



MUNICIPAL TECHNICAL  
ADVISORY SERVICE

GOODLETTSVILLE, TENNESSEE

Comprehensive Fire Management  
Overview



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## **Introduction and Scope of Work**

Goodlettsville requested a comprehensive management overview of many city departments including the fire department. This study was conducted by field study work involving interviews, reviews of documentation, physical inspection of the fire station and equipment, and a tour of the service area. Those interviewed included, in alphabetical order by title:

City Manager Tim Ellis  
Director of Finance and Administration Julie High  
EVT James Hicks  
Executive Assistant Brenda Bell  
Fire Captain Dean Birdwell  
Fire Captain Ray Hunter  
Fire Captain Ricky West  
Fire Chief Phillip Gibson  
Fire Lieutenant Rusty Tinnin  
Firefighter Andrew Robertson  
Human Resources Director Dawn Freeman  
Training Captain Johnny Robertson

Nothing in this report should be seen as being a negative reflection of the Goodlettsville Fire Department. The firefighters and staff are dedicated, hard-working, and respond quickly to all emergencies. Descriptors such as knowledgeable, aggressive firefighting, dedicated, caring, and going above and beyond came up frequently in the interviews. This report provides an outside perspective of the city's fire services and future needs.

## **Background**

Goodlettsville was incorporated as a city in 1958 and lies in both Davidson and Sumner counties. Five years later, Goodlettsville chose to remain self-governing when the metropolitan government formed. Goodlettsville's certified population is 15,921. Though autonomous, the city relies on Metro Nashville for assistance with fire services. The community is mostly residential with retail and commercial properties throughout, and is the home of Dollar General Stores corporate headquarters. The fire department responds to over 2,650 calls per year, a rate of over seven calls per day, or one call every 3.3 hours. The 2011 per capita property loss rate is \$60.30. The Insurance Services Office (ISO) determined that the basic fire flow for the community is 3,500 gallons-per-minute (gpm), and that the community needs four engine companies.

## **The Use of the ISO Rating as an Evaluation and Planning Tool**

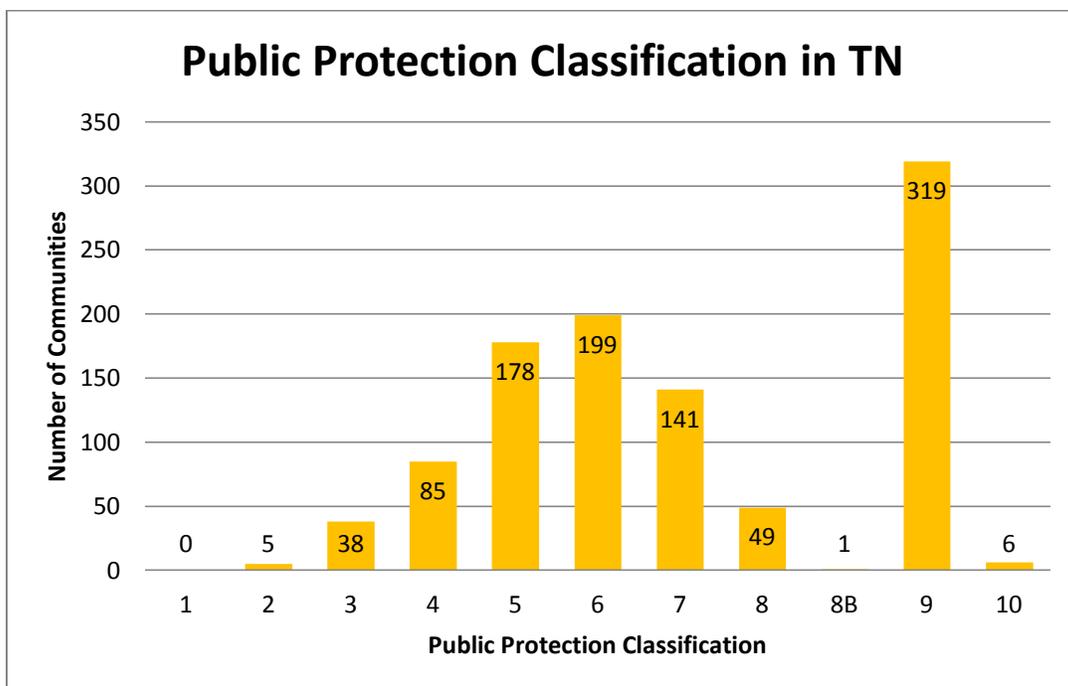
The information on the ISO rating will assist the reader in understanding the complexities of providing fire protection. Communities use the ISO rating and the information provided in the Public Protection Classification Summary Report as an

indicator of fire department capability, to assist in the prioritization of community needs, and to assist in the decision-making process.

The Insurance Services Office, Inc., also known as ISO, is a for-profit corporation that works for insurance companies to evaluate the capability of a community to suppress fires. ISO rates a community on a scale of 1 through 10. An ISO rating of 1 is the best (only 0.13% of the fire departments in the county have a Class 1 rating). An ISO rating of 10 is equivalent to not having any fire protection. Goodlettsville has been rated with a split classification of Class 5/9. ISO rates a community based upon three major elements: communication (10% of the rating), fire department (50% of the rating), and water supply (40% of the rating). The individual scores for the most recent ISO evaluation are shown in Table 1.

The Class 5 rating is good (see Figure 1), as just seventeen percent of all fire departments in Tennessee have a Class 5 ISO rating, and just 128 fire departments out of over 732 have a better ISO rating. The Class 5 rating means the fire department is doing the right things to provide good service, and because of this Goodlettsville residents pay competitive rates for property insurance. The Class 9 rating applies to areas within five road miles of the fire station but more than 1,000 feet from a fire hydrant. Areas further than five road miles from a fire station receive a Class 10 rating.

This review will focus on the fire department portion of the ISO evaluation.



**Figure 1 – Public Protection Classification (ISO Rating) in Tennessee**

	<b>Points Earned</b>	<b>Points Available</b>	<b>Percent Earned</b>
<b>Receiving and Handling Fire Alarms</b>			
414. Credit for Telephone Service	2.00	2.00	100.00%
422. Credit for Operators	1.71	3.00	57.00%
432. Credit for Dispatch Circuits	3.25	5.00	65.00%
<b>440. Credit for Receiving and Handling Fire Alarms</b>	<b>6.96</b>	<b>10.00</b>	<b>69.60%</b>
<b>Fire Department</b>			
513. Credit for Engine Companies	5.76	10.00	57.60%
523. Credit for Reserve Pumpers	0.58	1.00	58.00%
532. Credit for Pump Capacity	5.00	5.00	100.00%
549. Credit for Ladder Service	3.76	5.00	75.20%
553. Credit for Reserve Ladder Service	0.05	1.00	5.00%
561. Credit for Distribution	1.68	4.00	42.00%
571. Credit for Company Personnel	4.45	15.00	29.67%
580. Credit for Training	3.25	9.00	36.11%
<b>590. Credit for Fire Department</b>	<b>24.53</b>	<b>50.00</b>	<b>49.06%</b>
<b>Water Supply</b>			
616. Credit for Supply System	29.09	35.00	83.11%
621. Credit for Hydrants	1.84	2.00	92.00%
631. Credit for Inspection and Condition	2.31	3.00	77.00%
<b>640. Credit for Water Supply</b>	<b>33.24</b>	<b>40.00</b>	<b>83.10%</b>
<b>Divergence</b>	<b>-6.81</b>	<b>-</b>	
<b>Total Credit</b>	<b>57.92</b>	<b>100.00</b>	<b>57.92%</b>
<b>Table 1 – Summary of ISO Points Awarded by Element</b>			

Item 513 is the credit for engine companies. The basic fire flow for the community is 3,500 gpm, which requires that the fire department have four engine companies in service, and the fire department has four companies in service. The department responds at least two engine companies on every fire, which is an adequate response.

Item 523 is the credit for reserve pumpers. The city needs one reserve pumper and it has one reserve pumper. For maximum credit, the engine should have all of the required equipment and hose, and the pump and hose should be tested annually.

Item 532 is the credit for pump capacity. Pump capacity is determined by calculating the total pump capacity of all engines and automatic aid engines. Pump capacity should equal or exceed the basic fire flow for the community, and Goodlettsville has adequate pump capacity.

Item 549 is the credit for ladder service. Goodlettsville needs one ladder truck because the community has a combination of more than five buildings that have a needed fire flow greater than 3,500 gpm or are thirty-five or more feet in height. Goodlettsville has one ladder truck, and the truck should respond to all structure fires. Goodlettsville also needs one service truck. A service truck carries all of the tools and equipment carried on a ladder truck, but does not have an aerial ladder. Goodlettsville does not have a service truck, but has received partial credit for a service truck from equipment carried on other apparatus.

Item 553 is the credit for reserve ladder and service trucks. Goodlettsville does not have a reserve ladder or service truck and received minimal credit for equipment carried on other apparatus. Ladder trucks are expensive, and it is not cost effective to purchase a reserve ladder truck. Goodlettsville can receive credit for a reserve ladder truck by signing an agreement with a neighboring fire department, such as Nashville, where the neighboring department agrees to share a reserve ladder truck with Goodlettsville.

Item 561 is the credit for distribution. Points are earned for an adequate amount of fire engines, trucks, and service companies providing coverage to the developed areas of the community. All properties should be within 1.5 miles of an engine company and 2.5 miles of a truck or service company. This item also considers the equipment carried on the apparatus, the frequency of pump and hose testing, and pump capacity. The score reflects the need for an additional fire station.

Item 571 is the credit for company personnel. ISO recognized 4.03 on-duty personnel. Firefighting is a labor-intensive job, and four personnel is insufficient to be effective (see the section on minimum response to a structure fire). Additional staffing was a need mentioned by everyone in the interviews.

Item 580 is the credit for training. The department received 36% credit for this item. There are two major capital items affecting the training credit. Under Item 580.A, the department needs a four-story drill tower and a burn building. These two items are worth 45% of the credit available for facilities and aids, and the department received full credit for all other items.

The department received 23% of the points available for company training, with an average of 4.59 hours per month. The department should provide twenty hours of structural fire related training for each firefighter every month.

The department received 58% credit for officer training. All officers participated in the classes, and the department needs to have at least twelve hours of officer's classes per officer each year.

The department received 26% credit for recruit training as the course was sixty-four hours long. The department should provide a recruit training program that is at least

240 hours in length, and should consider using the state fire academy if the department is not able to provide that training in-house.

The department received 14% credit for pre-fire planning inspections. The department inspected just over 17% of all of the commercial occupancies in Goodlettsville. The department should inspect each commercial occupancy at least once a year, document the inspection and create/update the pre-fire plan, and every firefighter should review every pre-fire plan twice a year.

The department should maintain complete records on all training and pre-fire planning inspections as ISO deducted 0.89 points for deficient recordkeeping.

**Recommendation: Use the ISO Public Protection Classification Summary Report as a resource for creating a strategic plan for providing and improving community fire protection.**

## **Management and Administration**

The fire department's mission statement is good, and clearly provides direction for the fire department to develop appropriate goals, objectives, and performance measurements.

The mission of the Goodlettsville Fire Department is to serve the citizens and business of the City of Goodlettsville by protecting life, property and the environment, from hazards and dangers of fire, medical emergencies and manmade or natural disasters, through prevention, education and timely incident response.

Effective management, administration, supervision, and communication are essential for the fire department to accomplish its mission, achieve its goals, and deliver quality services to its residents. The management team of the fire department includes the fire chief directly supervising three shift captains and three administrative and technical support personnel. The shift captains are responsible for daily operational activities. There is a lack of consistency and accountability in the management of the department in areas such as supervision, training, performance improvement, employee accountability, budget management, workforce development, and succession planning. The fire chief does not hold regular staff meetings. There is a lack of consistent and meaningful communication between the fire chief and the fire department, among shifts, and between shifts. Low morale is an issue as well.

The fire chief is supervising six personnel, and in emergency response organizations such as fire departments, it is preferred that a leader supervise no more than five personnel. There is clearly a need for a mid-level supervisor to assume responsibility for daily operations and coordinate activities such as training, internal communications, performance monitoring and improvement, and employee accountability.

The fire department has good performance measurements to track and monitor service levels. The city recently joined the Tennessee Municipal Benchmarking Project.

**Recommendation: The fire chief should establish weekly staff meetings with the shift captains, executive assistant, and training officer to discuss department issues, inform staff on city issues as appropriate, gauge department performance against benchmarks, monitor progress on the strategic plan, discuss budget administration, and improve intradepartmental communication.**

**Recommendation: Establish the position of assistant fire chief with the authority and responsibility as second-in-command of the department for the direct supervision of the fire captains, daily operational activities, personnel management, facilities, apparatus, and equipment.**

The fire department does not have a succession plan or a workforce development plan. Workforce development identifies human resource training needs and provides training and development opportunities for the growth of employees. Succession planning looks to the future, identifies anticipated turnover from retirements, promotions, etc., and anticipates the resulting loss of knowledge, skills, and experience. Succession planning identifies replacement candidates and preserves the organization's knowledge capital through programs that capture the knowledge in standard procedures, written manuals, and mentoring programs. The fire department is a small organization, so the loss of a key member can have a significant effect on operations. Unless employees prepare for advancement, the city must go outside the organization for viable candidates. Supervisors should be given the opportunity to attend upper level fire service leadership and management classes, such as classes offered at the National Fire Academy and through the Degrees at a Distance program at the University of Memphis. All chief officers should consider attaining personal accreditation through the Center for Public Safety Excellence.

**Recommendation: Establish a workforce development and succession plan for the department. The fire chief should work closely with the training officer to develop and offer internal and external training programs to improve the knowledge, skills, and abilities of personnel in all positions, and prepare them for advancement and greater responsibility.**

**Recommendation: Establish a formal officer development and training program following NFPA standards. Training classes are available through the state fire academy. The program should be required for all officers, and available to firefighters who may aspire to be officers.**

**Recommendation: Establish as a job requirement that fire officers obtain a level of certification through the Tennessee fire commission commensurate with their position. Company officers should achieve Fire Officer I certification, captains should achieve Fire Officer II certification, and chief and staff officers should achieve Fire Officer III and IV certification.**

## Staffing Levels

For emergency response, the department operates three rotating shifts. Each shift works 24-hours on duty with 48-hours off-duty. Staff officers and support personnel work 40 hours weekday shifts. Staffing levels are less than ideal. Government, community, and fire service leaders across the country have debated minimum staffing levels for decades. Factors involved in determining adequate staffing levels include but are not limited to community risk, available financial resources, the level of fire service response desired in the community, and the level of safety desired for residents and firefighters. While the decision on staffing levels is a local one, there are guidelines that city, community, and fire service leaders can use to determine the minimum staffing level. Goodlettsville provides five firefighters per shift, and paid and unanticipated leave reduces the actual level of on-duty personnel to an average of 4.03 as reported by ISO.

In 1966, NFPA Standard 197, A Training Standard on Initial Fire Attack, stated, “*The desirable number of men normally required to respond with the apparatus to give this level of performance with properly manned hose streams and equipment would be approximately fifteen plus the chief.*” NFPA Standard 1710 replaced NFPA Standard 197 in 1979, but the idea of a minimum of fifteen firefighters plus an incident commander as a valid minimum number of personnel for the initial alarm has withstood the test of time. Various agencies have conducted many studies over the years regarding the number of firefighters needed to extinguish a fire, and there is consensus among NFPA, ISO, and the International City Management Association (ICMA) that a low-risk structure fire requires between fourteen to nineteen firefighters for effective operations. A single-family dwelling is an example of a low-risk structure fire. For example, ISO gives full staffing credit for a response of nineteen personnel. NFPA recommends a minimum of sixteen as shown in Table 1. Though the state has not adopted NFPA 1710, it is considered an industry best practice.

<b>Initial full-alarm structure fire assignment per NFPA 1710, § 5.2.4.2.2</b>		
<b>5.2.4.2.2 Sub-section</b>	<b>Function</b>	<b>Minimum Number</b>
(1)	Incident command	1
(2)	Pump - supply engine and attack engine	2
(3)	Two hand lines with 2 firefighters each	4
(4)	Hand line support, 1 for each hand line	2
(5)	Search and rescue	2
(6)	Ventilation	2
(7)	Aerial device operator	1
(8)	Rapid Intervention Team (RIT)	2
	Total	16
<b>Table 2 – NFPA Recommended Minimum Response for House Fire</b>		

The response level described above is for a residential structure fire of a home of about 2,000 square feet with no basement or exposures. NFPA 1710 Section 5.2.4.2.3 says that higher risk occupancies (schools, hospitals, apartments, commercial properties, etc.) require more resources, which means more apparatus and personnel. A *standard of cover* is a document that identifies local risks and defines the appropriate response level for the given risk based on the hazard, needed fire flow, life risk, and other factors. Local leaders must decide on a level of fire protection for their community, balancing the cost of providing the service against the lives and property at risk. To make this decision, it is important for the leaders to understand minimum response recommendations. This report acknowledges Goodlettsville's current limited financial resources to hire enough paid personnel to provide that level of response to a structure fire. Goodlettsville is using automatic aid and mutual aid to provide a sufficient number of trained firefighters on the scene of a structure fire, but this method takes more time to assemble an effective firefighting team of fifteen to sixteen personnel (see Appendix A for estimated response and travel times).

**Recommendation: Goodlettsville should adopt a plan to provide an effective firefighting response of sixteen personnel to a structure fire within 480 seconds (8 minutes) travel time on 90% of all incidents. Travel time is the time elapsed from when the fire apparatus leaves the fire station until it arrives on the scene of the emergency.**

**Recommendation: Goodlettsville should complete a community risk assessment and establish a standard of cover for each identified risk.**

**Recommendation: Goodlettsville should review current response assignments to ensure that a sufficient number of apparatus and personnel are dispatched based on the standard of cover.**

## **Human Resources**

The city has good job descriptions for all positions in the fire department. The fire department's standard operating guidelines manual is comprehensive and contains a code of ethics, which is a best practice, but it is apparent that the department needs to review and update the manual. For example, the manual refers to the assistant chief, but there is no such position in the fire department. The manual contains job descriptions, but the city has good job descriptions for each position in the fire department, and the two job descriptions do not match. The manual refers to the National Fire Academy Incident Management System, and the current standard is the National Incident Management System (NIMS). The manual references certification as a Firefighter III, a certification level that has not existed at the state fire fighting commission for many years.

Since not everyone was familiar with the manual, it appears that the policies in the manual may not be enforced consistently. For example, it appeared that the station was not cleaned on a daily basis. Some personnel were not familiar with the manual or

with where to find a copy of the manual. A standard operating procedures manual is akin to the “bible” for the fire department. Every member should be familiar with its content and copies should be available readily.

Pay and compensation are important factors to employees, as they are in every organization, and compensation and benefits were mentioned during the interviews. A check of the MTAS 2010 salary survey for fire departments near Goodlettsville showed that the compensation for fire department positions were below the market average at the time.

**Recommendation: Make sure that sufficient copies of the current standard operating procedures manual are available to all personnel, and that all personnel know where to find a copy.**

**Recommendation: Appoint a committee to review the standard operating procedures manual and make recommendations for updates.**

**Recommendation: After the manual has been reviewed and updated, train and then test all personnel on the contents of the manual to ensure that they understand the department’s policies and procedures.**

## **Apparatus and Equipment**

The fire department has a sufficient number of fire apparatus with three first out engines and one aerial ladder platform. The platform has a 2,000 gpm pump, which makes it a quint, a vehicle capable of performing as an engine and an aerial ladder truck.

Goodlettsville needs a ladder company because the community has at least five buildings that are three-stories or more than thirty-five feet in height, or five or more buildings with a needed fire flow greater than 3,500 gpm, or a combination of five buildings meeting these criteria. Goodlettsville has one ladder truck, and for full credit under the ISO grading schedule, the ladder truck must respond to all structure fires. ISO refers to a “ladder company,” meaning the ladder truck plus the personnel to operate the vehicle. Goodlettsville does not have sufficient staffing to operate the ladder truck and to perform essential fire ground operations simultaneously, which limits the effectiveness of fire suppression operations. Placing one firefighter on the ladder truck will get the vehicle to the scene, but without sufficient trained personnel, the truck is not effective and provides a visual false sense of adequate fire protection.

**Recommendation: Staff the aerial ladder platform with sufficient personnel to respond and operate the truck effectively on structure fires.**

The fire department received 57% credit for engine companies. For maximum ISO credit and effective suppression operations, apparatus should have the appropriate

inventory of tools, hose, equipment, etc. and properly documented hose and pump tests. Apparatus lack some tools, hose, and equipment.

**Recommendation: Inventory each fire apparatus to identify missing tools, hose, and equipment, and purchase missing items to bring all apparatus into compliance with NFPA and ISO recommendations and improve fire suppression capability.**

The city has three first line engines and one first line truck company as shown in Table 3.

Unit ID	Type	Year Made	Age	Year should be relegated to reserve service	Year unit should be retired from service	Replacement Cost
41-6	Engine	1996	16	2011	2021	\$440,000
41-7	Engine	1996	16	2011	2021	\$440,000
41-8	Engine	1997	15	2012	2022	\$440,000
T-41	Truck	2009	3	2024	2034	\$1,100,000
<b>Table 3 – Apparatus Roster</b>						

NFPA recommends that, “Because the changes, upgrades, and fine tuning to NFPA 1901, Standard for Automotive Fire Apparatus, have been truly significant, especially in the area of safety, fire departments should seriously consider the value (or risk) to fire fighters of keeping fire apparatus older than 15 years in first-line service.” All three of Goodlettsville’s fire engines are more than 15 years old, and the capital cost to replace all three engines is significant at \$1,320,000. The city does have a certified Emergency Vehicle Technician (EVT) to maintain the apparatus, which is an industry best practice. Each shift has an assigned fire engine, which means for every day the engine is in service there are two days of down time for maintenance, but there are maintenance issues. ISO requires that a community have one reserve fire engine for every eight or fraction thereof required engines, and the city does not have a reserve fire engine.

**Recommendation: Establish an apparatus replacement program to fund and schedule the transition and replacement of fire apparatus on the 15 year/25 year life cycle recommended by NFPA. After the purchase of a new fire engine, retain one engine to serve as the department’s reserve pumper.**

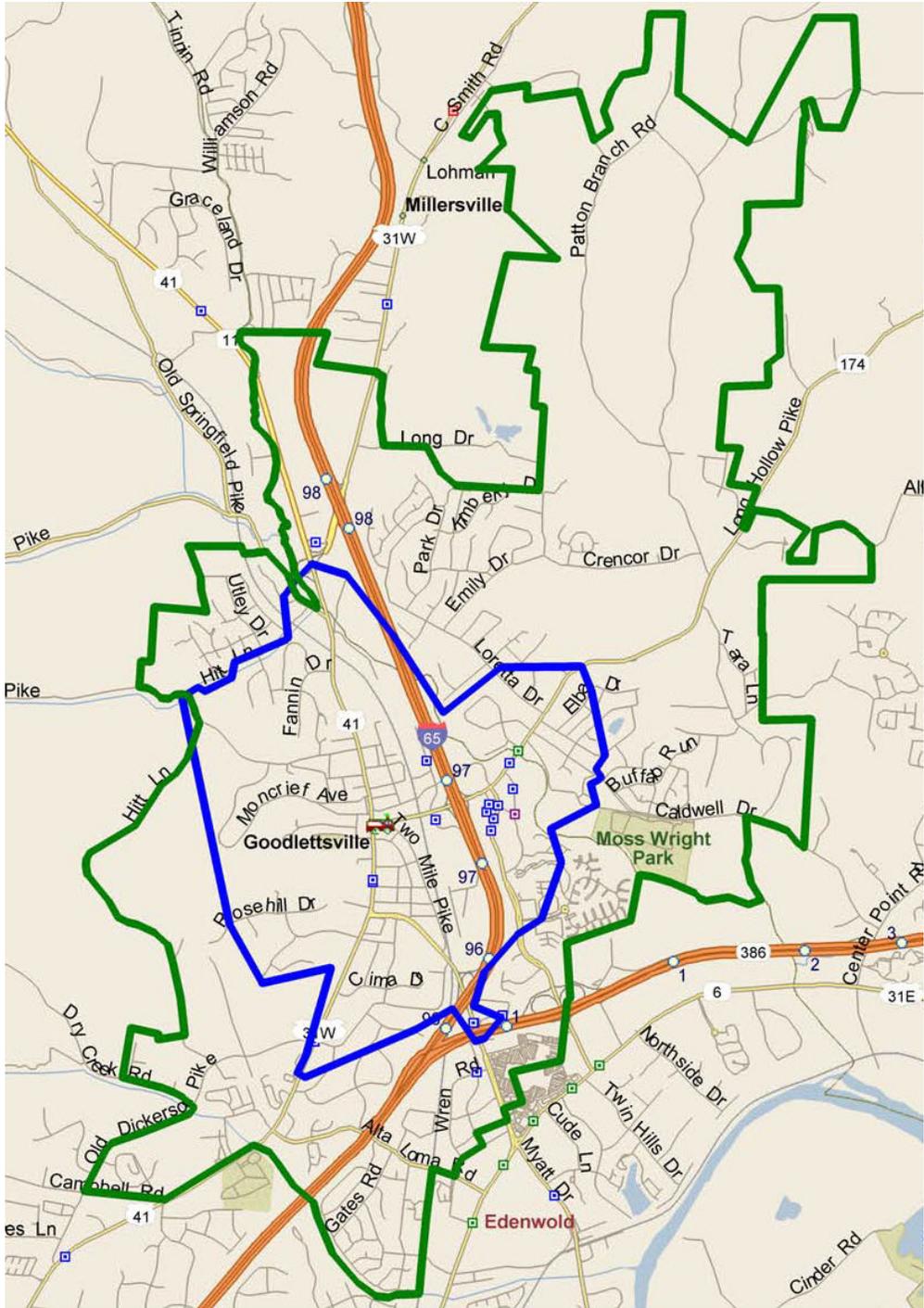
### Facilities

The map in Figure 2 shows the current city limits and the location of the single Goodlettsville fire hall. The green line represents the city limits, and the blue line illustrates the ISO defined 1½-mile service area for a fire station.

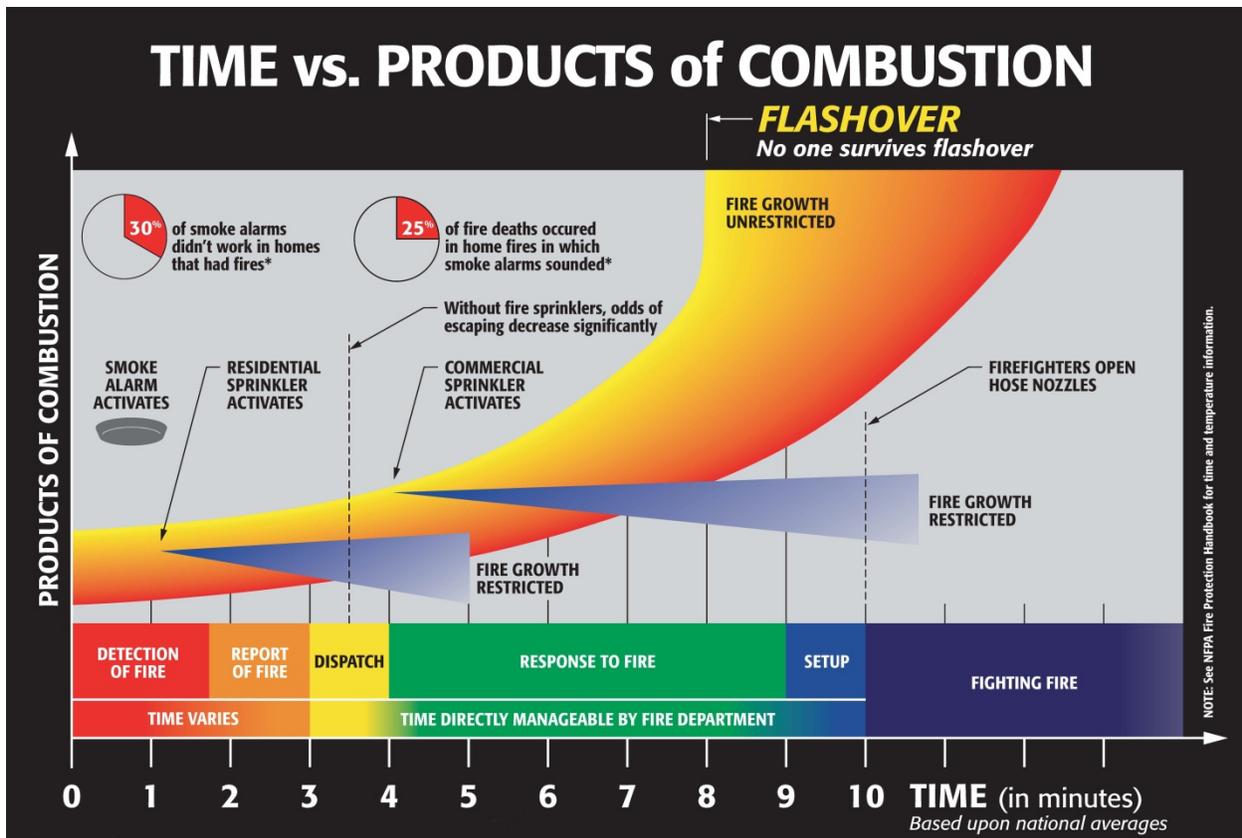
Goodlettsville's single fire station is inadequate for the size of the community. The city has chosen to augment fire protection with an automatic aid agreement with Metro Nashville, but the Metro Nashville station is several miles away, with a response time of over nine minutes. The city is growing, TFIRS reports show that annual call volume is increasing, and the city needs to assume more responsibility for fire protection within its corporate limits. Section 560 of the ISO Fire Suppression Rating Schedule states: "The built-upon area of the city should have a first-due engine company within 1½-miles and a ladder-service company within 2½-miles." To meet these criteria at the current city limits of 13.7 square miles, Goodlettsville needs 3.04 fire stations now and needs 1.11 ladder company right now.

When planning for adequate fire protection, city leaders must consider the phenomenon known as flashover. As a fire grows in size, it gives off temperatures that heat nearby objects. At some point in the time-temperature curve, all of the objects in the fire room reach their ignition temperature and ignite. The entire room bursts into flames, and the temperature rises to a point where no person can survive, including firefighters: this is flashover. The NFPA Fire Protection Handbook states: "During flashover, however, the temperature rises very sharply to such a level that survival of persons still in the room at that stage becomes unlikely. Thus the time interval between the start of the fire and the occurrence of flashover is a major factor in the time that is available for safe evacuation of the fire area." The development of fire conditions to reach the point of flashover is a function of temperature rise over time. A sufficient number of fire stations strategically located to provide quick response times might reduce the incidence of flashover, thus saving lives and property. As shown in the graph in Figure 3, flashover can occur within 9 to 11 minutes of the start of a fire. Locating fire stations to provide a total response time of six to seven minutes is advantageous, as firefighters need time after arrival to setup, lay fire hose, and gain access to the seat of the fire before they can actually begin to search for trapped occupants or extinguish the fire. This is where the reliance on Metro Nashville for automatic aid response, with a response time of nine minutes or greater, is inadequate except as a second alarm or backup response.

**Recommendation: Adopt a response time standard for the community and use this standard to plan for the placement of future fire stations and service levels. This study recommends a response time standard of 6:35 (six minutes, 35 seconds) for 90% of all responses, which is based upon recommendations found in NFPA Standard 1710, Standard for the Organization and Deployment of Fire Suppression Operations. The 6:35 breaks down as follows: ring time – 15 seconds, call processing time – 60 seconds, firefighter turnout time – 80 seconds, travel time – 240 seconds.**



**Figure 2 – City Limits and 1½ Mile Service Area for Fire Hall**



## Training

The department has a dedicated training officer, and comments about training were mostly positive. As a staff position, the training officer should work a Monday through Friday schedule to be available and provide training during the day. Overall, ISO awarded just 36% of the training credit available, so there is room for improvement. Fire personnel see the On-Target computerized training program a positive step that will improve documentation of training hours, but the computer program is lacking in hands-on practical ability. Since the department relies on Metro Nashville for assistance, the firefighters should train regularly with Metro Nashville crews. Daily on-duty structure fire related training by company personnel should equal twenty hours per month, but averaged 4.59 hours per month. The recruit training course should be at least 240 hours in length. The department received 58% credit for officer training, though all officers participated in the classes, and the department needs to have at least twelve hours of classes that cover qualifications and skills found in NFPA 1021 per officer each year. There are no consequences or accountability if personnel do not meet minimum required training. The department should maintain complete records on all training and pre-fire planning inspections as ISO deducted points for deficient recordkeeping. The department does not have a training and development program for upper level officers. The Nashville Fire Department provides EMS training with CEUs for recertification of personnel's EMT license.

**Recommendation: Provide 20 hours of structural firefighting training per firefighter per month.**

**Recommendation: Provide at least 240 hours of recruit firefighter training for each new recruit, either in-house or through an outside agency such as the Tennessee Fire and Codes Academy.**

**Recommendation: Provide 12 hours of leadership, management, supervisory, or incident management training per officer annually that complies with NFPA 1021, Standard for Fire Officer Professional Qualifications.**

**Recommendation: Establish a regular training schedule with Metro Nashville where firefighters from both departments train together.**

**Recommendation: Develop a plan for providing a drill tower and burn building for firefighters to use for practical experience in structural firefighting.**

**Recommendation: Provide college-level supervisory and management training for the fire chief and command staff officers. Encourage and support command staff officers to apply for and take National Fire Academy courses.**

**Recommendation: Establish an accountability program where every fire department member is held accountable in a manner to be determined jointly by the city and fire department for failure to meet minimum annual training requirements.**

## **Fire Prevention**

The easiest fire to fight is the one that never happens. ISO lists pre-fire planning credit under training, but it is really fire prevention through code enforcement, the elimination of fire hazards, and the maintenance of fire protection features. The department does pre-fire planning, and the pre-fire plans are very good, but the frequency of inspection is low. Last year the department inspected just over 17% of all of the commercial occupancies in Goodlettsville. The department should inspect all commercial occupancies at least once a year, document the inspection and create/update the pre-fire plan, and every firefighter should review every pre-fire plan annually.

**Recommendation: Inspect through a site visit every commercial occupancy in the city, update the pre-fire plan, and have every firefighter review every pre-fire plan annually. Document the firefighter pre-fire plan reviews as training.**

## Dispatch and Radio Communications

There is need for improvement with fire dispatch and radio communications as the dispatcher is the linchpin in fire department emergency operations. While it is true that people call the police department to report crime, most of those calls are after the fact. The crime is over, the burglary has occurred, the larceny has occurred, the person has been assaulted and the perpetrator has left the scene: there is no emergency. The “robbery in progress” or similar emergency in progress call is rare. Police officers patrol and do self-initiated activities (traffic stops, find open doors, etc.), which requires minimal assistance from the dispatcher. With fire and EMS calls, the emergency is in progress, and the situation continues to get worse (structure fire, heart attack, etc.) until the fire department arrives to intervene. NFPA Standard 1710 sets performance marks for dispatching: the phone must be answered within 15 seconds (that is less than 3 rings) 95% of the time, the call must be processed (this includes all conversation with the call and fact/information gathering, and determining what resources need to be sent) within 60 seconds 90% of the time. In other words, from the time the phone first rings until the dispatcher notifies the fire department to respond, no more than 75 seconds should elapse on 90% of the calls. This is a tough performance standard and cannot be met without sufficient resources (personnel, technology, training, etc.). All of the expensive fire equipment and well-trained and equipped firefighters are worthless unless they are dispatched promptly.

The Goodlettsville Police Department dispatches the fire department. Police and fire operations are different, and most people do not realize this. Police officers patrol and do many self-initiated activities, while fire departments respond from fixed locations. The terminology is different, and police dispatchers do not understand fire terminology. Police officers usually do not require a lot of two-way communications with dispatch, especially if they have in-car laptops or data terminals and can run their own license checks, etc., whereas the fire department may require the dispatcher to summon resources, find and provide additional information, and document the time of certain events during a fire operation. In a large fire operation, the dispatcher should summon additional local or mutual aid resources to protect the rest of the city, but this does not always happen, or the dispatcher may ask the incident commander what to do, which places an additional responsibility on the person who is commanding the firefighting operation. The police call volume is higher than the fire department call volume, but when there is a fire, the percent of dispatcher time and resources required to work the fire will be disproportional to the number of total incidents in progress in the dispatch office. A lack of attention to the fire department radio for any reason, especially during a working fire, may cause a dispatcher to miss a critical radio transmission, such as a “mayday.” It is common in Goodlettsville for fire units to call dispatch on the radio several times before the dispatcher answers them. The ISO evaluation revealed that the dispatch office is understaffed given the volume of calls processed. ISO noted that Goodlettsville’s call volume requires that five dispatchers be on-duty and awake at all times, and Goodlettsville averaged 2.86 dispatchers on-duty. Being understaffed affects efficiency and effectiveness.

Dispatch and radio communications is an interdepartmental function. The problems noted will be fixed through a combination of training and technology, seasoned with liberal cooperation. The fire and police chiefs should maintain good interdepartmental communication to identify and correct problems as soon as they occur.

**Recommendation: Provide dispatchers with formal fire department dispatcher training, and require that dispatchers ride-out and observe fire department operations for at least four hours every month.**

**Recommendation: Train and certify all dispatchers to provide Emergency Medical Dispatch (EMD) pre-arrival instructions on EMS calls and provide the EMD module in the CAD program.**

**Recommendation: Increase staffing in the dispatch office to provide five dispatchers on duty at all times, as recommended by ISO. Consider dedicated fire dispatchers to improve fire dispatch and communications.**

**Recommendation: Establish a quality assurance review procedure, similar to an EMS Q/A program, to review random dispatches for ways to improve dispatch services, and monitor compliance with the response time standard.**

## **Summary**

The purpose of this comprehensive management review is to provide a summary report of key issues affecting the provision of fire services in Goodlettsville. Nothing in this report should be seen as being a negative reflection of the Goodlettsville Fire Department. The firefighters and staff are dedicated and provide good service to the community. The report is an outside view of the department at a single point in time, making recommendations for improvement. It is our sincere hope that the city and fire department leaders will use the report as a guide for improving the delivery of fire-related emergency services in the community. The department has the potential to resolve the internal conflicts and cultural attitudes, many of which are self-imposed, that limit the department's ability to grow. There is no doubt that the members of the fire department have the capability to fix any problems noted and implement most of the recommendations made within existing budgetary restrictions. City and fire department leadership should determine a reasonable time line and plan for prioritizing and adopting the recommendations proposed. MTAS would like to thank the City of Goodlettsville, city leaders, and the men and women of the Goodlettsville Fire Department for their professionalism, cooperation, and assistance in this study.

## Recommendations

1. Use the ISO Public Protection Classification Summary Report as a resource for creating a strategic plan for providing and improving community fire protection.
2. The fire chief should establish weekly staff meetings with the shift captains, executive assistant, and training officer to discuss department issues, inform staff on city issues as appropriate, gauge department performance against benchmarks, monitor progress on the strategic plan, discuss budget administration, and improve intradepartmental communication.
3. Establish the position of assistant fire chief with the authority and responsibility as second-in-command of the department for the direct supervision of the fire captains, daily operational activities, personnel management, facilities, apparatus, and equipment.
4. Establish a workforce development and succession plan for the department. The fire chief should work closely with the training officer to develop and offer internal and external training programs to improve the knowledge, skills, and abilities of personnel in all positions, and prepare them for advancement and greater responsibility.
5. Establish a formal officer development and training program following NFPA standards. Training classes are available through the state fire academy. The program should be required for all officers, and available to firefighters who may aspire to be officers.
6. Establish as a job requirement that fire officers obtain a level of certification through the Tennessee fire commission commensurate with their position. Company officers should achieve Fire Officer I certification, captains should achieve Fire Officer II certification, and chief and staff officers should achieve Fire Officer III and IV certification.
7. Goodlettsville should adopt a plan to provide an effective firefighting response of sixteen personnel to a structure fire within 480 seconds (8 minutes) travel time on 90% of all incidents. Travel time is the time elapsed from when the fire apparatus leaves the fire station until it arrives on the scene of the emergency.
8. Goodlettsville should complete a community risk assessment and establish a standard of cover for each identified risk.
9. Goodlettsville should review current response assignments to ensure that a sufficient number of apparatus and personnel are dispatched based on the standard of cover.

10. Make sure that sufficient copies of the current standard operating procedures manual are available to all personnel, and that all personnel know where to find a copy.
11. Appoint a committee to review the standard operating procedures manual and make recommendations for updates.
12. After the manual has been reviewed and updated, train and then test all personnel on the contents of the manual to ensure that they understand the department's policies and procedures.
13. Staff the aerial ladder platform with sufficient personnel to respond and operate the truck effectively on structure fires.
14. Inventory each fire apparatus to identify missing tools, hose, and equipment, and purchase missing items to bring all apparatus into compliance with NFPA and ISO recommendations and improve fire suppression capability.
15. Establish an apparatus replacement program to fund and schedule the transition and replacement of fire apparatus on the 15 year/25 year life cycle recommended by NFPA. After the purchase of a new fire engine, retain one engine to serve as the department's reserve pumper.
16. Adopt a response time standard for the community and use this standard to plan for the placement of future fire stations and service levels. This study recommends a response time standard of 6:35 (six minutes, 35 seconds) for 90% of all responses, which is based upon recommendations found in NFPA Standard 1710, Standard for the Organization and Deployment of Fire Suppression Operations. The 6:35 breaks down as follows: ring time – 15 seconds, call processing time – 60 seconds, firefighter turnout time – 80 seconds, travel time – 240 seconds.
17. Provide 20 hours of structural firefighting training per firefighter per month.
18. Provide at least 240 hours of recruit firefighter training for each new recruit, either in-house or through an outside agency such as the Tennessee Fire and Codes Academy.
19. Provide 12 hours of leadership, management, supervisory, or incident management training per officer annually that complies with NFPA 1021, Standard for Fire Officer Professional Qualifications.
20. Establish a regular training schedule with Metro Nashville where firefighters from both departments train together.

21. Develop a plan for providing a drill tower and burn building for firefighters to use for practical experience in structural firefighting.
22. Provide college-level supervisory and management training for the fire chief and command staff officers. Encourage and support command staff officers to apply for and take National Fire Academy courses.
23. Establish an accountability program where every fire department member is held accountable in a manner to be determined jointly by the city and fire department for failure to meet minimum annual training requirements.
24. Inspect through a site visit every commercial occupancy in the city, update the pre-fire plan, and have every firefighter review every pre-fire plan annually. Document the firefighter pre-fire plan reviews as training.
25. Provide dispatchers with formal fire department dispatcher training, and require that dispatchers ride-out and observe fire department operations for at least four hours every month.
26. Train and certify all dispatchers to provide Emergency Medical Dispatch (EMD) pre-arrival instructions on EMS calls and provide the EMD module in the CAD program.
27. Increase staffing in the dispatch office to provide five dispatchers on duty at all times, as recommended by ISO. Consider dedicated fire dispatchers to improve fire dispatch and communications.
28. Provide dispatchers with formal fire department dispatcher training, and require that dispatchers ride-out and observe fire department operations for at least four hours every month.
29. Train and certify all dispatchers to provide Emergency Medical Dispatch (EMD) pre-arrival instructions on EMS calls and provide the EMD module in the CAD program.
30. Increase staffing in the dispatch office to provide five dispatchers on duty at all times, as recommended by ISO. Consider dedicated fire dispatchers to improve fire dispatch and communications.
31. Establish a quality assurance review procedure, similar to an EMS Q/A program, to review random dispatches for ways to improve dispatch services, and monitor compliance with the response time standard.

## Appendix A – Estimated Travel Times and Total Response Time in Minutes

Distance To Travel in Miles	Estimated Travel Time	Ring Time	Call Processing Time	Fire Dept. Turnout Time	Total Response Time
0.25	1.08	0.25	1.00	1.33	3.66
0.38	1.30	0.25	1.00	1.33	3.88
0.50	1.50	0.25	1.00	1.33	4.08
0.75	1.93	0.25	1.00	1.33	4.51
1.00	2.35	0.25	1.00	1.33	4.93
1.25	2.78	0.25	1.00	1.33	5.36
1.50	3.20	0.25	1.00	1.33	5.78
1.75	3.63	0.25	1.00	1.33	6.21
2.00	4.05	0.25	1.00	1.33	6.63
2.25	4.48	0.25	1.00	1.33	7.06
2.50	4.90	0.25	1.00	1.33	7.48
2.75	5.33	0.25	1.00	1.33	7.91
3.00	5.75	0.25	1.00	1.33	8.33
3.25	6.18	0.25	1.00	1.33	8.76
3.50	6.60	0.25	1.00	1.33	9.18
3.75	7.03	0.25	1.00	1.33	9.61
4.00	7.45	0.25	1.00	1.33	10.03
4.25	7.88	0.25	1.00	1.33	10.46
4.50	8.30	0.25	1.00	1.33	10.88
4.75	8.73	0.25	1.00	1.33	11.31
5.00	9.15	0.25	1.00	1.33	11.73
5.25	9.58	0.25	1.00	1.33	12.16
5.50	10.00	0.25	1.00	1.33	12.58
5.75	10.43	0.25	1.00	1.33	13.01
6.00	10.85	0.25	1.00	1.33	13.43
6.25	11.28	0.25	1.00	1.33	13.86
6.50	11.70	0.25	1.00	1.33	14.28
6.75	12.13	0.25	1.00	1.33	14.71
7.00	12.55	0.25	1.00	1.33	15.13

### Notes:

- Travel time was calculated using the Rand formula of  $T = 1.7(D)$  to estimate travel time, where T is time and D is the distance to be covered expressed in miles.
- The 15-second ring time, 60-second call processing time, and 80-second turnout time are based on recommendations found in NFPA Standard 1710.
- Minutes expressed as decimal minutes: to compute seconds, multiply the decimal number by 60. For example, 3.66 decimal minutes equals 3:40 (three minutes, forty seconds).

## Appendix B – Fire Department Organizational Chart

