department groups were both asked if they have experienced occupancy complacency (neglect to react to activated fire alarm systems) while responding to false alarms. The research found that 100% of the FFD respondents and 77.6% of the external department perspective respondents agreed they had experienced occupant complacency, in which occupants failed to react to fire alarm activation.

The second research question evaluated was, "What have other departments found when measuring the effectiveness of fee-based enforcement systems in order to reduce the number of repeat false alarms?" Officer Conway (personal communication, 8/9/2016) from FPD, answered this question by explaining, "I do believe fees have been beneficial in keeping repeat false alarms at bay, because rarely do I get the same address in violation after sending the first violation notice. I also feel if we did not enforce the false alarm ordinance as we currently do that the FPD would be experiencing a much bigger false alarm problem than we have today."

By comparison Bryan (2013) established with some evidence-based data that the Rancho Cucamonga Fire District dropped the number of false alarms from 816 to 711 in a nine-month period. Rancho Cucamonga designed its plan to require fire inspectors to identify and investigate for fire alarm deficiencies, imposing fines to the responsible party involved.

Similar results were reported in the City of Columbus (Ohio), Wilmington (North Carolina), and Palm Beach County Rescue (Florida). Decker (2013) summarized that Columbus logged 12,298 false alarms in 2012 and 13,326 in 2013, numbers that were markedly lower than the early 2000s. Fresko (2012), indicated that after the Wilmington Police department had begun to bill property owners for false alarms, their annual call volume dropped from 14,000 calls in 2010 to 8,000 calls in 2012. Kathi Greenia (personal communication, 9/13/2016) via email summarized that Palm Beach County Rescue through enforcement had reduced false alarms from almost 10% of the total calls to approximately 5.5 to 6.9% of total calls, which is in line with the national average.

The research found six of the 24 outside perspective department respondents enforce fees for repeat false alarms; five confirmed they had observed a negligible reduction in false alarms/repeat false alarms. Only one of the four was able to respond with evidence-based statistical data in saying, “Just started to impose fees in April of 2015. Our false calls decreased from 238 in 2014 to 187 in 15. This year up through August we are at 115.” The current limitation to answering this question for outside perspective departments and in Fairlawn was the lack of data or inaccurate data. Fairlawn needs to refocus its officers to conduct better false alarm investigations to help identify root causes, then report these alarm responses as accurately as possible to the national reporting standards. False alarm enforcement programs need to be

viewed as opportunities to make community partnerships with a common goal of reducing false alarms.

This research project is focused on the fee-based enforcement aspect of reducing repeat false alarms in Fairlawn, which has been supported by the research; 80% of all three populous groups combined believe a fee-based enforcement system provides an incentive to businesses or owners to repair/maintain their alarm systems. As discussed in the Executive Analysis of Community Risk Reduction class at the NFA, other aspects are equally as important as enforcement when reducing risk. Enforcement in this instance can be the vehicle to allow engineering and education to be part of the solution. Engineering can be enforced in terms of system design to include faulty equipment repair and maintenance. In order to educate, the root causes of false alarm must first be identified, whether it be a training issue or communication issue. As acknowledged in Fairlawn, false alarm reports often are not reported properly and are missing identifiable root causes necessary to develop appropriate solutions, despite the fact that 10 of the 14 FFD respondents stated they feel they have been trained adequately on automatic fire alarm systems enough to be able to distinguish, identify, and report the difference between a malicious alarm, nuisance alarm, and unintentional alarm.

The third research question evaluated was, “What common or best practices have other departments identified in administering repeat false alarm fees?” In order to answer this question, the literature review included a review of the NFPA Standards, the Ohio Revised Code, and the City of Fairlawn Codified Ordinance. The NFPA defines false alarms as “unwanted alarms, where any alarm that occurs that is not the result of a potentially hazardous condition” (2016, p. 33) and identifies four categories into which they are classified: malicious alarm, nuisance alarm, unintentional alarm, and unknown alarm. These four classifications are to be used when fire

departments report their call data into the national database. When false alarms are reported correctly, trends can be identified, and appropriate corrective actions can be presented.

In Ohio, the ORC provided a law for false alarms fees in commercial establishments only. In section 505.391 (2006), the code allows municipalities to charge up to \$300 per false alarm and specifies after three false in a calendar year. Prior to imposing a fee, Ohio requires fire departments to notify the commercial establishment in writing, by certified mail, that they may be charged up to \$300 per false alarm. In contrast to the ORC on false burglar alarms, police can impose fines on commercial establishments, as well as residences. The police are also required to send written notification prior to imposing fees, and the fee schedule is more specific with a \$50 fee for fourth false alarm, \$100 fee for fifth false alarm, and \$150 for each subsequent false alarm.

The City of Fairlawn, Code of Ordinance 1606.05 (2010) is more lenient than the ORC in allowing four false alarms in a six-month period. Fairlawn's fee schedule is \$75 for every subsequent false alarm after four in a six-month period. The Ordinance further explains that the City will have a designated alarm administrator through which all fees can be appealed. The FFD for some reason has overlooked the "nuisance alarm" ordinance. However, the FPD has been enforcing the "nuisance alarm" ordinance for burglar alarms for the last 18 years. The research suggested that FFD is not alone in this trend; 15 of the 24 external perspective departments responded their municipality has an existing false alarm ordinance that imposes fees for false alarms. However, only six of the outside perspective departments replied that they actually enforce the ordinance. We have a duty to enforce City Ordinances as we have a duty to enforce the Ohio Fire Code when we are conducting inspections. Officer Conway (personal

communication, 8/9/2016) defined the police perspective on this matter, saying, “We feel that there is an ordinance in the city, which is law, and we enforce the law.”

Bryan (2013) identifies that developing a fee for unnecessary alarms with a zero tolerance will quickly reduce unwanted responses (p. 88). He also summarized cost recovery fees for apparatus and personnel by writing, “when the system malfunctions, the alarm company is responsible; contractors are responsible when their actions result in an unnecessary alarm, and the occupants are held responsible when their actions cause the alarm” (p.88). This concept places the burden of costs on the responsible party. It is not uncommon in Fairlawn that a false alarm is activated due to the contractors failing to take the system offline and/or notify the authorities that they are about to conduct work on the system. Bryan’s concept of cost recovery seems to be the fairest to all stakeholders and holds the responsible party accountable for causing the false alarm. Fairlawn’s ordinance is currently designed to impose fees to the alarm owner at the occupancy and does not include any provisions for fining responsible parties for false alarms. The burden would fall on the alarm owner to hold the responsible party accountable.

The research found that the most common number of false alarm responses allowable prior to having a fee imposed was three a year, noted by seven out of 15 respondents. The research also identified the following common and best practices for fee-based enforcement of repeat false alarms: “We use a fire protection engineer to monitor and send out fines and other warnings as appropriate.”; “We have an assessment division that tracks and does actually bill for any false alarm over three in a month.”; “False alarms are tracked by the department; invoices are tracked by the clerk’s office.”; “We have an alarm coordinator who keeps track of false alarms. She sends letters and provides follow-up.”; “The ability to waive fines if repairs are made. This can be discussed with the owner/occupant. They must have a time-frame to make the

repairs.”; “The fire chief is responsible for enforcement, and there is an appeals process which is through the city’s safety director. The chief reviews the weekly call report from RMS then generates letters through administrative offices.”; “Follow-ups through fire prevention bureau allows for tracking and knowing what is causing false alarms.”

Officer Conway (personal communication, 8/9/2016) from FPD summarized the process he follows in Fairlawn to impose fines for false burglar alarms. His alarm administrator job duties include gathering alarm data, cross-checking addresses for repeat violations, creating violation notices, notifying the police chief of current offenders, sending violation notices, and hearing any appeals from stakeholders involved. Officer Conway also disclosed that once the initial violation letter is sent to occupancy, Fairlawn’s finance department processes payments, sends follow-up notices, and processes non-payments through collections. Officer Conway’s perspective was valuable to the author in that it provided information on utilizing systems already in place in Fairlawn, as well as department policy on the “who” and the “how” to enforce the existing “nuisance alarm” ordinance.

The fourth research question evaluated was, “What are the political implications if a fee-based enforcement system were to be implemented for repeat false alarms in the City of Fairlawn?” The interview with Officer Conway (personal communication, 8/9/2016) revealed he has never had any issues with the city administration or the police administration in regard to false alarm fees. He also stated one reason might be the fact that the violation letter that is sent out lists his contact information, so people call him directly with questions or complaints.

The literature review did identify some negative influences of imposing fees for false alarms. John Glidden (2016) expressed that residents and business owners felt the fees were too excessive and were complaining to city council. Due to the citizen and business owner

complaints and the increased risks of business owners not wanting police to respond to alarms the City, Glidden (2016) reported council chose to cut the fees for false alarms by more than half. Glidden's (2016) article also indicated these charges were implemented due to City's finances, as they were struggling through bankruptcy. The literature revealed a trend that became a negative political influence for many municipalities: one in which false alarms fees were introduced to mend shortfalls of budgets rather than to further the goal of prevention.

Fresko (2012) reported similar negative implications in which business owners stated these fees are a burden and unfair, causing owners to put filters in the system to reduce sensitivity, fueling criticism that they were nothing more than a money-making scheme. In conclusion, Fresko (2012) reported that city officials were aware of the criticisms, but they felt the reduction of false alarms from 2010 to 2012 was evidence enough that the ordinance is working.

These negative political implications were also observed by the external department perspective departments. The research revealed, "Administration not allowing the fire department to implement a fee and to follow through on collection from repeat false alarms and companies not fixing their systems."; "Trustees who own business in the township."; "We've never implemented any fees, mainly because when the police attempted to use a fee-based system for recovering costs at MVAs, the public, and the political outcry was enormous."; "None so far, but if a business ever truly fought the fines politically there may end up with an issue."

The political perspective included a survey of the City of Fairlawn administrators. The research found that 80% of Fairlawn's administrators feel false alarms place firefighters and the community at risk and agree the "nuisance alarm" ordinance should be enforced, and 80% agree fee-based enforcement provides incentives to repair or maintain fire alarm systems. It noted that 100% of the political respondents said they would support implementing the fee-based ordinance

for repeat false alarms. The only topic the political respondents wavered on was whether or not to include all occupancies, such as schools or nursing homes, in the ordinance. The political environment between Fairlawn's city administration and the FFD has always been positive and supportive. The research also suggests that the city administration supports false fire alarm enforcement as specified under the current "nuisance alarm" ordinance. The research confirmed that the city administrators support the implementation of fees for repeat false alarms and also recognize that repeat false alarms are a problem placing firefighters and the community at risk.

This research revealed the need to develop a department policy outlining how to operate within Fairlawn's political system to enforce the false alarm ordinance already in place. This research has established the problem of false alarms in Fairlawn and provided alternatives for how to administer and implement a false alarm ordinance. There have been marked response reductions accredited to imposing fees for repeat false alarms from other departments. This research also evaluated and identified deficiencies in false alarm reporting and provided insight on the political implications of a fee-based false alarm enforcement system. If ignored, the repeat false alarm problem will persist and continue to burden the FFD resources, adding additional negative influences to the risk factors involving the firefighters and the community while responding to false alarms. This research indicates a need for the FFD to create a policy defining the repeat false alarm enforcement process, along with developing a training program enabling Fairlawn's officers to investigate, identify, and report false alarms so that correctable actions can be taken. Fairlawn can no longer accept that false alarms are the cost of doing business or the fact that their false alarm response is five times the national average. There are tools and systems in place to enforce and reduce the number of repeat false alarms in Fairlawn. FFD must initiate

change, focused on reducing these repeat false calls and unwanted alarms in general, in turn reducing the risk to their firefighters and their community.

Recommendations

This research was designed to determine whether fee-based enforcement systems provide an incentive for businesses and owners to repair and maintain their automatic alarm system. It was also intended to create a department policy outlining actions that could be taken for enforcement of the existing “nuisance alarm” ordinance. The literature gave insight and background information on the false alarm problem, common practices, enforcement, and political implications. The research confirmed Fairlawn has a repeat false alarm problem and that changes need to be made relative to training, enforcement, investigating, and reporting, all focused on the common goal of reducing false alarms/repeat false alarms. Therefore, based on this research the following recommendations are made:

- Further research is needed not only in Fairlawn but service-wide. False alarms have been identified globally as exhausting resources and placing all stakeholders involved in unnecessary risk. Evidence-based studies are limited globally and in Fairlawn, relative to false alarm reduction. Additional studies service-wide could help develop evidence-based solutions to the ongoing problem of false alarms/repeat false alarms.
- The Fairlawn Fire Department needs to develop a training program that will enable responding units to investigate better, identify, and report false alarms into the national database and Fairlawn’s record management system. To better develop correctable actions outside of fee-based enforcement, identification of root causes are vital. The data for this research was focused on the number of false alarms.

Fairlawn's current data collection and reporting practices make it challenging to identify root causes of false alarms – specifically, whether they are equipment issues or human errors. These training sessions can be conducted on-duty with all personnel by Fairlawn's Training Bureau tying in the terminology and reporting outline by NFPA's National Standards.

- Develop and implement an FFD “False Alarm Enforcement” policy outlining a system that gives clear direction on how to administer the City's current “nuisance alarm” ordinance. In the City of Fairlawn, Codified Ordinances are law, as are the ORC and the Ohio Fire Code; it is the duty of the FFD to enforce the code. The new policy, “False Alarm Enforcement,” can be located in Appendix F. This policy is currently being reviewed for changes by the Fire Chief and Fairlawn's law department. The goal for implementing fees for repeat false alarms is Jan. 1, 2017, after final approval from the Fire Chief and law department.
- Additional training is also recommended for the Fairlawn Fire Prevention Bureau personnel. Additional classes focused on automatic fire alarm systems, online formats and/or through other training centers, could be used to provide this training. The purpose would be to improve the knowledge, skills, and abilities of those working in the Fire Prevention Bureau (FPB). The FPB is paramount in this false alarm reduction system, as they will be the face of the FFD in terms the above-mentioned “False Alarm Reduction” policy. We must enable them with the tools necessary to go out and educate, identify, and enforce with the goal of reducing repeat false alarms. These topics of training will assist the FPB in building

partnerships in the businesses providing them with viable solutions to the ongoing problem of false alarms/repeat false alarms.

- The Fairlawn Fire Department and the City of Fairlawn need to re-evaluate the Codified Ordinances. While conducting this research, there were a few discrepancies identified in the fire department section of the ordinance. The fire department ordinance on “nuisance alarm” enforcement is housed in two different ordinances with incorrect references to the fee schedule and how to enforce such fees.
- The Fairlawn Fire Department needs to develop and evaluation a process to determine the effectiveness of this new policy. It is recommended that they evaluate false alarm reports every month from their record management system. Evaluation is the only way to know if changes need to be made or if the intended goal is being achieved: in this case, a reduction of repeat false alarms. It would also be imperative to include an audit of false alarm calls to ensure that they are being entered appropriately.
- Fairlawn needs to change the “do more with less” mentality and evaluate actions that reduce risk to all stakeholders, such as enforcing the “nuisance alarm” ordinance that already exists. This could be originated from a formal community risk reduction assessment in Fairlawn, identifying other areas for improvement and a formation of a risk reduction committee that develops evidence-based solutions to current problematic areas.

Should other researchers want to replicate all or any part of this study, some additional recommendations are offered. Surveys were sent out electronically via Survey

Monkey. Despite the high internal survey response, the external surveys were limiting due to response rate. A better approach may be to use other platforms such as a phone survey, which would eliminate the risk of emails being lost in the shuffle of everyday business. A phone survey would allow immediate feedback and a chance to request additional information if needed.

The political perspective group survey was sent specifically to the five City of Fairlawn administrators. The researcher initially felt that Fairlawn's perspective on politics was more pertinent, as political ideals differ in each municipality. This in turn limited research perspective to Fairlawn only. If research is replicated in the future, consider evaluating outside political perspective as well, as their views may bring to light implications or issues that have not occurred in Fairlawn. It is also recommended that the political perspective survey recipients be educated on the problem prior to distributing surveys. Provide insight, provide data, and consider a pre-survey meeting. They need to be equipped with the necessary background information to best answer the question.

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Appendix A

Internal Survey Questions and Responses (FFD)

Question 1: Do you feel false alarms and repeat false alarms are a problem at FFD?		
Answer Options	Response Percent	Response Count
Yes	69.2%	9
No	30.8%	4
<i>answered question</i>		13
<i>skipped question</i>		1

Question 2: Do you feel that false alarms cause distractions to FFD operations (i.e. increasing firefighter complacency, increasing simultaneous alarms, challenging to response dynamics)		
Answer Options	Response Percent	Response Count
Yes	92.9%	13
No	7.1%	1
<i>answered question</i>		14
<i>skipped question</i>		0

Question 3: While responding to fire alarm activation's, have you witnessed occupant complacency (neglect to react to fire alarm systems)?		
Answer Options	Response Percent	Response Count
Yes	100.0%	14
No	0.0%	0
<i>answered question</i>		14
<i>skipped question</i>		0

Question 4: Do you believe a fee-based enforcement system provides an incentive to business owners to repair their alarm systems?

Answer Options	Response Percent	Response Count
Yes	78.6%	11
No	21.4%	3
<i>answered question</i>		14
<i>skipped question</i>		0

Question 5: Do you feel you have been trained adequately on automatic fire alarm systems, enough to be able to distinguish, identify, and report the difference between a Malicious Alarm, Nuisance Alarm, and Unintentional Alarm responses?

Answer Options	Response Percent	Response Count
Yes	71.4%	10
No	28.6%	4
<i>answered question</i>		14
<i>skipped question</i>		0

Appendix B

Political perspective survey questions and responses

Question 1: Do you feel that emergency responses to false alarms put the fire department at risk and members of the community at risk?		
Answer Options	Response Percent	Response Count
Yes	80.0%	4
No	0.0%	0
Indifferent	20.0%	1
<i>answered question</i>		5
<i>skipped question</i>		0

Question 2: Do you feel a fee-based enforcement system for “nuisance alarms” or repeat false alarms should be imposed for repeat false alarm occupancies in your community?		
Answer Options	Response Percent	Response Count
Yes	80.0%	4
No	0.0%	0
Indifferent	20.0%	1
<i>answered question</i>		5
<i>skipped question</i>		0

Question 3: Would a fee-based enforcement system for repeat false alarms hinder any future development or re-development in the City?		
Answer Options	Response Percent	Response Count
yes	0.0%	0
no	100.0%	5
Indifferent	0.0%	0
<i>answered question</i>		5
<i>skipped question</i>		0

Question 4: Do you feel that a fee-based enforcement system for repeat false alarm occupancies would provide an incentive to business owners to repair, maintain, and administer their systems, therefore reducing the number of repeat false alarms?

Answer Options	Response Percent	Response Count
Yes	80.0%	4
No	0.0%	0
Indifferent	20.0%	1
<i>answered question</i>		5
<i>skipped question</i>		0

If a fee-based enforcement system be instituted in the City of Fairlawn, should all occupancies be included in enforcement (schools, mall, nursing home, hotels, etc.)?

Answer Options	Response Percent	Response Count
Yes	0.0%	0
No	40.0%	2
Indifferent	60.0%	3
<i>answered question</i>		5
<i>skipped question</i>		0

Question 6: Would the City administration support implementing the fee-based enforcement system for repeat false as described by the City's Ordinance?

Answer Options	Response Percent	Response Count
Yes	100.0%	5
No	0.0%	0
Indifferent	0.0%	0
<i>answered question</i>		5
<i>skipped question</i>		0

Question 7: What, if any are the political implications of a fee-based enforcement system in the City of Fairlawn?

Answer Options	Response Count
	5
<i>answered question</i>	5
<i>skipped question</i>	0

Number	Response Date	Response Text
1	Sep 12, 2016 5:02 AM	Ordinances are in place to be enforced and are considered law. If an occupancy is in violation then it would be appropriate to enforce ordinance.
2	Sep 5, 2016 5:02 PM	I would need more insight on occupancies such as the schools and the mall. I could see how it could be construed in a negative outlook but also feel if occupancies are making strides to repair the system if fees could be waved.
3	Sep 5, 2016 9:48 AM	Should be instituted for repeat offenders. I struggle with the context of the schools, nursing homes, and mall and repeat false alarms. Their systems are inherently more complex. I would be more cautious with billing the school. Find means to expedite results verse fines. They equally should accommodate repairs as soon as possible.
4	Sep 5, 2016 9:43 AM	The ordinance should definitely be used in extreme cases, but we should also focus on creating partnerships with our business community.
5	Sep 5, 2016 1:40 AM	There needs to be a sense of reasonability involved of all parties. The alarm owner's need to understand that these false alarms are very costly to City, department resources, and community.

Appendix C

External department perspective survey questions and responses

Question 1: What is the current size of your fire department?		
Answer Options	Response Percent	Response Count
1-49 personnel	37.5%	9
50-100 personnel	45.8%	11
100-250 personnel	8.3%	2
250-500 personnel	4.2%	1
>500 personnel	4.2%	1
<i>answered question</i>		24
<i>skipped question</i>		0

Question 2: Are false alarms and repeat false alarms considered a problem at your department; causing distractions to your departments operation (i.e. increasing firefighter complacency, increasing simultaneous alarms, and increasing response times to other emergencies, etc)?		
Answer Options	Response Percent	Response Count
Yes	66.7%	16
No	33.3%	8
<i>answered question</i>		24
<i>skipped question</i>		0

Question 3: Has your department experienced occupant complacency (neglect to react to fire alarms systems), in occupancies that have high instances of repeat false alarms?		
Answer Options	Response Percent	Response Count
yes	75.0%	18
no	25.0%	6
<i>answered question</i>		24
<i>skipped question</i>		0

Question 4: Approximately how many fire responses does your department respond to a year?	
Answer Options	Response Count
	24
<i>answered question</i>	24
<i>skipped question</i>	0

Question 5: Approximately how many of those fire responses are false alarms?	
Answer Options	Response Count
	24
<i>answered question</i>	24
<i>skipped question</i>	0

Number	Response Date	Response Text
1	Sep 8, 2016 11:12 PM	161 since January 1st
2	Sep 8, 2016 12:39 PM	300
3	Sep 7, 2016 8:58 AM	1700
4	Sep 5, 2016 4:59 PM	250
5	Sep 5, 2016 4:55 PM	111
6	Sep 5, 2016 4:48 PM	135
7	Sep 5, 2016 2:59 PM	150
8	Sep 5, 2016 2:13 PM	128
9	Sep 5, 2016 1:58 PM	125
10	Sep 5, 2016 10:02 AM	187
11	Sep 2, 2016 1:06 PM	100
12	Sep 1, 2016 7:08 PM	138
13	Sep 1, 2016 5:25 PM	750
14	Aug 31, 2016 6:51 PM	150-200
15	Aug 30, 2016 7:29 PM	100
16	Aug 30, 2016 6:45 PM	200
17	Aug 30, 2016 4:47 PM	75
18	Aug 30, 2016 1:41 PM	266
19	Aug 30, 2016 2:37 AM	6500
20	Aug 29, 2016 10:39 PM	125
21	Aug 29, 2016 7:47 PM	400
22	Aug 29, 2016 7:29 PM	175
23	Aug 29, 2016 6:37 PM	1100
24	Aug 29, 2016 5:14 PM	476

Question 6: Approximately how many of those false alarms are repeat false alarms? (Please use "Unknown" or "unable to obtain" as an answer if that is most correct response, or a number based on annual report or record management system)

Answer Options	Response Count
	23
<i>answered question</i>	23
<i>skipped question</i>	1

Number	Response Date	Response Text
1	Sep 8, 2016 11:12 PM	unknown
2	Sep 8, 2016 12:39 PM	186
3	Sep 7, 2016 8:58 AM	unknown
4	Sep 5, 2016 4:59 PM	Unknown
5	Sep 5, 2016 4:55 PM	unknown
6	Sep 5, 2016 4:48 PM	85
7	Sep 5, 2016 2:59 PM	100
8	Sep 5, 2016 2:13 PM	Unknown
9	Sep 5, 2016 1:58 PM	unable to determine
10	Sep 5, 2016 10:02 AM	unable to determine
11	Sep 2, 2016 1:06 PM	50
12	Sep 1, 2016 7:08 PM	unknown
13	Sep 1, 2016 5:25 PM	unknown
14	Aug 31, 2016 6:51 PM	Unknown
15	Aug 30, 2016 7:29 PM	majority are repeats
16	Aug 30, 2016 4:47 PM	50
17	Aug 30, 2016 1:41 PM	Unknown
18	Aug 30, 2016 2:37 AM	4000
19	Aug 29, 2016 10:39 PM	Unknown
20	Aug 29, 2016 7:47 PM	Unknown
21	Aug 29, 2016 7:29 PM	10
22	Aug 29, 2016 6:37 PM	unknown
23	Aug 29, 2016 5:14 PM	unknown, but may be able to find that out

Question 7: Does your municipality currently have an ordinance that imposes fees for “nuisance alarms” or repeat false alarms?

Answer Options	Response Percent	Response Count
Yes	62.5%	15
No	37.5%	9
<i>answered question</i>		24
<i>skipped question</i>		0

Question 8: Feel free to add any additional comments on Fee-based enforcement systems and “nuisance alarms”?

Answer Options	Response Count
	3
<i>answered question</i>	3
<i>skipped question</i>	2

Number	Response Date	Response Text	Categories
1	Sep 12, 2016 5:02 AM	It is important to build partnerships in the business community. We just ask to be fair and balance the negative and positive. Communication is key to achieve the desired outcome. Enforcement is a tool to be used not necessarily for punitive punishment only.	
2	Sep 5, 2016 5:02 PM	This makes sense for the extreme situations, would like to consider an appeals process. This would have to be fair for all parties involved.	
3	Sep 5, 2016 1:40 AM	Thank you for enlightening us on false alarms and your efforts in making our services better.	

Question 9: If your department imposes fees for “nuisance alarms” or repeat false alarms, at what number response do the fees begin to be enforced?

Answer Options	Response Count
	18
<i>answered question</i>	18
<i>skipped question</i>	6

Number	Response Date	Response Text
1	Sep 8, 2016 12:39 PM	2 in a year
2	Sep 5, 2016 4:59 PM	3rd nuisance alarm
3	Sep 5, 2016 4:55 PM	2
4	Sep 5, 2016 4:48 PM	3
5	Sep 5, 2016 2:59 PM	NA
6	Sep 5, 2016 2:13 PM	n/a
7	Sep 5, 2016 1:58 PM	not currently enforcing
8	Sep 5, 2016 10:02 AM	2nd offense in a calendar year
9	Sep 2, 2016 1:06 PM	4
10	Sep 1, 2016 7:08 PM	n/a
11	Sep 1, 2016 5:25 PM	3
12	Aug 30, 2016 6:45 PM	2nd event in rolling 12 month calendar
13	Aug 30, 2016 2:37 AM	6
14	Aug 29, 2016 10:39 PM	3 in a year
15	Aug 29, 2016 7:47 PM	5 for law enforcement and 5 for FD on a rolling 12 months.
16	Aug 29, 2016 7:29 PM	3
17	Aug 29, 2016 6:37 PM	after 3rd alarm in a month
18	Aug 29, 2016 5:14 PM	3 but with discretion

Question 10: If your department imposes fees for “Nuisance alarms” or repeat false alarms has there been any noticeable reduction in repeat false alarms or false alarms in general. (Please provide data or stats if possible)

Answer Options	Response Percent	Response Count
Yes	21.7%	5
No	13.0%	3
N/A	65.2%	15
Please explain answer positive or negative		5
<i>answered question</i>		23
<i>skipped question</i>		1

Number	Response Date	Please explain answer positive or negative	Categories
1	Sep 8, 2016 12:39 PM	When we had ordinance it reduced the number of repeat alarms.	
2	Sep 5, 2016 10:02 AM	Just started to impose fees in April of 2015. Our false alarms decreased from 238 in 2014 to 187. This year up to August we are at 115.	
3	Sep 2, 2016 1:06 PM	The imposed fee and letter saying that the fee is coming if the system is not fixed helps drive the repair.	
4	Aug 30, 2016 6:45 PM	Initial implementation in the early 1990's resulted in a marked decrease in false alarms, and a marked improvement in system maintenance.	
5	Aug 29, 2016 5:14 PM	we still go to a considerable amount of false alarms, but I would assume that businesses have changed knowing that they will be charged money	

Question 11: Is your department able to identify one of the following as a primary factor to false alarms?

Answer Options	Response Percent	Response Count
Malicious Alarm - intentional activation by persons knowing that there is no hazardous condition	0.0%	0
Nuisance alarm - activation caused by malfunction or response to a stimulus or condition that is not a result of hazardous condition (thunderstorms, water issues	50.0%	12
Unintentional alarm - i.e. burnt food, construction work kicking up dust, HVAC needing cleaned, etc.	37.5%	9
Unknown Alarm - unable to identify root cause	8.3%	2
Unable to determine	4.2%	1
<i>answered question</i>		24
<i>skipped question</i>		0

Question 12: Do you believe a fee-based enforcement system provides an incentive to business owners to repair their alarm system?

Answer Options	Response Percent	Response Count
Yes	83.3%	20
No	16.7%	4
<i>answered question</i>		24
<i>skipped question</i>		0

Question 13: What are some common or best practices your department may have identified for administering a fee-based enforcement system for repeat false alarms? (Such as: who tracks false alarms, writing letters, follow-up, compliance, invoices, notification, etc.)

Answer Options	Response Count
	19
<i>answered question</i>	19
<i>skipped question</i>	5

Number	Response Date	Response Text	Categories
1	Sep 8, 2016 12:39 PM	Our AA tracked the repeat alarms and sent out notification letters to repeat users. Enforcement was through Fire Prevention office.	
2	Sep 7, 2016 8:58 AM	N/A	
3	Sep 5, 2016 4:59 PM	Follow ups through fire prevention bureau allows for tracking and knowing what is causing false alarms.	
4	Sep 5, 2016 4:55 PM	Formal letter notifying business owners that next false alarm will result in fees being charged for false alarm, in person follow up	
5	Sep 5, 2016 4:48 PM	Having the prevention bureau follow up with consecutive false alarms and advising the owner that the problem needs followed up on.	
6	Sep 5, 2016 2:59 PM	NA	
7	Sep 5, 2016 2:13 PM	n/a	
8	Sep 5, 2016 1:58 PM	we do not currently enforce	
9	Sep 5, 2016 10:02 AM	The Fire Chief is responsible for enforcement and there is an appeals process which is through the City's Safety Director. The Chief reviews the weekly call report from RMS then generates letters through administrative offices.	
10	Sep 2, 2016 1:06 PM	We are small enough that the Chief tracks and monitors the number of alarms and the cause.	
11	Sep 1, 2016 7:08 PM	n/a	
12	Aug 30, 2016 6:45 PM	Fire Prevention Bureau does follow-up.	

13	Aug 30, 2016 1:41 PM	Fire prevention has established a good relationship with many of our businesses and will help them find a solution to their alarm system issues.
14	Aug 30, 2016 2:37 AM	All stakeholders must buy in, including city legislatures and mayor/city manager.
15	Aug 29, 2016 10:39 PM	The ability to waive fines if repairs are made. This can be discussed with the owner/occupant. They must have a time frame to make the repairs.
16	Aug 29, 2016 7:47 PM	We have an alarm coordinator who keeps track of false alarms. She sends letters and provides follow-up.
17	Aug 29, 2016 7:29 PM	False alarms are tracked by the dept, invoices are tracked by the clerks office.
18	Aug 29, 2016 6:37 PM	We have an assessment division that tracks and does actually bill for any false alarm over 3 in a month.
19	Aug 29, 2016 5:14 PM	we use a fire protection engineer to monitor and send out fines and other warnings as appropriate

Question 14: Final question: What, if any, political implications has your department experienced while implementing or administering a fee-based enforcement system for "nuisance alarms" or repeat false alarms?

Answer Options	Response Count
	22
<i>answered question</i>	22
<i>skipped question</i>	2

Number	Response Date	Response Text
1	Sep 8, 2016 12:39 PM	Some community pressure when we had it, no longer enforced.
2	Sep 7, 2016 8:58 AM	We have attempted to impose a fee based enforcement policy without success due to political resistance.
3	Sep 5, 2016 4:59 PM	Administration not allowing fire department to implement a fee and following through and collecting from repeat false alarms and companies not fixing their systems.
4	Sep 5, 2016 4:55 PM	trustees who own businesses in the township
5	Sep 5, 2016 4:48 PM	Knowing there is a fee based system and realizing its not being enforced due to a lack of communications.
6	Sep 5, 2016 2:59 PM	NA
7	Sep 5, 2016 2:13 PM	n/a
8	Sep 5, 2016 1:58 PM	n/a

9	Sep 5, 2016 10:02 AM	When we started to implement fees for false alarms there were some initial complaints from business owners. We educated owners through the inspection division to explain the false alarm problem and discussed these are not punishment rather a means to push owners to maintain alarm systems.
10	Sep 2, 2016 1:06 PM	none
11	Sep 1, 2016 7:08 PM	n/a
12	Sep 1, 2016 5:25 PM	excuses
13	Aug 30, 2016 7:29 PM	n/a
14	Aug 30, 2016 6:45 PM	None significant. A careful explanation of the risk/benefit perspective, either face to face or written, to reasonable people seems to resolve most issues.
15	Aug 30, 2016 4:47 PM	don't have any fees
16	Aug 30, 2016 1:41 PM	We've never implemented any fees, mainly because when the police attempted to use a fee-based system for recovering operating costs at MVA's, the public, and political outcry was enormous.
17	Aug 30, 2016 2:37 AM	Restrictions on full enforcement
18	Aug 29, 2016 10:39 PM	"Connected" people complaining.
19	Aug 29, 2016 7:47 PM	None, since it is a part of our ordinances and they were aware of the process.
20	Aug 29, 2016 7:29 PM	None
21	Aug 29, 2016 6:37 PM	None that we have noticed.
22	Aug 29, 2016 5:14 PM	none so far, but if a business ever truly fought the fines politically there may end up with an issue

Appendix D

Survey Cover Letter

August 15, 2016

Dear Fire Service Colleague,

As a student of the National Fire Academy, Executive Fire Officer Program, I am required to complete an Applied Research Project. I am currently researching how to reduce the inordinate number of repeat false fire alarms in the City of Fairlawn due to system malfunctions and maintenance issues. The purpose of this research is to identify if a fee-based enforcement system provides an incentive to business owners to repair their alarm system and if justified, create a fire department policy on "Nuisance Alarm" fee enforcement.

Your help in completing the survey will assist in answering the following research questions: a.) What is the risk to the community when the Fairlawn Fire Department responds to a false alarm? b.) What have other departments found when measuring the effectiveness of fee-based enforcement systems in order to reduce the number of repeat false alarms? c.) What common or best practices have other departments identified in administering repeat false alarm fees? d.) What are the political implications if a fee based enforcement system were to be implemented for repeat false alarms in the City of Fairlawn?

Your input is import and will be used in my project. The survey is anonymous and no department identifiers will be used in my research project from this survey. If you have a current department policy on how you administer fees for repeat false alarms or "nuisance alarms" please email your policy to. brants@ci.fairlawn.oh.us . Please complete survey by Wednesday, September 8, 2016. To access this survey just click on the following web link:

<https://www.surveymonkey.com/r/HHYWHGN>

Thank you for your time and your support of this project. For any further questions or assistance, I can be reached at (330)488-5229 or by email: brants@ci.fairlawn.oh.us.

Respectfully,

Capt. Steven Brant
Fairlawn Fire Department

Appendix E

Interview transcript from Fairlawn Police Department Alarm Administrator:

Prior to this project the researcher was not aware that the City of Fairlawn had an “Alarm Administrator” at the police department and that the police department has been enforcing fees for false burglar alarms for over 18 years. The researcher conducted an interview using open-ended question with the FPD Alarm Administrator. The interview was conducted at the FPD and was focused on this project's research questions, to assist in the development of a department policy enforcing the false alarm ordinance:

The Fairlawn Police Department (FPD) was contacted on August 9, 2016, and the researcher interviewed Officer Matt Conway; who is also the “Alarm Administrator” for the Police Department. The interview questions and Officer Conway’s responses are as follows:

How long have you been the Alarm Administrator for the "FPD"? "I have only been the Alarm Administrator for about one and a half years now. Due to a retirement, I was directed by the FPD administration to gather information and learn the duties of the alarm administrator before the retiring officer left. By the time they assigned this job to me, I only had two or three days to work with the former officer before he retired." (Conway, personal Communication, 8/9/2016).

Can you explain to me what the job responsibilities include for the FPD “Alarm Administrator and how you administer the fee-based for your false alarms enforcement of your false?" The billing for false burglar alarms started long before I was here. I believe the ordinance was introduced about 18 years ago and has been enforced ever since. I will explain the process the best I can. When burglar alarms are dispatched, they are logged by dispatch and the responding officer fills out an alarm card. The officer at the end of their shift place the card in a

box in the basement of the police station. Every Monday, I go through the alarm cards in the box and compare it to a weekly alarm report that dispatch sends me. I like to double check both, to verify all alarms have been accounted for. If there is an alarm card missing the responding officer will be requested to fill one out, so alarms can be processed correctly.

Next, I will pull up alarm history reports from our records management system referencing each address I have a card for. The ordinance allows four false alarms in a six-month period on a rolling calendar. For any address that has incurred more than four false alarms in a six-month period, I put them on a list to process letters and fines. When I have compiled my list, I generate a letter to the Police Chief notifying him of the addresses, the number of false alarms they have incurred, and notification that they will be receiving a bill for \$75.00 for every occurrence after 4. I then generate a letter to the occupancy that is in violation. In this letter, which I can give you a copy of, explains to the alarm owner that they are in violation, what their fine is, and to submit payment to the Fairlawn Finance Department. One copy is sent to the alarm owner, one copy to the finance department, and I keep one copy on file at FPD.

After letters are sent out to the alarm owners, the finance department handles it from there. They receive and process the payments and if there is no payment, second notices are sent to alarm owners. There have been a few instances when the finance department has contacted me to ask if there is any reason not to send someone to collections for non-payment. Those we have to look at case by case basis.” (Conway, personal Communication, 8/9/2016).

Can you explain to me a little more in depth on who you charge (businesses, residences, or both), is there any appeal process, and at what exactly constitutes a false alarm in the eyes of FPD? Do you include power outages and acts of nature such as thunderstorms as a false alarm?

“We charge both businesses and residents for false alarms. We also have an ordinance for fire



alarm systems where all are required to register it in the City, and it also includes a \$100.00 fee to register and is good for two years. There is an appeal process and it falls to me. If a resident can get a letter from their alarm company stating that they had an issue with a device and has been repaired and they had a high number of false alarms in a few day period; I do have the authority to waive the fees. As far as power outages and thunderstorms, if the alarm goes off and we respond there, and there is no issue, then it counts as a false alarm. We have no policy stating differently. What constitutes us as a false alarm is a police response and upon arrival, there are no signs of break-in, other property damage, stolen items, or police issues in which alarm was activated. For example, we will bill a bank for a false alarm if they trip their emergency button and don't follow proper procedure notifying us it is false. If at any time someone were to call and cancel the false alarm whether it be the company or the alarm owner and we are not on scene yet, we will not count that as a false alarm." (Conway, personal Communication, 8/9/2016).

Have you experienced any political implications from enforcing fees for false burglar alarms? For example any citizen or business owner complaints, pressure from City Administration, Pressure from Police Administration? "I have never had any issues with the City Administration or the Police Administration. One reason is the letter I send out has my contact information on it so people will call me directly with questions or complaints. I have fielded very few complaints, for the most part people just pay the fee. When people do call, it is usually about their faulty system that has been repaired and want to explain why they had false alarms asking if fine can be reduced. We feel that there is an ordinance in the city which is law, and we enforce the law. I provide the police chief with a letter that lists who I have sent notices to, so he is informed if they were to call him with any questions or complaints." (Conway, personal Communication, 8/9/2016).

Do you feel that the fees imposed for false alarms provide an incentive for alarm owners to repair and maintain their alarm? If so do you have any system in place to track how effective the enforcement is? Do you feel false alarms have been reduced to the fees for false alarms? Like I said I have only been doing this for about a year and a half now, and I have yet to create a way or even thought of looking at the statistics to break down the effectiveness. I believe that it does help because there are only a few alarm systems out there that repeatedly go off. For the most part when I send a letter out explaining that they are in violation of the city ordinance and that they are being fined, is generally the last time we respond to an alarm there. I can only assume that they have dealt with the problem or figured out what the root cause for the false alarm was. I can only think of a few occupancies on hand that just pay the fines and never really seem to change their ways or repair the system. In fact, there are probably only two or three of them. I have never really tracked statistically how many false alarms we respond to. There is no way for me to look back statistically to when we first started imposing fees for false alarms due to changes in software for our record management system. I do believe fees have been beneficial in keeping repeat false alarms at bay; because rarely do I get the same address in violation after sending the first violation notice. I also feel if no one were to enforce the false alarm ordinance as we currently do, that the FPD would be experiencing a much bigger false alarm problem than we have today. It does take a lot of time to administer these fees, considering I probably work on it almost every shift at some point.” (Conway, personal Communication, 8/9/2016).

Appendix F

False Alarm Enforcement Policy

	Fairlawn Fire Department - Rules, and Regulations, Policy and Procedures		
False Alarm Enforcement		Issue Date: January 1, 2016	
Issued by: Fire Administration		Next Review Date: January 1, 2018	

1.0 PURPOSE

- 1.1 To provide the Fairlawn Fire Prevention Bureau and the General Employee work guidelines and guidance on reducing repeat false alarms in Fairlawn.

2.0 DIVISIONS EFFECTED

- 2.1 All divisions and all personnel
- 2.2 The Lieutenant of the Fire Prevention Bureau will be the designated "Fire Alarm Administrator." In the absence of the designated Fire Alarm Administrator, the Captain that oversees the Fire Prevention Bureau will assume the responsibility of Fire Alarm Administrator.

3.0 RESPONSIBILITY

- 3.1 All members have the responsibility to learn and follow this procedure.
- 3.2 All officers are responsible for complying with and ensuring that personnel under their command are adequately trained, fully understand, and comply with this guideline.
- 3.3 The Fire Department designated "Alarm Administrator" has the responsibility to learn, follow, and enforce this repeat false alarm reduction program. It is also the responsibility of the Alarm Administrator to learn and enforce the City of Fairlawn, Code of Ordinance 1606.05 (2010) "Nuisance Alarms."

4.0 PROCEDURE

4.1 False Fire Alarm Response

4.1.1 The responding shift Lieutenant or Officer in Charge (OIC) shall identify, investigate, and report all false alarm fire responses following the national standards and reporting requirements.

4.1.2 It is imperative to determine and report the root cause of all false alarms into the department's record management system (Firehouse) based on the following definitions:

- “**Unwanted alarms**,” where any alarm that occurs that is not the result of a potentially hazardous condition” (NFPA, 2016, p. 33). Also identified by this standard is that when fire departments respond to false alarms or the “unwanted alarms” they are to be reported to the national database by the following four categories:
 - **3.3.304.1-Malicious Alarm.** *An unwanted activation of an alarm initiating device caused by a person acting with malice.* (NFPA, 2016, p. 33)
 - **3.3.304.2-Nuisance Alarm.** *An unwanted activation of a signaling system or an alarm initiating device in response to a stimulus or condition that is not the result of a potentially hazardous condition.* (NFPA, 2016, p. 33)
 - **3.3.304.3-Unintentional Alarm.** *An unwanted activation of an alarm initiating device caused by a person acting without malice.* (NFPA, 2016, p. 33)
 - **3.3.304.4-Unknown Alarm.** *An unwanted activation of an alarm initiating device or system output function where the cause has not been identified.* (NFPA, 2016, p. 33)

4.1.3 If the responding shift Lieutenant or Officer in Charge (OIC) is unable to identify and report root cause for false alarm, the Alarm Administrator shall be notified for follow-up and further investigation.

4.2 Tracking False Alarms

4.2.1 The Fire Alarm Administrator or their designee will generate a weekly false alarm report on Monday. This report will evaluate the previous week, Monday through Sunday. Any occupancy identified in the weekly false alarm report will then be evaluated with a 6-month false alarm report; to determine the number of false alarm responses at each of the identified occupancies.

4.3 Repeat False Alarm Enforcement

4.3.1 Any occupancy identified as having four (4) false alarm responses in a six month period, will receive a formal notice from the Alarm Administrator in writing. This letter will include the City of Fairlawn, Code of Ordinance 1606.05 (2010) “Nuisance Alarms” and advise the occupancy that any

future false alarm responses in the appropriate 6-month period may result in a \$75.00 fee. This letter shall be sent by certified mail.

- 4.3.2 Any occupancy identified as having more than four (4) false alarm responses in a 6-month period, will receive a formal invoice notice from the Alarm Administrator in writing. This letter will include the City of Fairlawn, Code of Ordinance 1606.05 (2010) "Nuisance Alarms" and advise the occupancy that they are in violation of the "Nuisance Alarm" ordinance resulting in a \$75.00 fee for each false alarm response over 4 in a 6-month period. The invoice notification letter shall also include remittance information addressed to the City of Fairlawn-Finance Department and notice to submit payment within 30 days.

4.4 Collection of Payment

- 4.4.1 All payments submitted for repeat false alarms will be submitted to the City of Fairlawn-Finance Department. The Finance department will be responsible for all collections and future payment notifications. Any payment not received within 30 will be tracked and notified by the Finance Department. Any and all questions regarding payments and invoices will be directed to the Finance Department.

4.5 Appeals Process

- 4.5.1 All questions or complaints of false alarms and validity of false alarm notifications will be directed to the Fire Alarm Administrator. The Fire Alarm Administrator will hear all appeals from occupancies. The final decision of what constitutes a false alarm is the discretion of the Fire Alarm Administrator. Upon request to the Fire Alarm Administrator, any occupancy has the right to review alarm data and descriptions of all false alarm responses to their occupancy t. Alarm owners can provide letters from alarm companies to the Fire Alarm Administrator explaining issues and/or repairs made; to be considered in the final decision of a request to reduce or dispute false alarm invoices.

4.6 Repeat False Alarm Follow-up

- 4.6.1 The Fire Prevention Bureau will conduct all follow-up communications with all occupancies that are in violation of the "Nuisance Alarm" ordinance. The Inspector conducting follow-up shall reference the reported data to identify the root cause. After identifying the root cause of false alarms, corrective actions shall be discussed with all stakeholders involved in order to reduce and prevent any further false alarms. There is a difference between human errors and system malfunctions in terms of correctable actions needed. Human errors may be nothing more than a

training issue, whereas system malfunctions may be enforcement or maintenance issues. This is an opportunity for the Fire Prevention Bureau to create community partnerships in developing solutions and preventing future false alarms.