

Running head: DEVELOPING A PUBLIC EMERGENCY COMMUNICATION SYSTEM FOR
NATURAL AND MAN-MADE EMERGENCIES

Developing a Public Emergency Communication System for Natural and Man-made
Emergencies

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CERTIFICATION STATEMENT

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

Signed: _____

Abstract

The Town of Mooresville does not have a public emergency communication system in place to handle natural and man-made emergencies. Mooresville Fire Department is the primary Emergency Management organization within the Town of Mooresville. The absence of a public emergency communication system prevents the Mooresville Fire Department from delivering life-saving messages to its citizens during natural and man-made emergencies. The problem was, the Mooresville Fire Department had no public emergency communication system in place for natural and man-made emergencies. The purpose of the research is to develop a public emergency communication system. Action research was the method chosen by the author. Literature review and personal interviews were used to answer the following research questions and develop a Public Emergency Communication System for the Town of Mooresville. (a) What are the risk factors for natural and man-made disaster within the Town of Mooresville? (b) What Public Emergency Communication System hardware and software is available? (c) What Public Emergency Communication System hardware and software is needed? (d) What are the costs associated with meeting the public emergency communication needs for the Town of Mooresville? (e) What training is required in order to implement a Public Emergency Communication System? The results found that the Town of Mooresville had a high risk factor for natural and man-made emergencies. The research outlined requirements for a public emergency communication system and was used to develop a Public Emergency Communication System for the Town of Mooresville.

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Developing A Public Emergency Communication System For Natural And Man-Made Emergencies

Introduction

Jurisdictions across the world are threatened by natural and man-made emergencies every day. The ability to communicate with a jurisdiction's citizens is imperative in order to minimize the effects a community may experience during natural or man-made emergencies. The problem is the Mooresville Fire Department does not have an established public emergency communication system in place for natural and man-made emergencies. The absence of a public emergency communication system prevents the Mooresville Fire Department from delivering life-saving messages to its citizens during natural and man-made emergencies. Rapid growth in the Town of Mooresville has increased the exposure threat to natural and man-made emergencies. The density of population, residential properties, commercial properties, America's Ballpark and the waters of Lake Norman increase the need for an effective public emergency communication system.

The purpose of the research is to develop a public emergency communication system. A public emergency communication system would allow the Mooresville Fire Department to notify the citizens of Mooresville in the event the need should arise during natural or man-made emergencies. Mooresville Fire Department is the primary Emergency Management organization within the Town of Mooresville. This research will also identify areas of interest when comparing current communication capabilities and funding abilities of the Mooresville Fire Department as they relate to proper development of a public emergency communication system. In order to design a solid program, establish the need, assess the benefits, and requirements for development of a public emergency communication system for the Town of Mooresville, five

research questions will be answered. Action research methods were utilized to answer the five questions. The five research questions are as follows: (a) What are the risk factors for natural and man-made disaster within the Town of Mooresville? (b) What Public Emergency Communication System hardware and software is available? (c) What Public Emergency Communication System hardware and software is needed? (d) What are the costs associated with meeting the public emergency communication needs for the Town of Mooresville? (e) What training is required in order to implement a Public Emergency Communication System?

For this research, Literature review and personal interviews will be used to review program requirements necessary to develop a Public Emergency Communication System for the Town of Mooresville. The requirements will outline the necessary infrastructure required to establish a public emergency communication system. The research will determine the training, staffing, and funding needs necessary for development of a public emergency communication system. The annual budget and strategic plan will be reviewed in order to gain an understanding of additional funding issues that may benefit or limit the implementation process. It is important to discuss the advantages and disadvantages of a public emergency communication system for natural and man-made emergencies prior to the implementation of a communication system. To complete the research process an equipment inventory will be reviewed to assess mandatory equipment and resources that may need to be allocated in the 2011-2012 budget requests. The elements of this research project will be used to develop an effective public emergency communication system to be used during natural and man-made emergencies within the Town of Mooresville.

Background and Significance

The Town of Mooresville is located in southern Iredell County in the piedmont region of North Carolina. The town is located 17 miles north of the City of Charlotte along Interstate Highway 77. The town is the municipal center for southern Iredell County. Within the town's jurisdiction is Lake Norman, the state's largest man-made lake with 520 miles of shoreline. The demographics and geography of Mooresville has dramatically changed over the past 13 years. The Town has experienced significant residential and commercial growth in a short time frame. Census figures reflect an increase of approximately 100% in the Town's population between 1990 and 2000 (U.S. Census Bureau, 2010). According to the U.S. Census Bureau, in 2007 the estimated population of Mooresville had grown to 26,689 (2010). Today Mooresville has grown to an estimated population of 35,000 (U.S. Census Bureau, 2010).

Mooresville's employment base is diversified including corporate headquarters, manufacturing, medical, governmental and numerous retail activities. Mooresville is most famous for its designation of Race City USA where the Town attracts new and expanding investments by approximately 62 race teams. Mooresville is now the home of America's Ballpark, the largest ballpark complex in the nation for young adults and children. The corporate headquarters for Lowes, numerous NASCAR race shops, America's Ballpark, and Lake Norman has developed the Town of Mooresville into a tourist town. According to Craig Culberson, specialist in planning and zoning with the Town of Mooresville, frequently the population of Mooresville will increase by 50% during the summer months (personal communication, May 5, 2011).

Delivery methods for public emergency communications during natural and man-made emergencies have been a challenge because the Town of Mooresville has not developed a

comprehensive procedure that handles emergency communications to the public. The Mooresville Fire Department has the primary responsibility of Emergency Management within the Town of Mooresville. The Fire Chief is designated by the Town of Mooresville Board of Commissioner's as the Emergency Manager. The Town of Mooresville has developed a comprehensive emergency management plan that outlines the approach to emergency operations which provides guidance for emergency management activities and an overview of methods of mitigation, preparedness, response, and recovery. However, the emergency management plan does not address in detail an effective process that will deliver important emergency information to the citizens and visitors of Mooresville during emergencies. Mooresville Fire Department's Emergency Management's staff works directly with Iredell County's Office of Emergency Management to mitigate and respond to hazards within the corporate limits of Mooresville as well as Iredell County.

The Town of Mooresville is not immune to natural and man-made emergencies. Mooresville has been exposed to all types of weather events such as tornados, hurricanes, ice storms, floods, earthquakes, heavy snow, high winds, droughts, lake advisories, and severe thunder storms. All four seasons frequently deliver weather events that result in injuries to people and damage to property. The summer heat tends to build storms almost daily that threatens the citizens and tourist who are experiencing the attractions of Mooresville. The proximity of Interstate Highway 77 and a major natural gas pipeline through the center of Mooresville increases the man-made threats to the citizens of Mooresville. The amount of hazardous materials that travels through Mooresville is increased due to the fact that Interstate Highway 77 sits between Interstate Highway 40 and Interstate Highway 85's interchanges.

Given all of those threats, the Town of Mooresville is also located within the 10 mile perimeter of McGuire Nuclear Plants fallout zone and has a high risk of Dam failure.

The Town of Mooresville and the Iredell County Office of Emergency Management has created their own jurisdictional Emergency Management Plans. The objectives of both plans are to protect public health and safety and preserve public and private property. The Town of Mooresville's *Comprehensive Emergency Management Plan (2007)* establishes a method of emergency communication to the public during emergencies. The plan identifies that the primary objective of the warning system is to notify key officials of emergency situations and disseminate timely and accurate warning and instructions to the population at risk from the emergency situation. It is a clear understanding that rapid dissemination and delivery of warning information and instructions may provide time for life saving measures to be taken by the citizen or visitor. The Town of Mooresville's *Comprehensive Emergency Management Plan* identifies numerous methods that could be utilized to provide warning information to the Town. Although the plan identifies methods of dissemination, there is not an official policy or program for dissemination of information and furthermore recent storm events proved the plan not to be adequate in emergency communication dissemination to the public.

The intent of this research began as a needs assessment for a public emergency communication system for the Town of Mooresville to utilize during natural and man-made emergencies. The research proposal outlined the steps of conducting a needs assessment. As the researcher progressed forward with creation of a needs assessment tool, a series of events quickly changed the direction of this research. The 2011 spring severe weather season has been at full throttle. According to Dr. Greg Forbes with the Weather Channel, 2011 produced a record numbers of severe weather outbreaks across the nation (Forbes, 2011). The State of North

Carolina and Mooresville was not spared during these outbreaks. The increase in severe weather, tornado outbreaks and flooding created a sense of urgency in the Mooresville Fire Department that led to the development of an effective public emergency communication system to be utilized in disseminating lifesaving information to the citizens of Mooresville. The State of North Carolina was hit by a record number of tornados in the spring of 2011. The tornado outbreak on April 16, 2011 produced a record number of tornados in a single day for North Carolina. The devastation that cities across the state experienced propelled the need for a public emergency communication system. The Town of Mooresville was also hit by several storms this season that posed a severe risk to the citizens and visitors. The Town of Mooresville was hit by a strong tornadic super cell during the early morning on April 18, 2011. This storm left many residents picking up the pieces the next morning. The timely notification of the storms impending threat failed to be disseminated across Mooresville. The aftermath of 2011's historic severe weather outbreak for the Town of Mooresville and the State of North Carolina accelerated this research from the needs assessment into the program development phase.

The methods of receiving warnings appeared to be adequate. The method of dissemination is where the breakdown occurs within the Town of Mooresville's Comprehensive Emergency Management Plan. The Town of Mooresville's Comprehensive Emergency Management Plan list the Local Warning Point, Emergency Alerting System, Route Alerting, NOAA Weather Radio, Cable Television Interrupt, and a Telephone warning system as notification methods available for use.

The Local Warning Point is located 22 miles away in the City of Statesville. The Local Warning Point designation was given to Iredell County Emergency Communication Center (ECOM). This center operates on a different radio system than the Mooresville Fire Department.

The center does not utilize a functional CAD system. The Mooresville Fire Department is currently dispatched on patch system from the Mooresville Police Department's CAD system and hand held portables are utilized as fireground radios within the communication center. Iredell County's ECOM Telecommunicator's are not allowed to send emergency information to the public. This creates a delay in information dissemination. This was the case on the night of April 18, 2011.

The Emergency Alerting System is a viable resource since as a conditioning of licensing, all commercial radio, television stations and cable companies must participate in the Emergency Alerting System to relay warning and instructions from government to the public (Town of Mooresville, 2007). If messages are not prescribed, the delivery to the broadcast entity can be delayed. The Town of Mooresville does not currently have any scripted messages for emergencies. The Federal Communication Commission encourages licensees to broadcast state and local warning and instructions messages. The public may be warned by route alerting which is the process of using vehicles equipped with sirens and loud speaker systems. This method does not work well in all areas depending on distances from roadways to buildings. The process of responders going door to door is an option but it is very labor intensive. NOAA Weather Radio is an option pursuant to an agreement with the NWS Forecast Office in Greenville Spartanburg and local government. The effectiveness of this method depends on the amount of NOAA Weather radios in each household. The radio also requires maintenance that cannot be controlled by the Mooresville Fire Department. The Iredell County Emergency Operation Center can interrupt the local cable network with an emergency voice message when and if the center is staffed. This means of warning only reaches those who have cable television and have their television set turned on. The final method available to the Town of Mooresville is a

telephone warning system. This system will deliver a message to published land lines without any interaction with the citizen. If the resident does not have a published phone line, the resident must physically register their numbers with the system. The only person designated to send messages out is David Martin, Iredell County's Emergency Management Director. The dependency of one person being available 24 hours a day and seven days a week is not a reliable process. At the current time, the emergency management director has not recorded any messages that can be delivered by the phone system in a timely manner where minutes decide life or death.

Due to the rapid growth experienced by the Town of Mooresville, problems have begun to arise in the reliability of current methods used to disseminate emergency messages during natural and man-made emergencies. The process of delivering emergency messages to all citizens in a timely manner is a challenge that this research will address. The sheer demographics and geography of Mooresville compounds the challenges to deliver necessary emergency communications to citizens while they are relaxing at home, on the lake, working or catching a baseball game at America's Ballpark. Many of the traditional communication methods for emergency communications may be viable methods for certain instances, but in general the development of standard methods is a necessity for the Town of Mooresville.

The Town of Mooresville is exposed to many hazards, all of which have the potential for disrupting the community, causing casualties, and damaging or destroying public or private property. The Town of Mooresville can expect to experience emergency situations that could threaten public health, safety, property and require protective action from Emergency Management. Emergency situations can occur at any time so it is imperative that equipment and procedures to warn the public of impending emergencies be in place and ready for use.

As addressed in the Executive Analysis of Community Risk Reduction course, risk sequencing allows the sequence of events, often avoidable, that occurs in natural and man-made events causing damage to people and property to be studied and preventable measures identified resulting in a reduction of injuries and property damage (U.S. Fire Administration, 2006). The course addresses the five E's of fire prevention. The development of a Public Emergency Communication System for the Town of Mooresville will utilize four of the five processes. Education, Engineering, Economic Incentives and Emergency Response Interventions all have a major impact on the success of a Public Emergency Communication System. (U.S. Fire Administration, 2006).

Of the different methods of delivery for emergency communications, most are adequate and have a place in the big scheme of emergency communications. The time required to deliver current messages presents the greatest threat for the Town of Mooresville. Adaptive and technical problems illustrate advantages to an organization if they are recognized and acted upon in an appropriate manner (US Fire Administration, 2009). Technical problems can change the direction of an organization and affect the mission and goals previously outlined (Heifetz and Linsky, 2002). The development of an effective public emergency communication system is imperative.

The significance of implementation of a public emergency communication system will have an impact on the safety of all citizens and visitors of Mooresville. The ability to develop a public emergency communication system will provide the Mooresville Fire Department a mechanism for the dissemination of lifesaving information during natural and man-made emergencies. Identification of the technical problems with current methods of delivery will

allow the administration of Mooresville Fire Department an opportunity to meet the needs of maintaining a safer community.

This research project will develop a public emergency communication system that will enhance the safety of the general public by delivering lifesaving information in a timely manner. The development of a public emergency communication system aligns the Mooresville Fire Department with all four of the United States Fire Administration's (USFA) operational objectives. The four USFA's operational objectives are to reduce risk at the local level through prevention and mitigation, improve local planning and preparedness, improve the fire and emergency services' capability for response to and recovery from all hazards, and improve the fire and emergency services' professional status (US Fire Administration, 2009).

It is the mission of the Mooresville Fire Department to protect life, property and safeguard the environment. The Mooresville Fire Department has the primary role in identifying and mitigating hazards, preparing for and responding to, and managing the recovery from an emergency incident. It is impossible for Mooresville Fire Department to do everything that is required to protect the lives and property in Mooresville. The citizens have the responsibility to prepare themselves and their families to cope with emergencies. It is Mooresville Fire Department's responsibility to assist the citizens of Mooresville by providing public information and instructions prior to and during natural and man-made emergencies.

Literature Review

Many of the fire department responses to emergencies that occur each year have nothing to do with fire. The public looks to the fire department for emergency preparedness. The Town of Mooresville is responsible for organizing, training, and equipping local emergency responders, providing appropriate shelter facilities and providing effective warning and

communication systems that can be utilized during natural and man-made emergencies. The state and federal governments provide some assistance with portions of these responsibilities; however the sole responsibility lies with the Town of Mooresville. NFPA 1600, *Recommended Practice for Disaster Management* establishes minimum criteria for disaster management for the private and public sectors in the development of a program for effective disaster mitigation, preparedness, response, and recovery (NFPA, 2007). Early warning of a community is important in the process of saving lives and community risk reduction. Frequent and catastrophic disasters have increased the role of the public sector in managing disasters and emergencies (Kapucu and Van Wart, 2006). Management of an early warning and risk reduction system is most effective through a policy process (Ban & Ricucci, 1997). If the Town of Mooresville creates a policy that ensures the public at risk is adequately informed and alerted, the effectiveness of the process can be measureable. As stated in the text *Public Personnel Management*, quality is defined as a multifaceted concept that includes aspects as performance, conformance, accuracy, reliability and timeliness as well as durability (Ban & Ricucci, 1997).

An informed public as well as the intervention of a credible early warning system create an environment where the public will take emergencies more seriously (Clarke, 2006). The education process establishes a foundation for action during natural or man-made emergencies. According to Barr (2006), “Public safety education programs are those that seek to prevent injury or loss through programs that are educational, instructional, or informative on a wide range of issues that the fire rescue organization is responsible for” (p.1064). It is the responsibility of the Mooresville Fire Department to target areas where public safety educational programs could reduce the impact from natural and man-made emergencies. Natural emergencies may affect any community. The fact that none of these natural emergencies can be

completely prevented, a solid process of evaluation and planning must go into a department's mitigation efforts in order to minimize loss of life and property. Even if some natural disasters cannot be prevented; they are not totally unpredictable or unexpected. As stated in *Management in the Fire Service*, when a department is in an area where such disasters occur, more specific planning and preparedness for them can and should be done (Carter & Rausch, 2007).

In *Managing Fire and Rescue Services*, the author writes the identification of risk considers both actual (historical) and potential losses (Forsman, 2002). Actual loss can be measured by review of historical data. The effects of actual losses will inform a response agency of potential losses through risk identification. After the identification process is complete, the risk must be analyzed and the effects on a community be specified for a demographical or geographical area. According to Forsman (2002), "The two measures used to specify this effect are frequency and severity. Frequency is defined as how often a particular incident may occur or is likely to occur. Severity is defined as the consequences of the incident once it has occurred" (p.42).

The United States has more severe weather than any other nation on the planet (Steinberg & Potter, 1998). The threats of tornadoes, hail storms, severe thunderstorms, blizzards, hurricanes and other severe weather plague the United States annually. In recent years there has been a steady increase in tornadoes and damaging weather. One notation with the increase is that given the increase in events, there has been a steady decline in deaths related to storms. As stated in the article *Weather Alert Systems for the PSAP*, the primary reason for the decline in deaths are the improvements in weather forecast and warnings as well as the dissemination of the information to the public (Potter and Stienberg, 1998). The changes in technologies have significantly made forecasting and dissemination of severe weather information better than ever.

Title III of the Superfund Amendments and Reauthorization Act or SARA as most know it requires communities to develop emergency response plans for fixed-site facilities. The man-made emergencies that threaten communities can cause as much damage as a natural emergency. One different component of man-made emergencies compared to natural emergencies is that most man-made emergencies can be predicted and a response plan implemented to prevent a release. As in natural emergencies, a means to warn the public in the event of a release is critical in the policy phase. The emergency warning systems for potentially hazardous facilities such as chemical plants, dams, or nuclear power plants must be effective (Rogers & Sorensen, 1998). As stated in the *Diffusion of Emergency Warning*, warning people of impending danger involves two conceptually distinct aspects: alerting and notification (Rogers & Sorensen, 1998). The recognition and awareness of threats is classified as alerting while notification focuses on how people will interpret the warning message (Town of Mooresville, 2007). The way an individual interprets information will dramatically influence the level of response their behavior will reflect. People respond to emergencies based off of prior experiences. The environment as well as their experiences will determine whether the individual will accept or ignore the warning.

Traditionally the general public has depended on radio and television to receive emergency warnings. According to *FEMA's website* research shows that the reach of radio and TV alerting is less than 40% of the population during the work day, less than 12% of the population in the middle of the night and an even lower 5% are tuned into the radio (2011). There are an increase number of social media avenues available for receiving notifications of natural and man-made emergency information. In the article *The Power of Emergency Notification Weather Alerting and Community Preparation*, emergency notification systems have the capability to track down people wherever they are, via whatever means they would prefer via

phone, email, SMS message, text, Instant Messenger, Pager, PDA, and Blackberry (Putra, 2005).

The instruments used to warn communities of pending emergencies are simple and complex in nature. The technologies listed above will continue to increase the effectiveness of information dissemination. Communities have options to utilize Sirens, NOAA Weather Radios, Reverse-911 Calling System, and Television/FM/AM Radio Alerts (Collins & Kapucu, 2008).

The use of sirens dates back to the early civil defense movement during World War II. As explained in the article *Early Warning Systems and Disaster Preparedness and Response in Local Government*, a Siren system warns the public of impending emergencies with a loud blare. The advantages of a siren system are the ability to warn large communities simultaneously (Collins and Kapuca, (2008). The cost factor and the lack of information provided to the public by a siren blaring ranks into the disadvantages with this type of warning system.

One of the most effective methods of alerting during natural and man-made emergencies is the use of a NOAA weather radio. An individual can receive warnings about severe weather 24 hours a day directly from the National Weather service over a National Oceanic and Atmospheric Administration (NOAA) weather radio. NOAA weather radio is a network broadcasting continuous weather information from a National Weather Service office transmitter in the area (Collins & Kapucu, 2008). NOAA weather radios have been utilized since the early 1970's. The National Weather Service states the National Weather Radio now has over 1000 transmitters (2011). According to the National Weather Service, at a minimum a community should have NOAA weather radios in schools, day care centers, hospital, places of worship, restaurants, grocery stores, recreation centers, bus and train stations, office buildings, sports stadiums, theaters, retail stores and airports (2011).

Reverse-911 Calling Systems is a telephone-based system that can be programmed to call people in a defined geographical area with an emergency message (Collins & Kapucu, 2008). Local government has utilized this method of alerting for many years. The use of a Reverse-911 Calling System for time sensitive messages can be a drawback for local government. The system is only able to call a small number of residents at a time. The time frame required to deliver a message to a large group of people may not be appropriate for time sensitive information like a Tornado warning. The use of this system where the individual's life safety is not dependent upon receiving a message within minutes would be valuable to local responders.

The use of Television/AM/FM radio alerts with the Emergency Alert System (EAS) while effective is limited on its capabilities to deliver an effective message to the public during times of emergencies. As stated in *Early Warning Systems and Disaster Preparedness and Response in Local Government (2008)*, drawbacks to this method include time of day, availability of TV or radio within a family or the loss of power to supply the units.

In 2006 the President signed the *Public Alert and Warning System Executive Order* which states "It is the policy of the United States to have an effective, reliable, integrated, flexible, and comprehensive system to alert and warn the American people" (2006). According to FEMA, today the internet, including video, email, cellular and residential phones are increasingly popular and valuable sources of information. One study showed that the internet has a 62% usage rate (2011). The presidential document led to the creation of an Integrated Public Alert and Warning System (IPAWS). FEMA is currently developing the IPAWS system which will be complete by the end of 2011. IPAWS will allow the President to speak to the America under all emergency circumstances, build and maintain an effective, reliable and

integrated alert and warning system along with diversifying and modernizing the Emergency Alert System (EAS).

In summary, the literature review allowed the Mooresville Fire Department to review information and techniques present to develop an effective public emergency communication system. The process of disseminating life-saving information during natural or man-made emergencies is a very difficult task for local government. Communication during an emergency is extra challenging due to the influx of fear and panic from the unknown of the public. The means a jurisdiction provides appropriate information and instructions to the public during emergency situations are imperative for public safety. The measures at which an organization can provide public education in advance of emergency situations will reduce the likelihood that citizens will place themselves in hazardous situations that may require an emergency response. The research provided a review of technologies and equipment that can be used in effective communications with the community. The information provided by past researchers allowed the researcher to identify emergency communication criteria needed to develop an effective public emergency communication system. The emphasis on timely alerting and notification along with program effectiveness validated the need for research on a public emergency communication system for the Town of Mooresville.

Procedures

The desired outcome of this research was to develop a Public Emergency Communication System for natural and man-made emergencies for the Town of Mooresville. The author hoped the research would identify effective techniques and methods for delivery of emergency communications during natural and man-made emergencies. Additional outcomes would provide the author an understanding of the risk factors and target areas for natural and man-made

emergencies, current and future public emergency communication software needs for the Town of Mooresville, evaluate the equipment and technologies resources currently utilized for day to day communications, identify the funding requirements with current and future budget needs for a public emergency communication system, and develop training requirements in order to implement a Public Emergency Communication System for the Town of Mooresville. Action research methods were utilized to answer the five research questions as well as develop a Public Emergency Communication System for Natural and Man-made Emergencies within the Town of Mooresville.

In order to get an understanding of what a public emergency communication system meant for the Town of Mooresville, the author's review of current methods for emergency information dissemination within the Town of Mooresville was conducted utilizing the Comprehensive Emergency Management Plan for the Town of Mooresville. Emergency Communications across the United States was reviewed to gather valuable information on technologies and equipment available for information dissemination.

Research for this Applied Research Project began at the Learning Resource Center on the campus of the National Fire Academy. The author searched warning systems and alerting equipment for natural and man-made disasters. The author attempted to contact the North Carolina Office of Emergency Management to discuss state-wide effort in alerting and notification during emergencies. At a local level, Iredell County's Office of Emergency Management was contacted to review the current methods county-wide as well as additional discussion that would move the Mooresville Fire Department and Iredell County Office of Emergency Management in a direction to establishing a public emergency communication system. North Carolina's Emergency Operation Plan, Iredell County's Emergency Management

Plan as well as the current Town of Mooresville Emergency Management Plan were reviewed. Websites of the Federal Emergency Management Agency, National Weather Service, and the U.S. Census Bureau were used to gather information on statistics and effective methods for alerting and notifying the public during times of emergencies.

The author reviewed the National Fire Protection Association's 1600 standard for recommendations on emergency communications during disasters. The review of the Presidential Document on Public Alert and Warning systems outlined the intent set-forth by the ability to alert the nation. The Emergency Management Plan for the Town of Mooresville outlined the direction the Mooresville Fire Department needed to head in the development of a Public Emergency Communication System.

The author conducted an interview with several individuals from the Iredell County Emergency Management Office and multiple Town of Mooresville department personnel with responsibilities in Planning/GIS and Police Communications based off of pre-determined questions (see APPENDIX A). These interviews provided information based on current methods of emergency communications and equipment available for the delivery of emergency information to the public during natural and man-made emergencies. To further the research process, the author contacted James Pharr, former Emergency Manager for Gaston County, North Carolina. The hopes of this contact were to provide an unbiased reflection on methods of public emergency communication programs connected to local and state government. In order to gain valuable information about weather in the greater Mooresville and Charlotte areas, the Chief Meteorologist of WBTV Eric Thomas was contacted and an appointment set for a discussion on risk factors and alerting methods. A phone interview with the National Weather Service in Greenville Spartanburg was contacted to provide an insight into the history of severe weather in

the areas. The phone interview of Justin Lane with the National Weather Service provided in-depth information as it relates to past storm history, future storm predictions, and methods of successful alerting techniques. A representative of Connect CTY, the telephone notifying system purchased by Iredell County was interviewed by phone. This interview provided a clear understanding of the potential uses as well limitation of the Connect CTY system.

The major limitation to the research is that emergency communications between the Town of Mooresville Police Department and the Mooresville Fire Department is separated by two different emergency communication centers. The telecommunication operators for the police department are different than the communicators for the fire department. This provides a break in communication dissemination at two different governmental levels. The final product of this research will be the development of a Public Emergency Communication System for use by the Town of Mooresville during natural and man-made emergencies. One unidentified limitation may be the implementation of the communication system due to the break between emergency communication at the county and town levels.

Results

Descriptive information provided by key emergency management and weather reporting agencies provided valuable information to the author as it relates to the benefits of an emergency communication system for natural and man-made emergencies. The lack of notification to the public during recent severe weather outbreaks led the author to research the methods used to notify the public of pertinent information during natural and man-made emergencies for the Town of Mooresville.

A review of Mooresville's and Iredell County's *Comprehensive Emergency Management Plan* (2007) provided valuable information to the department as to how current emergency

notifications are disseminated to the public. The ability to understand the methods of information dissemination at the town and county levels provided Mooresville Fire Department with valuable information about the limitations the Town of Mooresville experiences with information dissemination during emergencies. The *Comprehensive Emergency Management Plan* (2007) for both the Town of Mooresville and Iredell County outline procedures for disseminating critical information to the public. The dissemination methods have proven not to be successful during times of natural or man-made emergencies. The *Comprehensive Emergency Management Plan* state that information will be disseminated to the public by the NWS, Emergency Alert System, Door-to-Door or telephone warnings. The research data illustrates these methods to be acceptable but limited in successful dissemination during emergencies where time is a factor. The methods of dissemination listed in the emergency management plans also are limited to the time of day, a power source, or an alerting device in every home. The *Comprehensive Emergency Management Plan* does not match current processes utilized during natural or man-made emergencies within the Town of Mooresville or Iredell County.

Emergency management within Iredell County is managed by the Office of Emergency Management in Statesville, North Carolina. Information dissemination appears to be restricted by limitations at the county emergency management level. According to Iredell County Emergency Manager David Martin, the dissemination of information during natural or man-made emergencies can only be sent to the public by his action. (personal communication, June 1, 2011). He goes on to explain that the other personnel in his office or the county's Emergency Telecommunication Center do not have the ability to send an emergency message to the citizens of Iredell County (personal communication, June 1, 2011). The inability of Iredell County's

Office of Emergency Management to develop and deliver a quality program that delivers critical information to the citizens and general public during natural and man-made emergencies has forced the Mooresville Fire Department to develop a public emergency communication system. The Mooresville Fire Department has responsibility to prepare for and manage all emergencies within the Town's Corporate Limits.

In order to gather valuable information about how public emergency communication systems operate, this research interviewed several key individuals within the State of North Carolina that would have an insight into how an emergency communication system should operate at the local and county levels. According to James Pharr, the former Emergency Manager for Gaston County's Office of Emergency Management advised that the ability to deliver a critical message to the general public in a timely manner is vital for the success of the notification program. He mentioned that to rely on one person to create and send emergency information 24 for hours a day, seven days a week will not be successful and is a dangerous practice (personal communication, May 20, 2011).

Emergency calls are distributed to emergency agencies in Iredell County by two organizations. Iredell County police, fire and ems receive calls dispatched by ECOM of Iredell County. All agencies utilize ECOM with the exception of Mooresville Police Department. The Town of Mooresville owns its own 800 megahertz radio system. The Mooresville Police Department and Mooresville Fire Department are the only agencies in the county that currently use the 800 megahertz system. Communication in the county is currently restricted due to the Town of Mooresville using the 800 system and the rest of the county agencies using an outdated VHF system. Iredell County's Office of Emergency Management refuses to upgrade to the 800 system. All surrounding counties have upgraded to the 800 megahertz system for delivery of

emergency communications. The Mooresville Fire Department has to patch the 800 megahertz system to Iredell County's VHF system in order to maintain a centralized dispatch center for the delivery of fire service. All communication centers in North Carolina utilize the Division of Criminal Information (DCI) database to receive criminal information. These communication centers have the ability to receive instant severe weather warnings from the National Weather Service through the DCI database system. According to Pharr, the ability to disseminate emergency information to the public is typically centered around the communication center. He advises the use of information provided from the National Weather Service to DCI allows for a message to be received and disseminated in a timely manner (personal communications, May 20, 2011).

The insight from a local weather meteorologist was outlined by Eric Thomas, Chief Meteorologist for WBTV of Charlotte. The process of notifying people of pending severe weather information has improved over the past several years. This can be contributed to better radar technologies as well as information dissemination methods (E. Thomas, personal communications, March 13, 2011). When addressing methods of information dissemination during natural and man-made emergencies, the data supports the use of a NOAA Weather radio. According to Thomas, the use of a NOAA Weather Radio is the best choice for the citizen, it provides instant warning of pending emergencies and provides an avenue to deliver important information to every household. The problem is the cost and maintenance of placing a NOAA Weather Radio inside every home in America (personal communications, March 13, 2011). According to Irene Mann, GIS Specialist for the Town of Mooresville, the Town of Mooresville has a population of approximately 35,000 which correlates to approximately 7580 homes and 3500 business (personal communication, April 20, 2011). The placement of a NOAA Weather

Radios inside every home and business within the Town of Mooresville would be roughly \$350,000.00. The funding requirements for a project in that range would be very difficult to obtain in this budget year for the Town of Mooresville. The bigger problem would be the maintenance of the NOAA Weather Radios once each unit was distributed in each home and business. The proper operations requirements set-forth by the manufacturers require proper programming and backup battery maintenance.

The National Weather Service in Greenville Spartanburg distributes the weather information for the North Carolina Mountains, Foothills, and Piedmont as well as the up state of South Carolina. According to Justin Lane with the National Weather Service in Greenville Spartanburg, Iredell County falls into the Piedmont region of North Carolina. The dissemination of weather related information for this area is the responsibility of the National Weather Service in Greenville Spartanburg (personal communications, March 25, 2011). The Greenville Spartanburg weather office will work with local and state emergency management officials to broadcast important information that may be related to man-made emergencies if the need should arise. This information dissemination process would be carried out by the agreement set-forth by the Emergency Broadcast System.

The author selected five research questions that would outline the requirements for a public emergency communication system as well as assist in the development of a public emergency communication system for the Town of Mooresville. These research questions discussed the risk factors for natural and man-made emergencies, outlined the equipment resources and facility needs for the department and potential funding issues, and the overall benefit of a public emergency communication system for the Town of Mooresville. The results of these questions have provided the Mooresville Fire Department with valuable information

needed in order to appropriately develop an effective public emergency communication system for natural and man-made emergencies.

Research Question (a) What are the risk factors for natural and man-made emergencies within the Town of Mooresville? The research outlined the risk factors the Town of Mooresville experiences annually as it relates to natural and man-made emergencies. The Town of Mooresville's rapid growth combined with the proximity of Interstate Highway 77 and the McGuire Nuclear plant increases the risk of exposure from natural and man-made emergencies. Mooresville has experienced all types of weather events such as tornadoes, hurricanes, ice storms, floods, earthquakes, heavy snow, high winds, droughts, lake advisories, and severe thunderstorms. Throughout the year, weather events damage property and sometimes cause injuries to people. According to data published by the National Climatic Data Center (NCDC), between 01/01/1950 and 01/31/2011, Mooresville and the surrounding area has been affected by over 471 documented cases of severe weather that resulted in injuries or property damage (NCPC, n.d.). During this time period 15 of the documented events were tornadic in nature. The proximity to the foothills of North Carolina creates a wind field that rides along the spine of the Appalachians. This wind field frequently contributes to high winds and convective storm development over the region around Mooresville.

The transport of millions of chemicals by highway transport as well as rail poses a high risk to Town of Mooresville. Interstate Highway 77 splits the town limits in half. This interstate is a major transportation route on the east coast for commodities. The rapid growth of Mooresville has been concentrated around the Interstate Highway. This increases the exposure factors as the populated areas of Mooresville fall within one and a half miles on either side of Interstate Highway 77. The Mooresville Fire Department responds daily to fires and traffic

collisions on Interstate Highway 77. The potential for chemical exposures to the general public is high.

One of the United States Nuclear Power Plants falls within 10 miles of the Town of Mooresville. The scenic attraction of Lake Norman's 520 miles of shoreline is also one of the major contributors to the risk of nuclear exposure. The only hospital in Mooresville, *Lake Norman Regional Medical Center* and the largest employer, *Lowe's Corporate* fall within the 10 mile evacuation perimeter for McGuire's Nuclear Plant. A sense of safety from the public is vital to the economic development for the Town of Mooresville. Risk management is a key component of the Mooresville Fire Departments responsibility to the public.

Research Question (b) What Public Emergency Communication Systems hardware and software is available? The research outlined the current hardware and software available for use by the Mooresville Fire Department for emergency information dissemination. As listed in the *Comprehensive Emergency Management Plan* for the Town of Mooresville and Iredell County, several methods for information dissemination are available to emergency managers. The effectiveness of the listed methods has not been tested in emergency situations. The method of receiving vital information appears to be adequate. The issue is the method of dissemination of the important information throughout the community. The ability to receive vital weather related information from the National Weather Service through the Division of Criminal Information database straight to the Emergency Communication Center's for Iredell County and Mooresville Police Department is very effective in the timely acquisition of severe weather information. The ability of the 911 system and police, fire and ems communications through the Iredell County and Mooresville's telecommunication centers provided an adequate avenue for

responders to transmit pertinent information to emergency managers as it relates to man-made emergencies.

Emergency Management has the ability to contact the National Weather Service and request information be transmitted over NOAA Weather Radios as it relates to man-made emergencies. The alerts of warnings that threaten the Piedmont region of North Carolina are already transmitted over NOAA Weather Radios by the National Weather Service. Although this is the preferred method emergency notification by the meteorologist and emergency managers it is estimated that only approximately 30 percent of American's have a NOAA Weather Radio in their homes or business.

Emergency Management in Iredell County or the Town of Mooresville can request the activation of the Emergency Broadcast System or interruption of local television programs. If this method is chosen, the time factor plays into the effectiveness of delivery. A message must be scripted as it relates to the emergency. The contact of the entities must be completed and the transmission of accurate information is vital to the success of proper notification. This is a method that can be utilized with great success on incidents where time is not a factor. Another consideration must access how many citizens will be utilizing a mechanism that will receive the alert over the Emergency Broadcast System.

As with the activation of the Emergency Broadcast System, the use of door-to-door alerting is time sensitive. Although a vital method which can be utilized by the Town of Mooresville, it is a method that would be as a last resort given a situation where emergency management has time to prepare the general public. Notification through this avenue is effective when following up with previous methods to ensure a comprehensive notification process has been completed in an area. The Mooresville Fire Department has loud speakers on their

apparatus as well as in the equipment resources that could deliver a door-to-door alerting message.

There is currently software and hardware in place to handle two additional methods of emergency notification during natural and man-made emergencies. Research during this project discovered that Iredell County and The Town of Mooresville partnered together in the purchase of a telephone notification system. The system is Connect CTY which is managed through Black Board. Connect CTY is an internet base system. Through the Town of Mooresville's and Iredell County's websites a citizen can register their contact information for notification during emergencies. The citizen can register up to three telephone numbers, text messages, email, tweeter, facebook and SMS. All published land line phone numbers are automatically programmed into the system county wide. This system allows the individual to select the most appropriate method of notification that fits their lifestyle. The use of Reverse 911 can be accomplished through the Emergency Communication Center. The software to reverse the 911 system is currently built into the CAD at Mooresville Police Department as well as in ECOM's Data Management System.

Research Question (c) What Public Emergency Communication Systems hardware and software is needed? The equipment resources at the Mooresville Police Department, Iredell County Emergency Communication Center and Mooresville Fire Department currently meets or exceeds the necessary equipment to establish an effective public emergency communication system for natural and man-made emergencies. The ability to deliver several methods of notification allows the Mooresville Fire Department options given the specific nature of the emergency at hand. All of the methods within reach of the Mooresville Fire Department are adequate and have a place in emergency communications. The research identified methods

that when combined, adequate software and hardware are present for use by the Mooresville Fire Department during emergency communication to the general public.

In keeping with the mission of the Mooresville Fire Department to protect life, property and safeguard the environment, the Mooresville Fire Department will need to seek a method to provide NOAA Weather Radio's to as many homes and businesses as possible within the town's corporate limits. Given the research that identifies a NOAA Weather Radio as one of the best tools for notification during times of emergencies, the Mooresville Fire Department believes it to be an important tool in the notification process. An acquisition model will be developed to ensure placement in homes and businesses in the Town of Mooresville.

Research Question (d) What are the cost associated with meeting the emergency communication needs for the Town of Mooresville? The funding needs for the Mooresville Fire Department to establish a public emergency communication system that can be utilized during natural and man-made emergencies are directly related to the placement of NOAA Weather Radios in homes and businesses. The current software and hardware in place will meet the basic requirements to establish a public emergency communication system. The use of the telephone Connect CTY system can provide a timely notification tool if dissemination procedure is developed and managed by the Mooresville Fire Department. The Mooresville Fire Department has the necessary computer infrastructure in place to manage the Connect CTY program. The Mooresville Police Department currently receives weather alert warnings through the North Carolina's Division of Criminal Information database. This will provide the avenue to deliver a telephone message in a timely manner where time sensitivity is important for the safety of the public. This system also provides the citizen a method where they can be contacted by the electronic means of their choice and lifestyle.

The estimated \$350,000.00 to place NOAA Weather Radios in all 7580 homes and 3500 businesses correlates to the funding requirements need to reach what some think is the best level of protection. The Mooresville Fire Department recently received \$10,000.00 from Liberty Mutual to use in the community for fire or safety programs. The Mooresville Fire Department feels that the funds could contribute to the purchase of NOAA Weather Radios. The development of a public emergency communication system would establish criteria that would support the initial installation of NOAA Weather Radios in residential and business occupancies.

Research Question (e) What are the training requirements in order to implement a Public Emergency Communication System? The training of Mooresville Fire Department's command staff and Mooresville Police Department's and Iredell County's Telecommunicator's on the use of Connect CTY's Telephone Notification System would be a minimum requirement for personnel. The review and discussion of the proposed procedure on public emergency communications during natural and man-made emergencies would be the second requirement for training. According to Jennifer Bowles, Connect CTY Specialist, Connect CTY has an established training program as well as assigned trainers that can come out to Mooresville to conduct training classes on the operation of Connect CTY program (personal communication, March 21, 2011). There are established web-n-r's that can provide training to personnel at convenient times to reduce overtime funding. The training for Connect CTY discusses the registration of contacts, creation of groups, scripting of messages, and dissemination of messages by computer or phone.

The ability to train key staff members to the necessary level required to deliver important information to the public during natural or man-made emergencies is imperative. The significance of providing a public emergency communication system to the Town of Mooresville

is absolutely a necessity for the safety of all citizens and visitors. The positive impact of a public emergency communication system will enhance the level of service the Mooresville Fire Department currently strives to provide to its citizens.

The Town of Mooresville does not have a procedure developed that utilized an electronic infrastructure to disseminate an emergency message to the public. The research has confirmed the need for the Mooresville Fire Department to develop a Public Emergency Communication System for natural and man-made emergencies. This public emergency communication system would be utilized during any type of emergency that threatens the Town of Mooresville. The author has provided a copy of the developed public emergency communication system for the Mooresville Fire Department (see APPENDIX B), Resident Connect CTY Registration Form (see APPENDIX C), Business Connect CTY Registration Form (see APPENDIX D), Connect CTY's Terms of Use (see APPENDIX E), NOAA Weather Radio Registration Form (see APPENDIX F), and a Receipt of Weather Radio Form (see APPENDIX G).

Discussion

The findings of this study show that the Mooresville Fire Department must make changes in how the citizens of Mooresville are notified during natural and man-made emergencies. The current method for information dissemination to the public during natural and man-made emergencies does not match the goals and objectives set-forth by the department's administration. The research proved that the ability to notify the public with important safety information or instructions was inadequate. The research identified multiple areas where improvements and drastic changes must be implemented in order to increase the safety of citizens. The Mooresville Fire Department has always considered itself to be a strong leader within the Town of Mooresville in the protection of life, property and the environment.

Leadership is most often defined as a perception or attitude held by both the follower and leaders that drive the organization and causes something to happen (Grant & Hoover, 1994). The Mooresville Fire Department is a progressive fire department for today's standards. According to Wrighton (2005), "Local governments tend to allocate a larger share of their limited budgets to work units whose goals, objectives, task, and activities reflect careful planning, and to units that can demonstrate the efficient use of fiscal resources" (p.38). A department must ask the citizens what level of service they will accept. The Town of Mooresville is responsible for organizing, training, and equipping local emergency responders and emergency management personnel with the necessary resources to respond to and mitigate emergency incidents.

Each community that faces a disaster or an emergency always has to answer questions about the short coming in their preparedness and response. Natural and Man-made emergencies challenge the service capabilities of most fire departments on a daily basis. The ability to prepare ahead of time, or allow the citizen to acquire the necessary information to make sound decisions tends to lower risk factors for people. The early notification response from the citizen in a natural event such as a tornado can be as simple as taking action to protect themselves from the effects of the event. Attention must be given to the fact that when the public has the substantial early warning information, the public will take the emergency more seriously (Clarke, 2006). In the 2002 study of Oklahoma City residents who were alerted of the developing tornado threat on May 3, 1999, 47 percent of the residents took protective action by going to a shelter (Hammer and Schmidlin, 2002). Emergency Management preparedness significantly reduces injuries (Comstock and Mallonee, 2005). The data illustrates importance of early warning and notification of pending emergencies where the citizen is asked to take action. The ability to educate the citizen on the importance of having a plan will continue to be a necessity

for the emergency management organization. A study showed that if a person takes not protective action during emergency events and there is a 30 percent increase in the risk of injuries or death (Hammer and Schmidlin, 2002).

A disaster involves the occurrence or threat of significant casualties and/or widespread property damage that is beyond the capability of local government to handle with its normal resources. As this research has discussed, the Town of Mooresville is exposed to many hazards, all of which have the potential for disrupting the community, causing casualties, and damaging or destroying public or private property. The Town of Mooresville will continue to be exposed to the impact of natural and man-made emergencies. The objective of this research was to develop a Public Emergency Communication System to be used by the Mooresville Fire Department during natural and man-made emergencies. It is the responsibility of Mooresville Fire Department to protect public health and safety as well as preserve property from natural and man-made emergencies. In the *Disaster Recovery Manual* (2009) published by North Carolina Division of Emergency Management, emergency management is outlined through mitigation, preparedness, response and recovery. The development of a public emergency communication system compliments the action phases of emergency management. The Mooresville Fire Department continues to address hazards through mitigation, preparedness, response and recovery. The public emergency communication system address all four of these phases. Mitigation through lessening the consequences of unavoidable hazards, preparedness by providing the citizens all of the necessary training to responders and the public, response activities that include warning the public and recovery of short and long term operations within the community.

The primary objective of the public emergency communication system is to notify the public of emergency situations, disseminate timely as well as accurate warnings and instructions. Rapid dissemination of warning information and instructions may provide time for citizens to take the action necessary to protect themselves and their property. The Town of Mooresville discovered through recent weather related events that the ability to alert the public does not exist within the Mooresville Fire Department. The previous attempts at partnerships with Iredell County Emergency Management have proven to be inadequate in meeting the level of response desired by the Mooresville Fire Department. The cooperation of the two agencies has come to a crossroads. The Mooresville Fire Department continues to focus efforts at providing the highest level of service possible to its citizens. Through previous discussions and work sessions, Iredell County Emergency Management has continued to demonstrate the unwillingness to change in the areas of technology, procedures and training requirements. The ability to advance the emergency management operations for the Town of Mooresville continues to be reactive in nature due to the lack of cooperation from Iredell County Emergency Management in the areas of communication and response.

To maintain a high level of preparedness for emergencies within the Town of Mooresville, the development of a public emergency communication system is a must. The research developed a fire department General Order that will facilitate the dissemination of information during natural and man-made emergencies. This General Order also established guidelines for resident and business registrations to participate in the town of Mooresville's Public Emergency Communication System. Along with registration for the public emergency communication system, high risk groups within the Town of Mooresville can apply for a free NOAA Weather Radio.

The Mooresville Fire Department would oversee the public emergency communication system for the Town of Mooresville. The Mooresville Fire Department would utilize the Connect CTY telephone system to disseminate information and instructions town wide during natural and man-made emergencies. The program would be a two part program that focuses on alerting citizens and businesses when natural or man-made emergencies threaten the Town of Mooresville. The Connect CTY program is setup to notify citizens and businesses of pending emergencies prior to the event. This program would be free for all citizens and businesses within the Town of Mooresville. The goal of the Mooresville Fire Department is to have all households and businesses a line of notification when an emergency threatens their way of life.

The Mooresville Fire Department would notify you if an emergency that could require action in order to protect yourself, family or employees. The notification would be delivered to the participant through one or all of the selected methods. The available methods are through a Land Phone Line, Cell Phone, Text Message, SMS, Facebook or Tweeter. The beauty of utilizing the Town of Mooresville's Connect CTY telephone system is its ability to be flexible on the methods of notification. It is important for an emergency notification system to have the ability to track down people wherever they are, by whatever means people prefer such as phone, email, SMS message, text, facebook or tweeter when time is of the utmost importance (C. Putra, 2005). During emergencies, the public needs timely, accurate information on the emergency situation and appropriate instructions regarding protective actions that should be taken to minimize its effects.

The ability to provide NOAA Weather Radio's to every resident and business owner is a long term goal for the Mooresville Fire Department. According to E. Thomas, a NOAA Weather Radio is the best tool for early warning during a natural or man-made emergency (personal

communication, March 16, 2011). The NOAA Weather Radios are equipped with a special tone feature which can sound an alert and give households immediate information about potentially life threatening situations. During an emergency, the National Weather Service will interrupt routine weather radio programming and send out a special tone that activates the weather radios in the warning area. The ability of the NOAA Weather Radio to transmit from a transmitter forty miles south of Mooresville provides excellent reception 24 hours a day. The ability to purchase approximately 11,000 NOAA Weather Radio's which would range approximately around \$350,000.00 is a limitation to the placing a NOAA Weather Radio in all residences and businesses. The Mooresville Fire Department through utilization of the Liberty Mutual Be Smart Fire Safety Grant could purchase 250 NOAA Weather Radio's for citizens with disabilities and occupancies with high risk. The ability to secure additional funding would require the Mooresville Fire Department seek sponsors for the community program of providing NOAA Weather Radios to the public. The Mooresville Fire Department would be able to give away NOAA Weather Radios to Town of Mooresville businesses, churches, offices, or anywhere else where at least 50 or more people congregate at one time. Weather Radios could also be available for citizens with a disability that limits their timely response in the event of an emergency. This project of getting a NOAA Weather Radio would be managed by the Assistant Chief of Risk Management within the Mooresville Fire Department. The department would educate the public on the importance of NOAA Weather Radios and the maintenance required to keep the radio in good working condition.

The resistance from Iredell County Emergency Management to create a seamless emergency communication system has driven the Mooresville Fire Department to develop a procedure that ensures appropriate notification in times of emergencies. The unwillingness to

allow Iredell County Emergency Communication Center the power to disseminate important information as it relates to natural and man-made emergencies poses an increased threat to the citizens of Mooresville. To place the responsibility of sending notification messages to the public solely on one individual is unrealistic and does not match the norm of emergency communication systems. This type of procedure does not match the business model of the Mooresville Fire Department. The Mooresville Fire Department does not depend on one individual to maintain the effectiveness or efficiency of a program. The Mooresville Fire Department with cooperation from the Mooresville Police Department has the capabilities to disseminate the necessary information during emergencies via the town's Connect CTY telephone system.

The involvement of Iredell County Office of Emergency Management in the community risk reduction projects has drawn concern from the personnel of the Mooresville Fire Department. Through the process of research, it was made clear that the Iredell County Office of Emergency Management's involvement in the risk reduction efforts for the Town of Mooresville must be redirected. The understanding and knowledge of community risk reduction was made clear during the National Fire Academy Executive Analysis of Community Risk Reduction class. At the beginning of this research it was unclear where the current risk reduction methods may have been falling short. A review of the current process for information dissemination during natural and man-made emergencies provided valuable information on the areas where information is lacking. The lack of infrastructure required to send information during natural and man-made emergencies would be understandable if the necessary infrastructure was not present within Iredell County or the Town of Mooresville. Discussion and research showed that the Connect CTY telephone system was adequate to meet the needs of a public emergency

communication system. The need for an option to notify the citizens of impending emergencies would be zero if Iredell County's Office of Emergency Management would form a partnership with Mooresville Fire Department to ensure the timely and accurate dissemination of emergency information. The goals and objectives of the Mooresville Fire Department include the implementation of a public emergency communication system for natural and man-made emergencies.

We all realize that the emergency services are resistant to change. We are often reluctant to accept new ways of doing business, but when we take a look at history, change was all around the emergency services. The ability for the Mooresville Fire Department to notify the citizens of Mooresville when a natural or man-made emergency threatens will improve the safety of all of Mooresville. We recognize through this research that even if the Mooresville Fire Department develops its own public emergency communication system, cooperation between the Iredell County Office of Emergency Management is important to ensure continued advancements in the area of emergency management. The process of exploring all possible options for community risk reduction is necessary to keep the department moving in a proactive manner. Eliminating restrictions that could prohibit development within an organization will have a positive impact on the department and community.

Through the process of reviewing the methods for notifying the public during times of natural or man-made emergencies, it is clear the Mooresville Fire Department must move in a different direction than Iredell County Office of Emergency Management. Through exploring the directions other agencies have taken to improve their communications with the community, the Mooresville Fire Department can see an enhancement to our knowledge and skills as well as the ability to deliver excellent services to our citizens. The impact of seeking a public

emergency communication system has proven to be minimal at this time. The current equipment infrastructure and staffing are adequate to disseminate critical information to the public. The established partnership with the Mooresville Police Department will continue to allow the Mooresville Fire Department to meet its goals and objectives in the areas emergency management and community risk reduction. It is clear that the Mooresville Fire Department must move in the direction of establishing a public emergency communication system for the Town of Mooresville. The research has provided all of the necessary answers to the research questions in order to direct the administration in its movement toward implementation of a Public Emergency Communication System for the Town of Mooresville. Change in the Mooresville Fire Department is important to the advancement of our mission. The mission and goals of the Mooresville Fire Department are aggressive and bold. The ability to notify each citizen and visitor of pending emergencies is imperative. The significance of providing information during natural and man-made emergencies is critical to the safety of Mooresville Fire Department and the Town of Mooresville.

Recommendations

At the beginning of this research, the Mooresville Fire Department did not have an established program or procedure in place for information dissemination to the public during natural and man-made emergencies. The recent explosive growth in the Town of Mooresville has increased the population and venues that may be threatened by natural or man-made emergencies. The record breaking severe weather outbreak of 2011 has created a high level of concern from the Mooresville Fire Department. The ability to prepare for and mitigate emergencies continues to be one of the highest priorities for Mooresville Fire Departments Emergency Management Division. The restrictions and breakdown in communications from

Iredell County Emergency Management restrict the level of preparedness the Mooresville Fire Department can achieve among its citizens. Once the research project was underway, areas of improvement began to become visible.

The Mooresville Fire Department should proceed into the implementation phase for the Public Emergency Communication System. This is the next step in making the community a safer place to live, work and play. The Mooresville Fire Department should utilize the developed General Order as the Public Emergency Communication System. The purpose of General Order is to establish a format for registration and dissemination of a CTY for natural and man-made emergencies. The General Order also outlines the requirements the public must comply with in order to receive a NOAA Weather Radio from the Mooresville Fire Department. The Mooresville Fire Department encourages citizens to register their information with the Town of Mooresville's CTY program for early warning notification during natural and man-made emergencies. The Public Emergency Communication System for the Town of Mooresville will be operated by the Mooresville Fire Department. The Public Emergency Communication System is a two part system that focuses on alerting citizens during times where pertinent information or instructions could mean the difference between life and death.

It is the recommendation that the developed Public Emergency Communication System be advertised to the citizens and businesses of Mooresville through Public Safety Announcements, Local Media TV/Newspapers, the Town Voice and Community Fire and Safety Programs sponsored by the Mooresville Fire Department. The Mooresville Fire Department should oversee the management of the Public Emergency Communication System. Given the Fire Chief has been designated as Emergency Manager for the Town of Mooresville, the

responsibility of preparedness, mitigation and response to natural and man-made emergencies rest within the administration of Mooresville Fire Department.

The implementation phase of the public emergency communication system will need to be coordinated with several town departments in order to accomplish level of service desired by the fire department. This should include the recording of pre-scripted messages that can be utilized during the many different types of emergencies that the Town of Mooresville may experience. The ability to disseminate information or instructions during times of emergencies would rest with the Mooresville Fire Department, Mooresville Police Department or Mooresville Town Manager. During weather related emergencies, the Mooresville Police Department's Telecommunicator's are in a centralized location with the necessary resources to activate the Public Emergency Communication System. The Mooresville Police Department's communication center is staffed 24 hours a day with trained personnel. This provides an avenue to send the fastest notifications once alerts are received through the North Carolina Division of Criminal Information Database and National Weather Service. Once the weather alert is forwarded to the Mooresville Police Department, the telecommunicator would activate the appropriate pre-scripted message in the CTY program. This would disseminate the information or instructions to all registered numbers within the Town of Mooresville. The Mooresville Fire Department will continue to monitor weather events and determine the level of alerting required for the safety of the Town of Mooresville should weather conditions merit additional activations. The Mooresville Fire Department would also be the responsible agency to alert citizens of man-made emergencies that threaten the Town of Mooresville.

The help of the Mooresville Information Technology (IT) personnel should be utilized to place information on the town's public access channels, on the website, and facebook. The IT

personnel would also be responsible for placing all of the appropriate registration forms for CTY and NOAA Weather Radios on the websites of the fire department and town.

The Mooresville Fire Department's Training Division will ensure adequate training is provided to all personnel responsible for sending messages through the Public Emergency Communication System. All fire department personnel would be trained on the proper programming, maintenance, and installation of NOAA Weather Radios.

It is the recommendation that future funding opportunities be explored by the Mooresville Fire Department in order to continue the NOAA Weather Radio giveaway program once the initial supply of NOAA Weather Radios have been distributed throughout the Town of Mooresville. Further evaluations will be a continuous process for future researchers. As the Town of Mooresville changes with times, the future leaders of the Mooresville Fire Department will need to conduct further studies and research to ensure the efficiency and effectiveness of the program. During this research if new technologies or methods are discovered, the Public Emergency Communication System should be modified to continue to provide the best service and protection to the citizens of Mooresville.

The significance of the implementation of a Public Emergency Communication System for the Town of Mooresville will have an impact on the advancement of safety for all citizens and visitor's. The ability to notify the public when natural or man-made emergencies pose a threat to their livelihood will enhance the Mooresville Fire Departments abilities to prepare, mitigate and respond to the effects of natural and man-made emergencies. The significance of maintaining an aggressive public emergency communication system is imperative to the safety or not just the citizens of Mooresville but most importantly the members of the Mooresville Fire Department.

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Appendix A

Public Emergency Communication System Questionnaire

1. Do you feel you are adequately notified during weather related emergencies within the Town of Mooresville?
2. Do you feel the Town of Mooresville is a risk for a natural or man-made emergency?
3. Have you experienced a natural or man-made emergency in the past?
4. Have you ever been contacted by a representative from Iredell County during natural or man-made emergencies?
5. If provided with an opportunity to register your phone number with the Town of Mooresville in order to receive emergency information, would you participate in the program?
6. Do you think the Town of Mooresville need a public emergency communication system to notify residents and businesses with safety information or instructions during times of emergencies?
7. What would you add to or change about the Mooresville Fire Department training program?
8. Do you have a NOAA Weather Radio inside your home or business?
9. Has the recent severe weather outbreak of 2011 caused you concern for your safety?

Appendix B**Mooresville Fire Department's Public Emergency Communication System****FIRE ADMINISTRATION AND OPERATIONS
MOORESVILLE FIRE DEPARTMENT****General Order: 01-01****Date:** June 1, 2011**Subject:** Public Emergency Communication System

Purpose: The purpose of this General Order is to establish a format for registration and dissemination of a CTY for Natural and Man-made Emergencies. This General Order also outlines the procedures for receiving a Weather Alert Radio from the Mooresville Fire Department.

The Mooresville Fire Department encourages citizens to register their information with the Town's Connect CTY program for early warning notification during natural and man-made emergencies. The fire department has a two part program that focuses on alerting citizens and businesses when weather emergencies threaten the Town of Mooresville.

(Part 1 Connect CTY) – Availability to all Residents and Businesses

The Connect CTY program is setup to notify citizens and businesses of pending emergencies prior to the event. This program is free for all citizens and businesses within the Town of Mooresville. The goal of the Mooresville Fire Department is to have all households and businesses a line of notification when an emergency threatens their way of life.

The Mooresville Fire Department will notify you of a Tornado Warning or any other emergency that could require action in order to protect yourself, family or employees. The notification is delivered to the participant through one or all of the selected methods:

Land Phone Line
Cell Phone
Text Message
Email

The signup for Connect CTY please visit the Town of Mooresville's Website at www.ci.mooresville.nc.us and locate the Connect CTY link on the Right side of the page. Click on this link and complete the requested information. If you should desire assistance feel free to

contact Mooresville Fire Department at 704-664-1338 and a representative will assist you in completing the signup process online.

TYPES OF CONNECT CTY

A Connect CTY can be disseminated to the Town of Mooresville during:

Weather Related Events
Man-made Emergency Events
Town Services Interruption Notifications
Inter-Department Information

AUTHORITY TO DISSEMINATE A CONNECT CTY

The Connect CTY's can be disseminated at the Direction of the Town Manager, Fire Chief, Police Chief, Water Department Director, Police Department Telecommunication's or any of these individuals designee's.

A Town Department may send a Connect CTY inter-department at the direction of the Department Head.

WEATHER RELATED EVENTS

In the event of weather related events that require immediate notification to the public for safety awareness, a CTY will be disseminated to the Town of Mooresville. The following types of weather events will be sent by the following positions.

TORNADO WARNING: The Police Department Telecommunication's will disseminate a Connect CTY when a **Tornado Warning** has been issued for Iredell County. The Police Department Telecommunications receives weather alerts via DCI and a NOAA Weather Alert Radio located inside the dispatch center. The Fire Chief or his designee may modify the Connect CTY at any moment depending on the severity of the approaching system. A Tornado warning CTY has been pre-set in the Connect CTY data base and on the Police Department Telecommunications computers for rapid dissemination to the public.

TORNADO CONNECT CTY MESSAGE

Hello, this is Fire Chief Wes Greene with Mooresville Fire and Rescue. The National Weather Service has issued a TORNADO WARNING for the Town of Mooresville and surrounding areas. A Tornado

Warning means that a Tornado has been indicated on radar or spotted in the area. Please take immediate action to protect yourself and family. Tune into your local TV, Radio or Internet service for additional information. Again a TORNADO WARNING has been issued for the Town of Mooresville and surrounding area.

HURRICANE EVENT: The Fire Chief or his designee will disseminate a Connect CTY when a Hurricane Event is threatening Iredell County. The Mooresville Fire Department receives weather alerts via Iredell County EM and a NOAA Weather Alert Radio located inside the Mooresville Fire Department. The Fire Chief or his designee may modify the Connect CTY at any moment depending on the severity of the approaching system.

HURRICANE EVENT CONNECT CTY MESSAGE - To Be Developed Storm Specific

SEVERE THUNDERSTORM EVENT: The Fire Chief or his designee will disseminate a Connect CTY when a Severe thunderstorm Event is threatening Iredell County. The Mooresville Fire Department receives weather alerts via Iredell County EM and a NOAA Weather Alert Radio located inside the Mooresville Fire Department. The Fire Chief or his designee may modify the Connect CTY at any moment depending on the severity of the approaching system.

SEVERE THUNDERSTORM EVENT CONNECT CTY MESSAGE - To Be Developed Storm Specific

FLOODING EVENT: The Fire Chief or his designee will disseminate a Connect CTY when a Flooding Event is threatening Iredell County. The Mooresville Fire Department receives weather alerts via Iredell County EM and a NOAA Weather Alert Radio located inside the Mooresville Fire Department. The Fire Chief or his designee may modify the Connect CTY at any moment depending on the severity of the approaching system.

FLOODING EVENT CONNECT CTY MESSAGE - To Be Developed Storm Specific

ICE EVENT: The Fire Chief or his designee will disseminate a Connect CTY when an ICE Event is threatening Iredell County. The Mooresville Fire Department receives weather alerts via Iredell County EM and a NOAA Weather Alert Radio located inside the Mooresville Fire Department. The Fire Chief or his designee may modify the Connect CTY at any moment depending on the severity of the approaching system.

ICE EVENT CONNECT CTY MESSAGE - To Be Developed Storm Specific

SNOW EVENT: The Fire Chief or his designee will disseminate a Connect CTY when a Snow Event is threatening Iredell County. The Mooresville Fire Department receives weather alerts via Iredell County EM and a NOAA Weather Alert Radio located inside the Mooresville Fire Department. The Fire Chief or

his designee may modify the Connect CTY at any moment depending on the severity of the approaching system.

SNOW EVENT CONNECT CTY MESSAGE - To Be Developed Storm Specific

HEAT EVENT: The Fire Chief or his designee will disseminate a Connect CTY when a Heat Event is threatening Iredell County. The Mooresville Fire Department receives weather alerts via Iredell County EM and a NOAA Weather Alert Radio located inside the Mooresville Fire Department. The Fire Chief or his designee may modify the Connect CTY at any moment depending on the severity of the approaching system.

HEAT EVENT CONNECT CTY MESSAGE - To Be Developed Storm Specific

MAN-MADE EMERGENCY EVENTS

In the event of Man-made Emergency events that require immediate notification to the public for safety awareness, a CTY will be disseminated to the Town of Mooresville. The following types of man-made events will be sent by the following positions.

MCGUIRE NUCLEAR EMERGENCY EVENT: The Fire Chief or his designee will disseminate a Connect CTY when a Nuclear Event is threatening Iredell County. The Mooresville Fire Department receives McGuire Nuclear alerts via Iredell County EM and a NOAA Weather Alert Radio located inside the Mooresville Fire Department. The Fire Chief or his designee may modify the Connect CTY at any moment depending on the severity of the approaching system.

MCGUIRE NUCLEAR EVENT CONNECT CTY MESSAGE - To Be Developed Emergency Specific

MAN-MADE EMERGENCY EVENT: The Fire Chief, Police Chief or his designee will disseminate a Connect CTY when a Man-Made Emergency Event is threatening the Town of Mooresville. The Mooresville Fire Department and Police Department receives man-made emergency alerts from ECOM or the Mooresville Police Department via 911 or non-emergency phone numbers. The Fire Chief or his designee may modify the Connect CTY at any moment depending on the severity of the emergency event.

MAN-MADE EMERGENCY EVENT CONNECT CTY MESSAGE - To Be Developed Emergency Specific

TOWN SERVICES INTERRUPTIONS EVENT

In the event of Town Services Interruption events that require immediate notification to the public for safety awareness, a CTY will be disseminated to the Town of Mooresville. The following types of Town Services Interruptions events will be sent by the following positions.

TOWN SERVICE INTERRUPTION EVENT: The Fire Chief, Police Chief, Water Department Director, Street Department Director or his/her designee will disseminate a Connect CTY when a Town Service Interruption Events are present for the Town of Mooresville. The specific Department Head or his designee may modify the Connect CTY at any moment depending on the event.

TOWN SERVICE INTERRUPTION EVENT CONNECT CTY MESSAGE - To Be Developed Service Specific

INTERDEPARTMENT EVENT

Each Town Department can utilize the Connect CTY system for department specific messages to their employees.

INTERDEPARTMENT EVENT: The Department Head or his/her designee will disseminate a Connect CTY when a department specific events need to be disseminated to the employee. The specific Department Head or his designee may modify the Connect CTY at any moment depending on the event.

INTERDEPARTMENT EVENT CONNECT CTY MESSAGE - To Be Developed Event Specific

(Part 2 Weather Radio's) –

The Mooresville Fire Department will give away NOAA Weather Radios to Town of Mooresville businesses, churches, offices or anywhere else, where at least 50 or more people congregate at one time. Weather Radios are available as well for citizens with a disability that limits their timely response in the event of an emergency.

To get a weather radio from Mooresville Fire Department, you need to contact Assistant Fire Chief Shane LaCount and complete a request form. The only stipulation to receive a free weather radio is that if you choose not to use the weather radio in the future, Mooresville Fire Department asks that you sign a form stating you will give the weather radio back.

The weather radios are equipped with a special tone feature, which can sound an alert and give households immediate information about potentially life threatening situations. During an emergency, the National Weather Service will interrupt routine weather radio programming and send out a special tone that activates the weather radios in the warning area.

NOAA Weather Radio is a nationwide network of radio stations broadcasting continuous weather information direct from a nearby National Weather Service office. NOAA Weather Radio broadcasts National Weather Service watches, warnings, forecasts and other hazard information 24 hours a day.

To sign up for a Weather Radio please contact Assistant Fire Chief Shane LaCount at 704-664-1338 or email slacount@ci.mooreville.nc.us

Appendix C

MOORESVILLE FIRE DEPARTMENT RESIDENT CTY REGISTRATION FORM

Please fill in the requested information below.

First Name: _____

Last Name: _____

Address: _____

City: Mooreville State: NC

Zip Code: _____

Primary E-mail Address: _____

Secondary E-mail Address: _____

Primary Phone Number: _____

Secondary and Alternate phone numbers will only be called when necessary.

Secondary Phone Number: _____

Alternate Phone Number: _____

If you use a TTY or TDD device, please choose the appropriate phone for those messages.

Primary Phone: _____

Secondary Phone: _____

Alternate Phone: _____

TTY Phone Number: _____

SMS phone number will only be used for text messaging.

SMS Phone Number: _____

I am over 18 years old, and have read and agree to the Terms of Use. I authorize the Mooreville Fire Department to entry my information into the Town of Mooreville's CTY Data Base.

Signature: _____ Date: _____

Appendix D

MOORESVILLE FIRE DEPARTMENT BUSINESS CTY REGISTRATION FORM

Please fill in the requested information below.

Business Name: _____

Business Contact First Name: _____

Business Contact Last Name: _____

Address: _____

City: Mooreville State: NC

Zip Code: _____

Primary E-mail Address: _____

Secondary E-mail Address: _____

Primary Phone Number: _____

Secondary and Alternate phone numbers will only be called when necessary.

Secondary Phone Number: _____

Alternate Phone Number: _____

If you use a TTY or TDD device, please choose the appropriate phone for those messages.

Primary Phone: _____

Secondary Phone: _____

Alternate Phone: _____

TTY Phone Number: _____

SMS phone number will only be used for text messaging.

SMS Phone Number: _____

I am over 18 years old, and have read and agree to the Terms of Use. I authorize the Mooreville Fire Department to entry my information into the Town of Mooreville's CTY Data Base.

Signature: _____ Date: _____

Appendix E

CONNECT CTY Terms of Use

Terms of Use for Registration *(Effective as of December 22, 2008)*

Your, state, county, or other local government authority (**each, the "Municipality"**), has subscribed to the **Blackboard Connect**® service (**the, "Service"**) to augment its ability to notify you and other residents and businesses of matters of interest to you. These Terms of Use (**"TOU"**), govern the registration of contact information by you (**"Contact Data"**).

The Service is owned by Blackboard Connect Inc., a Delaware corporation (**"Blackboard Connect" or "we" or "our" or "us"**). Blackboard Connect provides you with the ability to register your contact information on our **REGISTRATION WEBSITE (the "Website")** subject to your compliance with these TOU. Blackboard Connect reserves the right to change these TOU from time to time without notice to you. We will give notice of substantive changes to the TOU by written announcement on the home page of the Website.

If you do not accept this TOU, do not register your contact information.

YOUR SOLE REMEDY FOR DISSATISFACTION WITH THE WEBSITE OR THE MUNICIPALITY'S USE OF OUR SERVICE TO CONTACT YOU, IS TO DELETE YOUR CONTACT DATA FROM THE WEBSITE. YOU SHOULD ALSO UPDATE AND/OR DELETE YOUR CONTACT DATA IF YOU RELOCATE OUTSIDE THE MUNICIPALITY'S JURISDICTION. YOUR AGREEMENT WITH US REGARDING COMPLIANCE WITH THIS TOU BECOMES EFFECTIVE IMMEDIATELY UPON REGISTRATION OF YOUR CONTACT INFORMATION. THE MOST CURRENT VERSION OF THIS TOU, WHICH SUPERCEDES ALL PREVIOUS VERSIONS, CAN BE REVIEWED BY CLICKING ON THE "TERMS OF USE" HYPERLINK LOCATED ON THE **REGISTRATION PAGE** OF THE WEBSITE.

1. **THE BLACKBOARD CONNECT SERVICE.** The Service will entitle specific officials from the Municipality (from departments such as health, police, fire, emergency management, utility, public works, sanitation, mayor's office), to broadcast notifications to residents and businesses in your community, via an automated communication system.

These notifications may be about such events as weather alerts, health warnings, missing people, natural disasters, water main breaks, power outages, detours and road closures, crime prevention, flood alerts, fires or other urgent matters.

The notification may be sent to the entire community or to an affected area, and may be sent to the residential/business telephone, cell phone, text message service and/or email address (depending on the contact information provided by you and/or contained in our database). Standard charges by your carrier may apply.

BUT NOTE: The Service is not a replacement for your Municipality's direct communication with First Responders such as, for example purposes only, 911, fire, police, emergency medical, and public health.

2. **REGISTRATION REQUIREMENTS AND OBLIGATIONS.** In order to receive notifications, you should register (and/or update when necessary), your contact information (**"Contact Data"**) on the **REGISTRATION PAGE** of the Website. Although our system includes numbers from commercially available telephone databases, these databases may not contain the most up-to-date information for your landline number. Also, if you have a non-published or unlisted number, or if you are on a Do Not Call List, or have a cell phone, Internet phone, TDD/TTY service, or text message service, your Municipality and Blackboard Connect most likely do not have access to that information.

In order to register your Contact Data, you will be asked to provide certain information to set up your account (collectively, "**Account Information**").

In consideration for the ability to register your Contact Data on this Website, you agree to the following:

- a. You are solely responsible for ensuring the accuracy and completeness of your Contact Data, and you agree to update the Contact Data when required;
 - b. You will not "Spoof" or otherwise impersonate any individual or entity, falsely state or otherwise misrepresent your identity or affiliation in any way, or forge, delete, or alter any part of sender identification information in any e-mail or other transmission;
 - c. You will only register Contact Data for another person if you have that person's express permission;
 - d. You will keep your Account Information secure;
 - e. You are responsible for all unauthorized use or misuse of your Account Information due to your disclosure of your Account Information or lack of care in protecting your Account Information;
 - f. You will not attempt to intercept, redirect or otherwise interfere with communications intended for others;
 - g. You will not engage in any activity that would subject us to civil or other liability;
 - h. You will not make false or unverified complaints against any other subscriber, or otherwise abuse any complaint response procedure established with respect to the Service;
 - i. You will immediately notify Blackboard Connect by telephone and email (at the contact information listed at the end of this page), of any unauthorized use of any Account Information or any other breach of security pertaining to your Contact Data;
 - j. You will exit from your account at the end of each session;
 - k. You are prohibited from any conduct that may compromise security or tamper with system resources, Account Information, or the Contact Data. If you become involved in any violation of Blackboard Connect's system security, Blackboard Connect reserves the right to release your details to law enforcement authorities and system administrators at other sites in order to assist them in resolving security incidents. The following activities are expressly prohibited:
 - i. The use or distribution of tools designed for compromising security (e.g., password guessing programs, cracking tools or network probing tools);
 - ii. Attempting to log into or otherwise obtaining or seeking to obtain unauthorized access to any account. This includes, for example: (x) accessing data or information not intended for you or your use, (y) attempting to probe, scan, or test the vulnerability of Blackboard Connect's services, or (z) tampering, hacking, modifying or otherwise corrupting, circumventing or breaching security or authentication measures without proper authorization;
 - iii. Transmitting material that contains viruses, Trojan horses, worms, time bombs, cancelbots or any other computer programming routines or engines with the intent or effect of damaging, destroying, disrupting or otherwise impairing a computer's functionality or the operation of Blackboard Connect's services; and
 - l. Blackboard Connect is not responsible for the accuracy, timeliness, misdelivery, deletion, or failure to store any of your Contact Data.
 - m. Blackboard Connect does not pre-screen communications sent by the Municipality and is not responsible for screening or monitoring any messages, although Blackboard Connect reserves the right to do so.
3. **YOUR PRIVACY**
- a. **How is your Contact Data Used?**

Your Contact Data will be used by your Municipality to send notifications to you. Blackboard Connect does not rent, trade or sell your Contact Data.

- b. **How can you update, correct, or remove your Contact Data?**

Log on to the Website using your Account Information and make updates or deletions. It is your responsibility to promptly update changes in your Contact Data, and keep all information accurate, current, and complete.

c. How to stop receiving notifications from your Municipality.

You may opt-out of receiving notifications from your Municipality originating through the Service using the following methods:

Telephone and Cell Phone Notifications: Return to the Website and follow the instructions to delete your Contact Data.

E-mail Notifications: Either follow the opt-out instructions on the e-mails you receive or return to the Website and follow the instructions to delete your Contact Data.

Text Message Notifications: Either follow the opt-out instructions on the text message you receive or return to the Website and follow the instructions to delete your Contact Data.

In addition to deleting your Contact Data from your account, you should contact the agency or entity in your Municipality that dispatched the original communication to you and instruct them to remove your contact details from its contact list. Blackboard Connect has no control or authority to force your Municipality to remove your contact information. Please also understand that it may be impossible to completely delete your information without some residual information being retained because of backups. Please think carefully before stopping receipt of further notifications. By opting-out, you will no longer receive notices of matters that may affect your interest.

d. If you believe that someone entered your Contact Data without your consent:

Please contact one or all of the following and provide details:

1. CONTACT INFORMATION FOR THE CHAMPION
or
2. Blackboard Connect via telephone at 877-428-9411 or email to support@blackboardconnectcty.com

e. If you believe that someone is making inappropriate use of your Contact Data, such as to send you telemarketing messages or unsolicited commercial emails or SPAM, or are experiencing other problems with the Service:

Please contact us at (877) 428-9411 or using the contact information at the end of this TOU.

f. Factors beyond our control.

You understand and accept that no data transmission over the Internet or any wireless network can be guaranteed to be 100% secure. As a result, while we strive to protect Contact Data, you acknowledge that: (a) there are security and privacy limitations of the Internet which are beyond our control; (b) the security, integrity and privacy of any and all information and data exchanged between you and us through the Website cannot be guaranteed; and (c) any such information and data may be viewed or tampered with in transit by a third party.

4. **THIRD PARTY SITES AND INFORMATION.** The Website may contain links to other websites, which are not maintained by, or related to, Blackboard Connect. We do not investigate, monitor, or check these websites for accuracy or completeness, and the inclusion of any linked website on the Website does not imply approval or endorsement of the linked website by Blackboard Connect. As such, we are not responsible for the content, accuracy or opinions expressed in such third party

websites. If you decide to leave the Website and access these third-party sites, you do so at your own risk.

5. **INTELLECTUAL PROPERTY INFORMATION.** The material and content including, but not limited to, text, graphics, logos, button icons, images, audio clips, data compilations, and software, and the compilation thereof, accessible from the Website ("**Content**"), is the property of Blackboard Connect or the party that provided or licensed any part of the Content to Blackboard Connect. As such, the Content may not be copied, distributed, republished, uploaded, posted, or transmitted in any way without the prior written consent of Blackboard Connect.

The trademarks, logos, and service marks displayed on the Website, are the registered and unregistered marks of Blackboard Inc. and Blackboard Connect, our affiliates, our licensors or our partners, in the United States and other countries, and are protected by United States and international trademark laws. Neither the Content nor any other portion of the Website may be used, reproduced, duplicated, copied, sold, resold, accessed, modified, or otherwise exploited, in full or in part, for any purpose without the prior written consent of the Legal Department at Blackboard Connect.

6. **INFORMATION AND PRESS RELEASES.** The Website contains information and press releases about us. While this information was believed to be accurate as of the date prepared, we disclaim any duty or obligation to update this information or any press release. Information about companies other than ours contained in any press release or otherwise, should not be relied upon as being provided or endorsed by us.
7. **ACCURACY OF INFORMATION.** We attempt to be as accurate as possible when describing Blackboard Connect's services; however, to the extent permitted by applicable law, we do not warrant that the Content available on the Website is accurate, complete, reliable, current, or error free.

All of the information in the Website, whether historical in nature or forward-looking, speaks only as of the date the information is posted on the Website, and Blackboard Connect does not undertake any obligation to update such information after it is posted or to remove such information from the Website if it is no longer accurate or complete.

8. **INDEMNIFICATION.** You will indemnify and hold Blackboard Connect, its subsidiaries, affiliates, licensors, content providers, service providers, employees, agents, officers, directors, and contractors ("**Indemnified Parties**") harmless from any breach of the TOU by you, including any use of Content other than as expressly authorized in the TOU. You also agree to indemnify us for any loss, damages, or costs, including reasonable attorneys' fees, resulting from your use of software robots, spiders, crawlers, or similar data gathering and extraction tools, or any other action you take that imposes an unreasonable burden or load on our infrastructure. You agree that the Indemnified Parties will have no liability in connection with any such breach or unauthorized use, and you agree to indemnify any and all resulting loss, damages, judgments, awards, costs, expenses, and attorneys' fees of the Indemnified Parties in connection therewith.
9. **INTERNATIONAL USE.** Although the Website may be accessible worldwide, we make no representation that materials on the Website are appropriate or available for use in locations outside the United States, and accessing them from territories where their contents are illegal is prohibited. Those who choose to access the Website from other locations do so at their own initiative and are responsible for compliance with local laws. Any offer for any product, service, and/or information made in connection with the Website is void where prohibited.
10. **NOTICES.** All notices to us must be in writing and may be made either via email or conventional mail. Notices to us must be sent to the attention of Legal Department at businessaffairs@blackboardconnect.com if by email, or at Legal Department, Blackboard Connect Inc., 15301 Ventura Blvd., Bldg. B, Suite 300, Sherman Oaks, CA 91403, if by conventional mail. Any notices or communication will be deemed delivered to the party receiving such communication (1) on the delivery date if delivered personally to the party; (2) two business days after deposit with a commercial overnight carrier, with written verification of receipt; (3) five business days after the mailing date, if sent by US mail, return receipt requested; (4) on the delivery date if transmitted by confirmed facsimile; or (5) on the delivery date if transmitted by confirmed email. Notices to you may be given via the Website.

- 11. NO WARRANTY; DISCLAIMER** Blackboard Connect does not assume any responsibility or risk for your use of the Internet or the input of your Contact Data. The Website (including the registration pages), and the Service are provided "AS IS", and Blackboard Connect expressly disclaims all warranties, whether express, implied, statutory, or otherwise, and specifically disclaims any warranty of merchantability, non-infringement of third party rights, data security or fitness for a particular purpose, with respect to the Service or any portion thereof. We reserve the sole right to modify or discontinue the Website, including any features therein, at any time with or without notice to you, and we will not be liable to you or any third party should we exercise such right. You understand that Blackboard Connect has no control over the third party networks that you access in order to use the Website, and that interruptions of the Website may occur due to disruption of other network transmissions completely beyond our control.

YOU AGREE THAT BLACKBOARD CONNECT WILL NOT BE RESPONSIBLE OR LIABLE, UNDER ANY CIRCUMSTANCES, FOR ANY: (1) INTERRUPTION OF BUSINESS; (2) ACCESS DELAYS OR ACCESS INTERRUPTIONS TO THE WEBSITE; (3) DATA LOSS, NONDELIVERY, MISDELIVERY, CORRUPTION, DESTRUCTION OR OTHER MODIFICATION; (4) LOSS OR DAMAGES OF ANY SORT INCURRED AS A RESULT OF DEALINGS WITH OR THE PRESENCE OF OFF-SITE LINKS ON THE WEBSITE; (5) COMPUTER VIRUSES, SYSTEM FAILURE OR MALFUNCTION THAT MAY OCCUR IN CONNECTION WITH YOUR USE OF THE WEBSITE, INCLUDING DURING HYPERLINK TO OR FROM THIRD-PARTY WEB SITES; OR (6) EVENTS BEYOND OUR REASONABLE CONTROL. NEITHER PARTY WILL BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND WHATSOEVER, SUFFERED BY THE OTHER PARTY, REGARDLESS OF THE FORM OF ACTION WHETHER IN CONTRACT, TORT (INCLUDING NEGLIGENCE), OR OTHERWISE, ARISING OUT OF THE PERFORMANCE OR NON-PERFORMANCE HEREUNDER OR ANY USE OF OR FAILURE TO BE ABLE TO USE THE SERVICE OR THE WEBSITE. NO ADVICE OR INFORMATION, WHETHER ORAL OR WRITTEN, OBTAINED BY YOU FROM BLACKBOARD CONNECT THROUGH THE WEBSITE SHALL CREATE ANY WARRANTY, REPRESENTATION OR GUARANTEE NOT EXPRESSLY STATED IN THESE TOU.

THE ENTIRE LIABILITY OF BLACKBOARD CONNECT AND ITS LICENSORS AND SERVICE PROVIDERS AND YOUR EXCLUSIVE REMEDY WITH RESPECT TO THE USE THE WEBSITE OR ANY BREACH OF THIS TOU ARE LIMITED TO U.S. ONE DOLLAR (\$1.00). YOU HEREBY RELEASE BLACKBOARD CONNECT AND EACH OF ITS LICENSORS AND SERVICE PROVIDERS FROM ANY AND ALL OBLIGATIONS, LIABILITIES AND CLAIMS IN EXCESS OF THIS LIMITATION.

- 12. GOVERNING LAW**. With respect to any dispute regarding the Website, your rights and obligations and all actions contemplated by these TOU shall be governed by the laws of the State of New York, as if this TOU were a contract wholly entered into and wholly performed within the state of New York and you irrevocably submit to the non-exclusive jurisdiction of the courts in or for the District of Columbia. Any cause of action by you with respect to the Website (and/or any information, products or services related thereto) must be instituted within one (1) year after the cause of action arose or be forever waived and barred. All actions shall be subject to the limitations set forth in Section 11.
- 13. ADMISSIBILITY**. A printed version of the TOU and of any notice given in electronic form shall be admissible in judicial or administrative proceedings based upon or relating to the TOU, to the same extent and subject to the same conditions as other business documents and records originally generated and maintained in printed form. Notwithstanding the foregoing, any additional terms and conditions on the Website will govern the items to which they pertain.
- 14. GENERAL PROVISIONS**. This TOU constitutes the complete agreement between Blackboard Connect and you concerning the subject-matter herein, and supersedes and governs all prior proposals, agreements, or other communications. The TOU may not be altered, supplemented, or amended by the use of any other document(s). Any attempt to alter, supplement or amend these TOU, or to enter an order for services which are subject to conflicting, additional or altered terms and conditions shall be null and void, unless otherwise agreed to in a written agreement signed by you and Blackboard Connect. To the extent that anything in or associated with the Website is in conflict or inconsistent with the TOU, the TOU will take precedence. You may not assign your rights and obligations under the TOU to any third party, and any purported attempt to do so shall be null and void. In addition to any excuse provided by applicable law, we shall be excused from liability for non-delivery or delay in delivery of products and services available through the Website arising from any event beyond our reasonable control, whether or not foreseeable by either party, including but

not limited to, labor disturbance, war, fire, accident, adverse weather, disruption or outage of communications, power or other utility, inability to secure transportation, governmental act or regulation, and other causes or events beyond our reasonable control, whether or not similar to those which are enumerated above. Our failure to require your performance of any provision hereof shall not affect the full right to require such performance at any time thereafter, nor shall our waiver of a breach of any provision hereof be taken or held to be a waiver of the provision itself. In the event that any provision of the TOU is held to be unenforceable or invalid under any applicable law or court decision, such unenforceability or invalidity will not render the TOU unenforceable or invalid as a whole. We will amend or replace such provision with one that is valid and enforceable and which achieves, to the extent possible, our original objectives and intent as reflected in the original provision.

CONTACT INFORMATION:

Blackboard Connect Inc.
Attn: Legal Department
15301 Ventura Boulevard
Bldg. B, Suite 300
Sherman Oaks, CA 91403

Email: businessaffairs@blackboardconnect.com

Appendix F

MOORESVILLE FIRE AND RESCUE WEATHER RADIO REQUEST FORM

Company Name: _____

Address: _____

Address: _____

City: Mooreville **State:** NC **Zip:** _____

Contact Name: _____

Telephone: _____

Email: _____

Number of Person within Facility: _____

Fire Department Approval Signature: _____

Appendix G

STATE OF NORTH CAROLINA

COUNTY OF IREDELL

RECEIPT OF A WEATHER RADIO

By my signature below, I am confirming that I have received a weather radio from the Mooresville Fire Department free of charge and that no warranties of any kind have been made concerning its operation or installation. I understand and agree that any claims for damages resulting from defects in such weather radio are to be directed solely to the manufacturer of the weather radio.

I understand it is my responsibility to maintain and service this weather radio and keep it in working order. I also understand that if I request installation of this weather radio, the person doing such installation is not warranting the installation and such person is not making any guarantee or representations that such installation and placement of the weather radio will ensure the safety of the occupants or the safety of the property itself.

In other words, I am saying I understand that the installation, maintenance, and care of the weather radio is my responsibility and that I will make sure it is installed properly and maintained properly, regardless of who installs it.

By my signature below, I release and forever discharge the Mooresville Fire Department, the Town of Mooresville, or any of their officials, employees, agents, representatives, or volunteers, from any and all causes of actions, claims for relief, suits, damages, demands, or whatsoever, in law or in equity, which I might have against the Mooresville Fire Department, the Town of Mooresville, or any of their officials, employees, agents, representatives, or volunteers arising out of any claim for relief or cause of action arising out of the operation or installation of this weather radio.

I acknowledge that I read, or have had read to me at my request, this document.

IN WITNESS WHEREOF, I sign my name and set my hand and seal this _____ day of _____ 20_____.

Signature (SEAL) Printed Name

FOR FIRE DEPARTMENT USE ONLY

Address _____

Phone Number _____

_____ **Installed by** _____

_____ **Owner will install**