



WINTERVILLE

A slice of the good life!

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MIKE WELDIN, BUILDING INSPECTOR/CODE ENFORCEMENT OFFICER



TOWN COUNCIL

SPECIAL MEETING AGENDA

May 3, 2016

5:30 P.M.

WINTERVILLE TOWN HALL EXECUTIVE CONFERENCE ROOM

- I. **Call to Order**
- II. **Invocation**
- III. **Welcome**
- IV. **Approval of Agenda**
- V. **Budget Update**
- VI. **Fire Department Master Plan**
- VII. **Adjourn**

SPECIAL NOTICE:

The meeting is open to the public; however, public comments will not be rec



**Town of Winterville
Town Council
Agenda Abstract**

Item Section: Ne

Meeting Date: May 3, 2016

Presenter: Terri L. Parker, Town Manager

Item to be Considered

Subject: FY 2016-2017 Budget Update

Action Requested: N/A.

Attachments: Any information will be handed out at the Meeting.

Prepared By: Terri L. Parker, Town Manager

Date: 4/29

ABSTRACT ROUTING:

TC 5/3/2016

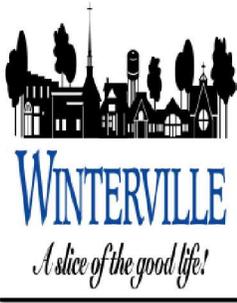
FD _____

TM tlp – 4/29/2016

Final

Supporting Documentation

The Town Manager and Finance Director will be giving an update of the FY 2016-2017 Budget. Applicable trends related to anticipated revenues will primarily be discussed.



**Town of Winterville
Town Council
Agenda Abstract**

Item Section: Pr

Meeting Date: May 3, 2016

Presenter: David Moore, Fire Chief

Item to be Considered

Subject: Fire Department Master Plan

Action Requested: Receive Presentation

Attachments: Copies of the Master Plan document were distributed to the Town Council at the

Prepared By: David Moore, Fire Chief

Date: 5/2/2

ABSTRACT ROUTING:

TC 5/3/2016 jjs

FD _____

TM 5/3/16

Final

Supporting Documentation

Fire Department Master Plan final presentation by Emergency Services Consulting International

Budgetary Impact: TBD

Recommendation: Staff recommends that the Town Council receive the Master Plan Document from Emergency Services Consulting. Any action is at the discretion of the Council.

Town of Winterville

North Carolina

Fire Department Master Plan

Winter 2015

Acknowledgements

ESCI would like to thank the following individuals and groups for their assistance with and part of this project.

TOWN OF WINTERVILLE

Douglas Jackson, Mayor

Mark Smith, Mayor Pro-Tem

Ronald Cooper, Sr., Councilman

Tony Moore, Councilman

Johnny Moye, Councilman

Veronica Roberson, Councilwoman

Terri Parker, Town Manager

WINTERVILLE FIRE DEPARTMENT

David Moore, Fire Chief

Rick Britt, Deputy Chief – EMS

Chris Rayner, Assistant Chief – Operations

Tony Smart, Assistant Chief – Fire Prevention Bureau

Candace Norris, Assistant Chief – EMS

Tony Klontz, Captain – Operations

Chris Brown, Captain – EMS

All the remaining officers, employees, and members of Winterville Fire Department

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Executive Summary

The Town of Winterville engaged Emergency Services Consulting International (ESCI) to conduct a two-phased evaluation of the services provided by Winterville Fire Department (WFD) and Winterville EMS (EMS). A previous report detailed the operations of EMS and provided policymakers with information relative to future options of governance and delivery of EMS. This document details the second phase of this project and provides a comprehensive review of WFD operations and begins with a brief overview of the organization.

The department provides a number of services including fire suppression, vehicle extrication, medical response (to certain incidents), code enforcement, and public education. Services are provided from a single fixed facility (fire station) to serve approximately 5.54 square miles all within the Town of Winterville municipal limits plus an additional 9.74 square miles in extraterritorial jurisdiction (ETJ). The current municipal population was estimated by the U.S. Census bureau to be approximately 9,000, which represents a 91.7 percent increase since the 2000 census. The average growth rate over the last decade is estimated at 4.72 percent and this growth is expected to continue for the foreseeable future.

The remainder of the first report section provides a basic review of the department's governance, lines of authority, budget and finance, management components, reporting and recordkeeping, and personnel management, capital assets, service delivery, training programs, and life safety. A number of short-term recommendations are provided regarding each of those elements.

The next section of the report provides the reader with a review of historical and projected fire risk. Although the population of the area has risen sharply over the past decade, the growth has slowed somewhat of late. However, given the number of building permits issued recently, it is expected that the overall population will continue to increase, which will lead to additional service demands in the area; reaching nearly 700 incidents by 2040 as compared to the 450 or so experienced in 2010.

The following list summarizes recommendations based on the individual agency evaluations provided within this report that are achievable in the short or mid-term, typically within a maximum of two years. These recommendations have been compiled into a prioritized list for easy reference. The prioritization system is as follows.

Priority 1 – Immediate Internal Safety

The recommendation deals with an improvement or initiative that solves an issue affecting the safety of firefighters and/or other personnel. These are not matters that simply make it easier to do a function but in fact make a currently unsafe situation safe.

Priority 2 – Legal or Financial Exposure

The recommendation resolves a situation that is creating—or is likely to create—the opportunity for legal action against the entity or its officials. It also may be a situation that could subject the entity to a significant expense.

- All personnel within the department, particularly the Fire Chief, should receive annual performance evaluations to provide feedback for improvement.
- An inventory should be kept of all capital equipment and a formal capital replacement schedule should be developed to ensure that equipment is replaced on a regular schedule in compliance with industry recommendations.
- The department should implement a formal program to evaluate skills competency and proficiency on a regular basis.

Priority 3 – Corrects a Service Delivery Issue

The recommendation addresses a service delivery situation that, while it does not create an immediate safety risk to personnel or the public, does affect the department's ability to deliver service in compliance with its standards of performance. For example, adding a response unit to compensate for an increase in response workload or delivering training needed to allow personnel to deal effectively with new types of responses already encountered.

- No Priority 3 recommendations to report.

Priority 4 – Enhances the Delivery of a Service

The recommendation improves the delivery of a particular service. For example, relocating a station to improve response times to a particular part of town, or adding a piece of equipment that will improve the delivery of a service.

- The department should implement a formal schedule to review and update standard operating procedures, guidelines and internal policies and procedures.
- The department should work with Town leadership and develop a formal strategic plan for the organization.
- The department should ensure that incident reports are entered in a timely manner and contain sufficient data to provide for future planning and training sessions.
- The department should continuously monitor staffing performance, including monitoring individual performance and ensuring that all personnel are effectively trained and equipped.

- The department should work to implement a formal annual training calendar and coordination program with surrounding departments.
- The department should work more closely with adjacent agencies and engage in multi-agency multi-departmental drills and exercises.
- The Town should consider a formal training facility that could be used as a regional resource for surrounding departments.
- The department should work to enhance the public education component of the fire services elements by assigning these tasks as a formal duty within the Fire Marshal's office and use clerical support for coordination.

Priority 5 – A Good Thing to Do

The recommendation does not fit within any of the above priorities but is still worth doing to enhance the department's morale or efficiency.

- Revenue generated from the inspections program should be reviewed to ensure that all revenue is realized.
- The department should consider a fee schedule for specialized responses such as extrajurisdictional hazardous materials incidents, to be charged to insurance companies.
- The Town should consider placing the department name on the station for identification and public relations purposes.
- The department should closely monitor the use of mutual and automatic aid with surrounding agencies to ensure that resources are used effectively and fairly throughout the region.
- The department should periodically review mutual and automatic aid geographically to ensure resources are properly positioned.

Based on the preceding analysis of current conditions and the review of current risk and demand trends within the Town, ESCI has evaluated the need for additional resources to enable the department to provide services to future populations. This begins with facilities and the resources within the department to enhance the level of services provided.

Facilities

Current and future development, particularly to the east, is currently outside the four-minute travel time but placing a new station to service that area will cause significant resource redundancies. In the future, as development continues, it may be necessary to place a sub-station to improve coverage to the east side of the Town. Town leaders should continue to work with fire department personnel to

Apparatus

The resource concentration analysis provided in the current conditions section of this report indicates that the southern portions of the Town cannot assemble sufficient resources (two engines and an aerial ladder) to combat a moderate risk structure fire. In order to ensure that sufficient apparatus are available, and given the commercial and industrial risk contained within the Town, it is recommended that WFD place an aerial ladder in service at the primary station. This would provide increased coverage and allow the department to assemble an effective response force of two engines and an aerial ladder within eight minutes of travel or less to 100 percent of the WFD response area.

In addition to the new apparatus, the Town should work with department staff to develop future equipment replacement plans that will allow for the timely replacement of apparatus and other high value equipment that have reached their useful life span.

Personnel

Without adequate personnel, capital resources will sit idle and a department will not be able to fulfill its mission. Therefore, it is imperative that organizations have sufficient personnel to deliver services and ensure operational effectiveness. WFD currently provides services with a combination of paid and volunteer personnel, in addition to the full-time Fire Chief. However, personnel are only "on duty" during certain periods, usually during daytime hours Monday through Friday. This leaves gaps in the department's ability to provide consistent services across all hours of the day.

Currently, one Engineer is on duty from 7:00 a.m. to 7:00 p.m. Monday through Friday. This is assisted by the Fire Chief, Inspectors (if also on duty), and volunteer personnel. Over the past several years, overall service demand has more than doubled without a corresponding increase in personnel. Service demand tends to be higher during the normal business week, Saturdays are the fourth busiest day of the week for WFD. Likewise, although service demand tends to be higher during the normal business hours, there are periods during the late evening and overnight hours that are left to volunteer personnel. This leads to increased response times.

If the Town desires to provide a consistent level of service across all hours of the day, it will be necessary to staff at least one position 24 hours a day. This can be accomplished by allocating three FTEs to work 24 hour shifts. To accommodate for benefit leave time for budgeting purposes, 3.75 FTEs are recommended. This is based on a 24/48 schedule; however, other departments work a 24/7 schedule (including the current ambulance personnel). In order to compare to other departments, five FTEs of personnel would be necessary, which translates to 5.0 FTEs.

In addition to operational personnel, the number of inspectable occupancies within the Town

In order to bolster the life safety services programs within WFD, it is recommended that the hours for the part-time Inspectors be increased to 15 for each personnel. This effectively doubles the time that these personnel have to ensure the safety of the residents of the Town and increase time for both inspections and public education activities.

As already mentioned, the Fire Chief is the only full-time position allocated to the fire department. This position is tasked with all of the administrative duties of the department as well as operations and response. Given the amount of time dedicated to responses, there is little time left for administrative functions such as data entry, reporting, and general public availability. To assist with the administrative duties of the Fire Chief, it is recommended that a part-time clerical position be created within the fire department. This position would serve as the assistant to the Fire Chief and complete tasks such as incident data entry, public interaction (answering phones and directing questions to the appropriate individual), and report production for elected and appointed officials. Although it would be beneficial for public access to have a 40-hour position to handle these responsibilities, it is recommended that this position be allocated for 20 to 24 hours weekly, based on current workload.

Phase I – Evaluation of Current Conditions

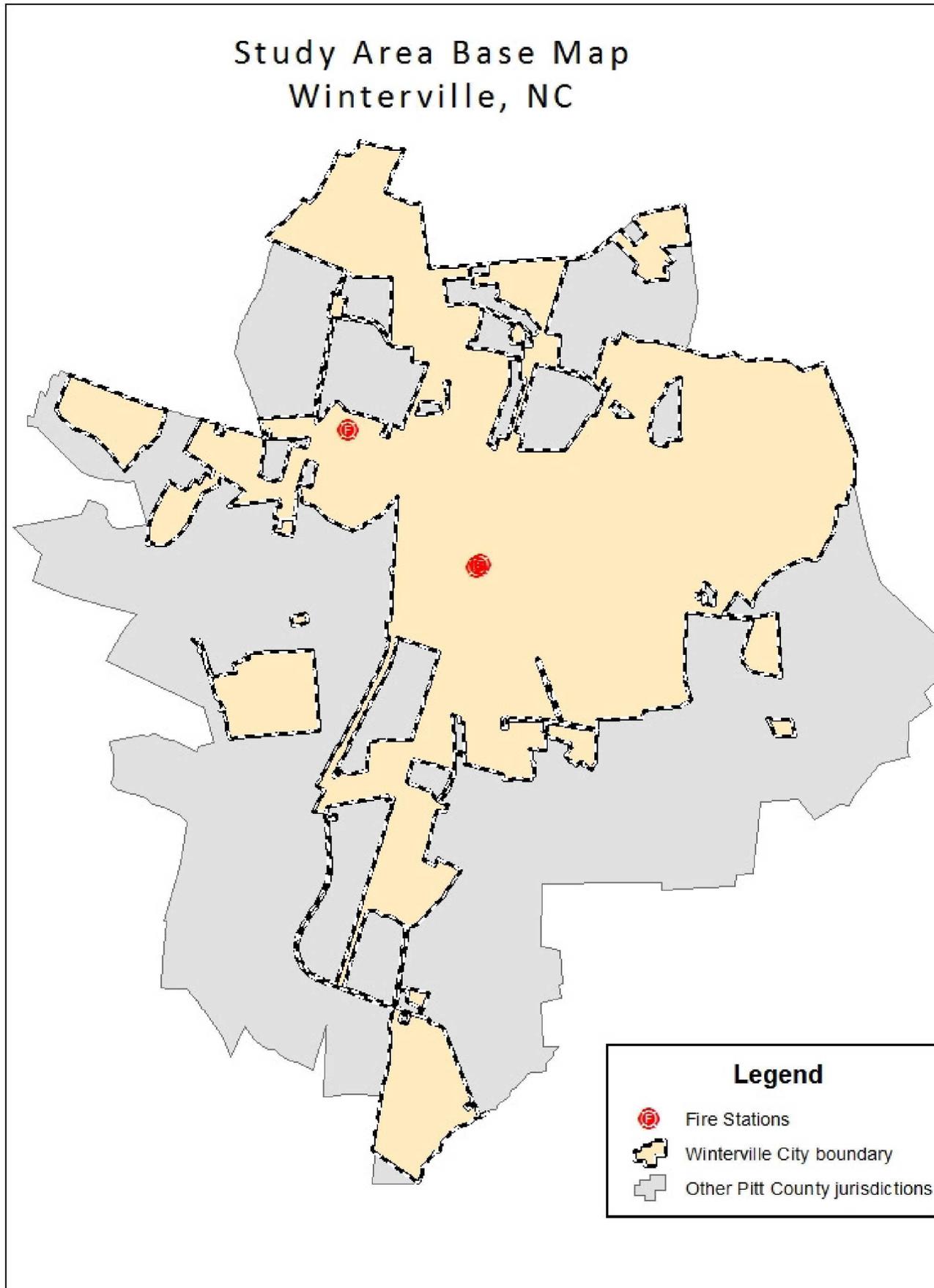
The Town of Winterville engaged Emergency Services Consulting International (ESCI) to conduct a two-phased evaluation of the services provided by Winterville Fire Department (WFD) and Winterville EMS (EMS). A previous report detailed the operations of EMS and provided policymakers with information relative to future options of governance and delivery of EMS. This document details the second phase of this project and provides a comprehensive review of WFD operations and begins with a brief overview of the organization.

ORGANIZATION OVERVIEW

WFD is a municipal fire department under the auspices of the Town of Winterville general government organizational function. The department is considered a combination fire department due to the fact that the agency uses a mix of paid and volunteer (on-call) personnel to fulfill the department's mission. The department provides a number of services including fire suppression, vehicle extrication, medical response (to certain incidents), code enforcement, and public education. Services are provided from a single fixed facility (fire station) to serve approximately 5.54 square miles all within the Town of Winterville municipal limits plus an additional 9.74 square miles in extraterritorial jurisdiction (ETJ). The department operates a fleet of five apparatus including two engines, one rescue, one squad, and one utility vehicle.

The 2013 municipal population was estimated by the U.S. Census Bureau to be approximately 10,000, which represents a 91.7 percent increase since the 2000 census. The average growth rate over the past 13 years is estimated at 4.72 percent and this growth is expected to continue for the foreseeable future. Based on an ISO review conducted in 2009, the department was rated as a Class 6 organization, which is better than 69 percent of all other departments across the United States.¹ The following figure represents the primary service area of WFD.

Figure 1: Study Area Base Map



Governance and Lines of Authority

As already identified, WFD is an operating department within the municipal structure of the Town of Winterville. Language within the municipal charter provides the fire department with authority and Town ordinance provides authority for the Fire Chief to deliver oversight to the organization. The Fire Chief is considered a Town department head and is not provided a personal services contract. Town human resources policies suggest that all personnel receive periodic performance evaluations. The Fire Chief has not received a formal evaluation since the end of his probationary period.

The department maintains a comprehensive set of administrative policies and standard operating procedures and guidelines that, in coordination with Town policies, contain important civil liability policies, workplace violence, sexual harassment, drug/alcohol abuse, and discrimination prevention. The policies within the department are currently under revision but no formal program has been implemented to periodically review and update the documents.

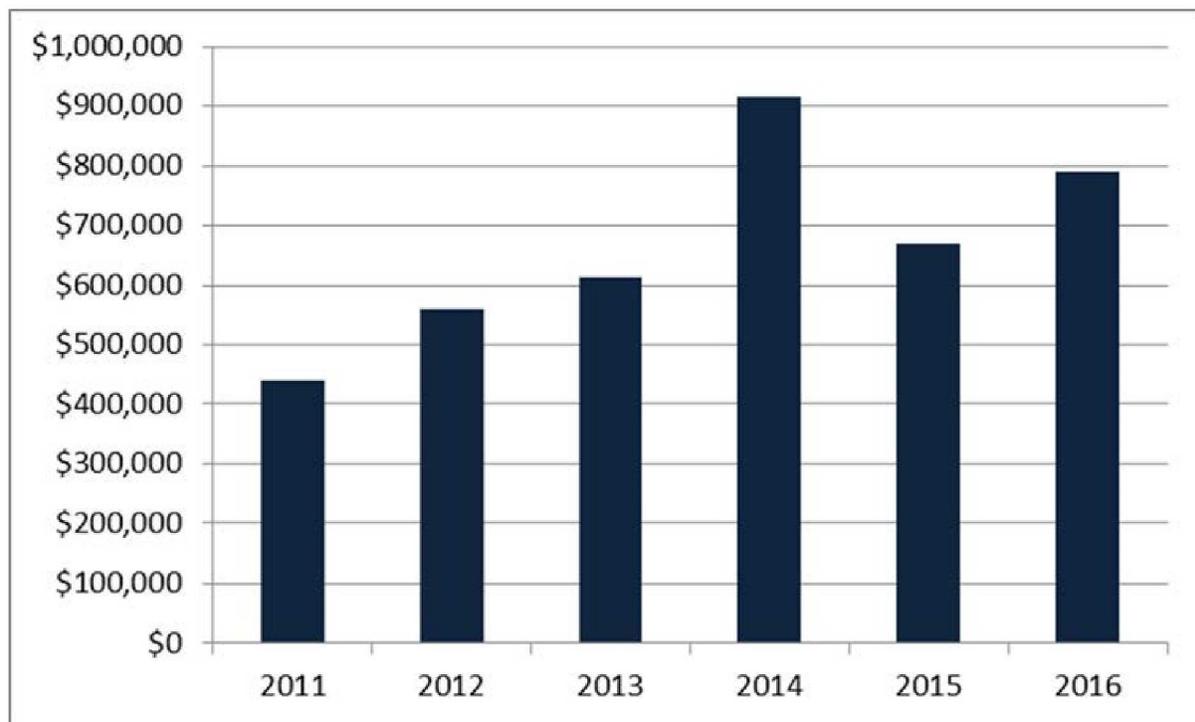
Recommendations:

- All personnel within the department, particularly the Fire Chief, should receive periodic performance evaluations to provide feedback for improvement.
- The department should implement a formal schedule to review and update standard operating procedures, guidelines and internal policies and procedures.

Budget and Finance

All organizations, regardless of size and/or function, need adequate funding to continue operations and fulfill their mission. WFD is no different. As a municipal organization, funding for WFD is derived predominantly from the ad valorem taxes levied by the Town. As a general fund department, WFD does not have a separate funding mechanism for the organization and all department expenditures are contained within the Town's general fund budget. The following figure summarizes the overall fire department budget for the last six years.

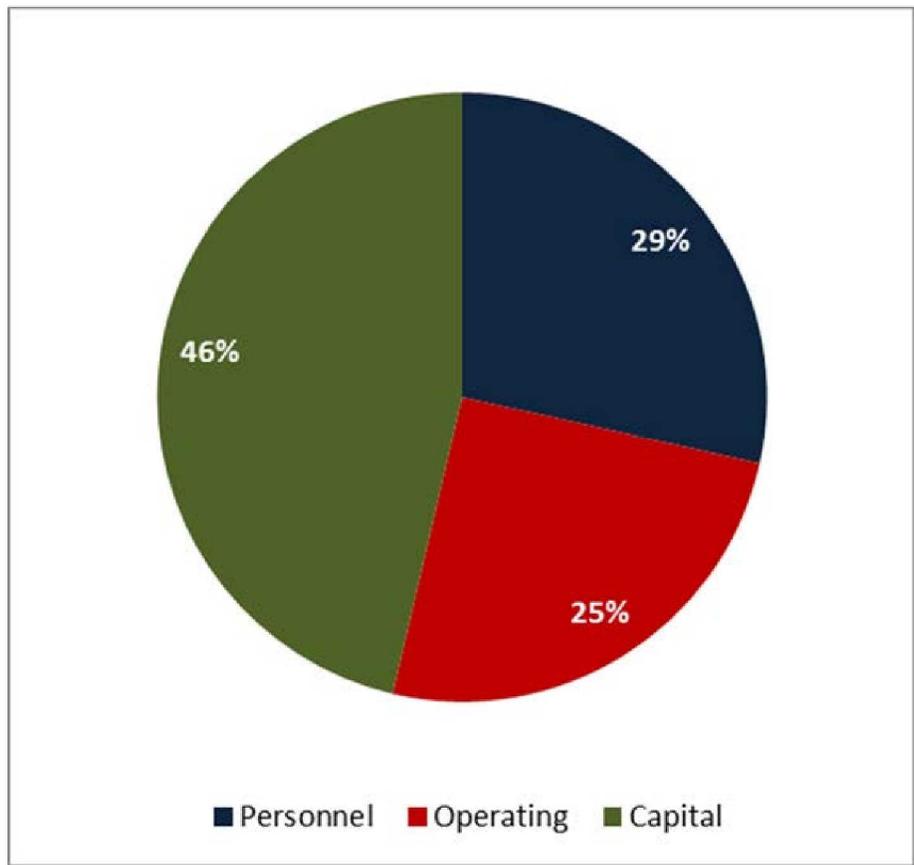
Figure 2: WFD Historical Budget



In general, the department's budget has increased at an average of 15.33 percent annually, but this average includes the purchase of a new fire apparatus in 2014, which artificially inflates the average. Without this one-time expenditure, the average decreases to 13.7 percent. It is also worth noting here that the department budget includes all capital expenditures including vehicle and equipment purchases, as well as debt service and interest expenses. These expenditures average \$342,216 annually.

Although evaluating actual budget figures is common, it is also useful to determine how funds are allocated within the organization. For WFD, 29 percent of the FY2014/15 budget was contributed to capital expenditures; 25 percent to general operating costs; and 46 percent to capital expenditures as represented in the following figure.

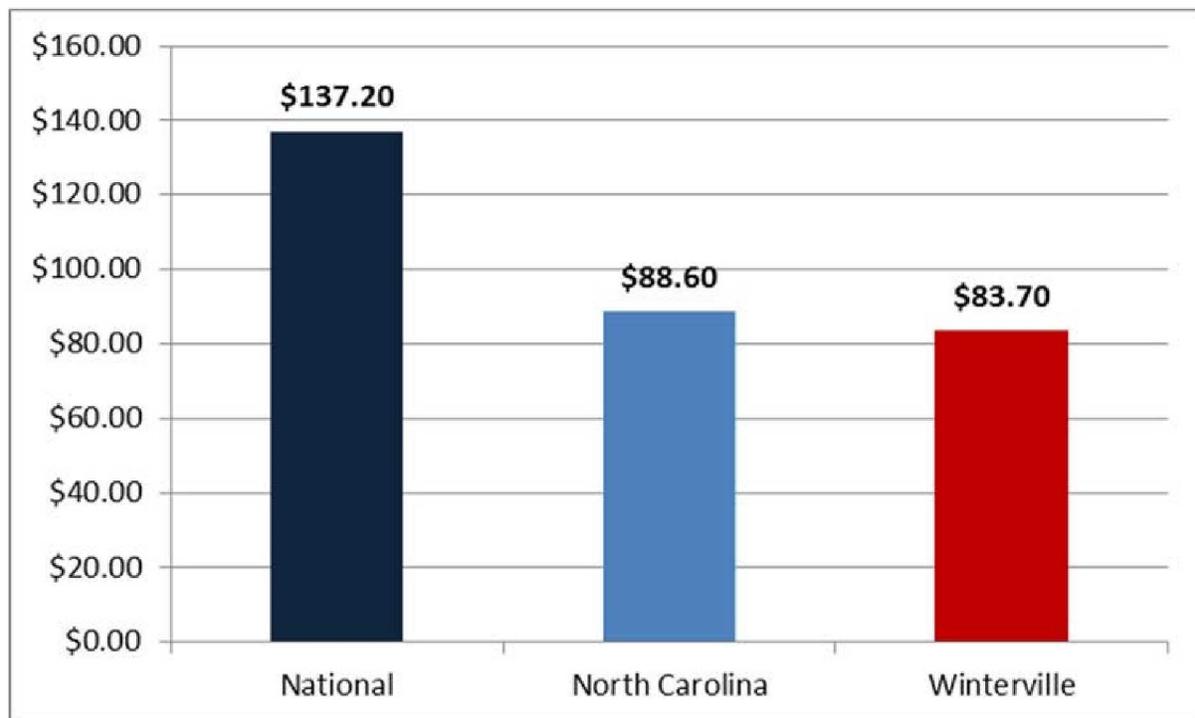
Figure 3: Budget Distribution



In most career emergency services organizations, personnel costs comprise a majority of the budget. This is not true, however, for volunteer or combination organizations, such as WFD. They have been diligent to improve the facilities and equipment for operational personnel and, rather than employing full-time career personnel, have chosen to continue to use part-time and part-time personnel to handle all operational responsibilities. The only full-time position within the organization is the Fire Chief. WFD also employs two part-time inspection personnel who work a combined 20 hours per week. Expanding the operational personnel will be discussed in a later section of the report.

In comparison to national and state median costs, WFD is within the expected range of a fire department operating in North Carolina as demonstrated in the following figure.

Figure 4: Per Capita Cost Comparison



The reader should keep in mind that this statistic is simply a comparison of overall budget divided by population. It does not take into consideration the type of staffing pattern used, the types of services delivered, the risks within the community, or the geography served. Unfortunately, the fire service industry has been weak in tracking these types of statistics.

In regard to revenue, a majority of funding for the fire department comes from the general taxes issued by the Town. However, the FY14/15 budget included a revenue line for fire inspections that generated \$18,897 during that fiscal year.

Recommendations:

- Revenue generated from the inspections program should be reviewed to ensure that all potential revenue is realized.
- The department should consider a fee schedule for specialized responses, such as extrajurisdictional and hazardous materials incidents, to be charged to insurance companies.

MANAGEMENT COMPONENTS

Elements within this section of the report focus on the planning processes in place within the fire department system. This includes development of an organizational mission statement, vision statement, and strategic planning efforts for short term goals and objectives, and identification of critical issues currently facing the organization as well as future challenges.

Planning Elements

While the mission of a fire department can be viewed as the primary duties and responsibilities of the organization, formally stating that mission in a detailed statement is important so that members know exactly what their purpose is during daily activities. The vision of the department is a way for members to know the direction of the organization, as well as what they hope to accomplish in the future. Planning elements, as well as future goals and objectives, are commonly determined through a customized strategic planning process that involves a wide cross-section of departmental members as well as decision makers and the general public.

Currently, there is no formal strategic plan in place for fire protection within Winterville. This is a high priority in the very near future so that all fire department personnel, as well as the general public, can understand and have input into the future of the community's fire protection plans.

Critical Issues

During interviews with elected officials, appointed staff, and fire department personnel, questions were posed as to what the current critical issues are facing the department today. In addition, the staff were asked their opinion of the main future challenges of the organization. The following are the predominant responses to each question.

- Rural district issues
 - Started as a fire tax and control issue
 - Past issues need to be left behind and move forward with a joint department
- Lack of automatic aid formal agreements with rural department
 - CAD issue?
- Daytime volunteers are limited
- Nighttime volunteers are limited unless it's a serious call
- No full-time paid staff for fire calls
- No aerial device in the town but lots of large square footage buildings
 - GFR operates quints and one tower that isn't staffed at Station 1 six months a year
 - Eastern Pines has a 100' stick but volunteer staffed
- Apparatus is aging and will need to be replaced in the near future
- Atmosphere within the department has changed as the community has changed

- Going to have to look at more paid staff in the near future; Service demand is too high for the volunteers to handle on their own
- Personnel work a number of agencies that will impact WFD's ability to staff during disaster
- Lack of money for incentives and other bonuses for volunteer staff
- Lack of representation on local boards such as school and county commission
- Personnel are working multiple jobs which take them away from the potential of the town

Future Challenges

- Can the Town support staffing as the department grows
- Need for capital replacement plan that is funded
 - Previously had a vehicle replacement plan for ancillary vehicles but not in effect and didn't include fire apparatus
- Is there a need for a sub-station, and where would it be?
- Demographics may change community expectations
- Public education as to what services are offered and delivered
- Will need to have more certified members as call volume increases
- Going to have to change the way they think as the community grows
- Rural department may be resistant to re-join WFD
- How does the department attract new members... demographics are changing, volunteerism will continue to decline
- County leadership is part of the problem with countywide cooperation
- Need a formal training area that may be shared between several departments to increase the amount of interdepartmental and multi-company training
- More paid staff will lead to an increased budget
- Cost of additional vehicles and facilities
- Training is making it hard to get people to volunteer
- Potential lack of support in the future from council
- Needs to be a change in mindset from town officials toward the services that the department provides; No unity among the council members
- Council needs to stand up for the FD and support the staff
- The fire service is evolving and the department is somewhat resistant to change
- Town Manager is holding back the department because she doesn't understand what is necessary to operate the fire department
- Need to go through a recruitment campaign prior to hiring paid personnel so the town has a backup for those that may complain about paid people

Reporting and Recordkeeping

The department utilizes up-to-date records management software to enter and store information. The software is compliant with NFIRS (National Fire Incident Reporting System) and incidents are entered quickly and accurately. Training records are maintained electronically, permitting easy retrieval of accurate reports on training attendance, certification status, and other matters. Code enforcement activities and occupancy records are maintained in an effective manner, permitting analysis of prevention activities, community risks, and trends.

Personnel records are complete, up-to-date, and maintained in a manner that protects private information. Records are kept on employment history, discipline, commendations, work injuries, exposures, and leave time. Financial activities, including budgets, expenditures, purchase orders, and other encumbrances are kept in a financial records management software, permitting consistent and up-to-date monitoring of all financial activities and accounts.

Recommendation:

- The department should ensure that incident reports are entered in a timely manner and contain sufficient data to provide for future planning and training sessions.

STAFFING AND PERSONNEL MANAGEMENT

In career emergency services organizations, personnel represent the single greatest expenditure of a department’s budget. Volunteer and combination agencies commonly experience a much lower personnel expenditure. As discussed previously, personnel accounted for approximately 29 percent of the system’s overall budget during FY2016. This includes full-time and part-time administrative and support staff as well as compensation for operational personnel.

Without proper levels of personnel, apparatus and stations will sit idle and may not be ready for emergency response. This section is intended to provide the reader with a review of the department’s personnel management practices as compared to industry standards and to examine the department’s ability to provide sufficient staffing resources for the risks that exist throughout the community.

Administrative and Support Staff

The primary responsibility of a department’s administration and support staff is to ensure that the organization’s operational entities have the abilities and means to fulfill their mission at any time during an incident. Efficient and effective administration and support are critical to the department’s success. Without adequate oversight, planning, documentation, and training the operational capabilities of the department may suffer and ultimately fail operational testing. The following figure summarizes the administrative and support complement within WFD.

Figure 5: Administrative and Support Complement

Position	Count	Status
Fire Chief	1	Full-Time
Deputy Chief (Vacant)	1	Volunteer
Asst. Chief	2	Volunteer
Inspector*	2	Part-Time

*Also Asst. Chief/Fire Marshal

Although the Chief Officers are identified here as administrative and support, they, like in other predominantly volunteer organizations, also work within the operational elements of the department.

Based on ESCI’s anecdotal experience conducting similar studies, we have found that many organizations that do not provide transport emergency medical services maintain an administrative and support to operations ratio in the range of 10 to 15 percent. Based on WFD’s current staffing of six personnel in the administrative and support structure, the ratio calculates to 12.0 percent; in the middle of the expected range. However, some positions are vacant, which decreases the overall ratio significantly.

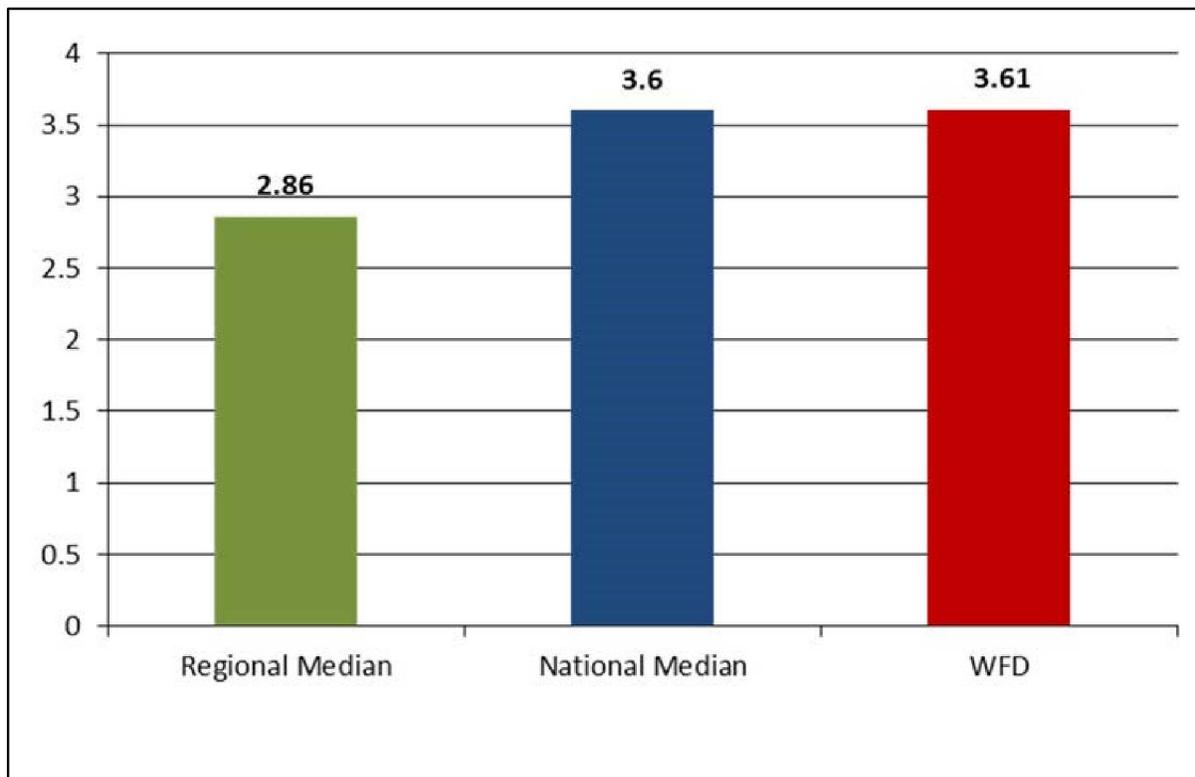
Operational Staff

Figure 6: Operational Staff Complement

Position	Count	Status
Captain	1	Part-Time
Lieutenant	1	Volunteer
Engineer	3	Part-Time
Engineer	12	Volunteer
Senior Firefighter	3	Volunteer
Firefighters	18	Volunteer
Jr. Firefighter	8	Volunteer

A number of the positions listed in the preceding figure remain vacant and the total staff of all allotted positions totals approximately 35. Based on benchmarks provided by the NFPA, WFD has a lower level of volunteer personnel per 1,000 population than similarly sized communities across North Carolina and nearly equivalent level to the National Median as illustrated in the following figure.

Figure 7: Per Capita Staffing Comparison



This is not to say that WFD is overstaffed or that they should have plenty of personnel to handle all incidents. Volunteers, by nature, are not always available to answer every call. When they do respond from home, work, or elsewhere within or outside the community. It is becoming increasingly common that employers will allow their personnel to take time away from work to serve as

Staff Allocation

Along with a quick response, a robust, well-trained, and appropriately-equipped company of emergency workers is needed to successfully mitigate structural fires. Too few firefighters at an emergency scene decreases effectiveness and increases the risk of injury to firefighters and civilians.

While many requests for emergency assistance are comparatively low risk requiring few personnel, emergency workers needed to mitigate a structure fire are greater. A house fire involving just the structure and its contents is considered as a moderate risk incident in the industry.

WFD operates a single fire station for the entirety of the primary response area and the station is staffed with a minimum number of on-duty personnel as illustrated in the following figure.

Figure 8: Staff Allocation and Scheduling

Position	Count	Days	Hours
Fire Chief	1	M-F	8:00 a.m. to 5:00 p.m.
Inspectors	2	Variable	Variable
Engineers	1	M-F	7:00 a.m. to 7:00 p.m.
On-Call Responders		Variable and Respond as Needed	

Based on the current deployment and allocation of personnel, WFD cannot achieve an effective working force of 14 personnel for a working structure fire without the use of mutual and automatic aid from adjacent departments.² This is not uncommon for departments of this size across North Carolina and the rest of the nation.

Staffing Performance

In most communities around the country, the number of fire calls has declined over the past decade as the frequency of fires diminishes, in part due to stricter fire codes and safety education, though the number of fire departments has risen sharply—medical calls, hazardous materials calls, and even household emergency are now addressed by fire departments. Therefore, as the frequency of fires diminishes, the need for a ready group of firefighters has increased.

Although modern codes tend to make fires in newer structures more infrequent, today's energy-efficient construction (designed to hold heat during the winter) also tends to confine the heat of a house fire. In addition, research has shown that modern furnishings generally burn hotter (due to synthetics) and collapse sooner because prefabricated roof trusses separate easily after a very short exposure to fire. In the 1970s, scientists at the National Institute of Standards and Technology found that after a fire broke out, building occupants had about 17 minutes to escape before being overcome by heat and smoke.

Today, that estimate is three minutes.³ The necessity of firefighters arriving on the scene of a shortest span of time is more critical now than ever.

In ideal circumstances, reviewing a department data for a period that covers multiple years a better and more thorough analysis of staffing performance. However, WFD transitioned the management system (RMS) software and a significant amount of data was lost. The new RMS is more robust and user-friendly but only one year of data was available for review; 2015. For ca 2015, WFD averaged eight personnel for each structure fire. As already identified, this is well number of personnel recommended by industry standards. Additional personnel are not usual on the “home department’s” records so every effort should be made to more accurately track actual response personnel to working structure fires and other more involved incidents.

Recommendation:

- The department should continuously monitor staffing performance, including mutual aid and automatic aid departments, to ensure that sufficient resources are used effectively on incidents.

CAPITAL ASSETS

Three basic resources are required to successfully carry out the emergency mission department—trained personnel, firefighting equipment, and fire stations. Because firefighting is an extremely physical task, the training and capacity of personnel resources is a vital concern. However, no matter how competent or numerous the firefighters, the department will fail to execute its mission if it lacks sufficient fire equipment deployed in an efficient and effective manner.

Facilities

An essential element affecting a fire department’s ability to provide services in a timely manner is the appropriate placement, design, and maintenance of fire stations. ESCI observed and reviewed the fire station operated by WFD. The findings are summarized in the following pages and any areas of concern observed are identified.

Figure 9: WFD Facility Review



WFD Headquarters Station

Facility used for:	Active response station, Administrative office (fire station), Training or classroom
Year Facility Initially Constructed	2004
Number of Major Additions or Renovations	None

Construction Features

Building Square Feet	18,500
Apparatus Bays:	
<i>Back-in, single unit</i>	0
<i>Back-in, used with stacked parking</i>	0
<i>Drive-through use, single unit</i>	0
<i>Drive-through capable, used with stacked parking</i>	4
Building Height	One-story
Construction Type	TYPE I-A–Fire Resistive Non-combustible
Outside Finish	Brick veneer, Masonry block
Unusual Construction Features	None
Overall Construction Condition	Good condition
Structure Appear to be ADA Compliant	Yes
Building Code Issues Evident	None
Roof Type	Flat-membrane
Roof Age	Original to building
Roof Condition	No known problems
Type of Heating System	Forced air-natural gas
Heating System Age	Original to building
Air Conditioning	Central air-living and administrative areas only
Other Known Maintenance or Disrepair Issues	None

Design Features

Overall Size of Facility Adequate for Current Use	Yes
Apparatus Exit	Signalization would be helpful but not present
Building and Property Blend Well with Neighborhood	Yes
Building and Property Adaptable if Future Expansion Needed	Expansion need unlikely
Adequate Staff and Visitor Parking	Parking is limited
Additional Design Comments	None

Safety Features

Automatic Door Stops on Overhead Doors Operating Properly	Yes
Adequate Fire Extinguishers (not on apparatus)	Yes
Cooking Equipment Central Shutdown	No
Automatic Fire Sprinklers Present	Living areas only
Fire Sprinkler System Type	Wet
Alarm Systems Present	Sprinkler water flow, Local smoke detection on Monitored smoke/heat alarms, Monitored secu alarms
Commercial Cooking Equipment Present	No
Flammable and Combustible Liquids Stored in Approved Cabinet	Yes
All Pressure Cylinders Stored Properly	Yes
SCBA Compressor System Present	Yes
Air Sample Certification Present and Visible	Yes
Back-Up Generator Present	Yes, with auto transfer switch
Generator Fuel Type and Source	Diesel fuel, local tank

Environmental Features

Apparatus Exhaust Removal	Forced air through structure, manual activation
Underground Storage Tanks Present	No
Apparatus Floor Drain Oil Separators in Place	Oil separator in use

Station Staff Facilities and Features

Adequate Space for Working On or Around Apparatus	Space around apparatus is adequate
Apparatus Room Accommodates Working on Small Equipment	Adequate space
Personnel Can Move Quickly and Easily to Apparatus for Response	Yes
Adequate Space for Cooking and Eating	Yes
Adequate Space for Local Company Training and Drills	Compromised Multi-use room
Are Compromises Necessary for Two-Gender Staffing	Bedrooms are unisex
Adequate Space for Personal Hygiene	Yes
Adequate Space for Sleeping	Yes
Adequate Space for Storage	Inadequate space
Facility Features	Separate watch room/station office, Administrative/support offices, Day room/lounge, Kitchen, Classroom for >10, Male dormitory, Fe

Apparatus

The department maintains a fleet of response vehicles that are generally in good condition well maintained. An inventory of fire apparatus, configuration, and condition is provided below.

Figure 10: WFD Apparatus Review

Unit: Truck 1	Make/Model: Ford	Type: Pickup
Year: 2010	Pump gpm: N/A	Tank size: N/A
Mileage: Unknown	Cab seating: 2	Condition: Good
Special notes/problems:	Skid package	
Unit: Engine 1	Make/Model: Sutphen	Type: Custom engine
Year: 2006	Pump gpm: 1500	Tank size: 1,000
Mileage: 32,670	Cab seating: 6	Condition: good
Special notes/problems:	Packing leaking. 12-Lead monitor defib, top mount pump panel	
Unit: Squad 1	Make/Model: Pierce	Type: Engine
Year: 2006	Pump gpm: 1,500	Tank size: 750
Mileage: 69098	Cab seating: 6	Condition: Good
Special notes/problems:	Combi-tool, 12 monitor/defib, side mount pump panel	
Unit: Rescue 1	Make/Model: pierce	Type: Heavy Rescue
Year: 2010	Pump gpm:	Tank size:
Mileage: 6,718	Cab seating: 6	Condition: Excellent
Special notes/problems:		
Unit #: Engine 2	Make/Model: E-One	Type: Commercial Engine
Year: 1994	Pump gpm: 1,250	Tank size: 1,000
Mileage: 33876	Cab seating: 4	Condition: Fair
Special notes/problems:	Reserve, top mount pump panel	
Unit #: Chief SUV	Make/Model: Ford	Type: Expedition
Year: 2007	Pump gpm: N/A	Tank size: N/A
Mileage: Unknown	Cab seating: 4	Condition: Good
Special notes/problems:		

Capital Replacement Planning

Fire apparatus are typically unique pieces of equipment, often very customized to operate efficiently on a narrowly defined mission. A pumper may be designed such that the compartments fit specific tools and equipment, and tools, with virtually every space on the truck designated in advance for functionality. A vehicle, with its specialized design, cannot be expected to function in a completely different capacity, such as a hazardous materials unit or a rescue squad. For this reason, fire apparatus is very expensive and has little flexibility in use and reassignment. As a result, communities across the country have learned to achieve the longest life span possible for these vehicles.

Unfortunately, no mechanical piece of equipment can be expected to last forever. As a vehicle ages, repairs tend to become more frequent, parts more difficult to obtain, and downtime for repairs more significant. Given the emergency mission that is so critical to the community, this factor of downtime is one of the most frequently identified reasons for apparatus replacement.

Because of the large expense of fire apparatus, most communities find the need to plan ahead for the cost of replacement. To properly do so, agencies often turn to the long-accepted practice of estimating a life cycle for the apparatus that results in a replacement date anticipated well in advance. Forward-thinking organizations then set aside incremental funds during the life of the vehicle so replacement dollars are ready when needed.

WFD does not maintain a funded schedule that places all apparatus on any specified replacement schedule from date of primary service. ESCI recommends that the Town make an effort to develop a replacement schedule, including a funding strategy that will fully meet future needs. In the strategies section of this report is additional discussion on the matter.

Recommendations:

- The Town should consider placing the department name on the station for identification and pride purposes.
- An inventory should be kept of all capital equipment and a formal capital replacement schedule should be developed to ensure that equipment is replaced on a regular schedule in compliance with industry recommendations.
- The department should consider a dedicated inspections vehicle rather than having to use the existing brush truck for everyday tasks.

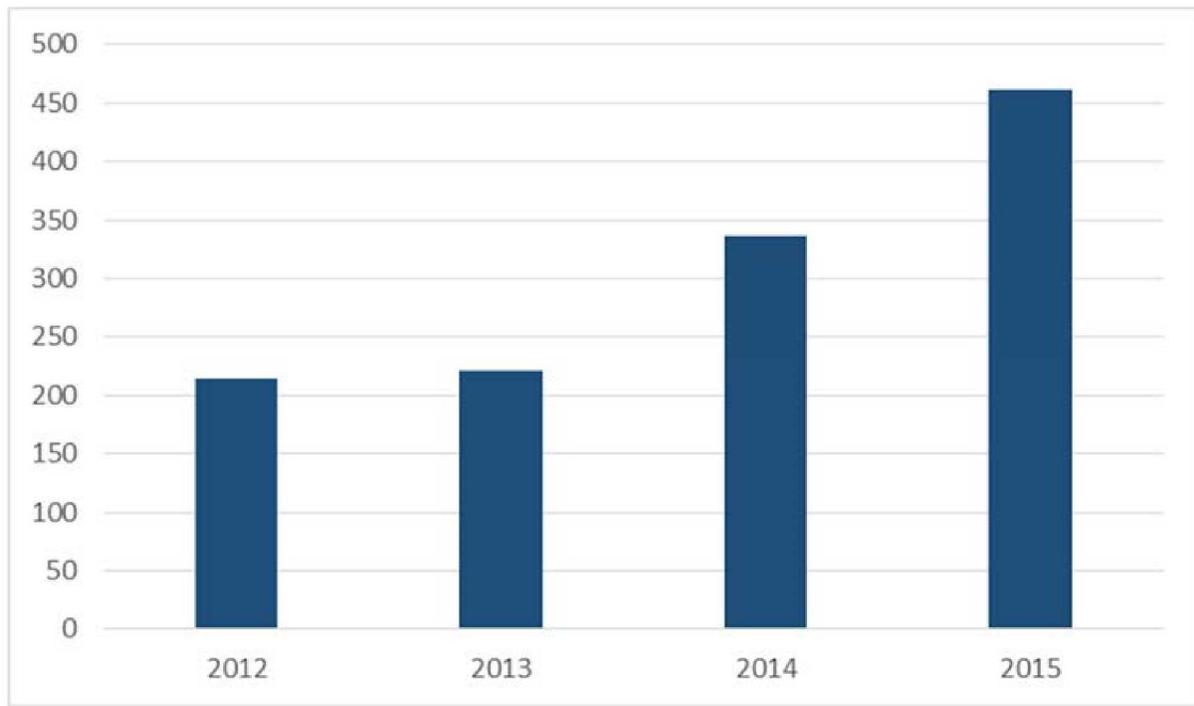
SERVICE DELIVERY AND PERFORMANCE

The most important aspect of any emergency services agency is its ability to deliver service requested. This section of the report evaluates the current and historical service delivery and demand, distribution, concentration, reliability, and response performance.

Demand

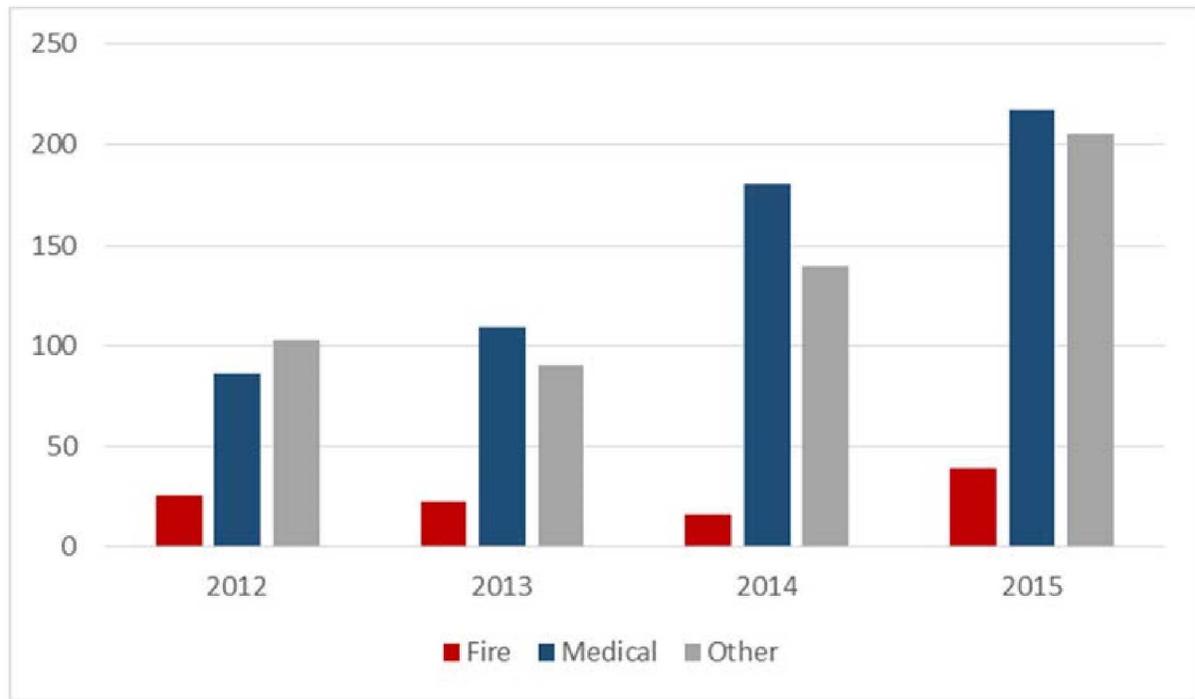
Service demand can be measured or defined in a number of ways. For the purposes of this report, demand is considered all incidents responded to by WFD units. ESCI reviewed four years of annual data to determine how service demand has changed over the past several years. The following figure illustrates how overall service demand has increased over the last four years at a rate of approximately 30.8 percent on average.

Figure 11: Overall Historical Service Demand



Although overall service demand has increased, it is also useful to determine how the demand is distributed across various incident types. The following figure segregates historical service demand into fires, medical incidents, and all other incident types including service calls, false alarms, public

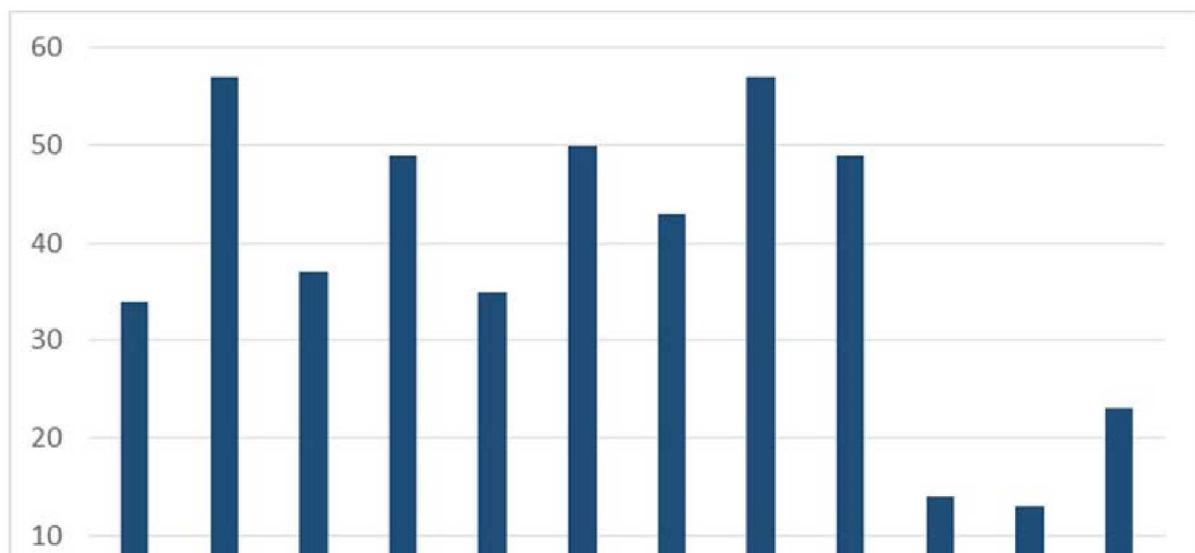
Figure 12: Historical Service Demand by Incident Type



Based on this analysis, actual fires have increased 56 percent over the past four years. Meanwhile, medical incidents (EMS calls including motor vehicle collisions) have increased over 150 percent and other incident types have increased approximately 115 percent. These drastic increases could be due, in part, to changes in operational mission as well as to the growth occurring within the community.

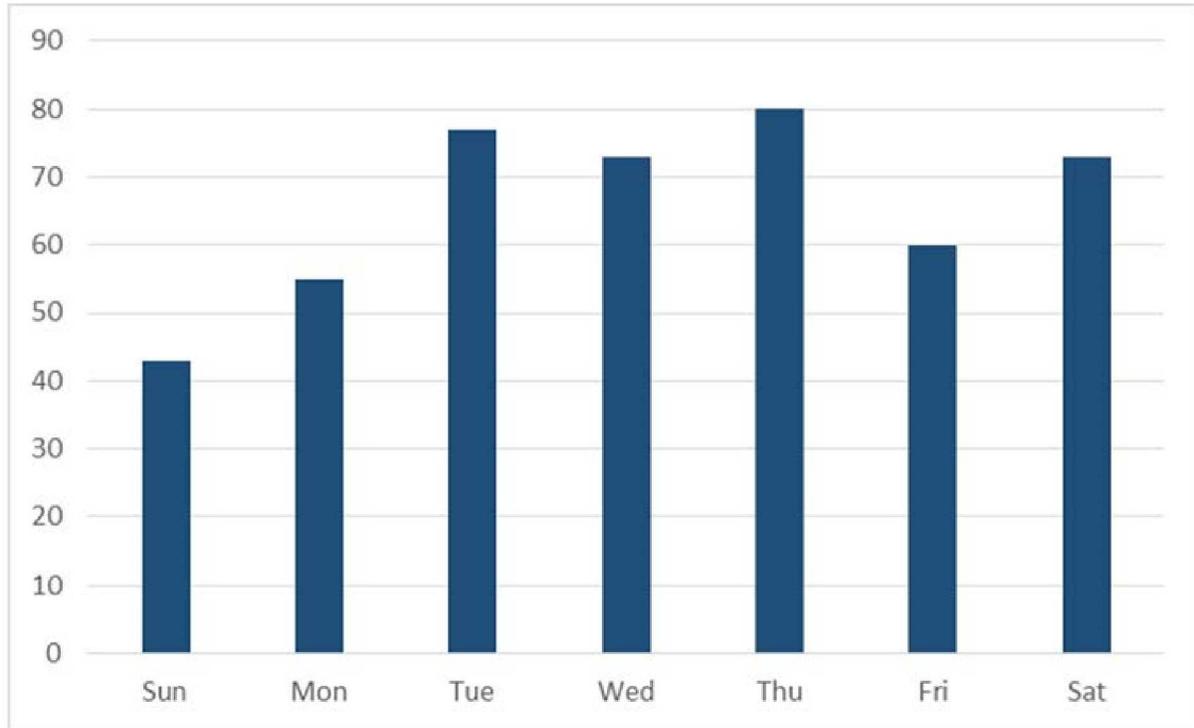
In addition to annual service demand and changes from year to year, it is also useful to evaluate when calls are occurring so resources can be better matched to when service demand is highest. This analysis begins as temporal variation and begins with an analysis of service demand by month.

Figure 13: Service Demand by Month (2015)



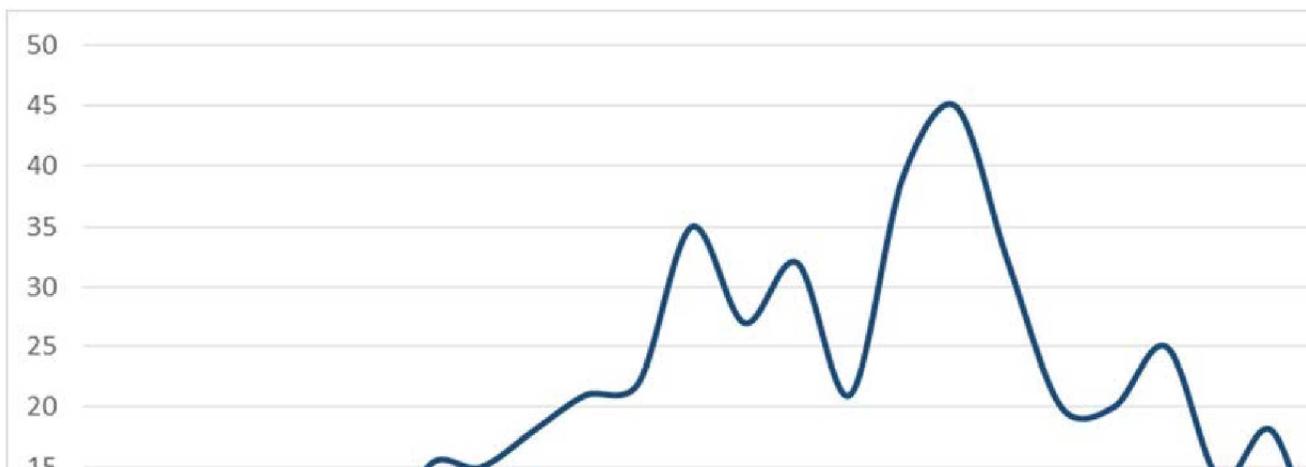
The monthly service demand is highly variable and the sharp decline in incidents during November, and December could represent a lag as to when incidents are entered into the management system. The department should work to ensure that incidents are entered as possible after call completion. The next analysis reviews service demand by day of week.

Figure 14: Service Demand by Day of Week (2015)



This analysis indicates the WFD’s busiest days are Tuesday and Thursday with Wednesday and Saturday close behind. The department currently staffs the station with part-time personnel Monday through Friday to cover these busier times but should consider an option to provide additional coverage on weekends as well. The final temporal analysis is that of service demand by hour of day.

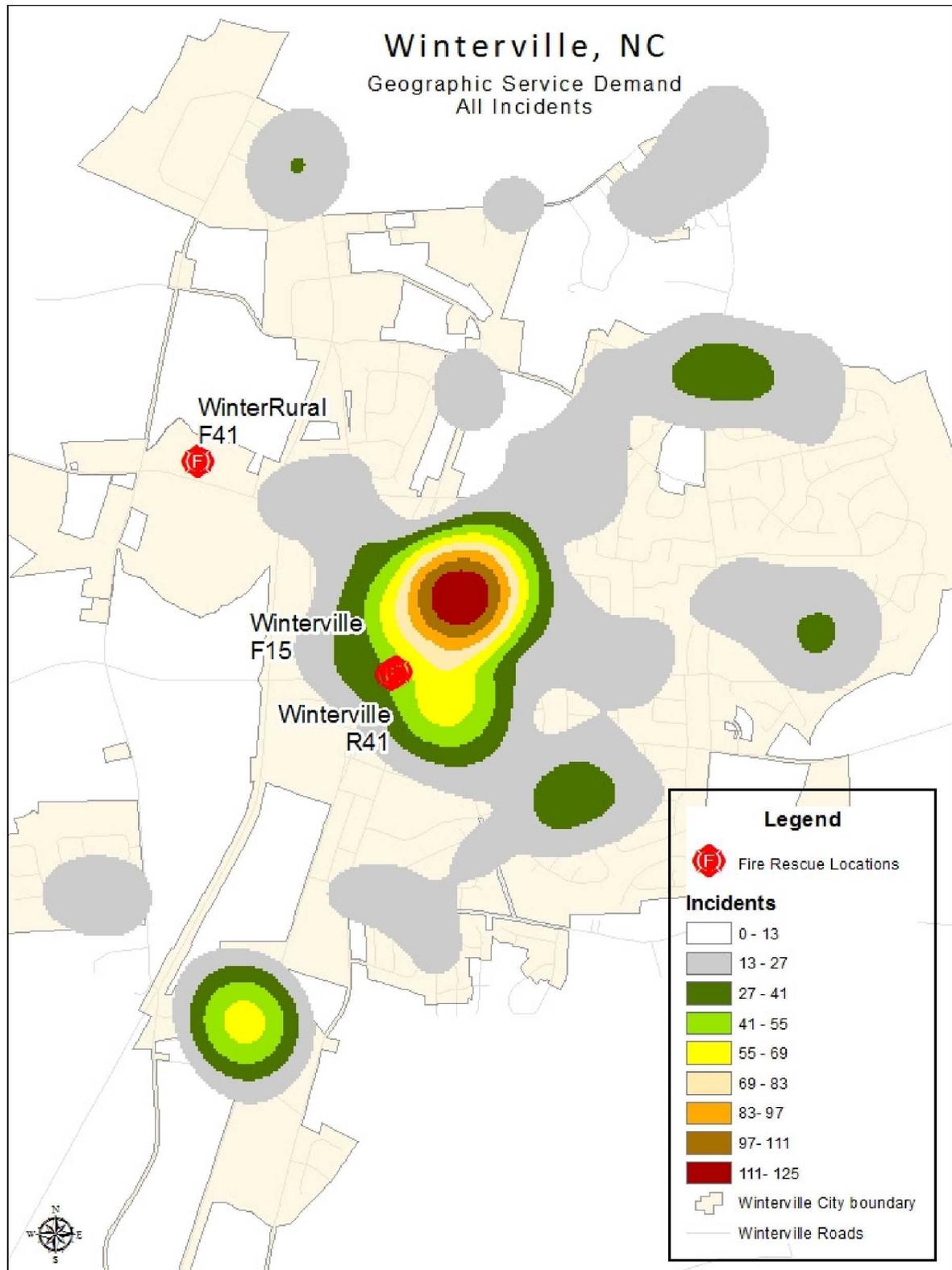
Figure 15: Service Demand by Time of Day (2015)



As expected for any organization that participates in the delivery of emergency medical services, demand begins to increase between 6:00 a.m. and 7:00 a.m., peaking during the mid-afternoon and then declining into the evening. This type of variation is typical since a majority of the demand for service is medical in nature and tends to follow general human activity patterns.

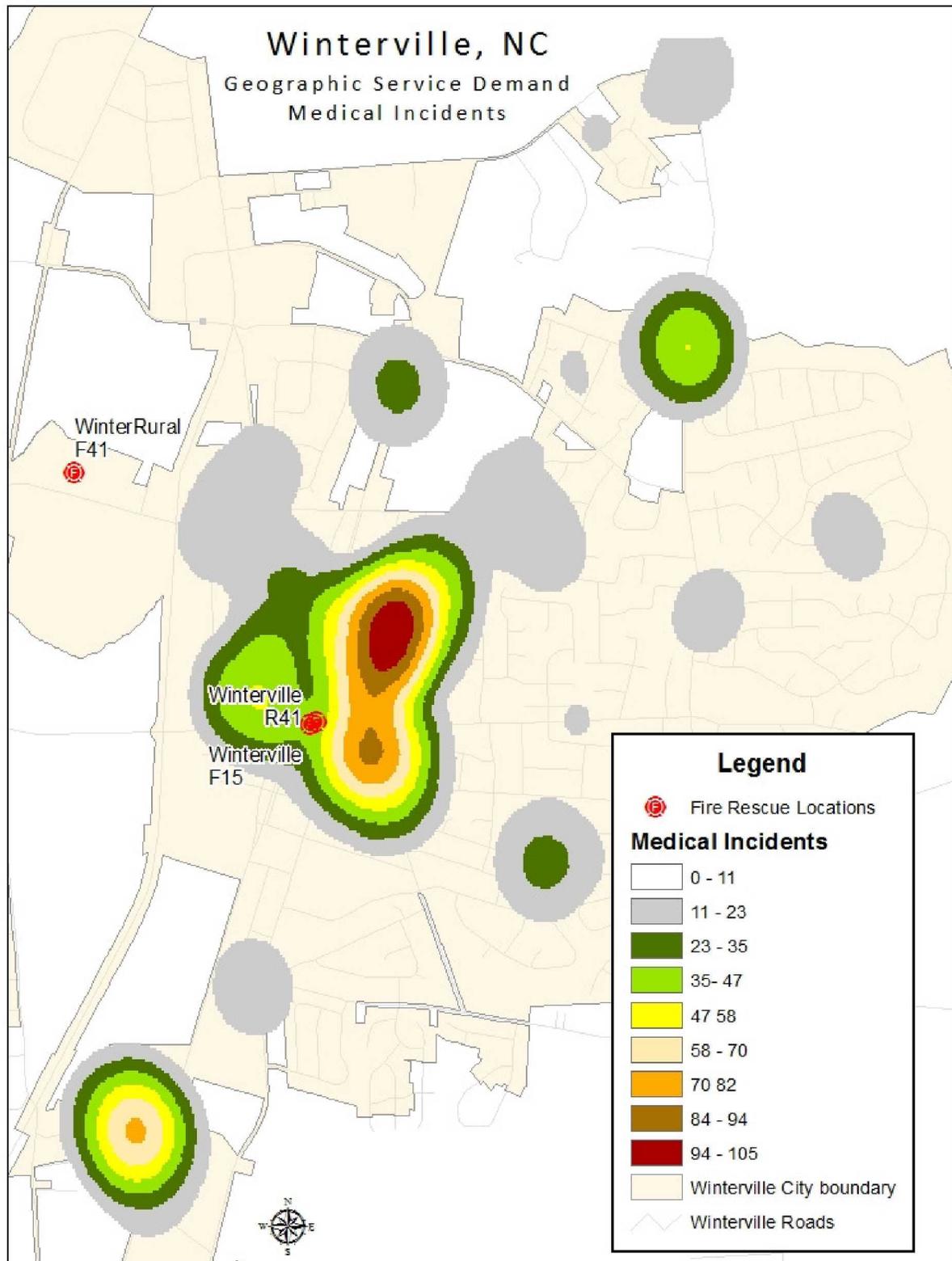
Although evaluating service demand numerically illustrates how demand has changed, it is not enough to determine where incidents are occurring so that the deployment of resources can be maximized. The following figure illustrates WFD's overall geographic service demand for all incident types for

Figure 16: Geographic Service Demand - All Incident Types (2015)



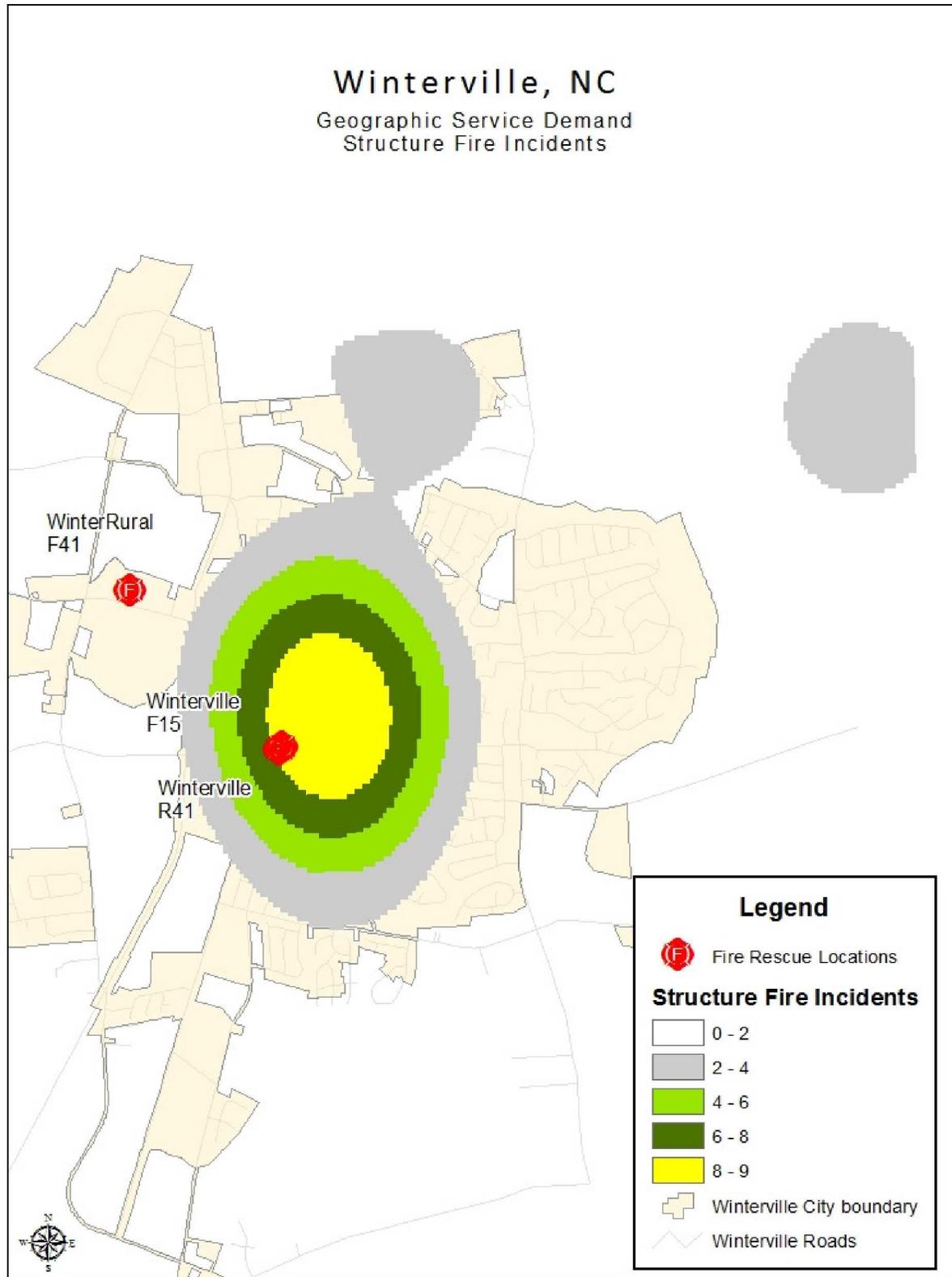
Knowing that medical incidents have comprised the largest percentage of the department demand growth, ESCI was also interested in where those incidents were occurring. The following

Figure 17: Geographic Service Demand - Medical Incidents (2015)



As expected, medical incident density closely resembles overall incident density since these incidents comprise a majority of the department's total workload. Structure fires, however, are much less frequent.

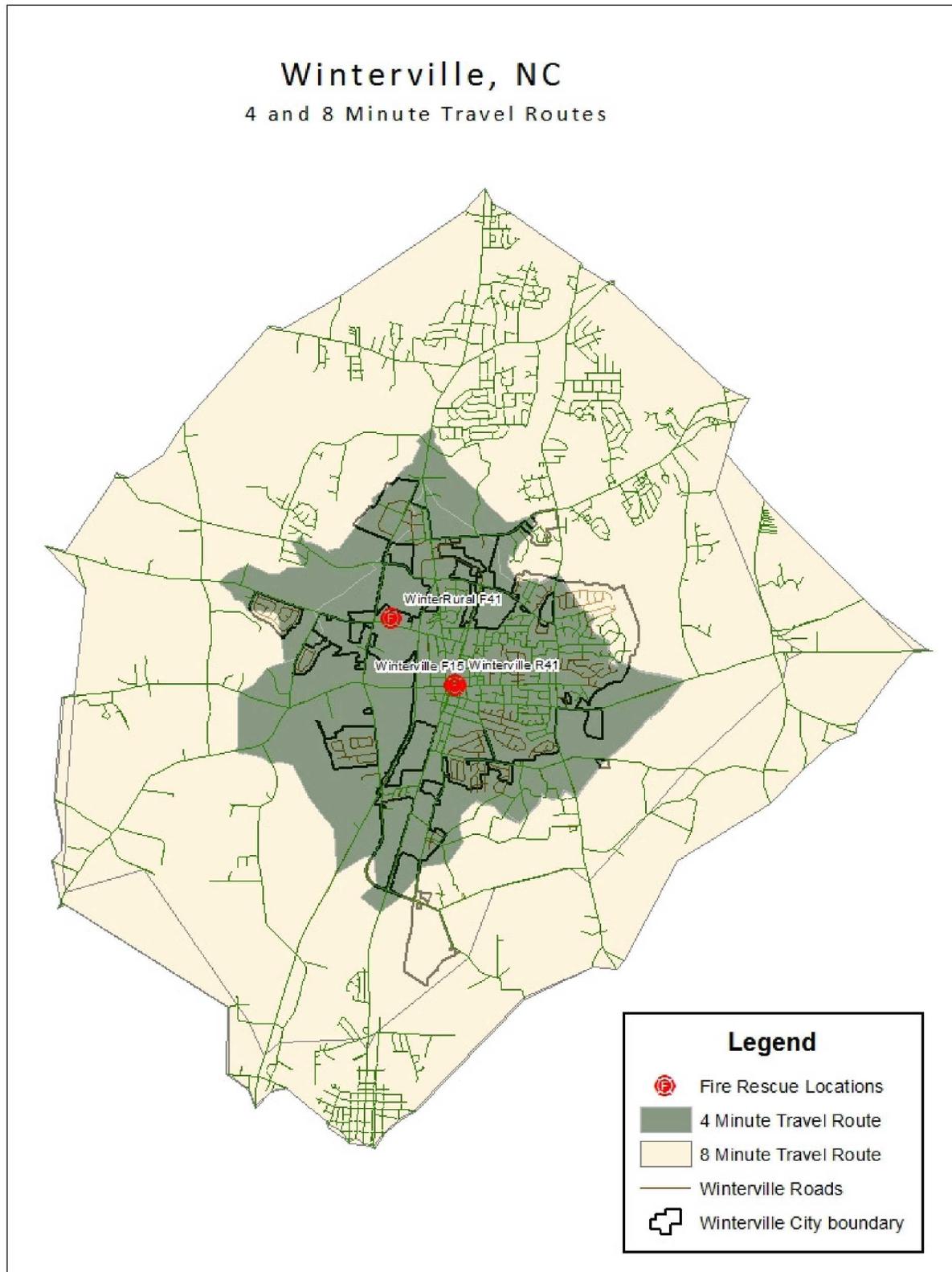
Figure 18: Geographic Service Demand - Structure Fires (2015)



Distribution

Distribution is an analysis that illustrates travel capability of specific units based on the exist

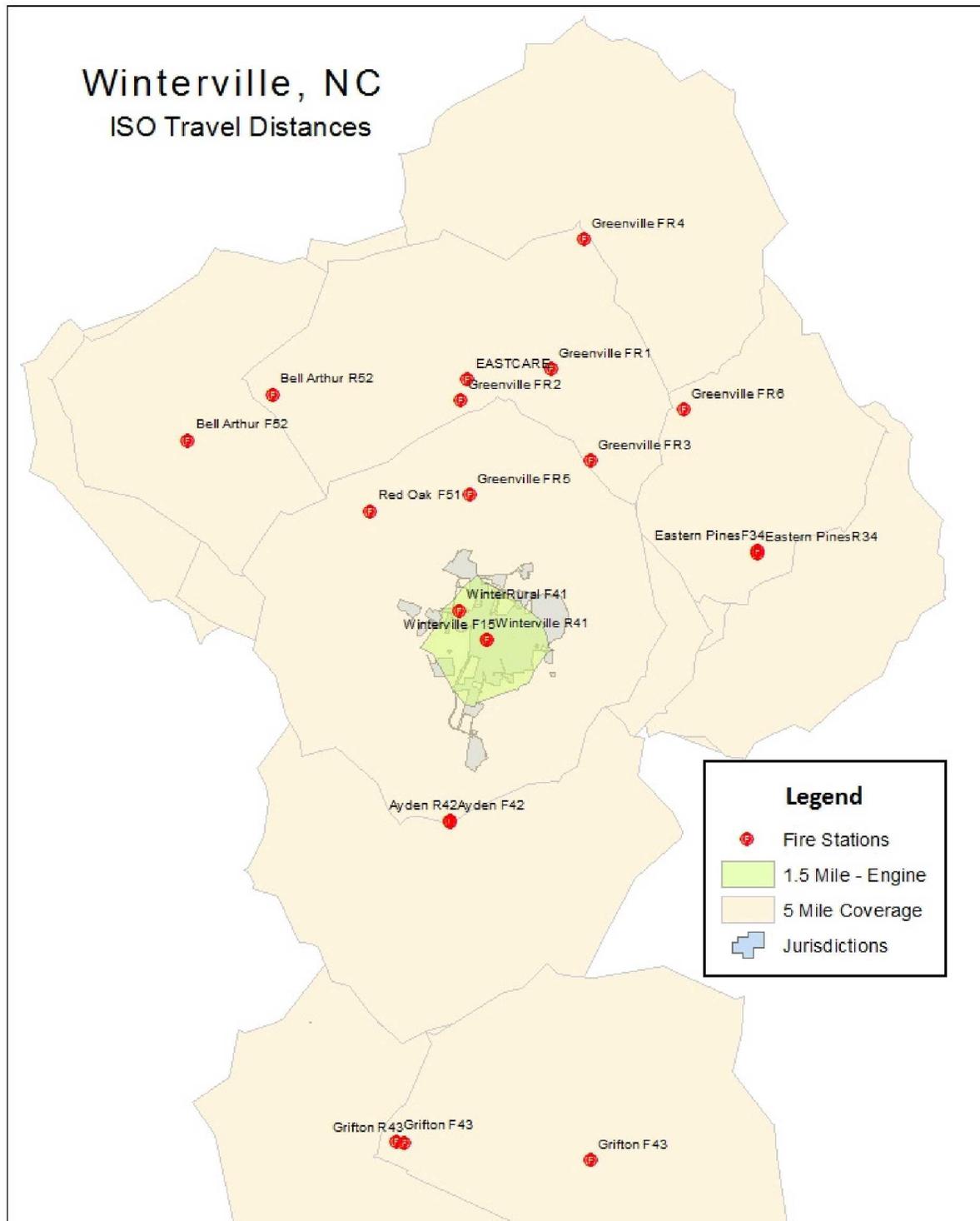
Figure 19: Four- and Eight-Minute Travel Capability



Based on this analysis, a high percentage of historical service demand can be reached within four minutes of travel.

The Insurance Services Office (ISO) also provides guidance on where stations should be located to receive maximum credit under the distribution section of the Public Protection Classification (PPC). Property must be within five road miles of a fire station; within 1.5 miles of a fire engine; and within 1.5 miles of an aerial apparatus (which WFD does not currently operate), and five miles of total coverage from the fire station. The following figure illustrates these three ISO travel distances.

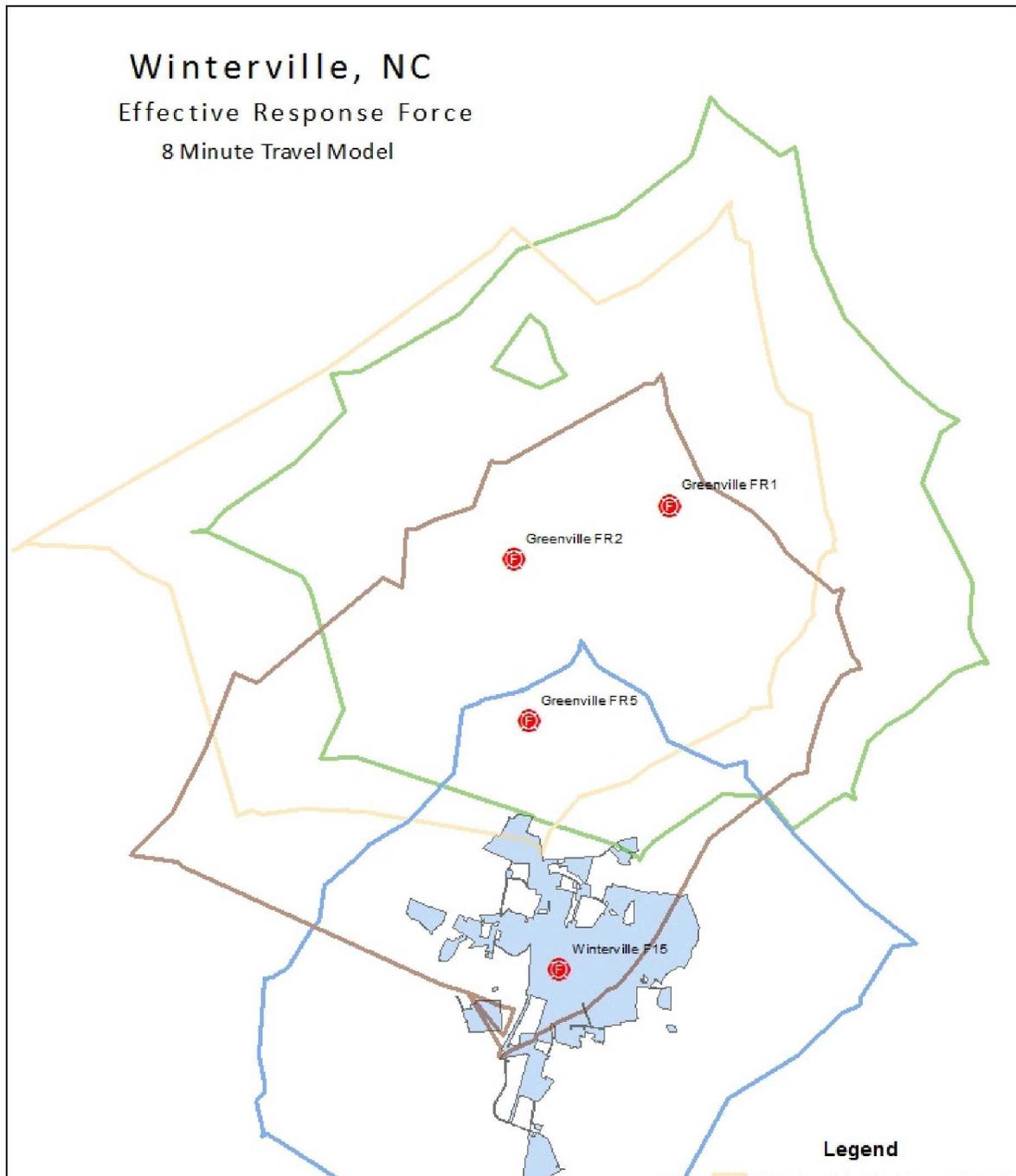
Figure 20: ISO Travel Distances



Concentration

Resource concentration is an analysis that determines how quickly a department can assemble an appropriate number of apparatus and/or personnel on the scene of a major incident. In many cases, this is conducted considering a single family detached dwelling that is considered moderate risk. For this analysis, at least two engines and one aerial apparatus would be needed to effectively mitigate the incident. The figure illustrates WFD's concentration capability within eight minutes of travel and includes units from other aid departments from outside the Town when appropriate that have engine and ladder capabilities.

Figure 21: Resource Concentration



As illustrated in the previous figure, all of the Town can be reached with an effective response by two engines and an aerial ladder within eight minutes of total travel time.

Reliability

The workload on emergency response units can also be a factor in response time performance. For a given unit, the less available it is for the next emergency. If a response unit is unavailable, a unit from a more distant station must respond, increasing overall response time. A cushion of surplus capacity above average values must be maintained due to less frequent, but very critical times when atypical demand patterns appear in the system. Multiple medical calls, simultaneous fires, multiple incidents, or multiple alarm fires are all examples.

One way to look at resource workload is to examine the amount of time multiple calls occur within the same time frame on the same day. ESCI examined the 2015 incidents to find the frequency with which the department is handling multiple calls within any given time frame. This is important because multiple calls occurring at one time; the more stretched available resources become leading to extended response times from distant responding available apparatus. The following figure illustrates WFD's concurrency rates based on incidents that occurred in during 2015.

Figure 22: Incident Concurrency

Concurrency	1	2	3
Count	430	27	4

This analysis indicates that most incidents occurred singularly within the Town and the number of simultaneous calls were very limited. This bodes well for the department in that it rarely has to handle multiple simultaneous incidents. This indicates that additional physical resources are not necessarily needed. However, department and Town policymakers should continue to monitor this on a regular basis to identify if and when additional operational resources may be necessary.

Response Performance

Perhaps the most visible and notable aspect of emergency services to the public, response performance is the primary measure by which the public gauges overall effectiveness. Response time can be measured in a number of ways but industry standards suggest that performance be measured on a percentage basis rather than simply reporting the average.

Response time, however, is not simply a matter of operational response. The response time continuum begins when someone calls 9-1-1 and ends when the appropriate resources are on the scene at the incident. The response time continuum, the time between when the caller dials 9-1-1 and when the resources arrive, is comprised of several components:

- Processing Time – The amount of time between when a dispatcher answers the 9-1-1 call and the resources are dispatched.
- Turnout Time – The amount of time between when units are notified of the incident and when they are en route.
- Travel Time – The amount of time the responding unit actually spends on the road to the incident.
- Response Time – A combination of turnout time and travel time and generally accepted as the most measurable element.

Before entering this discussion, however, it is important to provide a brief discussion about statistical information is presented, particularly regarding average versus percentile measures.

The “average” measure is a commonly used descriptive statistic also called the mean of a data set. It is a measure to describe the central tendency, or the center of a data set. The average is the sum of all data points of data in a set divided by the total number of data points. In this measurement, each data point is counted and the value of each data point has an impact on the overall performance. Average should be viewed with a certain amount of caution because the average measure can be skewed if an outlier point, known as an outlier, is present within the data set. Depending on the sample size of the data set, this skewing can be either very large or very small.

As an example, assume that a particular station with a response time objective of six minutes receives five calls on a particular day. If four of the calls had a response time of eight minutes while the fifth was across the street and only a few seconds away, the average would indicate the station was not meeting its performance goal. However, four of the five calls, or 80 percent, were beyond the stated response time performance objective.

The reason for computing the average is because of its common use and ease of understanding. An important reason for not using averages for performance standards is that it does not accurately represent the performance for the entire data set.

With the average measure, it is recognized that some data points are below the average and some are above the average. The same is true for a median measure which simply arranges the data set in order and finds the value in which 50 percent of the data points are below the median and the other 50 percent are above the median value. This is also called the 50th percentile.

When dealing with percentiles, the actual value of the individual data does not have the same impact as it did in the average. The reason for this is that the percentile is nothing more than the ranking of the data set. The 90th percentile means that 10 percent of the data is greater than the value stated and 90 percent of the data is at or below this level.

For this analysis, ESCI was most interested in the ability to respond with the appropriate resources to the highest percentage of incidents. For this reason, ESCI analyzed National Fire Incident Reporting System (NFIRS) and computer aided dispatch (CAD) data and generated average and 90th percentile response performance for emergency incidents only.

NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments recommends that career fire departments be en route to emergency incidents within 60 seconds for medical responses and 80 seconds for fire responses; allowing an extra 20 seconds to don protective clothing that is not worn for medical incidents. This time period is known as turnout time. *NFPA 1720: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer or Combination Departments*, however, does not contain a specific turnout time performance recommendation since personnel are often responding from home, work, or from within and outside the community. For volunteer and combination fire departments, the same turnout time recommendations remain but the overall response performance recommendation is tiered based on population density.

NFPA 1710 includes a performance objective of 240 seconds or less of travel time for the first arriving engine company in urban areas serviced by career fire departments.⁴ *NFPA 1720* differentiates between the various population densities and assumes that all areas served by career fire departments will adhere to a single performance objective. The volunteer and combination response performance recommendation is summarized below.

Figure 23: NFPA 1720 Response Performance Recommendations

Classification	Population Density	Response Target	Percentile
Urban	>1,000	9:00	90 th
Suburban	500 – 999	10:00	80 th
Rural	<500	14:00	80 th

For this analysis, ESCI was able to analyze National Fire Incident Reporting System (NFIRS) records alarm time, arrival time, and available time. The following figure summarizes WFD response performance during 2015.

Figure 24: Response Performance (2015)

Measure	Performance
Average	05:44
90th Percentile	09:39

Without firm fire response zones to the various population densities, it is difficult to identify incidents that are occurring in the more densely populated areas versus the outlying suburban and rural areas. However, WFD's response performance is slightly longer than the recommended level but this is due to incidents occurring outside the core of the Town.

Mutual and Automatic Aid

Communities have traditionally forged limited agreements to share resources under circumstances of extreme emergencies or disasters. These agreements, known as mutual aid agreements, allow a community to request the resources of another in order to mitigate an emergency situation that threatens lives or property. There are numerous mutual aid agreements, both formal and informal, in place between fire, police, and emergency medical agencies within the study area, as well as between participating departments and those surrounding the study area.

However, it is important to define the level of mutual aid systems in place in this region. Mutual aid can take several forms, and this analysis of mutual aid programs will begin with a brief explanation of the various types of mutual aid systems used by the fire service in various parts of North America.

Basic Mutual Aid Upon Request

This form of mutual aid is the most basic and is typically permitted under broad public laws that allow communities to share resources upon request during times of disaster or during local emergencies. Often, these broad laws permit communities to make decisions quickly regarding mutual aid under specified limitations of liability. These broad laws can allow a community to tap into resources from their immediate neighbors, as well as very distant resources in communities with which they have very little day-to-day contact otherwise. Under this level of mutual aid, specific resources are requested by the fire department, through the appropriate chain of command, and are coordinated by local or regional emergency management personnel. Depending on the level of request, the response can sometimes be slow and the authorization process may be cumbersome, often requiring the exchange of official information or even elected official's approval that may be required.

Written Mutual Aid Agreements

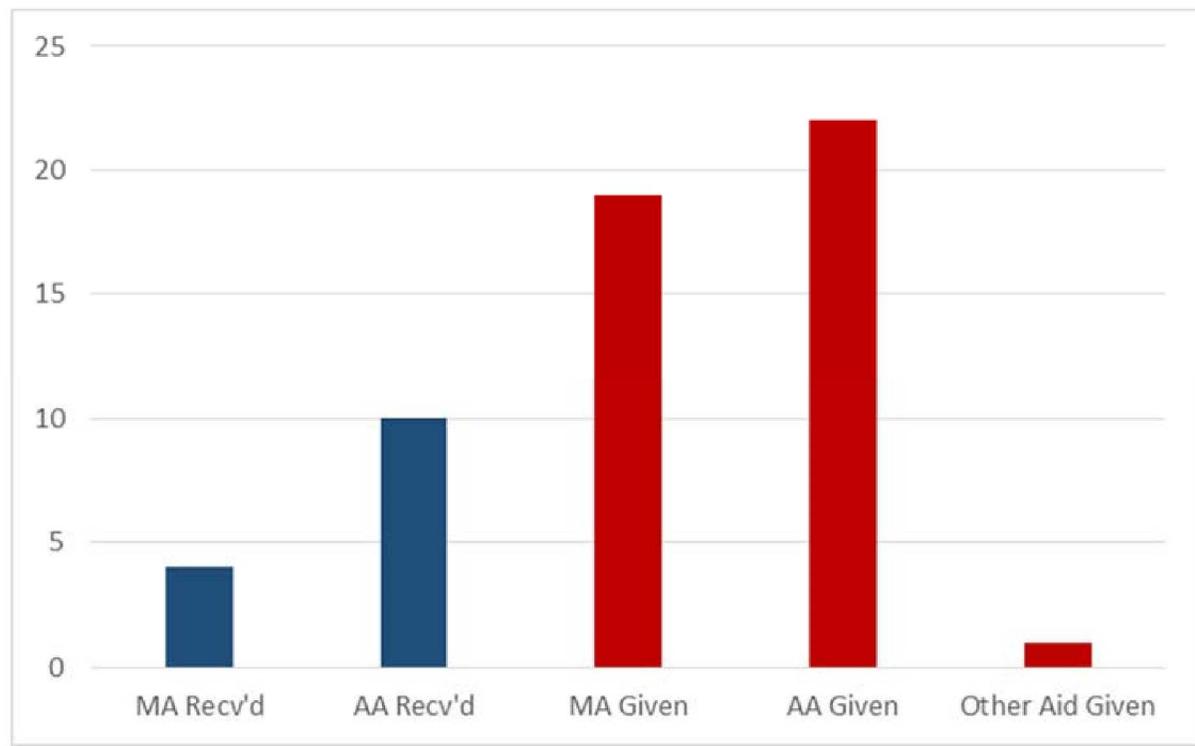
This form of mutual aid takes the previous form one step further by formalizing written agreements between communities (typically immediate neighbors in a region) in an effort to simplify the process and, thus, cut response time. Usually, these written agreements include a process that takes request and response authorization down to a lower level in the organization, such as the Fire Chief or incident commander. By signing such agreements, communities are "pre-authorizing" the deployment of their resources under specified circumstances as identified in the agreement. Most mutual aid agreements are generally reciprocal in nature and rarely involve an exchange of money for services.

notification of a reported incident in the neighboring community. In essence, automatic aid agreements expand a community's initial first alarm response to certain types of incidents by adding resources from a nearby neighbor to that response protocol. Typically, such agreements are for specific geographic areas where the neighbor's resource can be expected to have a reasonable response time and are limited to specific types of incidents. An example of such an agreement would be having a neighboring community's engine respond to all reported structure fires in an area where it would be closer than the second due engine from the home community. In other cases, the agreement might cover a type of resource, such as a water tender or aerial ladder, that the home community does not possess. An example would be having a neighboring community's water tender respond to all reported structure fires in certain areas of the home community that do not have pressurized hydrants.

Automatic aid agreements may be purely reciprocal or they may involve the exchange of more services provided. Purely reciprocal agreements are common, but typically are used where one community has some resource or service it can provide to the benefit of the other. These agreements do not require resources need not be identical. For instance, one community may send an engine to the other on automatic response to structure fires, while the second community agrees to send a water tender to the first community's structure fire calls in exchange. These reciprocal agreements are sometimes made without detailed concern over quantification of the equality of the services exchanged, but they do promote the effectiveness of overall services in both communities. In other cases, the written agreements spell out costs that one community can charge the other for services, typically where no reciprocity or reciprocation can be anticipated.

One primary purpose of automatic aid agreements is to improve the regional application of resources and staffing. Since fire protection resources are most frequently established because of the occupational needs of a community and not necessarily a heavy workload, these resources may be idle during frequent periods of time. While fire departments make productive use of this time through training, drills, public education, planning, and other functions, the fact is that these expensive resources of apparatus and staff are heavily tied up on emergency incidents. Communities that share certain resources back and forth, in essence, expanding the emergency response workload of those units across a larger geographic area. This generally ignores jurisdictional lines. This expanded use of resources can strongly benefit the communities that might otherwise have significantly increased costs if they had to procure and maintain all the same resources alone. Automatic aid can be used effectively to bolster a community's fire protection resources or to reduce unnecessary redundancy and overlap between communities.

WFD already actively participates in both automatic and mutual aid with surrounding departments. For structure fires and other involved incidents, agreements are in place for the automatic use of additional resources such as Greenville Fire/Rescue, Winterville Rural Fire Department,

Figure 25: Mutual and Automatic Aid Utilization

From this analysis, WFD is giving mutual aid significantly more than it is receiving. With GFR to and predominantly volunteer departments to the west, east, and south, this is to be expected. As the department continues to evolve, the Town may have to consider charging for external response. The frequency of these issues becomes an issue with degrading resources within the Town.

Recommendations:

- The department should closely monitor the use of mutual and automatic aid with other agencies to ensure that resources are used effectively and fairly throughout the region.
- The department should periodically review mutual and automatic aid geographically to ensure resources are properly positioned.

SUPPORT PROGRAMS

Although the delivery of fire suppression and emergency medical services is at the core of the department's mission, additional core activities are necessary to support every emergency response. These activities provide the basis for employee training and education, career development, public safety education, fire prevention, and code enforcement.

Training

Providing quality and safe fire and emergency services requires a well-trained response force. Training and education of department personnel are critical functions for WFD. In the past, officers and firefighters in service were raised with a "Management by Objectives" foundation. This type of system was based on quality, quantity, and costs as the elements. Officers used to plan, measure, control, time, and evaluate training outcomes.

Today's fire service consists of creating, promoting, and delivering training to members; but many training programs fall short and members become less interested. Training officers should capitalize on a program that will effectively overcome personal and organizational blocks to achieve results. Quality, comprehensive training program, emergency outcomes are compromised and department personnel are at risk.

Because the fire service is constantly changing, training cannot be limited to new recruits. Firefighters can benefit from training by learning new methods and procedures. In addition to training firefighters in the skills and knowledge needed in today's fire departments, training of instructors need to establish educational opportunities for more advanced procedures and new subjects. The following figure summarizes the training elements for WFD.

Figure 26: Training Program Elements

Element	Department Status
Initial Training of Personnel Conducted By	State or community college program
Firefighter Training Required Prior to Scene Response	No formal training required; duties limited to emergency response; no mandatory state minimum firefighter certification
Firefighter Training Required to Leave Probation/Trainee Status	Must complete 1403 within 12 months and 1403 within 12 months (does not always have to be completed)
Established Minimum Training Hours Annually	Yes
Minimum Training Hours Annually by Duty	
<i>Firefighter</i>	48
<i>EMT</i>	24
<i>Paramedic</i>	24
<i>First responder</i>	24
<i>Apparatus driver/operator</i>	12
<i>Fire officer</i>	12
All Position Minimum Requirements Follow NFPA Standards	Yes
Consistent Officer Training Provided	Yes
Consistent Driver/Operator Training Provided	Yes
Individual Responsible for Training Program	Asst. Chief
Number of Certified Fire Instructors in Agency	
<i>Fire</i>	7
<i>EMS</i>	4
Are All Company Officers Trained in Instructional Technique	Yes, not all certified
Is an Annual Training Plan Prepared and Followed	Informally in place with certain topics covered each year
Does the Training Program Have Software and Data Support	Emergency Reporting
Does the Training Program Have an Identified Program Budget	Yes
Training Resources Available	Formal classroom(s), EMS training support, training manikins, simulators, training equipment, insufficient for the needs for the department. Training room is shared as a community room, sometimes difficult to schedule
Standard Training Curriculum Manuals Used	IFSTA, State guidelines
Lesson Plans Utilized	For certification classes only
Night Drills Conducted	Weekly
Multi-Company Drills Conducted	Rarely
Regional Disaster Drills Conducted	Inconsistently
Periodic Physical Performance Evaluation to Ensure Personnel Maintain Physical Capacity to Perform Duties	No formal program, observed through annual training
Periodic Skills Competency Test to Ensure Personnel	No formal program,

Discussion

The department's overall training program is in good shape and is comparable to most other organizations of similar size. WFD requires minimum training for personnel to be involved in fire suppression related activities and also provides consistent officer and driver/operator training. An Assistant Chief is assigned to lead the training program and is assisted by a number of certified instructors within the department. The department should work to implement a formal annual training calendar and coordinate this program with surrounding departments. In addition, the department should work more closely with adjacent agencies and engage in multi-company, multi-departmental drills and exercises. Skills competency should be a high priority and a formal program to evaluate these skills should be implemented. The current level of training required of all personnel is adequate but there is still room for improvement and additional training.

Recommendations:

- The department should work to implement a formal annual training calendar and coordinate this program with surrounding departments.
- The department should work more closely with adjacent agencies and engage in multi-company, multi-departmental drills and exercises.
- The department should implement a formal program to evaluate skills competency on a regular basis.
- The Town should consider a formal training facility that could be used as a regional training center for surrounding departments.

Life Safety Services

An aggressive risk management program, through active fire and life safety services, is a fire de best opportunity to minimize the losses and human trauma associated with fires and other risks.

“The National Fire Protection Association recommends a multifaceted, coordinated reduction process at the community level to address local risks. This requires engaging segments of the community, identifying the highest priority risks, and then developing and implementing strategies designed to mitigate the risks.”

The most effective way to combat fires is to prevent them. A strong fire prevention program effective application of relevant codes and ordinances, reduces loss of property, life, and the disruption that accompanies a catastrophic fire. A fire department should actively promote fire construction, built-in warning and fire suppression systems and maintenance of fire safe b minimize risk to fire and health challenges.

The fundamental components of an effective fire prevention program are listed in the follow accompanied by the elements needed to address each component.

Figure 27: Life Safety Services Elements

Element	Departmental Status
Applicable Fire Code	International Fire Code model
Local Sprinkler Requirements Exceeding Model Code	None
Involvement in New Commercial Construction	Agency requires plan submittal, site r conducted, plan review conducted locally, prior to occupancy, sign-off required, obser test required for sprinkler system, obser required for fire alarm system in public a
Key-Vault Entry Box Program	Yes- required for all commercial occup
Inspections Conducted by This Agency	All commercial occupancies, all indu occupancies, all assembly occupancies institutional occupancies, licensed li establishments, high-risk occupancies, sto installation/modification/removal, residen occupancies, multi-unit residential occu
Occupancies on Scheduled Inspection List	421
Self-Inspection Incentive Program	No
Inspection Frequency for High-Risk Occupancies	Annually
Inspection Frequency for Moderate-Risk Occupancies	Annually
Inspection Frequency for Low-Risk Occupancies	Bi-Annually
Number of Initial Inspections Conducted Prior Year	408
Number of Reinspections Conducted Prior Year	121

Element	Departmental Status
Topics Included in Public Education Programs	Smoke alarm use, general fire safe fire extinguisher use
Publications Stocked and Distributed	Yes
Formal Public Education Training Provided to All Personnel	No
Level of Fire Investigation Provided by Agency Itself	Arson investigation
Additional Fire Investigation Resources Available	Local law enforcement criminal investi (not fire)
Individual Responsible for Fire Investigations	Fire Marshal
Formal Training for All Personnel	Scene control and evidence quaran
Formal Training for Specified Fire Investigators	Formal fire investigation certificati
Investigation Program Guided by NFPA 921	Yes, fully compliant
Juvenile Firesetter Program	No formal program

Discussion

The life safety services (fire prevention) components of WFD are robust for a department of t limited personnel availability. The part-time Inspectors are able to accomplish a great deal limited amount of time afforded to these positions. Some programs, however, have suffered this limited availability, particularly public education. The two part-time personnel are t inspecting 421 properties (and growing) plus working with local building officials on plans r pre-construction assistance.

Recommendation:

- The department should work to enhance the public education component of the services elements by assigning these tasks as a formal duty within the Fire Marshal’s use clerical support for coordination.

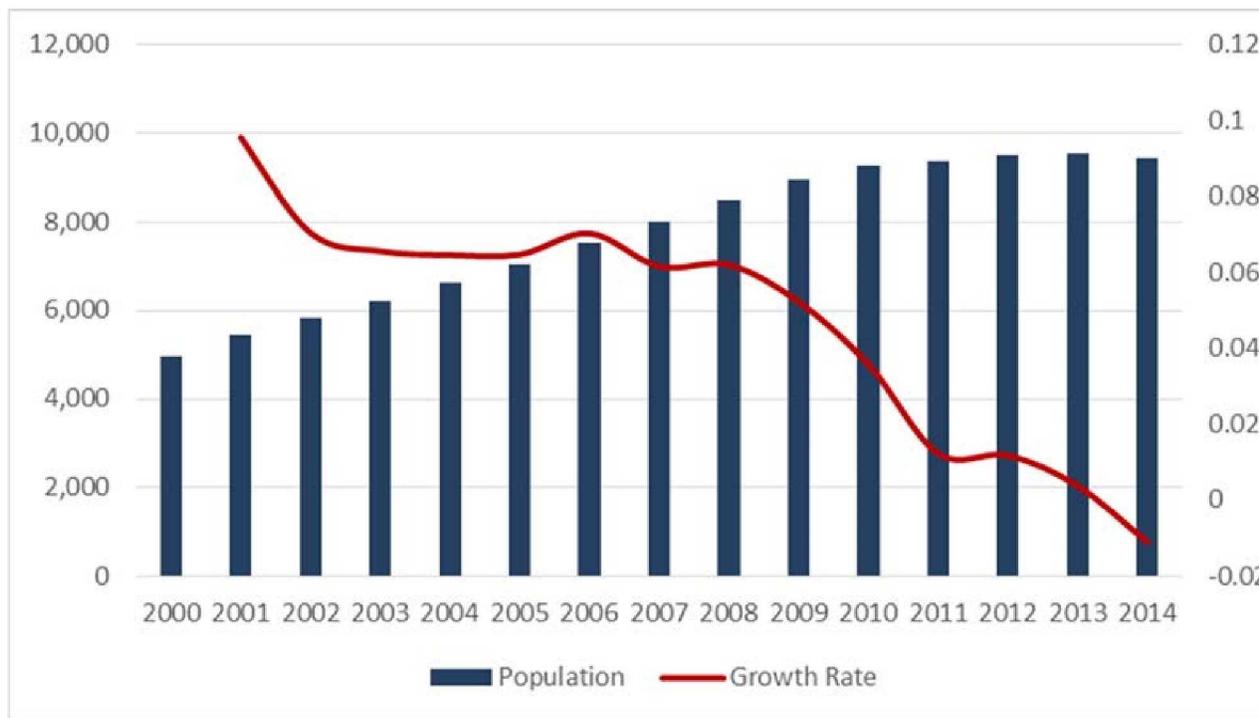
Phase II – Future System Demand Projections

In order to project potential future service demand, it is first necessary to evaluate historical growth and current community risk. These elements, combined with historical per capita income, allow for a more accurate projection of future demand.

POPULATION HISTORY AND GROWTH

Emergency services demand is typically driven by population and human activity. This holds true for the WFD response area. As the population of the area has risen, so has the overall service demand. The overall population of the WFD response area has risen steadily over the last several decades. As illustrated in the following chart, the area has seen a general population growth of 9.54 percent since 2000 although the growth has slowed in recent years.

Figure 28: Population Growth History



This increased growth is due primarily to the development occurring within the Town and its designation as a Certified Retirement Community. This will likely attract additional development, particularly with regards to senior and retirement subdivisions.

COMMUNITY RISK

The fire service assesses the relative risk of properties based on a number of factors. Properties with high fire and life risk often require greater numbers of personnel and apparatus to effectively mitigate an emergency. Staffing and deployment decisions should be made with consideration of the risk within geographic sub-areas of a community. Unlike medical responses that focus on human

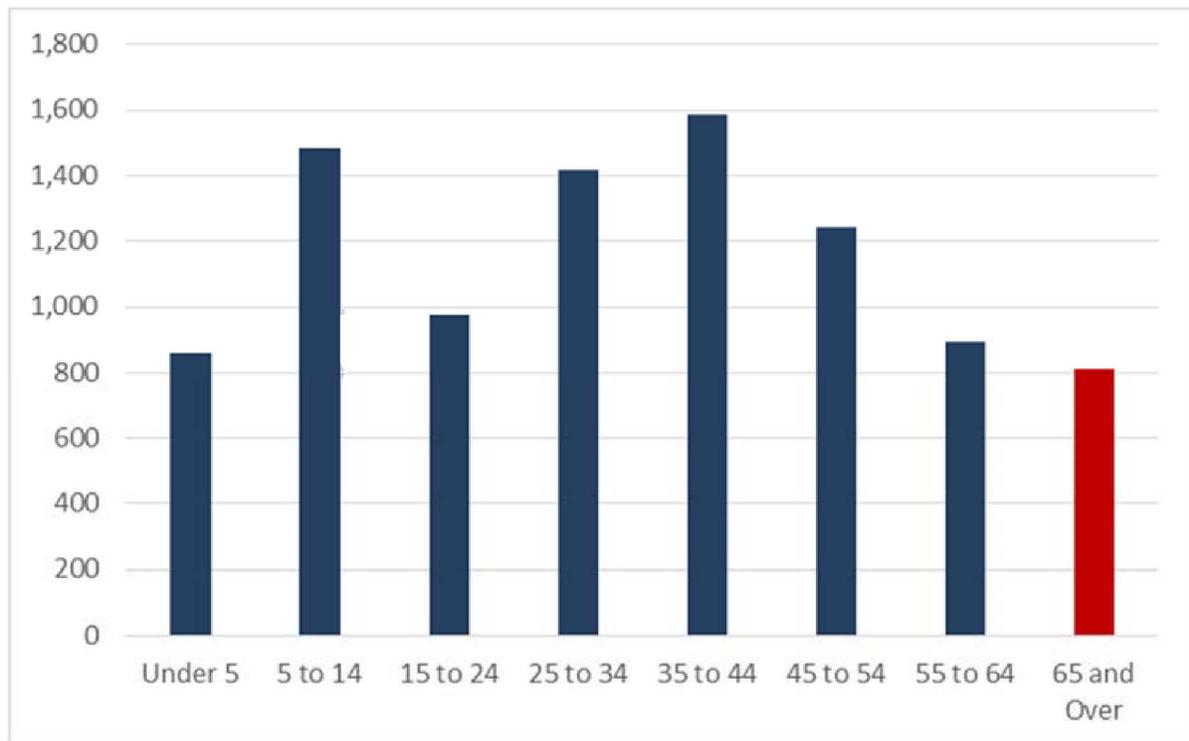
The following translates land use (potential scale and type of development within geographic areas) to categories of relative fire and life risk.

- Low risk – Areas zoned and used for agricultural purposes, open space, low-density residential, and other low intensity uses.
- Moderate risk – Areas zoned for medium-density single family properties, small commercial, office uses, low-intensity retail sales, and equivalently sized business activities.
- High risk – Higher-intensity business districts, mixed use areas, high-density residential, warehousing, and large mercantile centers.

WFD has a diverse mix of risk across the jurisdiction including some high risk industrial occupancies. Code enforcement and fire prevention efforts will assist the department in ensuring that these occupancies are operating safely.

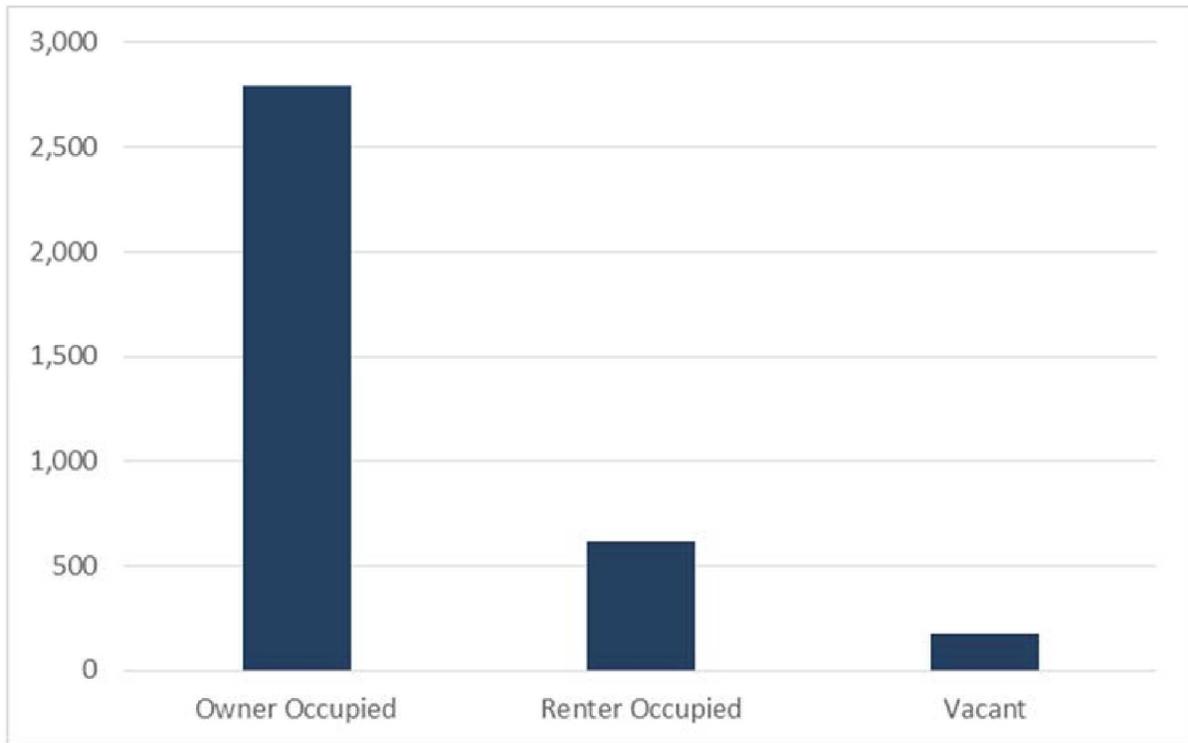
In addition to occupancy risk, the relative age of a population can impact service demand and service delivery. Studies have shown that departments that participate in emergency medical services see utilization rates higher in certain age groups; typically those under the age of five and those over the age of 65. The following figure illustrates how the population in the Town is distributed across age groups

Figure 29: Population by Age Group



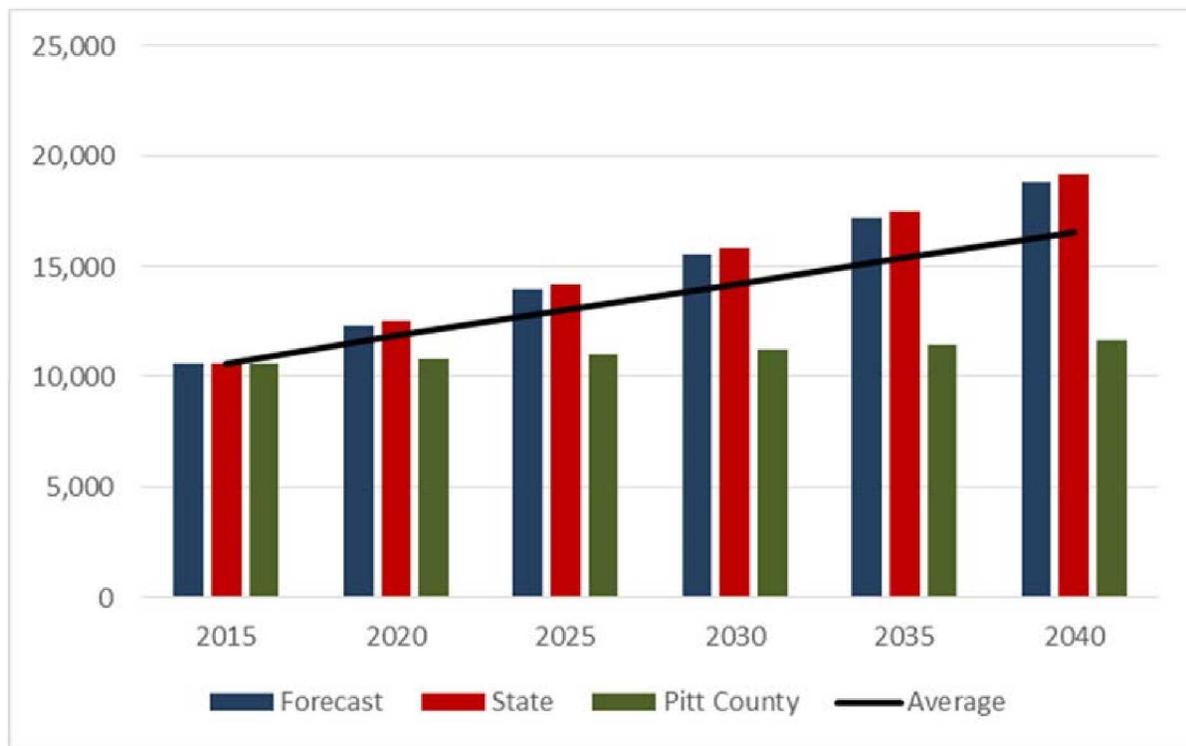
Many communities across the nation see a correlation between housing occupancy type and service demand. In some cases, high rental property and vacancy rates lead to increased service demand, which is commonly tied to socioeconomic issues but is highly variable. The Town, however, currently has a relatively low renter and vacancy rate, which should remain steady into the future.

Figure 30: Housing Occupancy Type



Although there are different methods of calculating potential future population growth, sufficient data indicates that the population of the WFD response area will continue to increase for the foreseeable future, reaching an estimated 16,500 by 2040, as illustrated in the following figure.

Figure 31: Population Growth Projections



The forecast of population growth is based on several models that include:

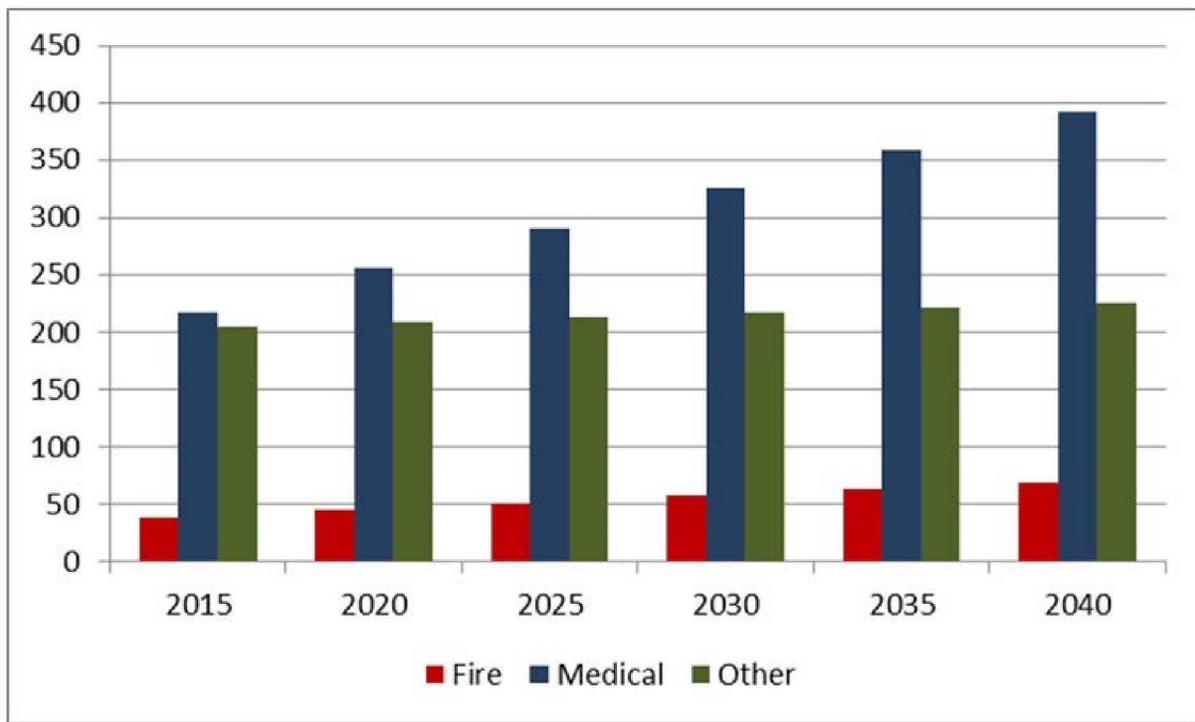
- Mathematical forecast based on historic growth
- State growth rate projections
- Local growth rate projections (Pitt County)
- Average of the previous three models

This information will be used in the following section to project future service demand.

SERVICE DEMAND PROJECTIONS

Using the information from the previous sections of this report, ESCI evaluated historical service demand, historical incident rates, and potential changes to the population in the future, to develop predictive models of future service demand. Historical incident rates were multiplied against future population projections based on the average growth rate model. This method indicates slow but steady growth over the 25-year period as illustrated below, with a majority of service demand coming from medical incidents.

Figure 32: Service Demand Projections



It is evident that WFD will be faced with an increased service demand as time progresses and population continues to grow. Local officials should work closely with fire department representatives to monitor population changes annually and adjust future predictive models as necessary in order to ensure appropriate resource deployment.

Phase III – Future Delivery System Models

The preceding sections of this report are intended to form the bases by which future recommendations can be made concerning the deployment of resources. The overall intent is to provide policymakers the necessary information that will allow them to make an informed decision about the emergency services delivery in their community.

As already discussed, WFD covers a relatively compact geographic area and a diverse mix of demographics and socioeconomics, as well as risks. Current deployment of resources at the central location allows the department to reach approximately 90 percent of historical service demand within four minutes, placing the department in a good position to serve existing development. Future development, depending on the scope and location, may tax the department beyond its current capabilities.

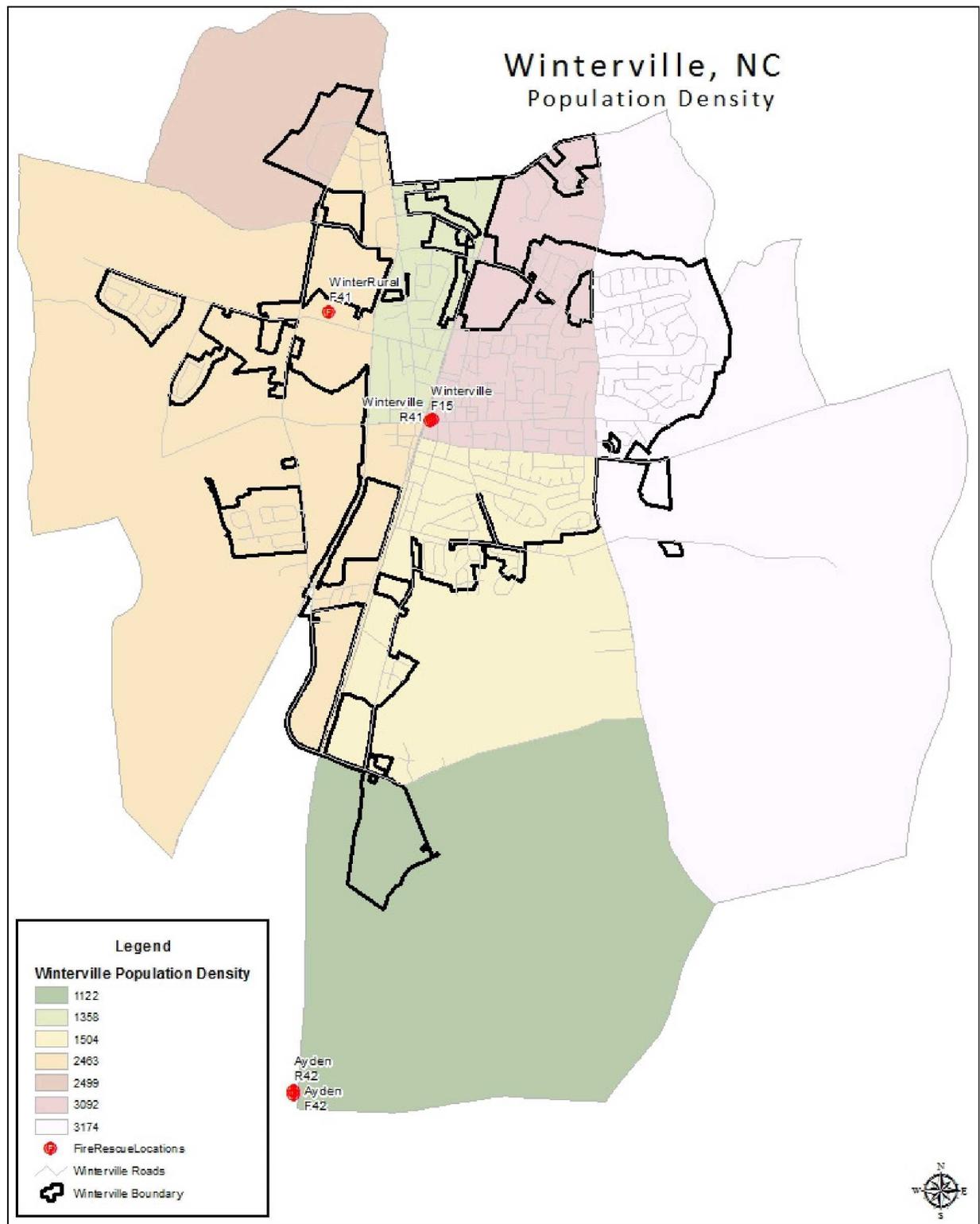
RESPONSE STANDARDS AND TARGETS

In order to determine future service delivery models for the study area, it is first necessary to establish response standards and targets that will be used to establish an appropriate deployment of resources. Although there are nationally published standards for the deployment of structural firefighting apparatus, often these standards are simply too restrictive for many organizations. In this report, ESCI will provide an overview of the published standards and then work to establish an appropriate response standards and targets for the study area that deliver an expected level of service within the constraints of the region.

NFPA 1710 recommends that career fire departments adopt response performance objectives that provide an equal level of service across the entirety of the response area irrespective of population density, geography, or response area size. For an area the size of the study region, it is improbable that the response performance objective can be accomplished. The standard recommends the following response times for fire departments:

- Call Processing 0:60 at the 90th Percentile
- Turnout 1:00 at the 90th Percentile⁵
- Total Response 5:00 at the 90th Percentile⁶

Figure 33: Population Density



As illustrated in the preceding figure, the entirety of the Town is over 1,000 population per s (based on census block data) making the entire WFD response area urban based on the NFPA

Although the aforementioned response performance objectives are detailed within each published standard, it should be noted that few, if any, departments actually meet these objectives with consistency. In ESCI’s 40 years of working with fire departments of various size and deployment, no client department has been able to routinely meet the published standards. In addition, with each standard, there is the ability of the Authority Having Jurisdiction (AHJ) to establish response performance objectives based on local expectations and abilities.

The historical response performance for WFD was provided previously in this document. Based on this information, and the department’s adopted response performance objectives, ESCI recommends that WFD continue to attempt to achieve compliance with NFPA 1720 as their adopted response performance objectives as listed below:

Figure 34: Recommended Response Performance Objectives

	Population Density	Performance Objective	Percentile
Urban	>1,000	9:00	90 th
Suburban	500 – 999	10:00	80 th
Rural	<500	14:00	80 th

Since the entire Town is considered urban, only the yellow shaded performance objective would apply to WFD. However, future annexation of lower density areas could cause for other criteria to be applicable.

SHORT AND MID-TERM STRATEGIES

The following list summarizes recommendations based on the individual agency evaluations within this report that are achievable in the short or mid-term, typically within a maximum of 12 months. These recommendations have been compiled into a prioritized list for easy reference. The prioritization system is as follows.

Priority 1 – Immediate Internal Safety

The recommendation deals with an improvement or initiative that solves an issue affecting the safety of firefighters and/or other personnel. These are not matters that simply make it easier to do a job or function but in fact make a currently unsafe situation safe.

- No Priority 1 recommendations to report.

Priority 2 – Legal or Financial Exposure

The recommendation resolves a situation that is creating or is likely to create the opportunity for a lawsuit or legal action against the entity or its officials. It also may be a situation that could subject the entity to a significant expense.

- All personnel within the department, particularly the Fire Chief, should receive annual performance evaluations to provide feedback for improvement.
- An inventory should be kept of all capital equipment and a formal capital replacement program should be developed to ensure that equipment is replaced on a regular schedule in compliance with manufacturer recommendations.
- The department should implement a formal program to evaluate skills competency and performance on a regular basis.

Priority 3 – Corrects a Service Delivery Issue

The recommendation addresses a service delivery situation that, while it does not create an immediate safety risk to personnel or the public, does affect the department’s ability to deliver service in compliance with its standards of performance. For example, adding a response unit to compensate for an increase in response workload or delivering training needed to allow personnel to deal effectively with new types of responses already encountered.

- No Priority 3 recommendations to report.

Priority 4 – Enhances the Delivery of a Service

The recommendation improves the delivery of a particular service. For example, relocating a station to improve response times to a particular part of town or adding a piece of equipment that will improve the delivery of a service.

- The department should implement a formal schedule to review and update standard operating procedures, guidelines and internal policies and procedures.
- The department should work with Town leadership and develop a formal strategic plan and organizational structure.
- The department should ensure that incident reports are entered in a timely manner and contain sufficient data to provide for future planning and training sessions.
- The department should continuously monitor staffing performance, including mutual and automatic aid departments, to ensure that sufficient resources are used effectively for major incidents.
- The department should consider a dedicated inspections vehicle rather than having personnel use the existing brush truck for everyday tasks.
- The department should work to implement a formal annual training calendar and coordination program with surrounding departments.
- The department should work more closely with adjacent agencies and engage in multi-agency multi-departmental drills and exercises.
- The Town should consider a formal training facility that could be used as a regional resource for surrounding departments.
- The department should work to enhance the public education component of the life safety program by assigning these tasks as a formal duty within the Fire Marshal’s office and use clerical staff for coordination.

Priority 5 – A Good Thing to Do

The recommendation does not fit within any of the above priorities but is still worth doing to enhance the department’s morale or efficiency.

- Revenue generated from the inspections program should be reviewed to ensure that a sufficient amount of revenue is realized.
- The department should consider a fee schedule for specialized responses, such as extrajurisdictional hazardous materials incidents, to be charged to insurance companies.
- The Town should consider placing the department name on the station for identification and public relations purposes.
- The department should closely monitor the use of mutual and automatic aid with adjacent agencies.

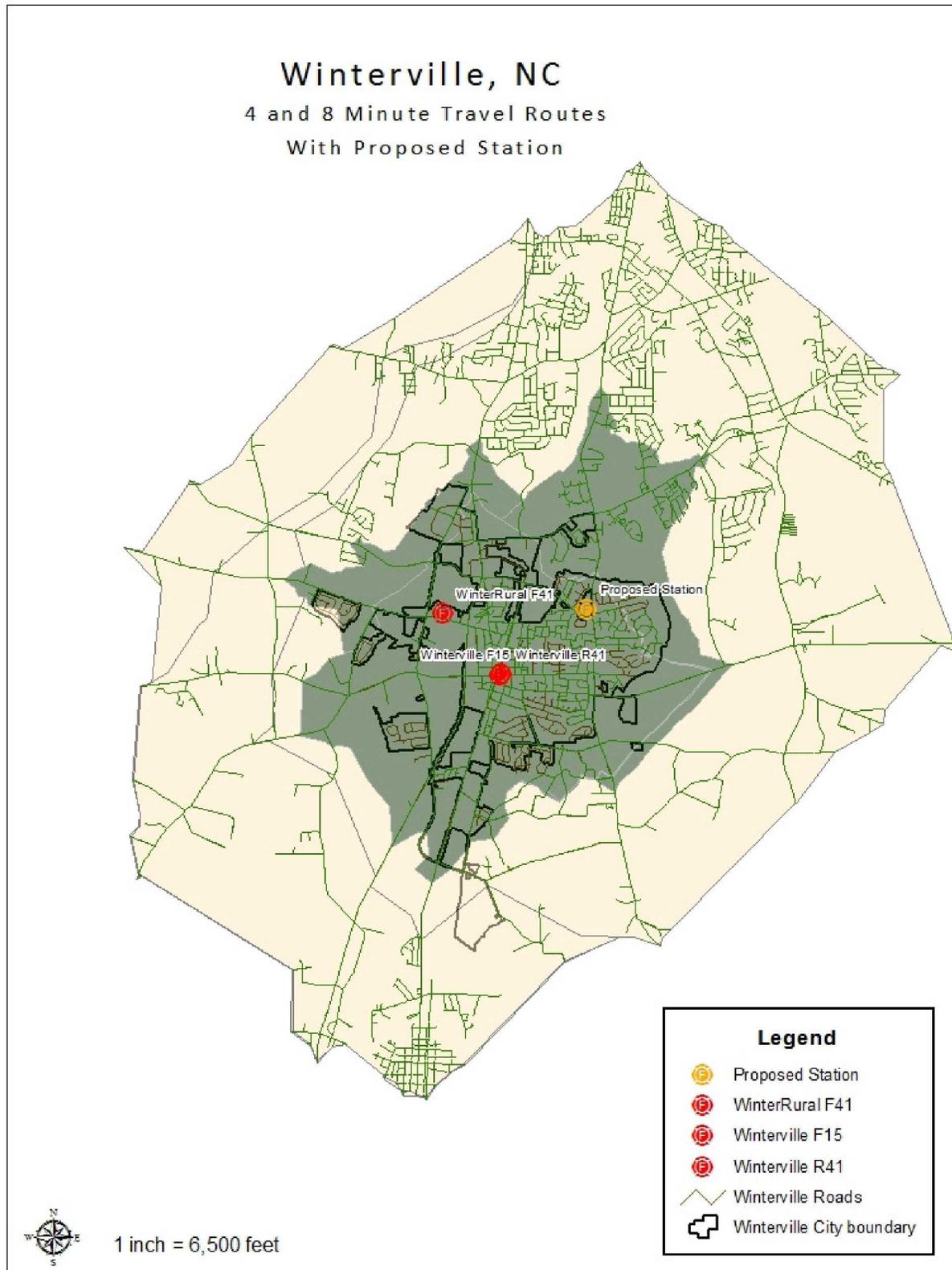
RECOMMENDED LONG TERM STRATEGIES

Based on the preceding analysis of current conditions and the review of current risk and demand trends within the Town, ESCI has evaluated the need for additional resources to enable the Fire Department to provide services to future populations. This begins with facilities and the resources with which to enhance the level of services provided.

Facilities

As already presented, the current WFD station is well-located centrally within the Town. Continued future development, particularly to the east, is currently outside the four-minute travel model. The placement of a new station to service that area will cause significant resource redundancies. In the event that development continues, it may be necessary to place a sub-station to improve coverage to the eastern side of the Town as shown in the following figure.

Figure 35: Potential New Station Location



Town leaders should continue to work with fire department personnel to ensure that service throughout the Town in a way that is satisfactory to the residents. Aside from this pote

Apparatus

The resource concentration analysis provided in the Current Conditions section of this report indicates that the southern portions of the Town cannot assemble sufficient resources (two engines and an aerial ladder) to combat a moderate risk structure fire. There is currently no aerial ladder within the GFR provides that resource when required from Station 5, although it is only a 75-foot quint. Another GFR aerial is in their downtown station and is not consistently staffed.

In order to ensure that sufficient apparatus resources are available, and given the commercial and industrial risk contained within the Town, it is recommended that WFD place an aerial ladder in the primary station. This would provide increased coverage and allow the department to have an effective response force of two engines and an aerial ladder within eight minutes of travel or 10 percent of the WFD response area.

In addition to the new apparatus, the Town should work with department staff to develop a future apparatus replacement plan that will allow for the timely replacement of apparatus that have reached their useful life span. The following figure represents an example capital replacement plan based on current resources and assumed life spans.

Figure 36: Recommended Capital Replacement Plan

Unit	Year	Replacement Cost	Annual Fund Contributions	Current Cash Requirements	Current Age	Life Expectancy
Engine 1	2006	\$550,000	\$36,667	\$366,667	10	15
Squad 1	2006	\$550,000	\$36,667	\$366,667	10	15
Rescue 1	2010	\$350,000	\$23,333	\$140,000	6	15
Engine 2	1994	\$320,000	N/A	\$320,000	22	15
Truck 1	2010	\$140,000	\$9,333	\$56,000	6	15
Chief's Car	2007	\$40,000	\$4,000	\$36,000	9	10
TOTAL/Avg.		\$1,950,000	\$110,000	\$1,285,333	10.5	

In addition to apparatus, the department should work with the Town to ensure that all other equipment, such as protective clothing, SCBA, and other equipment, is also placed on a replacement plan with sufficient funding to allow for scheduled replacement.

Personnel

Without adequate personnel, capital resources will sit idle and a department will not be able to fulfill its mission. Therefore, it is imperative that organizations have sufficient personnel to deliver services effectively. WFD should work with the Town to ensure that sufficient personnel are available to deliver services effectively.

Currently, one Engineer is on duty from 7:00 a.m. to 7:00 p.m. Monday through Friday. This is assisted by the Fire Chief, Inspectors (if also on duty), and volunteer personnel. Over the past several years, overall service demand has more than doubled without a corresponding increase in personnel. Service demand tends to be higher during the normal business week, Saturdays are the fourth highest day of the week for WFD. Likewise, although service demand tends to be higher during the normal business hours, there are periods during the late evening and overnight hours that are left to volunteer personnel. This leads to increased response times.

If the Town desires to provide a consistent level of service across all hours of the day, it will be necessary to staff at least one position 24 hours a day. This can be accomplished by allocating three FTEs to work 24-hour shifts. To accommodate for benefit leave time for budgeting purposes, 3.75 FTEs are recommended. This is based on a 24/48 schedule; however, other departments work a 24/7 schedule (including the current ambulance personnel). In order to compare to other departments, five FTEs of personnel would be necessary, which translates to 5.0 FTEs.

In addition to operational personnel, the number of inspectable occupancies within the Town of Winterville is expected to increase. The current Inspectors work a total of 15 hours weekly (combined) and are not able to conduct the necessary number of inspections to maintain an adequate level of inspection frequency. Although there are approximately 420 properties on the current inspection list, this does not include plan reviews and multiple meetings that are necessary during the pre-construction and construction phases of commercial development. This further reduces the amount of time remaining for general inspections.

In order to bolster the life safety services programs within WFD, it is recommended that the hours for the part-time Inspectors be increased to 15 for each of those personnel. This effectively doubles the available time that these personnel have to ensure the safety of the residents of the Town of Winterville and the capacity for both inspections and public education activities.

As already mentioned, the Fire Chief is the only full-time position allocated to the fire department. The Fire Chief position is tasked with all of the administrative duties of the department as well as operational duties and response. Given the amount of time dedicated to responses, there is little time left for administrative functions such as data entry, reporting, and general public availability. To assist with the administrative duties of the Fire Chief, it is recommended that a part-time clerical position be allocated within the fire department. This position would serve as the assistant to the Fire Chief and complete tasks such as incident data entry, public interaction (answering phones and directing questions to the appropriate individual), and report production for elected and appointed officials. Although it is beneficial for public access to have a 40-hour position to handle these responsibilities, it is recommended that this position be allocated for 20 to 24 hours weekly, based on current workload.

Conclusion

This document provides an enormous amount of technical data, much of which was provided to the Fire Department, and allows the reader to gain a clear understanding of the services provided by the Fire Department as an indication of how *well* those services are provided. The intent of this document is not to provide a critical evaluation of the organization but to rather provide personnel and policymakers information which to make informed decisions about the future of the department.

Based on information obtained throughout this process, WFD is functioning at a level commensurate with community expectations and are providing services to the Town in line with adopted objectives. The response performance analysis indicates that the department could improve, it is possible that the adoption of the tiered performance recommendations will show that the department is performing better than presented here based on a single objective.