

# **Vacant Structure Fires and Firefighter Injuries In The City Of Flint**

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## **1. Introduction**

Fires in vacant structures are a major problem in the City of Flint. In order to better understand the extent of the problems that vacant buildings represent to the Flint Fire Department, a study of structure fires occurring between April 1, 2006 and April 1, 2007 was conducted.

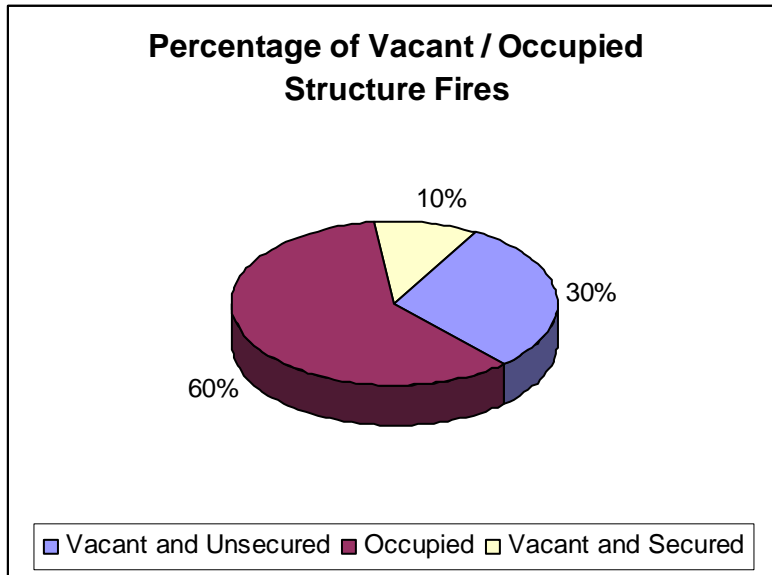
The key findings of this study are:

- Vacant structure fires represented 40% of the Department's structure fire volume.
- The Department's injury rate at vacant structure fires is more than triple the national average reported by the National Fire Protection Association.
- 62% of the Department's fireground injuries occurred at vacant structures fires.
- 79% of the cost from fireground injuries resulted from fires at vacant structures.
- 93% of the cost of injuries at fires in vacant structures occurred in buildings that were unsecured when firefighters arrived.

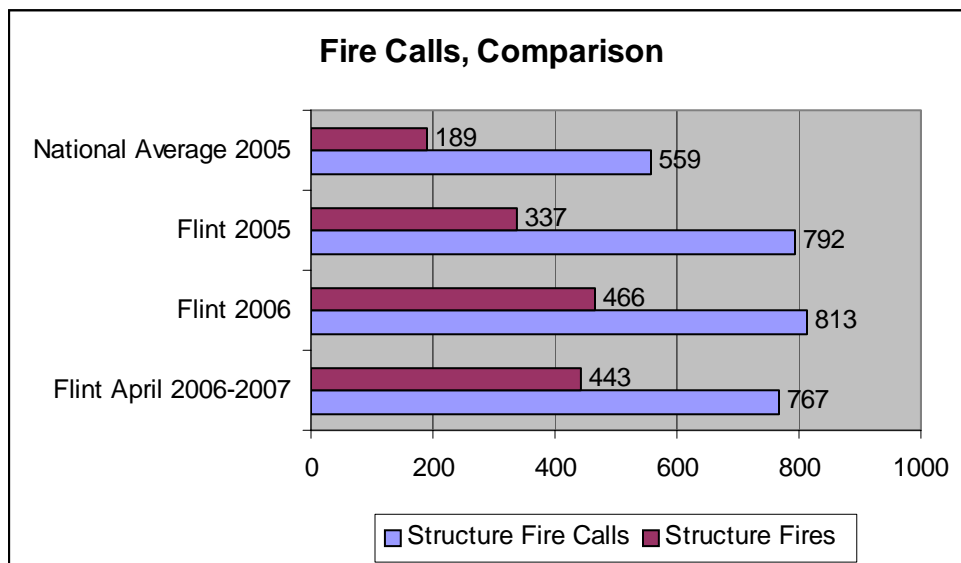
## **2. Fire Activity in the City of Flint, April 2006 – April 2007**

During the survey period of April 1, 2006 through April 1, 2007, a total of 767 structure fire calls were dispatched in the City of Flint. 596 were dispatched as residential structure fires, 134 were dispatched as commercial or large structure fires, and 37 were dispatched as structure fires with occupants possibly entrapped.

Out of the 767 total structure fires dispatched, 443 resulted in a report of an actual structure fire occurring. The 443 actual structure fires involved 264 occupied structures and 179 vacant structures. Property loss due to fire during the April 2006 to April 2007 period was in excess of \$8.1 million or an average of \$22,191 in property loss due to fire each day.

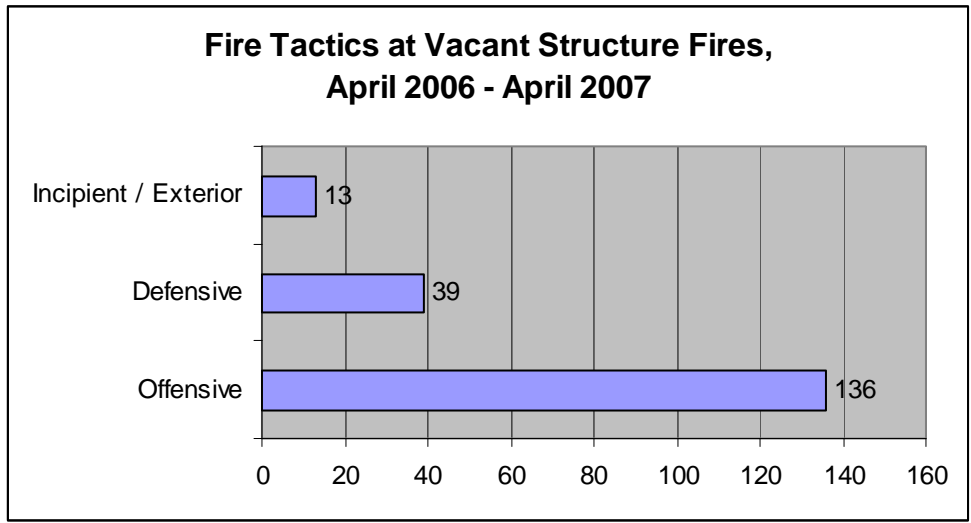


By comparison, the National Fire Protection Association reported that in 2005 the average community with a population between 100,000 and 249,999 experienced 559 fire calls resulting in 189 structure fires with a property loss of \$4.1 million.



Fires at vacant structures were examined to determine the tactics employed to combat them. They were then classified as offensive mode, defensive mode, or incipient and exterior fires. At fires in which tactics transitioned, the incident was classified by the tactics originally initiated upon the arrival of fire crews.

Fire tactics at vacant structure fires were as follows:



### 3. Firefighter Injuries

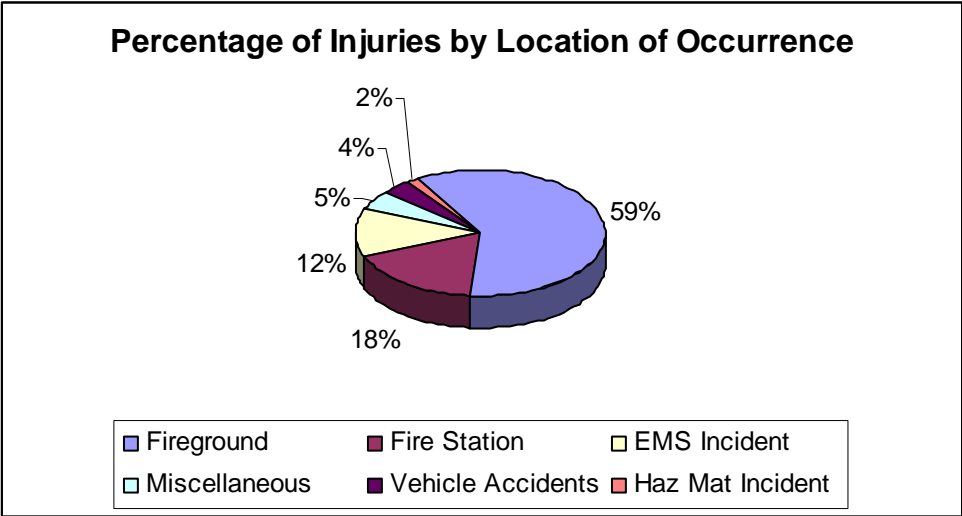
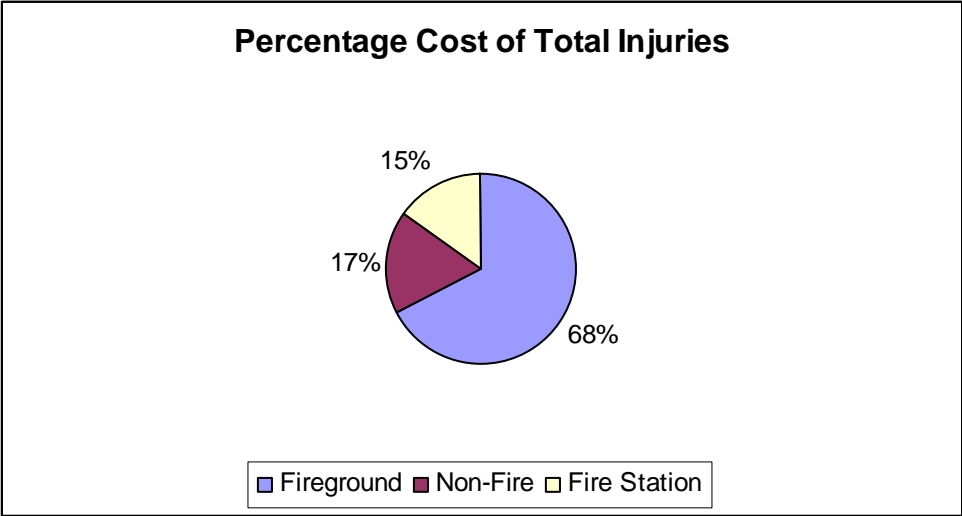
During the survey period of April 1, 2006 through April 1, 2007, employees of the Flint Fire Department reported 57 injuries to the Employee Health Clinic. The injuries represent a total of 5,416 hours lost due to injury at an estimated cost of \$94,633. Additional costs for any overtime required to supplement staffing shortages caused by injury was not calculated. Further, medical costs incurred by the City for treatment of injuries was not calculated.

Injuries incurred by Fire Department personnel during the survey period were as follows:

- 34 injuries occurred during fire suppression operations
- 10 injuries occurred within a fire station
- 7 injuries occurred during EMS operations
- 3 miscellaneous injuries occurred
- 2 injuries occurred due to apparatus accidents
- 1 injury occurred at a hazardous materials incident

Seven fireground injuries resulted in no time lost. The cost of injuries and lost hours is represented in the table below:

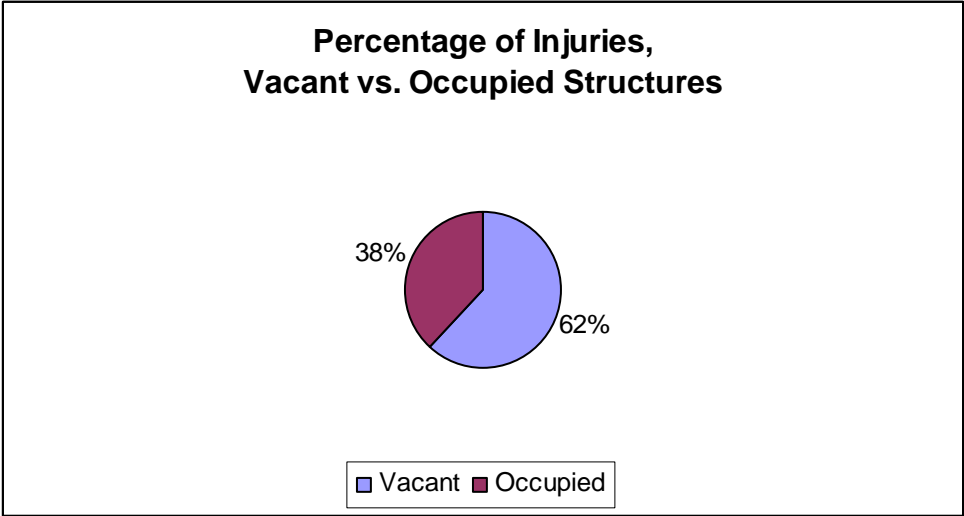
<u>Location</u>	<u>Hours Lost</u>	<u>Estimated Cost</u>
Fireground	3,880	\$63,692
Non-Fire Incident	760	\$16,435
Fire Station	776	\$14,506
<b>Total</b>	<b>5,416</b>	<b>\$94,633</b>



Firefighters suffered the following injuries during fire suppression activities:

- 14 burns
- 8 strains or sprains involving an extremity
- 3 back strains
- 3 contusions to an extremity
- 2 abdominal strains
- 3 incidents of debris in the eye
- 1 puncture wound to an extremity

Fireground operations produced 21 injuries at vacant buildings. 13 injuries occurred during fires at occupied buildings.



Injuries occur more frequently at vacant structure fires and have a higher degree of severity. The cost due to injuries at vacant buildings was \$50,431 for 3,112 hours lost. Injuries at vacant buildings accounted for 53% of the Department’s total cost for all injuries combined. Injuries at vacant buildings resulted in an average cost of \$2,401 and 148 hours lost per occurrence.

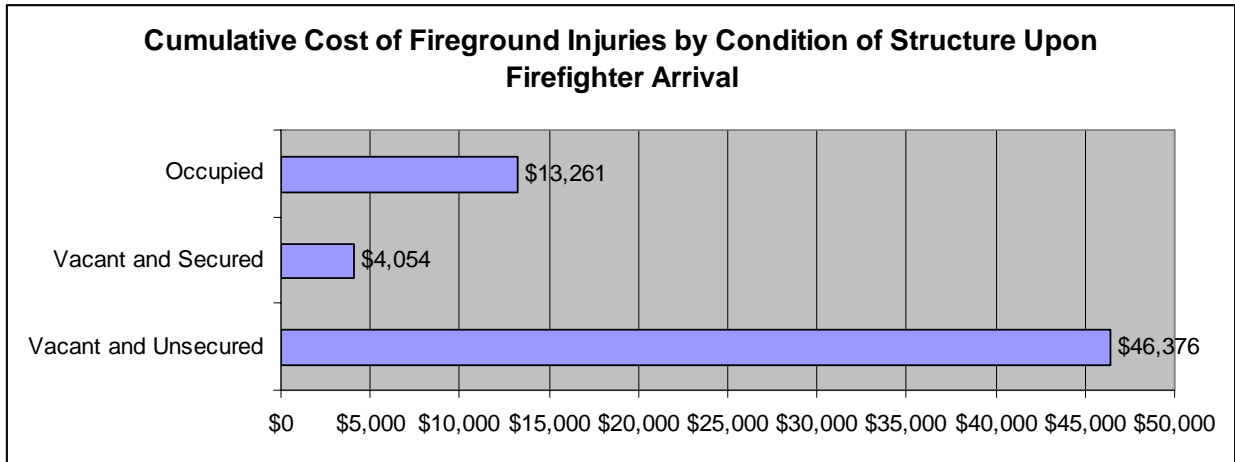
By comparison, the cost of injuries suffered at occupied buildings was \$13,261 for 768 hours lost. Injuries at occupied buildings resulted in an average cost of \$1,020 and 59 hours lost per occurrence.

The National Fire Protection Association reported a national average of 3.7 firefighter injuries per 100 special structure fires and 1.9 firefighter injuries per 100 structure fires in general. The NFPA defines special structures as vacant buildings and buildings under construction.

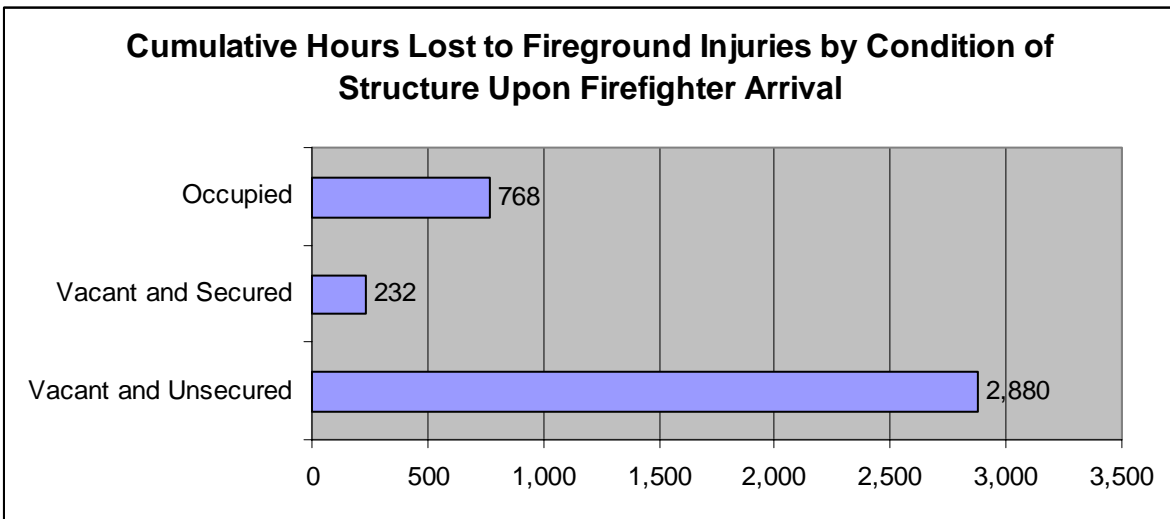
The rate of injury for Flint firefighters is alarmingly higher than the findings in the NFPA report. During the survey period, Flint firefighters incurred an injury rate of 11.7 per 100 vacant structure fires. An injury rate of 4.9 per 100 occupied structures was incurred. The rate of injury for structure fires in general was 7.6 per 100.

Fire incidents at buildings that were found vacant and unsecured upon firefighter arrival caused by far the most injuries, most lost hours, and highest cost. Many of these structures were open and abandoned and presented advanced fire conditions when firefighters arrived.

The cumulative cost of fireground injuries is shown below:



The cumulative hours lost to fireground injuries is shown below:



#### 4. Results of Firefighting Efforts at Vacant Structures

Firefighters enter burning structures with two goals – to save lives (life safety) and to preserve property. The City of Flint had two issues of civilian life safety at vacant structure fires during the survey period. The two incidents involving civilian life safety represent 1.1% of total vacant structure fires.

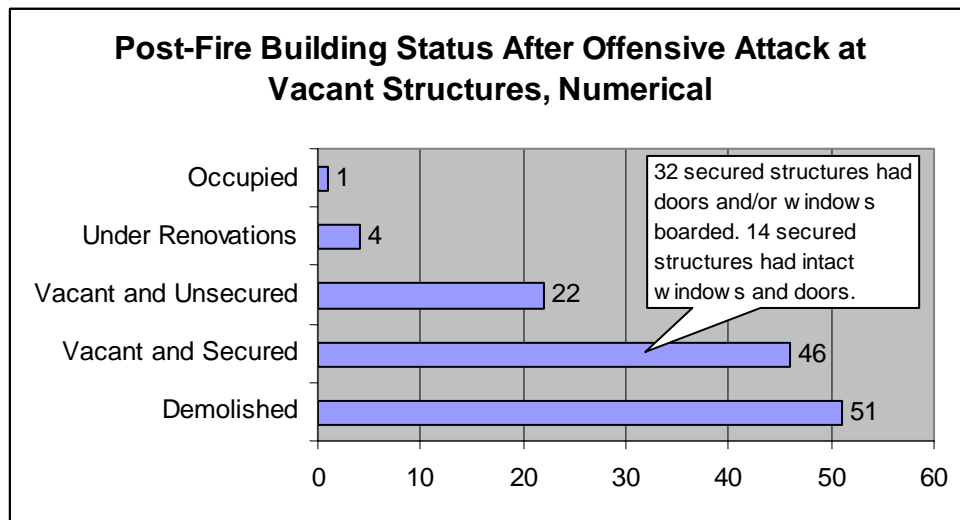
In the first incident, firefighters arrived to find a vacant two-story house fully involved in fire. Defensive operations were initiated. Reports were then received from bystanders that a vagrant might be inside the building. Despite the appearance that the fire would be non-survivable for anyone inside, fire crews then made an interior attack into poor conditions. They

encountered structural instability on the stairway and noted the fire was growing despite their suppression efforts. Crews were withdrawn from the building and defensive operations were resumed. Several hours after extinguishment, the remains of a civilian were discovered amidst collapsed debris in the basement.

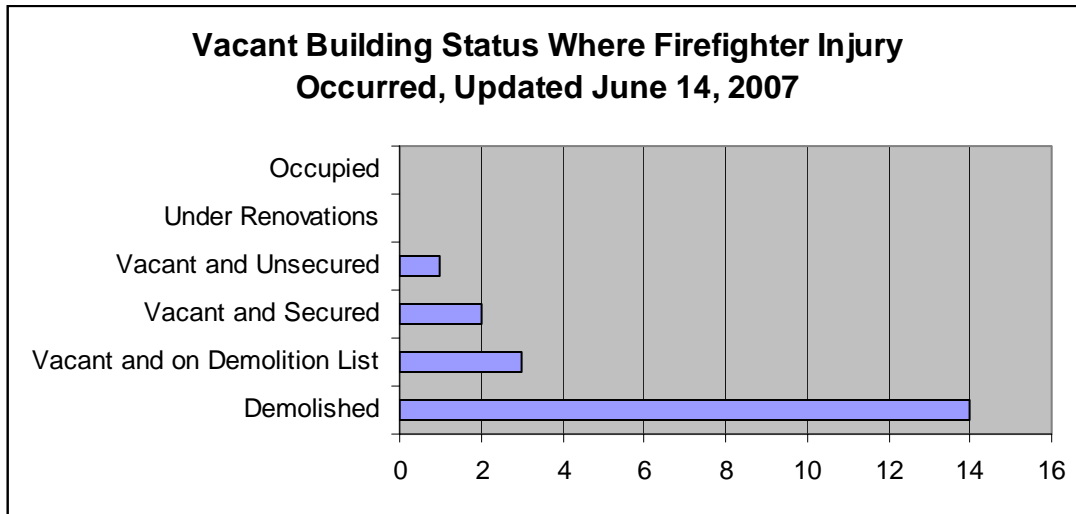
In the second incident, firefighters arrived to find a vacant two-story house with fire emanating from one room on the second floor. No reports of persons trapped within the building were made to fire crews or the 911 Center. Fire crews initiated an interior attack and successfully rescued two injured civilians, one conscious and one unconscious, who were found on the second floor and whose means of escape down the stairway had been blocked by the fire.

With life safety issues discussed, the effect of firefighting in vacant structures as it relates to property conservation is indicated. Firefighters made 136 offensive attacks into 124 vacant buildings during the survey period. Between April 30, 2007 and May 6, 2007, site surveys were conducted at each vacant building that received an offensive attack to determine if the building was now occupied, under renovation, vacant and secured, vacant and unsecured, or demolished.

The post-fire building status of vacant structures receiving an offensive attack during the survey period is represented in the following graph:



19 firefighter injuries occurred during offensive operations at vacant structures. Two of those injuries resulted from one incident. 2 firefighter injuries occurred during defensive operations. 100% of buildings where an injury occurred are demolished or vacant. The status of the 20 vacant structures at which a firefighter was injured was as follows:



## 5. Examples of Vacant Structures That Received Offensive Attacks



A vacant and unsecured house at 2507 Minnesota. Fire occurred twice at this structure on January 7, 2007. One firefighter suffered a burn during an offensive attack in the first incident. The building was placed on the City Emergency Demolition List on April 10, 2007.





The foundation of 209 West Baker. One firefighter suffered a burn during an offensive attack here on March 26, 2007. At a subsequent fire here on April 18, 2007, one firefighter suffered a shoulder injury during a defensive operation.



A vacant and unsecured house at 1518 Dakota. Fire crews performed an offensive attack and extensive overhaul in attempts to save this structure when it burned on April 12, 2007. Fire crews did not know that this building had been condemned and placed on the City Emergency Demolition List on February 14, 2007. No firefighters were injured.

## 6. NFPA 1500

Fire Department Occupational Safety and Health is the subject of NFPA Standard 1500. Chapter 8 of NFPA 1500 deals with Emergency Operations. In the context of the Flint Fire Department's injury rate at vacant buildings and the ongoing status of those buildings after fire incidents, NFPA 1500 provides the following guidance:

- Fire departments should consider the following Rules of Engagement:
  1. What is the survival profile of any victims in the involved compartment?
  2. We will not risk our lives at all for buildings or lives that are already lost.
  3. We may only risk our lives a little, in a calculated manner, to save savable property.
  4. We may risk our lives a lot, in a calculated manner, to save savable lives.
- The acceptable level of risk is directly related to the potential to save lives or property. Where there is no potential to save lives, the risk to fire department members should be evaluated in proportion to the ability to save property of value. When there is no ability to save lives or property, there is no justification to expose fire department members to any avoidable risk, and defensive fire suppression efforts are the appropriate strategy.

## 7. Negligent Firefighting and Case Law

Flint firefighters have expressed concerns that the City and individual firefighters could be sued in cases of defensive mode operations at structure fires. Incidents in which a civilian may be inside a structure at which defensive mode operations are used raise even more serious concerns. Cases have been decided in Michigan in favor of firefighters and municipalities in similar incidents.

In *Dean v. Childs* (2004), a mother filed suit against a fire department and an individual firefighter after the tragic deaths of her four children in an arson fire at their residence. She alleged that the firefighter was grossly negligent when he used a hydrant approximately one block away from the fire instead of a hydrant directly in front of the involved building. She further alleged that he was grossly negligent in ordering hoses to be put into operation at the front of the house, forcing heat and smoke to the back of the house where the children were trapped and other firefighters were attempting rescue.

In *Love v. City of Detroit* (2006), the estate of four children killed in a house fire filed suit against the City and 71 individual firefighters. The estate alleged that “that the individual defendants acted in a grossly negligent manner by failing to timely respond to the fire and failing to take effective steps to rescue the trapped individuals.”

In *Frame v. Royal Oak Township Fire Department* (2003), a plaintiff filed a lawsuit against the fire department and two individual firefighters after his daughter was killed in a house fire. Firefighters experienced problems connecting hoses and there was a delay in putting water on the fire. The plaintiff alleged that firefighters were grossly negligent and reckless in their attempts at extinguishment, in their attempts at rescuing the trapped child, and in operating the fire truck.

In each of the above cases, the court ruled in favor of the municipalities and the firefighters based on governmental employee immunity provided under Michigan law. To be found liable, the actions of the firefighters would have to be grossly negligent and actually caused the death or injury. The cause of death in each of the above cases was ruled to be the fire itself, not the alleged negligence of the firefighters.

Public perception of fireground strategy is also a concern to Flint firefighters. Two out-of-state cases provide further reasoning of how courts have supported firefighters and their tactical fireground decisions. These two cases are not legally binding in Michigan.

First, in the Massachusetts case of *Cyran v. Town of Ware* (1992), a property owner sued the town alleging that firefighters were grossly negligent in fighting a fire at his residence. The court sided with the town and firefighters, ruling that:

“Society would not favor, and public policy does not support, a rule which would expose a municipality to liability for damages every time its fire department does not, in a plaintiff’s view, fight a fire satisfactorily.”

Second, in the Minnesota case of *Dahlheimer v. City of Dayton* (1989), a property owner alleged that the City’s firefighters were grossly negligent in fighting a barn fire. Fire tactics began as offensive operations and then switched to defensive operations. The barn was destroyed. The court ruled that:

“It is inappropriate for a jury or court to second-guess a complicated decision made during a fire because it would submit the tactical decisions of fire chiefs to the monetary and psychological threats of litigation.”

## 8. Vacant Building S.O.P.s at Other Fire Departments

Fire departments across the United States face ongoing problems with fires in vacant buildings. Many fire departments have established standard operating procedures to specifically govern fireground operations at vacant buildings.

The Fire Department of New York established a vacant building fire procedure in 1986. Some excerpts are as follows:

- Members must psychologically adjust to a “no rush” approach. In these buildings, the life hazard is to the firefighter. A slower, more cautious operation is definitely indicated.
- The life hazard at vacant building fires is almost solely that of our operating members. It must be stressed, the primary emphasis in vacant building operations is that of exterior attack.

The Phoenix Fire Department’s vacant building fire procedure contains the following guideline:

- A well-involved building would likely represent a zero survivability profile. Similar conditions in an abandoned building would indicate little survivability and little property to be saved and members should avoid an offensive fire fight.

The Fulton County Fire Department in Georgia set forth the following in their vacant building fire procedure:

- No property is worth the life of a member of the Fire Department.
- No level of risk to responders is acceptable in situations where there is no potential to save lives or property.

The Jonesboro Fire Department in Arkansas established an extensive philosophy of firefighting in their S.O.P.s, which include the following excerpts:

- In the JFD and the fire service in general, we pride ourselves on being very aggressive interior firefighters and look down on those that fight fire from the street. However, there is a fine line between aggressive and careless firefighting.
- It is important to state that we are not advocating all interior attacks as being inappropriate, just those that cross the line of unacceptable risk.
- In some cases, it is more heroic to not make an interior attack because that officer is placing the safety of their crew first, rather than feeling compelled to take an unnecessary risk.

## 9. Conclusion

The evidence of this investigation shows overwhelmingly that Flint’s firefighters are regularly being exposed to a high level of risk during operations at vacant buildings. It is apparent that offensive attacks are frequently being made into vacant structures when defensive measures may have been the more appropriate tactical choice. Firefighters are being placed in a position of risk in non-life safety situations at vacant buildings where there is very little chance of recovering salvageable property. Many of the vacant buildings at which offensive attacks were

initiated were abandoned properties that had no civilian life hazard and essentially no measurable value before the fire, making for a dangerous exercise in futility.

Firefighters must recognize that fires in vacant and abandoned structures require a different approach than a fire in an occupied structure. A fire in a vacant property, especially an open and abandoned property, should be viewed for what it truly represents: *a uniquely dangerous hazard that is waiting to injure and kill firefighters.*

The goal of this report is to reduce firefighter injuries. By fighting fires in vacant and abandoned buildings in a smarter and safer way, risk and injury to firefighters can be reduced. The City of Flint is very fortunate to have a Department of aggressive firefighters who are very skilled in what they do. Their skill and ability should be rewarded by only exposing them to acceptable risk when life safety concerns or realistic property conservation concerns justify placing them in such positions.