



# Spring Hill Fire Department

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4000 Campbell Station Pkwy, Spring Hill, TN 37174  
Phone: 615.302.3462 Fax: 615.302.0612

## STANDARD OF COVER

The Committee creating this document includes:

**Chief Jim Swindle**

**Admin Assistant Tracy Hodge**

**Captains Boyd, Garza, and Glenn**

**Lt's Jeff Hardy, Wesley Hickman**

January 14, 2013

### About the Spring Hill Fire Department

The Spring Hill Fire Department has three fire stations and is manned by 39 Fire personnel, 12 Part-time personnel and 12 contracted EMS personnel (not paid by the city).

The Department protects an area of 27 square miles and 29,733 citizens.

The Department is located 30 miles due south of Nashville, TN.

The Department has a very stringent training and code enforcement program and training averages 370 hours a year per person.

The Fire Code Enforcement Division has 1 certified Fire Inspector and 3 currently in training to become certified Fire Inspectors with one Inspector on each shift that conduct daily inspections of City occupancies to control fire hazards and maintain enforcement of the National Fire Prevention Codes.

The Administrative section consists of 1 Fire Chief, and an Administrative Assistant with duties of maintaining budgetary issues, purchasing, payroll, grants and other administrative duties.

The Department averages 80%-85% medical/rescue calls in the City of Spring Hill and work 24 hr. shifts on duty and 48 hours shifts off duty.

The Department operates 1 Ladder company, 2 Engine companies, 1 Rescue company, 1 Reserve Engine, 1 Brush company and 1 Command Vehicle. The EMS contracted ambulance service (Life Guard) works in our houses and under our authority. They move through the cities on all calls in support of our operations and for the safety of our personnel.



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### NFPA 1710

National Fire Protection Association (NFPA) 1710 is the Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Career Fire Departments. This standard outlines an organized approach to defining levels of service, deployment capabilities, and staffing for "substantially" career fire departments.

Specifically NFPA 1710 provides standard definitions for fire apparatus, personnel assigned, procedural guidelines within which they operate, and staffing levels needed to accomplish specific tasks on arrival at an incident. NFPA 1710 states that fire departments shall establish a performance objective of not less than 90 percent for each of the following response time objectives:

- One and a half minute (90 seconds) for turnout time.
- Four minutes (240 seconds) or less for the arrival of the first-arriving engine company at a fire suppression incident and/or eight minutes (480 seconds) or less for the arrival of a full alarm assignment at a fire suppression incident (including one individual for incident command outside of the hazard area).
- Four minutes (240 seconds) or less for the arrival of a unit with first responder, or higher level of capability at an emergency medical incident.
- Eight minutes (480 seconds) or less for the arrival of an advanced life support unit at an emergency medical incident, where this service is provided by the fire department.
- NFPA 1710 outlines SHFD has not adopted the response times in NFPA 1710 as a local standard, it will regularly measure its response time performance against those times. SHFD also utilizes standards established by the American Heart Association (AHA) as related to emergency medical incidents.

"Standard of cover" is a term adopted from Western Europe and other countries where there are national standards for fire service deployment. A standard of cover policy describes the deployment "coverage" for a given community or area.

Such deployment policies are based on risk and on community expectations regarding outcomes should an emergency occur. Having a broadly understood and accepted system for determining deployment helps policy-makers at all levels understand deployment resource needs and reduces the differences from community to community that can occur if no common policies exist.

When starting to build the accreditation system, the International Association of Fire Chiefs and its partner, the International City/County Managers Association, of course



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knew about the Insurance Services Office measures for fire service, but found them too simplistic when compared to other countries' comprehensive soc statements. Additionally, then or at this writing, there was no national consensus on deployment from the NFPA or elsewhere.

The IAFC/ICMA accreditation task force founders therefore asked a subcommittee to mold the best of the international soc perspectives and current American fire service thoughts on deployment into a new systems approach to deployment evaluation. This work was accepted when the IAFC and ICMA adopted the documents that created the CFAI.

More than a standard, a system

why did the CFAI'S founders adopt a systems approach to deployment measurement instead of a linear prescriptive formula? After all, it's much easier just to measure one deployment factor, such as travel time or staffing per company. They chose a comprehensive systems approach to analyzing deployment in order to thoroughly assess whether a department pursuing accreditation is properly deployed to meet its community's risks and expectations.

While working with multiple components to a deployment analysis is admittedly more work, it yields a much better result. If we look just at travel time, for instance, and not at the frequency of multiple calls, the analysis could miss overworked companies. If we don't use risk assessment and deploy based on getting enough resources to a given risk for an effective outcome, we could under deploy to some incidents.

The accreditation deployment subcommittee therefore went with a comprehensive process that would factor all relevant issues into a deployment analysis. In this systems approach, if you aren't large enough or complicated enough to need all the parts, fine. But if a larger agency does need all the "tools" in the standard of cover toolbox, they're there to use. The soc process was adopted as a "core competency" in the self-assessment process that must be met for an agency to be accredited by the CFAI.



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The CFAI standard of cover process has eight parts.

1. Existing deployment: Each agency has something in place today.
2. Community outcome expectations: What is expected of the response agency?
3. Community risk assessment: What assets are at risk in the community?
4. Distribution study: The location of first-due resources (typically engines).
5. Concentration study: First-alarm assignment or effective response force.
6. Historical reliability: Is there a multiple call frequency (call stacking) issue?
7. Historical response effectiveness studies: What percentage of compliance does the existing system deliver?
8. Overall evaluation: With proposed standard of cover statements by risk type.

### Existing deployment.

Each agency has something in place today, so the study starts with understanding the current system, how it came to be, the expectations placed on it and if it was ever adopted by the elected officials in charge. A surprising number of communities have no response policies adopted by their governing body.

### Community outcome expectations.

The next factor to consider is what the community expects of the department. Has there ever been a discussion with the elected officials on what service goals the department ought to deliver and measure it against?

For example, a fire department is probably expected to confine fire damage to the room of origin. A rural agency might have to be satisfied with an "exposure" level of service, so that a house fire doesn't spread to the surrounding grass or forest area. Additional goals should be set at this step for EMS,, hazmat response and



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special

rescue.

Community risk assessment.

This is a critical step in the soc process. The department will respond to a variety of risks. Different risk types have different outcome needs, and some of those require additional deployment to achieve an acceptable outcome. The soc process analyzes deployment backward from risk assessment. That is, how many people must arrive in what time frame, properly trained and equipped, to achieve the desired outcome? The soc process uses critical task analysis to determine this by taking a given objective, such as confining the fire to the room of origin in a dwelling.

Structure fire risk assessment is performed on the community's building stock. Common fire and life safety factors, such as fire flow and code compliance for life safety, are used to determine a risk classification. The four classes range from Low to Moderate, Significant and finally Maximum risk. The majority of most communities are Moderate or typical risk, which are dwelling units. To assist in achieving standardized risk typification, the accreditation commission had a committee, in cooperation with the USFA, develop a software program to evaluate and score building risk.

This program is called Risk, Hazard and Value Evaluation, or RHAVE. It was developed in a common database program and will be available free from the USFA in the near future. Departments can use it to collect data from existing city sources or field surveys and then generate maps that accurately display risk in a community. Other commonly available tools are used to determine community EMS risk or wild land interface zone risk.

Distribution study.

This is the locating of first-due, all risk, initial intervention resources (typically engines). These station location(s) are needed to ensure rapid deployment to minimize and terminate average, routine emergencies. Distribution is measured by the percentage of the community covered by a first-due engine. A sample



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distribution policy could look like:

“For 90% of all incidents, the first-due unit shall arrive within four minutes travel or six minutes total reflex time. The first-due unit shall be capable of advancing the first line for fire control or starting rescue or providing Basic Life Support (or ALS) for medical incidents.”

As shown here, a distribution policy has to have a fractal performance measure and a time measure and state a service level objective. This objective is clearly written so that policy-makers understand that the first-due resource can't do everything by itself.

Concentration study.

This is the spacing of multiple resources arranged (close enough together) so that an initial “effective response force” can be assembled on scene within enough time to most likely stop the escalation of the emergency for a given risk type. Concentration is also measured by what percentage of the community is covered by the effective response force (first-alarm assignment). A sample concentration policy could look like:

“In a Moderate risk area, an initial effective response force shall arrive within 8 minutes travel or 10 minutes total reflex time, 90% of the time, and be able to provide 1,500gpm for firefighting, or be able to handle a five-patient emergency medical incident.”

Like a distribution policy, a concentration policy has to have a fractal performance measure and a time measure and state a service level objective. This objective is clearly written so that policy-makers understand that the effective response force is sized and timed to stop the escalation of the emergency for the given risk type. Some incidents will require additional resources for rehabilitation overhaul and so forth.



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Historical reliability.

A soc study needs to look for a multiple call frequency issue (call stacking). Experience has shown that most agencies are busiest when humans are out and about doing stupid things. Don't assume that only the metros or large county agencies have a call-stacking problem. I've been in small departments where they also have this headache of too many simultaneous calls for service. This phase of the study can get complicated in large departments. The review of stacked calls needs to occur on both a department-wide and a first-due unit basis.

Being a small agency we don't have a good statistician at hand. This analysis can get complicated, as the effect of multiple simultaneous incidents ripples across the city department at peak hours of the day and a team work effect should be done to try and achieve the goal.

While at times difficult, the analysis of simultaneous calls can produce the most meaningful results. A department's deployment may look great for travel time on a map, yet suffer terribly due to simultaneous calls for service.

Historical response effectiveness studies.

What percent of compliance does the existing system deliver? If, for example, the current deployment is supposed to answer all calls within 5-6 minutes, 90% percent of the time, does it? If not, why not? Besides call stacking, does the agency have a problem with traffic patterns, dispatch reflex times, crew turnout times, etc.? All these issues affect time and need to be measured and dealt with. For example, if an agency has trouble with downtown or rush-hour surface street traffic, and has not invested in traffic signal pre-emption, they could make a case to do so.

Overall evaluation.

Here's where "the rubber meets the road" and the fire officer's experience with his or her community comes into play. The proposed performance goals by risk type are compared to actual and proposed performance using good statistics and geographic mapping tools. However, the data also must match the fire officer's knowledge of actual incidents and outcomes in their community. Thus be careful of "garbage-in, garbage-out" when processing all the necessary data elements. If



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computers geographic travel time analysis disagrees with actual incident data, find out why!

After all the study parts are evaluated together to form a whole, any changes in deployment are proposed to the governing body, complete with a cost-benefit analysis for those changes. After any change or at least annually thereafter, the agency should re-benchmark itself against its performance goals to maintain an accurate picture of its deployment system.

The soc process supports firefighter safety and isn't just about the number of firefighters per company, nor does the soc disregard two-in/two-out, rapid intervention teams and accountability systems. Rather, the process uses these needs during the critical tasking study phase to ensure that enough personnel arrive at each risk type to safely and effectively accomplish the community's objectives. Thus units responding to incidents routinely in Significant or Maximum risk areas might well be justified in staffing five or more members per crew, and/or a department might use heavy rescue or "flying" squads to increase first-alarm staffing on these incidents.

Delivering the goods does the soc process work? In the opinion of this author, the CFAI and agencies accredited to date, the answer is a resounding yes! The agencies accredited to date have all used the soc process to understand and explain that they have a deployment system that works.

There are several tools that can help with the data gathering, measuring and displaying of soc study results, but they're not essential. I've seen good studies that used nothing more than Mylar overlays on top of a department base map to show risk type locations, station travel areas and incident locations. Spreadsheet programs such as Excel can be used to import dispatch data and analyze performance times and the frequency of multiple calls for service.

Beyond these basic tools, computer programs have really made the soc process more powerful and less labor-intensive. Many departments already use a geographic information system to provide run maps and dispatch system geo files.



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Many such systems will also do credible travel-time analysis over the local street network, which is far more useful than drawing station area circles or diamond areas on a map. Some firms have built software packages that combine geographic mapping with dispatch incident data analysis that allow all the study steps to be readily preformed.

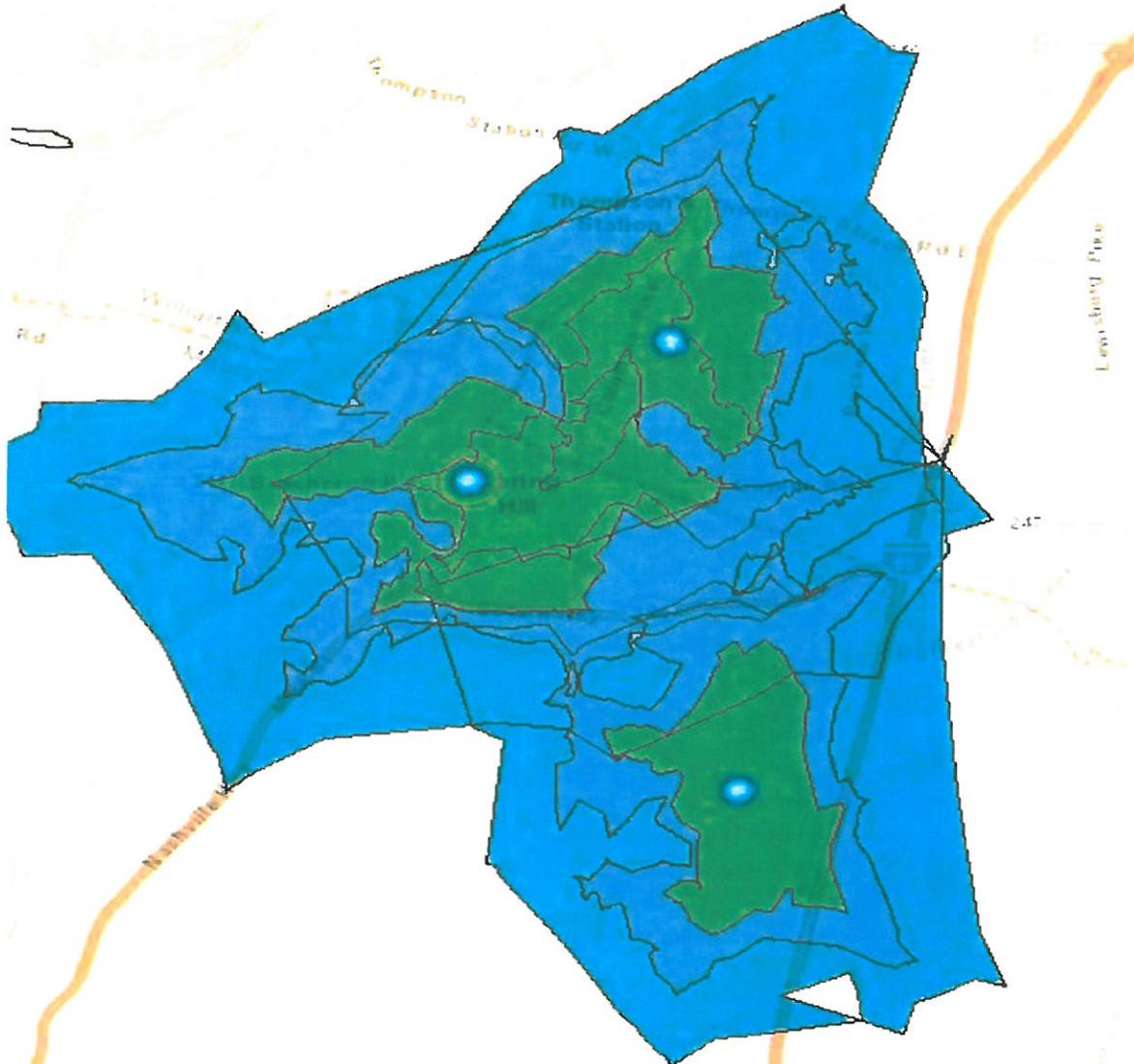
Finally, though, all the pretty graphics and tables of figures can't alone explain deployment to elected officials, media and the community. All good studies come packaged in a well-written staff report, presented by a credible fire chief, who, when backed up with significant facts about the community's risk and deployment performance, becomes a hard act to beat!

Remember that each agency defines its own standard of cover after a careful evaluation of all the factors to deployment in their area. Agencies should also acknowledge where appropriate alternative methods, such as central station alarms, fire sprinklers, mutual or automatic aid and even building roads, can improve response times. An additional fire station isn't always the only or best answer, nor should any one method preclude another.



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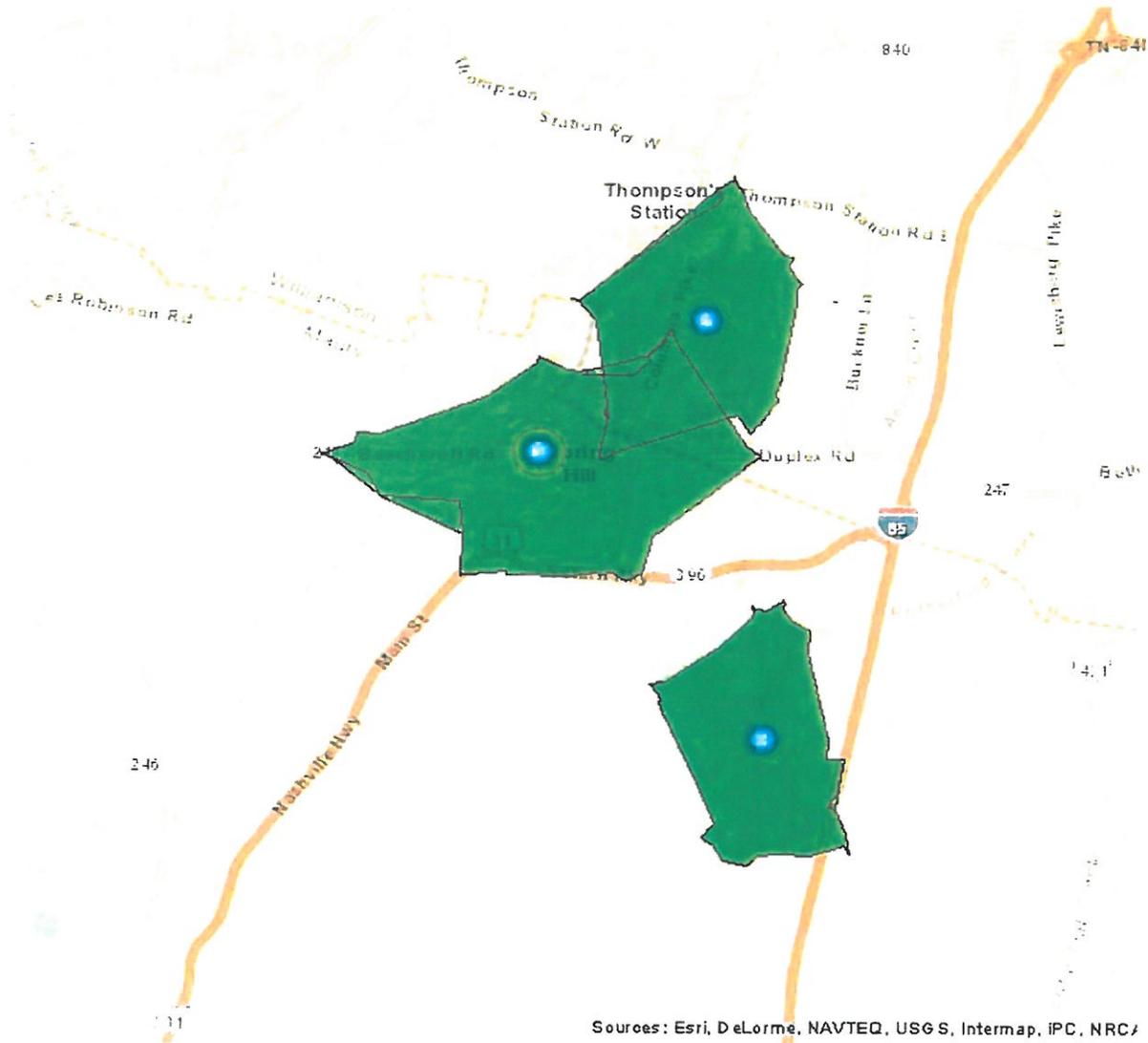
Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NF

## 4-6-8- Minute Response times



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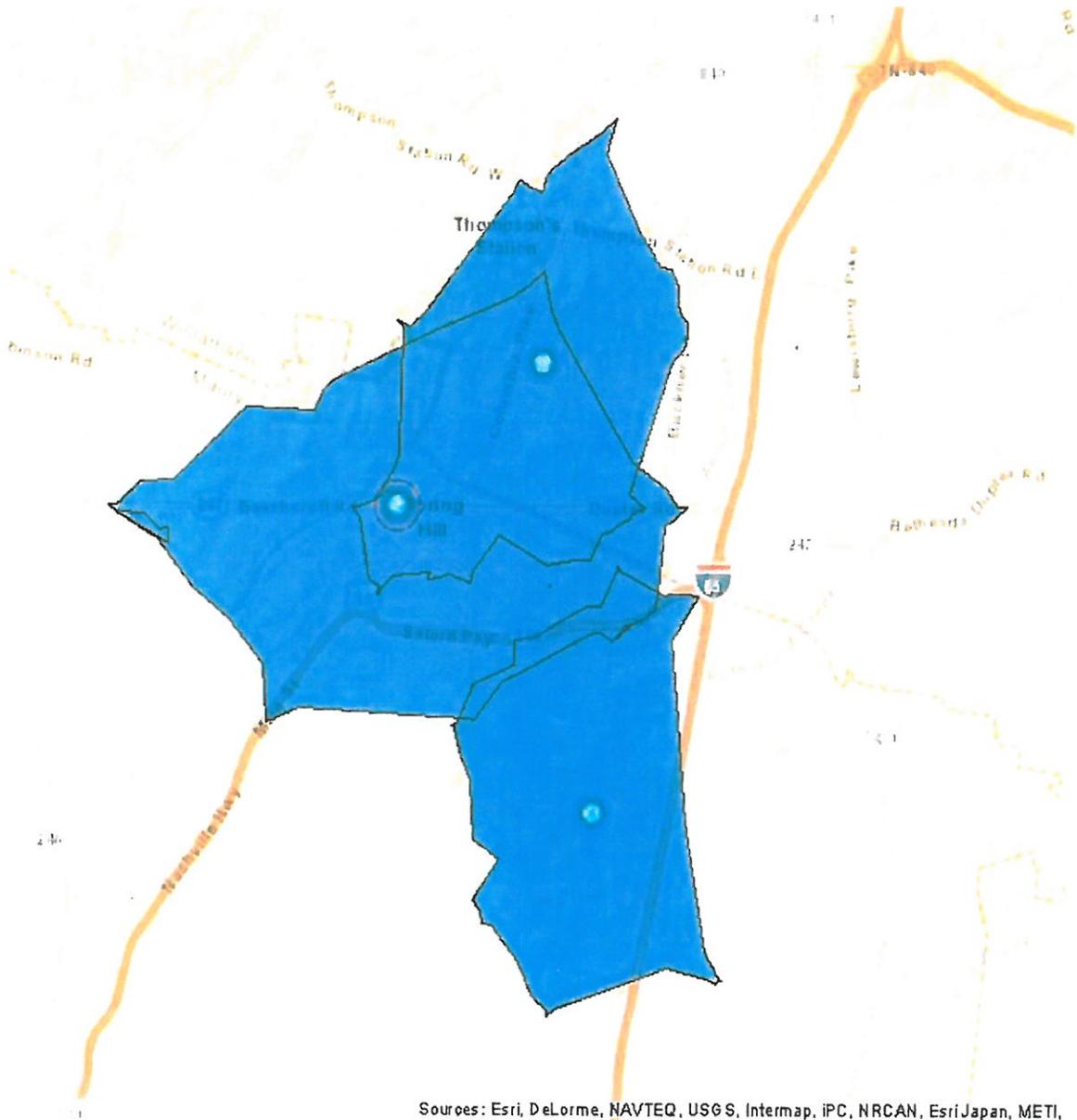
Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRC/

**4- minute response times**



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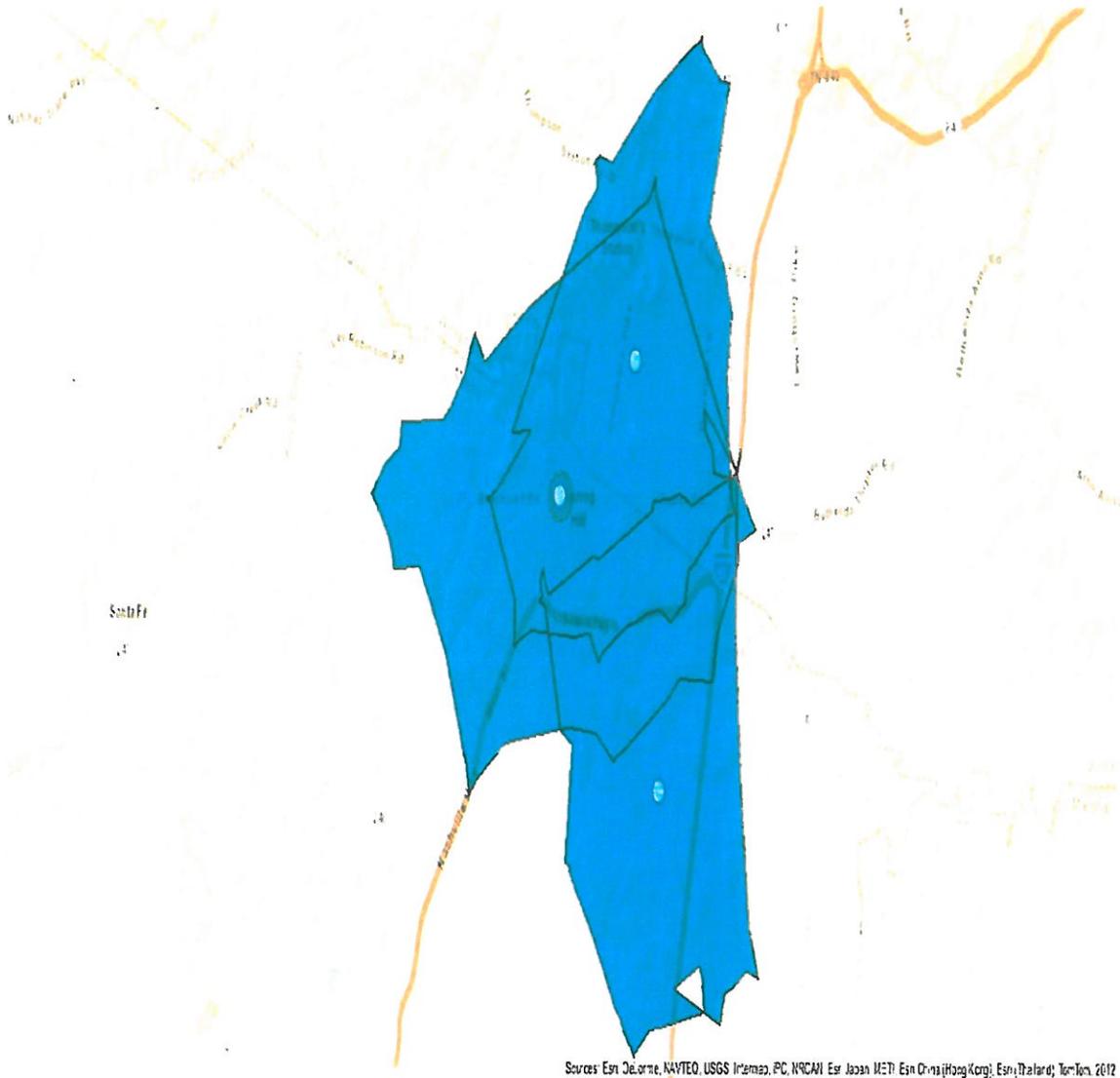
Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI,

**6 minute response times**



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**8 Minute Response**



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## Apparatus and Personnel Responses to various calls

### **Standard First Alarm Response, Structure Fires/Gas Emergencies**

1 Chief 1 \*\*\*  
2 Engine Companies 5  
1 Truck/Rescue Company 4  
1 Ambulance 2  
**5 Total 12**

### **Standard First Alarm Response, Automatic Alarms**

1 Chief 1 \*\*\*  
2 Engine Companies 5  
1 Truck/Rescue Company 4  
**4 Total 10**

### **Standard First Alarm Response, Hazardous Materials**

1 Chief 1 \*\*\*  
1 Engine Companies 3  
1 Rescue 2  
**3 Total 6**

### **Standard First Alarm Response, Technical Rescue**

1 Chief 1 \*\*\*  
2 Engine Companies 5  
1 Rescue Company 4  
**4 Total 10**

### **Standard First Alarm Response, Water Rescue Response:**

1 Chief 1 \*\*\*  
2 Engine Companies 5  
1 Truck/Rescue Company 4  
**4 Total 10**



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## **Standard First Alarm Response, Trench/Structural Collapse**

1 Chief 1 \*\*\*  
2 Engine Company 5  
1 Rescue Company 4  
1 Special Operations Trailer 2  
**5 Total 16**

## **Standard First Alarm Response, Medical Emergencies**

1 Engine or Truck/Rescue Company 3/4  
**1 Total 3/4**

## **Standard First Alarm Response, Vehicle Accidents with Confirmed Trap**

1 Engine Company 5  
1 Rescue Company 4  
1 Engine Company 3  
1 Chief 1 \*\*\*  
**4 Total 13**

## **Standard First Alarm Response, Vehicle Accidents with injuries**

1 Engine Companies 3  
1 Rescue Company 4  
**2 Total 7**

**\*\*\* denotes Chief, Deputy Chief or other Designated Command Level Officer.**



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## Available Resources Personnel and Funding:

Spring Hill Fire Department has an annual budget of 3.3 Million Dollars, 39 full-time firefighters and staff, and 12 part-time firefighters. The full-time response personnel (firefighters, medical, chief officers) are available as follows:

Station: 1 Beech Croft Rd.

2-3 Career,

Career personnel available the following hours per day: 24 hour shifts

Station: 2 Port Royal Road

4-5 Career, 2 EMS

Career available the following hours per day: 24 hour shifts

Station: 3 H.Q. Campbell Station Pkwy.

5-6 Career, Part-time as needed to maintain minimum staffing

Career available the following hours per day: 24 hour shifts

## Response Assets:

Spring Hill Fire Department currently has the following response resources:

Engines 3

Ladder Trucks 1

Rescue or Utility Squads 1

Ambulances 2 Contracted Services

Brush Units 1

Other Command Vehicle

## Service Level Objectives

Given the above described risks, Spring Hill has established the following service level objectives. These are based on the level of risk, historical incident type and volume, and the financial ability of the fire department to meet local, regional, state, and national standards and laws associated with providing fire and rescue services to the community.

In particular, Standard Operating Procedures for Firefighters requires that fire departments maintain a written policy describing their organizational structure, functions, and training. In addition, the S.O.P.s describes specific parameters for firefighting, and in particular limits interior firefighting to those



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departments that can maintain a specified level of response, provide regular defined training, maintain and regularly test respiratory equipment, and sustain other critical requirements.

The department will maintain sufficient personnel and equipment so that it can respond to any level of firefighting to include, Structural, Hazardous Materials, Motor Vehicle Accidents, Medical/Rescue, and Terrorist events in addition to any other needed calls for service.

Other Services Provided:

Fire Inspection, Prevention, and Public Education

Fire Investigation

Hazardous Materials Response

Auto Extrication

Specialty Rescue

# Comparison of Fire Department Budget

Account	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
42200-100 Salaries	\$1,729,400.00	\$1,640,000.00	\$1,699,623.00	\$1,859,750.00	\$1,898,100.00
42200-112 OT	\$30,000.00	\$20,000.00	\$20,000.00	\$15,000.00	\$5,000.00
42200-119 Other Salaries	\$38,200.00	\$50,000.00	\$60,000.00	\$55,000.00	\$5,000.00
42200-134 Christmas Bonus	\$4,000.00	\$3,800.00	\$3,800.00	\$3,800.00	\$5,000.00
42200-141 Payroll Taxes	\$117,800.00	\$129,500.00	\$130,021.00	\$142,271.00	\$146,235.00
42200-142 Health Insurance	\$450,000.00	\$446,000.00	\$455,239.00	\$489,133.00	\$535,344.00
42200-143 Retirement	\$78,100.00	\$88,000.00	\$92,459.00	\$101,170.00	\$103,257.00
42200-147 Unemployment Taxes	\$2,500.00	\$3,000.00	\$2,660.00	\$2,870.00	\$4,060.00
42200-200 Contract Services	\$3,800.00	\$5,000.00	\$4,000.00	\$6,800.00	\$8,300.00
42200-211 Postage				\$100.00	\$100.00
42200-235 Membership and Dues	\$2,000.00	\$1,600.00	\$2,000.00	\$2,000.00	\$4,500.00
42200-236 Public Relations				\$10,000.00	\$10,000.00
42200-241 Electric	\$15,000.00	\$15,000.00	\$15,000.00	\$19,000.00	\$19,000.00
42200-244 Natural Gas	\$8,000.00	\$7,200.00	\$6,000.00	\$10,000.00	\$10,000.00
42200-245 Telephone	\$13,000.00	\$10,000.00	\$13,000.00	\$27,000.00	\$27,000.00
42200-248 MSA				\$750.00	\$750.00
42200-254 Architectural			\$2,000.00	\$2,000.00	\$2,000.00
42200-261 Vehicle R&M	\$40,000.00	\$40,000.00	\$45,000.00	\$45,000.00	\$45,000.00
42200-262 Equipment R&M	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$6,000.00
42200-265 R&M Grounds/Buildings	\$8,000.00	\$8,000.00	\$9,000.00	\$9,000.00	\$18,000.00
42200-280 Travel & Training	\$10,000.00	\$6,000.00	\$6,000.00	\$18,000.00	\$18,000.00
42200-284 Meals and Entertainment		\$400.00	\$400.00	\$400.00	\$400.00
42200-291 Health and Protective Services	\$4,000.00	\$2,000.00	\$3,000.00	\$3,000.00	\$3,000.00
42200-310 Office Supplies			\$3,000.00	\$1,000.00	\$1,000.00
42200-320 Other Supplies	\$40,000.00	\$40,000.00	\$43,000.00	\$65,500.00	\$75,500.00
42200-322 EMT Equipment /Supplies	\$1,500.00	\$500.00	\$1,000.00	\$1,000.00	\$1,000.00
42200-326 Clothing and Accessories	\$30,000.00	\$20,000.00	\$20,000.00	\$21,500.00	\$21,500.00
42200-331 Gas,Oil, and Diesel	\$22,000.00	\$16,500.00	\$16,000.00	\$16,000.00	\$20,000.00
42200-510 TML Insurance	\$55,000.00	\$99,300.00	\$95,100.00	\$90,000.00	\$90,000.00
42200-790 Misc	\$1,000.00	\$1,000.00	\$2,500.00	\$2,500.00	\$2,500.00
42200-611 Ladder Payment		\$66,600.00	\$74,000.00	\$78,000.00	\$78,000.00
42200-621 E2 Payment				\$41,000.00	\$41,000.00
42200-632 Ladder Interest		\$39,000.00	\$31,800.00	\$28,000.00	\$28,000.00
42200-641 E2 Interest				\$10,000.00	\$10,000.00
42200-900 Capital Outlay	\$108,000.00		\$60,000.00		
42200-941 Fire Truck			\$54,000.00		
<b>Total</b>	<b>\$2,814,300.00</b>	<b>\$2,761,400.00</b>	<b>\$2,969,602.00</b>	<b>\$3,179,544.00</b>	<b>\$3,292,546.00</b>