BERLIN MAYOR AND COUNCIL

Meeting Agenda

Berlin Intermediate School
Cafeteria
309 Franklin Ave
Berlin, MD 21811
Tuesday, June 5, 2018

6:30 PM **Presentation of Fire and Emergency Medical Services Funding Study – Robert Finn, Matrix Consulting**

Public meeting to review and discuss the Berlin Fire Company's Fire and EMS Study conducted by Matrix Consulting with a Question and Answer session to follow.

Anyone having questions about the meetings mentioned above should contact
Laura Allen, Town Administrator at (410) 641-4144.

Fire and Emergency Medical Services Funding Study

TOWN OF BERLIN, MARYLAND

FINAL REPORT

matrix consulting group

April 5, 2018

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1 Introduction and Executive Summary

In December 2017, the Matrix Consulting Group began a project to assess the fire and emergency medical services funding for the Town of Berlin. This document is the report of the project teams' work that includes an analysis of financial resources, organizational management, equipment and facilities of the Berlin Fire Company.

1. Study Scope of Work

Government organizations should periodically review the services that they deliver to identify resource requirements, operational efficiencies, management and that customer services goals are met. Public safety operations are not exempt from this need. The focus of this study is a review of the funding and operations of the Berlin Fire Company (BFC) and its operational needs. As a result, the scope of this project was comprehensive and included:

- Operational and Capital needs for services provided to the Town along with a funding schedule;
- Capital Needs;
- Financial Management;
- Operations Management;
- Proportional sharing of BFC Fire and EMS expenses between the Town and County;
- Related Community Concerns;

This assessment is intended to determine the needs of the Berlin Fire Company to ensure they can provide effective and efficient services to the Town and remain financially viable.

2. Methodology Used in the Study

To understand and evaluate these staffing issues the project team undertook an assessment of the finances and operations of the Town and Fire Company. The principal approaches utilized by the project team in this study included the following:

- **Internal Interviews** – members of the project team individually interviewed numerous executive, management, and supervisory staff of the Town and Fire Company as part of this study.

- **Data Collection** – the project team collected a variety of external and internal data documenting the structure, operations and organization, including:

  – Company financial reports and audits
  – Documentation reflecting operations management
  – Numerous output data reflecting services provided
  – Various other performance information

  This data was summarized in a 'descriptive profile' of the Fire Company, which was reviewed by BFC staff to ensure we had a factual foundation for the study. This approach ensured that the project team had an appropriate understanding of the Town and Fire Company.

Data was collected over the past several months and presented in interim deliverables. Throughout this process, the project team reviewed facts, findings, and conclusions through these interim deliverables with the Fire Company and Town.

3. Overview

For the Berlin Fire Company and the Town of Berlin there are some overarching issues that need to be addressed:

- The Berlin Fire Company is not sufficiently funded for the level of services they have chosen to provide to Worcester County and the Town of Berlin. Worcester County has a funding formula that is used to determine the funding for the Company. The Town of Berlin does not have a specific formula for the funding of services but rather provides a flat rate for the services.

- The Fire Company is not held accountable for how they allocate the funding provided from the County or the Town. The Company receives the funding and spends it as the they deem appropriate. There is a lack of dialogue between the Town and Fire Company as it relates to the budget and funding for services. There is little to no discussion about the services being provided and the cost of those services.

- Financial planning for the Fire Company is needed to ensure appropriate funds are available for the continued operation of the Company.

- There is no formal agreement between the Town and the Fire Company that establishes the responsibilities for each party.

These issues cut across both organizations and represent management risks for the Town of Berlin.

4. Summary of Recommendations

Throughout this report the project team provides evaluation and analysis of the organization, finances, and services provided by the BFC and, where appropriate, makes suggestions for improvements. The table below provides a summary list of all the recommendations, appearing in sequential order, in this report.

RECOMMENDATIONS
OPERATIONS
The Fire Company should create a mechanism to capture appropriate data from the computer aided dispatch (CAD) to evaluate and analyze the various response time components.
The Fire Company should establish benchmark performance objectives, for the staffed units, of 60 second call turnout time for EMS calls and 90 second call turnout time for fire related calls for 90% of the calls to be evaluated at least annually.
The Fire Company should establish benchmark travel time performance objectives of 4 minutes and baseline travel time performance objectives 5 minutes and 12 seconds for 90% of the calls in Town limits to be evaluated at least annually.
The Fire Company should establish benchmark travel time performance objectives of 8 minutes and baseline travel time performance objectives 10 minutes and 24 seconds with a minimum staffing of 15 personnel for 90% of the calls in Town limits to be evaluated at least annually.
FINANCIAL RESOURCES
The Fire Company should establish written policies and procedures for the billing and collection of fees associated with the emergency medical services and transportation of the sick and injured.
The Fire Company should evaluate their emergency medical services fee structure annually, adjust their fees as necessary, and incorporate this analysis in the budget document.
The Town of Berlin and Berlin Fire Company should adopt a funding strategy that establishes a base amount with the balance of the funding being discussed as a part of the budget process.
Any future purchases of apparatus and equipment using funds from the Town of Berlin capital fund should be approved by the Town and the apparatus owned by the Town of Berlin.

RECOMMENDATIONS

The Fire Company should be required to provide and maintain a five-year financial plan to include capital items and obtain assistance from the Town Finance Department where necessary.

The Town of Berlin should contract with the Berlin Fire Company to define and provide fire suppression and emergency medical services to the Town, establish the funding for these services, and to delineate the reports and procedures to be followed by both parties.

The audits performed annually to be completed based on the fiscal year and not the calendar year.

The Fire Company should review their cash holdings to ensure they are protected against loss either through insurance such as the FDIC or are otherwise backed by significant collateral.

The Town of Berlin and the Berlin Fire Company should create a plan for the purchase of assets through funding mechanisms available to the Town to benefit the Fire Company and the residents.

ORGANIZATIONAL STRUCTURE

Create a new non-stock 501c (3) corporation to address funding, employment and service levels for the Town and County.

Work with the Fire Company accountants and auditors to establish written policies and procedures to provide financial controls for the collection, spending, and investing of funds.

Eliminate the provision that allows the membership of the organization to override decisions by the Board of Directors.

Maintain the existing organization to oversee fundraising activities and donations providing support to the new corporation.

OPERATIONAL MANAGEMENT

Use the outdoor warning siren only for emergencies that will affect the public in cases of severe weather or other calamities as designated by the Worcester County Emergency Management Division and not as a notification system for the Fire Company.

Continue to support the current programming of the Worcester County Fire Marshal's Office.

Continue to utilize the current training programs offered by the State of Maryland and the Maryland Fire and Rescue Institute.

Establish an estimated attendance trigger point to activate a stand-by emergency medical services crew for a special event.

With limited parking and narrow streets, the ambulance should be staged at the fire station on Main Street for a special event allowing for easy access to the appropriate medical facility.

Access to the event or festival area by medical personnel to be accomplished using a golf cart specifically designed for medical crews and these types of events.

The use of Main Street is to be limited as much as possible by the Fire Company and a strict 25 mph speed limit to be placed on all emergency vehicles using the street to access an emergency call.

RECOMMENDATIONS

Consider adopting a retention program using stipends, length of service, insurance, or other programs to help with retaining volunteer firefighters and emergency medical personnel.

PHYSICAL RESOURCES

The second-floor area of Station 1 needs to be converted to house company offices and appropriate living quarters for station personnel.

The former library building on the lot could be converted to a rental facility.

Establish and adopt a program that contains benchmarks and measurable components for the planned replacement of apparatus.

Analytical details for all of these recommendations are found in the following chapters of this report.

2 Overview of the Current Service Environment

This chapter provides summary information regarding the current organization and operation of the Berlin Fire Company (BFC) and serves as the context for the organizational and effectiveness study. The various types of data were developed through interviews with BFC management and personnel, tours of stations and the Fire Company's response area, review of available documents and records, as well as access to computerized records and data sets. This chapter provides information that was utilized by the project team to analyze workloads, organization, management and service levels provided by the BFC. The organization of this chapter is as follows:

- Background and Overview
- Financial Resources
- Organizational Structure
- Administrative Division
- Operations Division
- Fire Marshal's Office
- Training Division

First some background and history of the Fire Company and its relationship with the Town.

1. Background and Overview

The Berlin Fire Company had its beginnings in late 1894 as an informal organization and was formally organized by the Town in 1910. In 1964 the Fire Company assumed the role of providing ambulance services and hiring a full-time employee in 1972. The service has grown to include three fire stations and full-time employees to staff a paramedic system covering the Town of Berlin and areas surrounding the Town.

The Town of Berlin is in the southern part of the State near the Atlantic Ocean in Worcester County. It covers just over three-square miles with an estimated population of 4,608 residents. The Town was incorporated in 1868 and in the early years was known as a rest stop for travelers on their way to Ocean City. Operating under a strong mayor form of government the Town also has a Town Administrator to ensure the efficient and effective administration of the various departments. Through years of revitalization of the downtown area the Town now enjoys numerous festivals and other events from May through December.

The following sections of this profile explore the Fire Company's budget, staffing and organizational structure, and staff roles and responsibilities.

2. Financial Resources

The Berlin Fire Company operates on a cash basis and has established several funds to build the reserves necessary to complete the project or purchase. The Company follows a fiscal year from July 1 through June 30 and maintains separate financial records for fire operations and emergency medical operations. The table below illustrates the past three fiscal years for emergency medical services. There was no budget provided for FY2017 / 2018.

Emergency Medical Services			
	FY 2015 Actual	FY 2016 Actual	FY 2017 Actual
Revenues			
Donations	$3,027	$5,605	$2,585
Annual Donations	$15,358	$17,306	$10,216
EMS Billing	$366,735	$372,944	$355,098
Memory Donations	$570	$0	$245
Other	$0	$0	$18,000
Interest Income	$4,661	$1,547	$564
Worcester County Funding	$553,690	$602,509	$606,578
Town of Berlin Funding	$50,000	$50,000	$140,000
Total Revenues	$994,041	$1,049,910	$1,133,287
Expenditures			
Medical Supplies	$11,236	$21,642	$10,785
Office Supplies	$7,203	$7,358	$7,791
Professional Services	$10,781	($19,132)	$2,732
Salaries	$548,213	$688,037	$794,573
Benefits	$293,878	$289,475	$338,977
Payroll Expenses	$19,133	$19,469	$17,850
Worker Compensation	$60,899	$55,469	$96,840
EMS Personnel - Other	$7,093	$4,355	$4,891
Uniform Expenses	$9,918	$7,089	$23,538
Training	$555	$755	$435
Miscellaneous	$975	$1,432	$0
Incentive/Awards Program	$5,260	$4,948	$2,610
Building Maintenance	$1,031	$6,161	$666
Medical Equipment Maintenance	$13,867	$13,046	$19,044
Bank Service Charges	$38	$35	$598
Communications	$225	$130	$0
Insurance	$3,298	$5,347	$6,656
Fuel	$9,642	$5,811	$6,729
Vehicle Maintenance	$12,705	$16,715	$20,116
Utilities	$522	$483	$618
Administrative Asst.	$28	$0	$0

Emergency Medical Services			
	FY 2015 Actual	FY 2016 Actual	FY 2017 Actual
Operating Expenditures	$1,016,500	$1,128,625	$1,355,450
New Ambulances	$303	$24,000	$234,162
New Medical Equipment	$7,654	$19,267	$53,524
Total Expenditures	$1,024,457	$1,171,892	$1,643,136

The table below illustrates the past three fiscal years for fire suppression services. There was no budget provided for FY2017 / 2018.

Fire Suppression Services			
	FY 2015 Actual	FY 2016 Actual	FY 2017 Actual
Revenues			
Donations	$60,874	$109,425	$15,608
Pledges	$6,000	$7,500	$4,050
Memory Donations	$1,590	$2,265	$2,535
Annual Drive	$18,429	$13,475	$19,233
Fund Raisers	$11,398	$27,842	$13,873
Control Burns	$2,950	$0	$3,700
Grants	$25,000	$0	$0
State Aid	$29,016	$37,689	$40,763
Worcester County Funding	$477,000	$388,072	$386,000
Town of Berlin Funding	$200,000	$200,000	$200,000
Interest Income	$2,818	$2,888	$2,538
Miscellaneous Income	$5,564	$0	$33,500
Town of Berlin Capital Fund	$150,000	$150,000	$60,000
Total Revenues	$990,638	$939,157	$781,800
Expenditures			
Utilities	$44,801	$30,528	$38,355
Building Maintenance	$54,749	$24,021	$75,287
Insurance	$39,842	$35,424	$39,753
Dues & Subscriptions	$524	$549	$524
Office Supplies	$17,479	$13,147	$13,336
Professional Fees	$2,619	$7,300	$1,930
Communications	$7,376	$6,386	$7,611
Fire Prevention	$8,901	$0	$3,522
Apparatus Maintenance	$68,471	$37,979	$66,517
Fuel	$11,500	$7,195	$7,181
Generators	$100	$219	$73
Miscellaneous Expenses	$38	($33)	$0
Fire Police	$0	$0	$840
Fire Equipment	$29,789	$123,461	$97,184
Physicals/Gym	$7,665	$10,469	$9,933
Fire Supplies	$3,693	$1,826	$3,300
Fire Equipment Repairs	$6,193	$11,341	$11,255
Taxes	$145	$145	$145
Volunteer Incentives	$33,655	$33,664	$37,185
Cadets	$0	$0	$0

Fire Suppression Services			
	FY 2015 Actual	FY 2016 Actual	FY 2017 Actual
Training	$8,091	$2,687	$15,549
Fund Raising Expenses	$0	$12,884	$0
Debt Service	$0	$0	$0
Operating Expenditures	$345,630	$359,195	$429,477
New Fire Equipment	$0	$0	$0
New Fire Apparatus	$91	$221	$725,747
Building Major Repairs/Improve.	$46,034	$27,834	$122,924
Total Expenditures	$391,755	$387,250	$1,278,148

The Company receives funding from a variety of sources including Worcester County, the Town of Berlin and billing for emergency medical services. The Town of Berlin provides an annual amount of $400,000. Worcester County uses a specific formula to provide funding to the departments in the County. The table below outlines the funding mechanism for Worcester County.

Worcester County Emergency Services Funding	
Fire Operations	
Per Call – In County	$1,000
Flat Rate	$225,000
Emergency Medical Services	
Each Equipped Vehicle	$10,000
Each FTE	$5,000
Paramedic On-Duty	$30,000
Transports:	
In Town	
Non-Transport	$0
Transport	$190
In County	
Non-Transport	$190
Transport	$795
Transport Mileage	60.5 cents per mile

For fire operations the County established a minimum flat rate of $225,000 annually but is also tied to the assessed property valuations and may increase. The per call rate is for fire calls in the County only. The emergency medical services have several caveats and restrictions. The FTE rate is for paid staff or in-station staffing, it does not include volunteer staffing or those responding from home. For the paramedic on-duty, the paramedic must be on-duty seven (7) days per week for eight (8) hours per day and is a flat rate fee. The transportation of a patient has a couple of components. For In-Town calls, the County will pay a flat rate of $190 for the call. Calls in the County will pay a flat rate of $795 for a transport and $190 for calls in which there is no transport of a patient. In addition, the County will pay 60.5 cents per mile if the round trip is more than twenty-

five (25) miles.

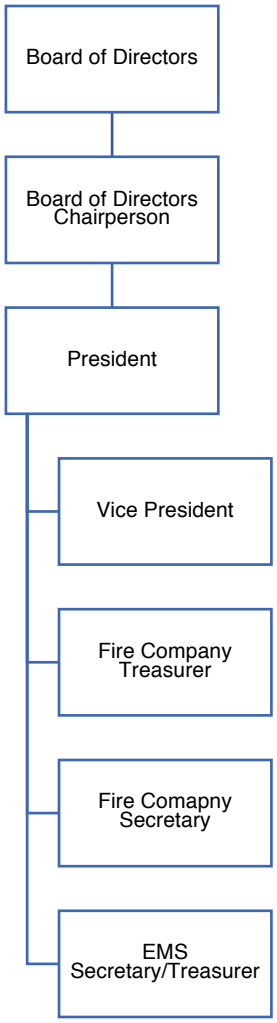
The third primary revenue source is billing for emergency medical services. The Company uses a third-party billing service to collect the billed fees and charges a commission of 8% for all collections. According to the Fire Company the collection rate is about 70% of those billed.

3. Organizational Structure

The Berlin Fire Company is a volunteer organization providing fire suppression, emergency medical services including transportation, and special operations response to the Town and surrounding community. The Company operates as a 501c (3) non-profit corporation and therefore has two organizational structures, one designed to manage business functions and the other the manage operational matters.

(1) Administrative Organization

The administrative structure is responsible for all financial reports and obligations, maintains the by-laws of the organization, handles any volunteer personnel issues and interviews any applicants for the volunteer staffing of the Company. The six (6) Board of Directors and officers are elected annually by the membership of the organization. The following chart illustrates the organization of this function in the Administration Division.


Board of Directors
Board of Directors Chairperson
President
Vice President
Fire Company Treasurer
Fire Comapny Secretary
EMS Secretary/Treasurer

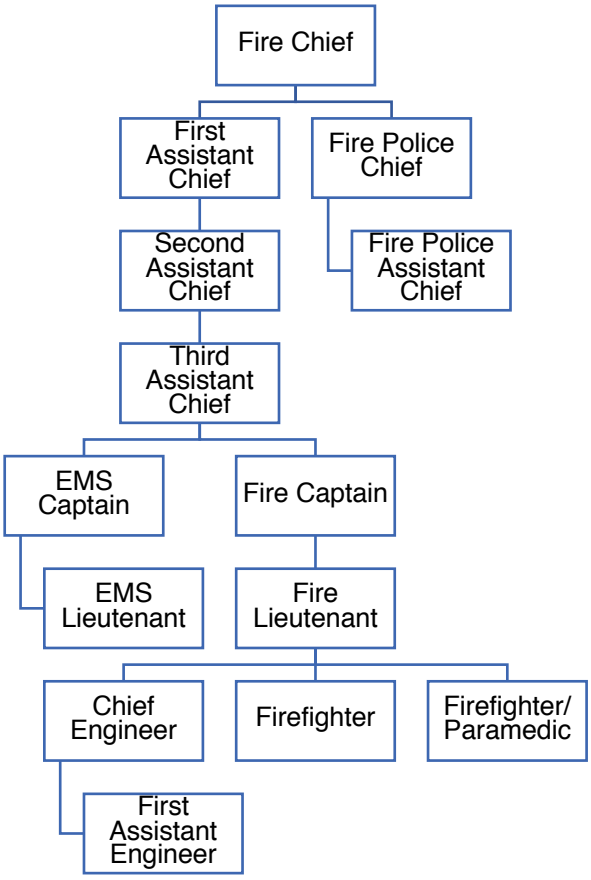
(2) Administrative Staffing and Unit Descriptions

The following table provides the personnel and the major tasks of the President and Board of Directors.

KEY ROLES AND RESPONSIBILITIES				
Unit/Division	**Filled**	**Auth.**	**Position**	**Unit Description**
Administrative Division	6	6	Board of Directors	• Maintain by-laws of the organization. • Interviews applicants for the volunteer staffing of the Company • Acts as the arbitrator for volunteer personnel issues.
	1	1	Board Chairperson	• Performs the duties of the President and Vice President in their absence.
	1	1	President	• Presides over Board meetings. • Acts as the resident agent for the corporation. • Custodian of corporate records. • Compiles the budget and monitors the financial condition of the corporation. • Executes all legal documents for the corporation.
	1	1	Vice President	• Maintains records of any memorial donations • Acts as President in the absence of the President
	1	1	Fire Company Secretary	• Maintains the minutes of corporation meetings and attendance for non-emergency activities. • Reports the monthly bills at the meetings.
	1	1	Fire Company Treasurer	• Writes and executes checks on behalf of the Fire Company. • Presents monthly financial reports of the Fire Company.
	1	1	EMS Secretary / Treasurer	• Writes and executes checks on behalf of the EMS Company. • Presents monthly financial reports of the EMS Company.

(3) Operational Organization

The operations structure of the corporation is responsible for the response to calls for service, maintenance of apparatus, and the training of personnel. The officers are elected annually by the membership of the organization. The following chart illustrates the organization of this function in the Operations Division.



(4) Operational Staffing and Unit Descriptions

The Fire Company operates as a volunteer department as over 85% of their personnel are volunteer members. There is career staffing for the emergency medical services with two paramedics and one emergency medical technician on-duty twenty-four hours a day. Twelve career employees work twenty-four (24) hours on-duty then seventy-two (72) hours off-duty. The following table provides the personnel and the major tasks of staff reporting to the Fire Chief through the chain of command.

KEY ROLES AND RESPONSIBILITIES				
Unit/Division	**Filled**	**Auth.**	**Position**	**Unit Description**
Operations Division	1	1	Fire Chief	• Provides supervision and direction during emergencies. • Ensures the readiness of equipment and personnel • Ensures personnel are appropriately trained. • Prepares operations and training budget. • Liaison with other fire companies and communications center.
	1	1	First Assistant Chief	• Assists the Fire Chief and assumes all duties of the Fire Chief in their absence.

KEY ROLES AND RESPONSIBILITIES				
Unit/Division	**Filled**	**Auth.**	**Position**	**Unit Description**
	1	1	Second Assistant Chief	• Performs the duties of the First Assistant Chief in their absence and takes command of the Company in the absence of the Fire Chief and First Assistant Chief when the Company is in action at fires or drills.
	1	1	Third Assistant Chief	• Performs the duties of the Second Assistant Chief in their absence and takes command of the Company in the absence of the Fire Chief, First Assistant Chief, and Second Assistant Chief when the Company is in action at fires or drills.
	1	1	Fire Captain	• Performs the duties of the Third Assistant Chief in their absence and takes command of the Company in the absence of the Fire Chief, First Assistant Chief, Second Assistant Chief, and Third Assistant Chief when the Company is in action at fires or drills.
	1	1	Fire Lieutenant	• Performs the duties of the Captain in their absence and takes command of the Company in the absence of the Fire Chief, First Assistant Chief, Second Assistant Chief, Third Assistant Chief, and Captain when the Company is in action at fires or drills.
	1	1	EMS Captain	• Oversees EMS Operations • Oversees EMS training and verifies personnel capability.
	1	1	EMS Lieutenant	• Ensures medical supplies and medical equipment readiness and availability. • Acts as EMS Captain in the absence of the EMS Captain.
	1	1	Chief of Fire Police	• Coordinates Fire Police activities. • Ensures Fire Police are properly trained and approved by County Sheriff.
	1	1	Assistant Chief of Fire Police	• Acts as Fire Police Chief in the absence of the Fire Police Chief
	1	1	Chief Engineer	• Ensures operational readiness of apparatus. • Oversees apparatus maintenance and repair • Oversees apparatus driver qualifications
	1	1	Assistant Chief Engineer	• Assists Chief Engineer • Acts as Chief Engineer in the absence of the Chief Engineer.
	8	8	Career Firefighter / Paramedic	• Responds to calls for service. • Performs station duties and equipment checks. • Operates emergency vehicles.
	4	4	Career Firefighter / EMT	• Responds to calls for service. • Performs station duties and equipment checks. • Operates emergency vehicles.
	38	38	Volunteer Firefighter / EMT	• Responds to calls for service. • Performs station duties and equipment checks. • Operates emergency vehicles.

(5) Workload

The computer aided dispatch (CAD) data was not in a format conducive for evaluation and analysis of the workload of the Fire Company. However, the project team was able to gain access to limited amounts of data. The table below illustrates the number of calls for the Town of Berlin. Worcester County and the total calls for the Fire Company based on data from the Fire Company.

Berlin Fire Company Fire Related Calls

	2013	2014	2015	2016	2017	Total	Pct. of Total
Town of Berlin	172	99	116	190	186	763	42.2%
Worcester County	252	175	151	231	234	1,043	57.8%
Total Calls	424	274	267	421	420	1,806	100.0%

Berlin Fire Company EMS Related Calls

	2013	2014	2015	2016	2017	Total	Pct. of Total
Town of Berlin	919	866	909	887	915	4,496	57.2%
Worcester County	670	636	661	701	694	3,362	42.8%
Total Calls	1,589	1,502	1,570	1,588	1,609	7,858	100%

Berlin Fire Company Total Calls for Service

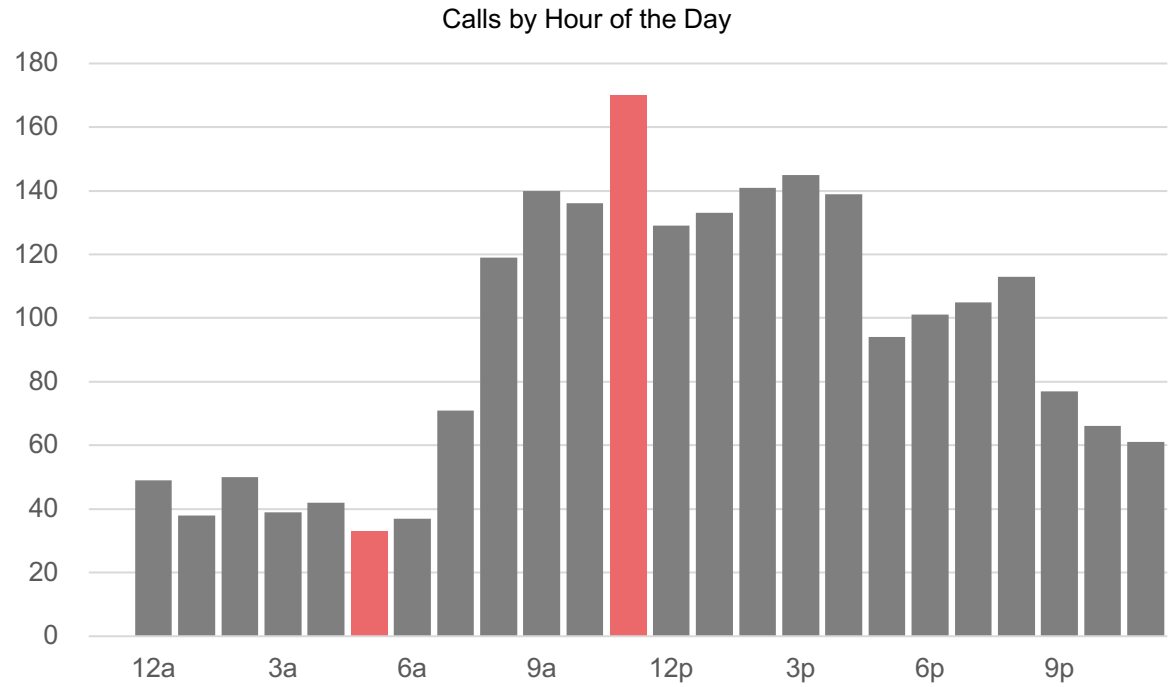
	2013	2014	2015	2016	2017	Total	Pct. of Total
Town of Berlin	1,091	965	1,025	1,077	1,101	5,259	54.4%
Worcester County	922	811	812	932	928	4,405	45.6%
Total Calls	2,013	1,776	1,837	2,009	2,029	9,664	100.0%

The following table illustrates the calls for service by hour and day. This data is from the CAD data and represents the Fiscal Year 2016/2017.

Berlin Fire Company Calls by Hour and Day

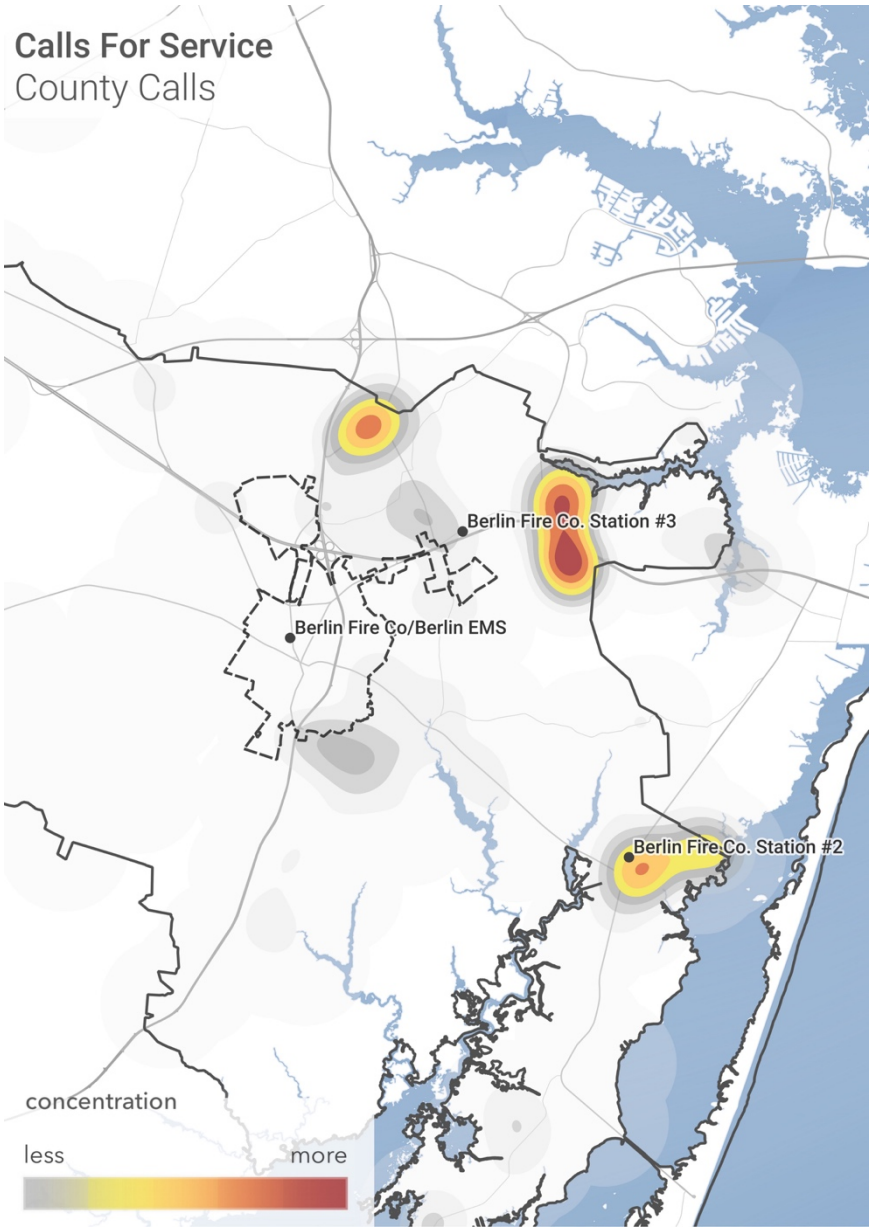
Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
12am	9	5	5	8	5	5	12	49
1am	8	5	8	3	5	1	8	38
2am	11	4	6	8	9	6	6	50
3am	10	3	4	5	5	4	8	39
4am	6	4	5	7	9	4	7	42
5am	7	8	1	2	3	7	5	33
6am	5	4	8	5	5	4	6	37
7am	8	5	13	9	8	13	15	71
8am	14	18	23	21	14	20	9	119
9am	15	17	26	20	16	27	19	140
10am	11	16	11	21	23	27	27	136
11am	16	39	24	19	28	25	19	170
12pm	12	17	24	12	13	24	27	129
1pm	14	23	24	20	17	15	20	133
2pm	19	19	25	24	20	25	9	141
3pm	20	28	17	18	30	23	9	145
4pm	13	29	15	19	23	17	23	139
5pm	16	8	21	9	12	14	14	94
6pm	19	18	14	7	5	19	19	101
7pm	16	10	14	16	10	21	18	105
8pm	20	21	10	11	13	16	22	113
9pm	15	7	4	13	12	5	21	77
10pm	12	5	8	10	9	13	9	66
11pm	9	8	11	9	5	13	6	61
Total	305	321	321	296	299	348	338	2,228

As illustrated the busiest day of the week is Friday closely followed by Saturday. This would be expected given the number of events that occur in the Town. The busiest time of the day is 11 am with the slowest time of the day being the 5 am hour. The following chart provides an alternative view of call volume by hour of day.

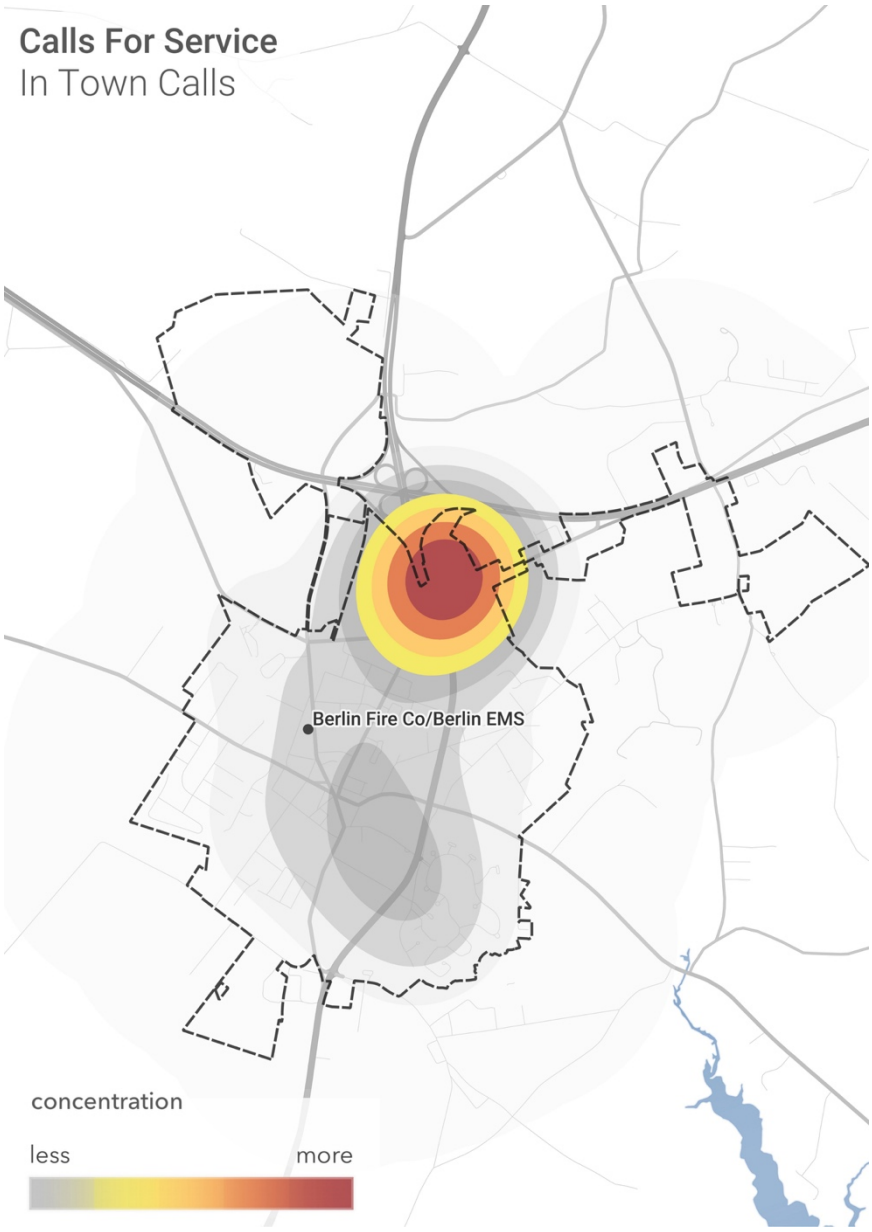


As illustrated above, call demand begins to increase at 8:00 am and declines from 9:00 pm through the overnight hours.

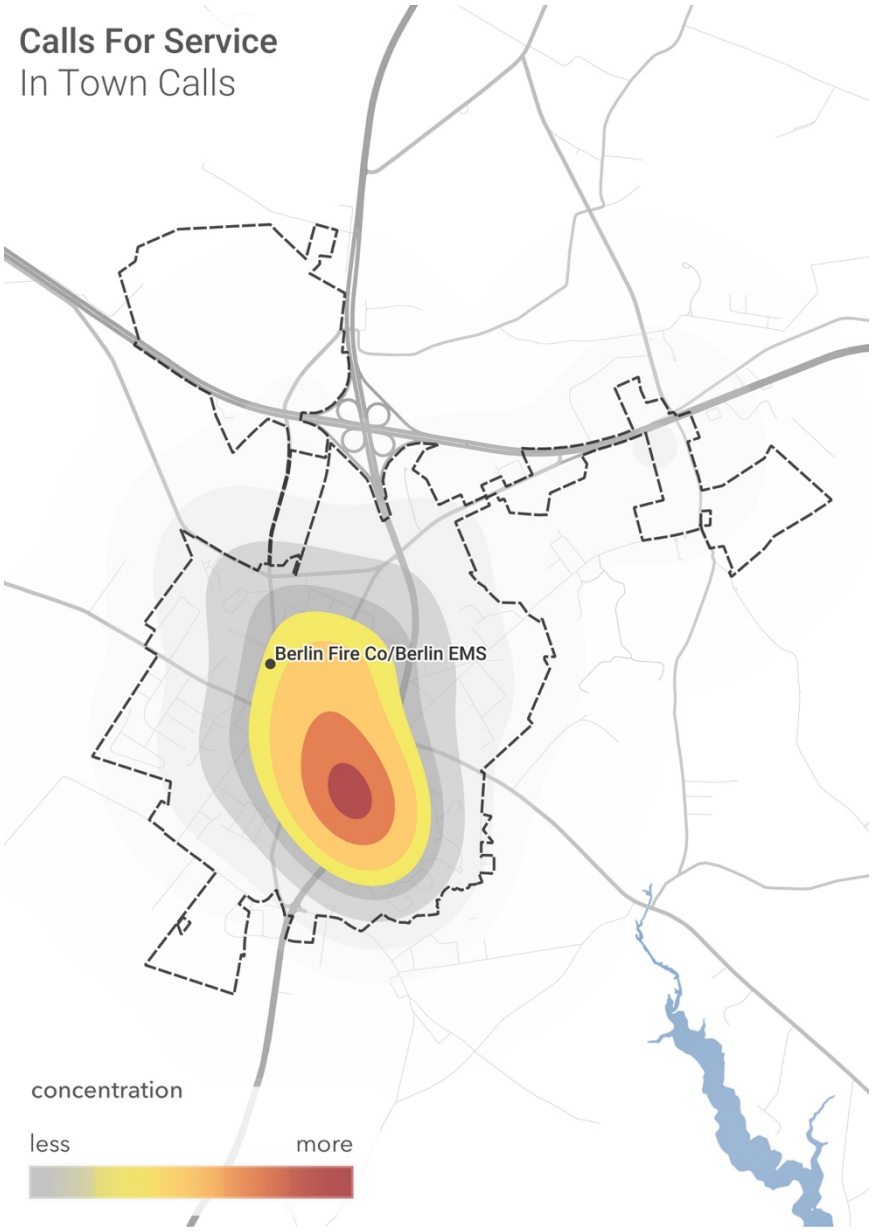
The maps below display the calls for service using GIS technology to outline where many of the calls are occurring using the FY 2016/2017 CAD data. The volume of calls to the hospital were overriding calls in the other parts of the district. As such the calls in the County and other parts of the Town were not readily visible. Calls in the County using FY 2016/2017 CAD data represented about 45.7% of the call volume and calls in the Town represented about 54.3%. This is consistent with the five-year averages of 45.6% and 54.4% respectively. The first map displays the only the County calls.



For the County calls, the calls are heaviest just to the east of Station 3. The following map displays the calls for service in the Town.



The largest volume of calls is in the northeastern section of the Town around the hospital. The volume of calls to the hospital overwhelmed the other calls for in the Town in terms of this visualization, the following map displays the calls for service without the calls to the hospital.



Without the calls for service to the hospital, the largest volume of calls is to the southeast section of the Town.

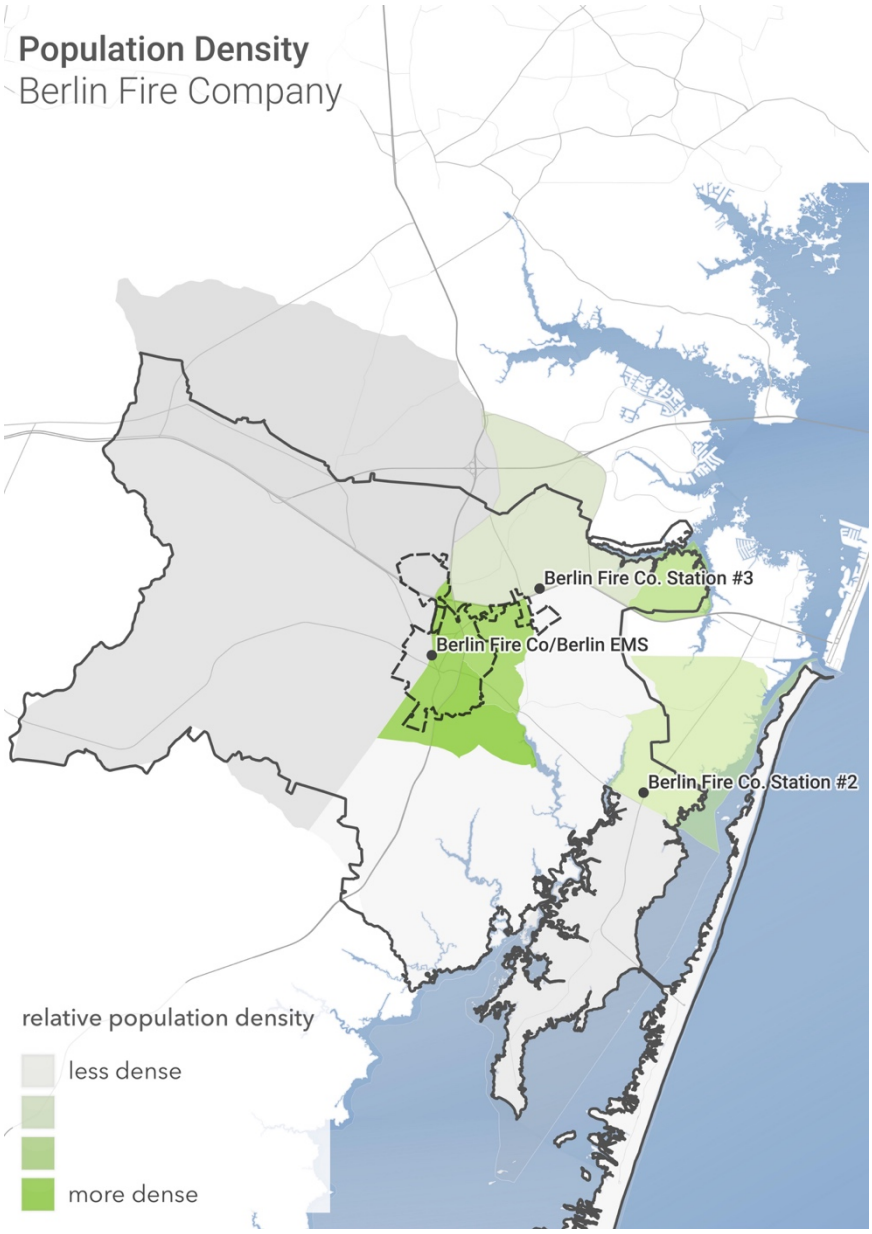
4. Physical Resources

Three stations are used in the delivery of services to the Town and surrounding area. In addition, there is a variety of apparatus to address the needs of the response area for emergency medical services and fire suppression activities. The following table outlines the station locations and apparatus assigned to the station.

Berlin Fire Company				
Station	Unit ID	Year	Description	Apparatus Type
214 North Main Street	600A1	2016	Ford / Horton	Ambulance
	600A2	2017	Ford / Horton	Ambulance
	600A3	2006	International / PL	Ambulance
	Ladder 6	2016	Pierce	Ladder
	Brush 6	2008	Chevrolet	Brush
	Tanker 6	2010	Spartan Rosenbauer	Tanker
	Utility 680	2009	Ford E-350 Van	Utility
	Utility 681	2008	Chevrolet 3500 PU	Utility
	Utility 682	2001	Sterling	Utility
	Rescue 6	1999	E-One Rescue	Rescue
	Command 6	2008	Chevrolet Suburban	Command
	Tower 6	2003	Spartan / Quality Tower	100' Tower
	Engine 604	2006	Pierce	Engine
	Police 6	1999	Dodge	Utility
8427 Stephen Decatur Hwy.	Engine 607	1988	Mack/SWAB	Engine
10823 Ocean Gateway	Engine 608	1998	Spartan / Quality	Engine

(1) Fire Station Locations and Response Area

The Berlin Fire Company uses three fire stations to provide service to the Town of Berlin and the surrounding area. The map below outlines the Fire Company district, Town limits and the population density of the area.



(2) Alarm Notification

The Fire Company receives its alarm and notifications from the Worcester County Emergency Services 911 center. To facilitate the receipt of alarms the members of the Fire Company are issued radio pagers. Additionally, some members receive text messages with the details of the alarm on their cellular phones. According to the Fire Company this system has failed in the past. Another mechanism to notify the Fire Company is the use of an outdoor siren.

The siren is activated for fire related calls and training drills held on Monday nights in a four-cycle pattern. The drill night use is limited to once per month in September, December and May, at all other times it is activated twice per month both at 6:30 pm. There is no activation of the siren for emergency medical calls. The siren is also a part of the Worcester County outdoor warning system. The siren pattern for this warning is a steady two-minute pattern. The testing of this system occurs on the first Saturday of each month at 10 am and is a steady 30 second blast.

3 Analysis of Fire Company Operations

This chapter provides the evaluation and analysis of the operations of the fire suppression and emergency medical services of the Berlin Fire Company. For an emergency service system to be effective and to successfully mitigate emergency situations, it must maintain an adequate, well-trained staff of emergency service personnel to utilize equipment and apparatus. The following sections detail the various aspects of Fire Company and Emergency Medical Services workloads and operations management.

1. Service Level Definition within Emergency Services

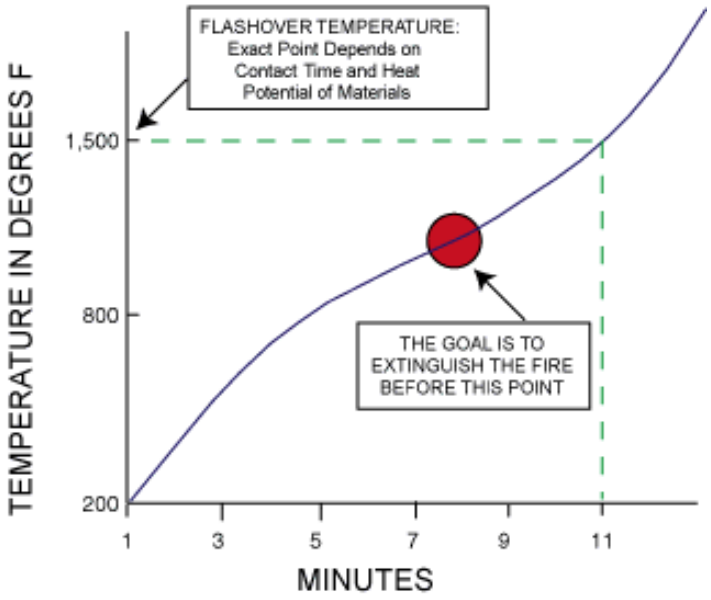
Nationally, a great deal of effort and research has been put into developing performance objectives for the delivery of Fire and EMS services. This effort is critical for local governments making decisions about deployment and location of emergency resources. The objectives promoted for Fire/Rescue and EMS have their basis derived from research that has been conducted in these two critical issues:

- What is the key point in a fire's "life" for gaining control of the blaze while minimizing the impact on the structure of origin and on those structures around it?

- What is the impact of the passage of time on survivability for victims of cardiac arrest?

The chart that follows, shows a typical "flashover" curve for interior structure fires. The point in time represented by the occurrence of "flashover" is critical because it defines when all of the contents of a room become involved in the fire. This is also the point at which a fire typically shifts from "room and contents" to a "structure" fire – involving a wider area of the building and posing a potential risk to the structures surrounding the original location of the fire.

Generalized Flashover Curve



Note that this illustration depicts a fire from the moment of inception – not from the moment that a fire is detected or reported. This demonstrates the importance of early detection and fast reporting as well as rapid dispatch of responding units. This also shows the critical need for a rapid (and sufficiently staffed) initial response – by quickly initiating the attack on a fire, "flashover" can be averted. The points below describe the major changes that occur at a fire when "flashover" occurs:

- It is the end of time for effective search and rescue in a room involved in the fire. It means the likely death of any person trapped in the room – either civilian or firefighter.

- After this point in a fire is reached, portable extinguishers can no longer have a successful impact on controlling the blaze. Only larger hand-lines will have enough water supply to affect a fire after this point.

- The fire has reached the end of the "growth" phase and has entered the fully developed phase. During this phase, every combustible object is subject to the full impact of the fire.

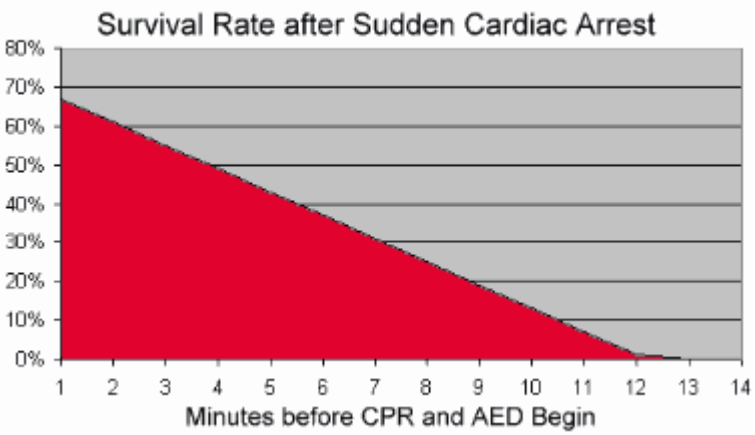
- This also signals the changeover from "contents" to "structure" fire. This is also the beginning of collapse danger for the structure. Structural collapse begins to become a major risk at this point and reaches the highest point during the decay stage of the fire (after the fire has been extinguished).

It should be noted that not every fire will reach flashover – and that not every fire will "wait" for the 8-minute mark to reach flashover. A quickly responding fire crew can do things to prevent or delay the occurrence of flashover. These options include:

- Application of portable extinguisher or other "fast attack" methodology.
- Venting the room to allow hot gases to escape before they can cause the ignition of other materials in the room.
- Not venting a room – under some circumstances this will actually stifle a fire and prevent flashover from occurring.

Each of these techniques requires the rapid response of appropriately trained fire suppression resources that can safely initiate these actions. In the absence of automatic fire suppression systems, access to interior fires can again be limited by a safety requirement related to staffing levels. OSHA and related industry standards require the presence of at least 2-firefighters on the exterior of a building before entry can be made to a structure in which the environment has been contaminated by a fire. In the absence of a threat to life demanding immediate rescue, interior fire suppression operations are limited to the extent a fire service delivery system can staff, to assuring a minimum of 4-people actively involved in firefighting operations.

The second issue to consider is the delivery of emergency medical services. One of the primary factors in the design of emergency medical systems is the ability to deliver basic CPR and defibrillation to victims of cardiac arrest. The graph below, demonstrates the survivability of cardiac patients as related to time from onset:



This graph illustrates that the chances of survival of cardiac arrest diminish approximately 10% for each minute that passes before the initiation of CPR and/or defibrillation. These dynamics are the result of extensive studies of the survivability of patients suffering from cardiac arrest. While the demand for services in EMS is wide ranging, the survival rates for full-arrests are often utilized as benchmarks for response time standards as they are more readily evaluated because of the ease in defining patient outcomes (a patient either survives or does not). This research results in the recommended objective of provision of basic life support within 4-minutes of notification and the provision of advanced life support within 8 minutes of notification. Considering the response time continuum, the response time goal for emergency services is to provide BLS within 6 minutes of the onset of the incident (including detection, dispatch and travel time) and ALS within 10 minutes. This is often used as the foundation for a two-tier system where fire resources function as first responders with additional (ALS) assistance provided by responding ambulance units and personnel.

Additionally, recent research is beginning to show the impact and efficacy of rapid deployment of automatic defibrillators to cardiac arrests. This research – conducted in King County (WA), Houston (TX) and as part of the OPALS study in Ontario, Canada – shows that the AED can be the largest single contributor to the successful outcome of a cardiac arrest – particularly when accompanied by early delivery of CPR. It is also important to note that these medical research efforts have been focused on a small fraction of the emergency responses handled by typical EMS systems – non-cardiac events make up the large majority of EMS and total system responses and this research does not attempt to address the need for such rapid (and expensive) intervention on these events.

The results of these research efforts have been utilized by communities and first responders, often on their own with no single reference, to develop local response time and other performance objectives. However, there are now three major sources of information to which responders and local policymakers can refer when determining the most appropriate response objectives for their community:

- The **Insurance Services Office (ISO)** in its *Public Protection Classification* document provides basic information regarding distances between fire stations. However, this “objective” does little to recognize the unique nature of every community’s road network, population, calls for service, call density, etc.

- The **National Fire Protection Association (NFPA)** promulgated two documents entitled: NFPA 1710: *Standard for the Operation and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* and NFPA 1720: *Standard for the*

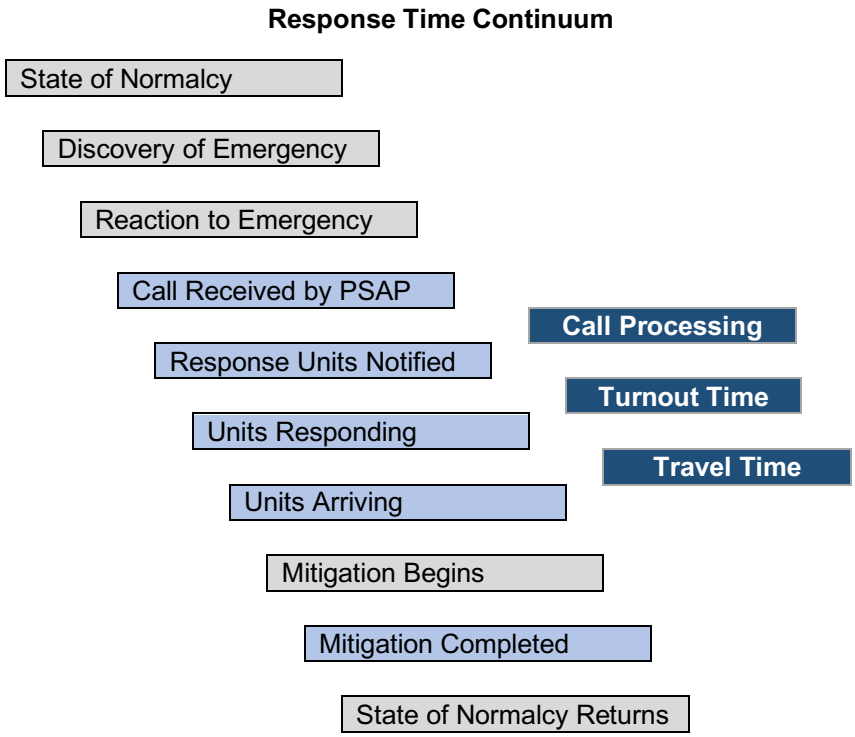
Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments. Both documents were originally published in 2001 and generated a great deal of dialogue and debate – which is still ongoing. The most current edition represents some of the changes from this debate and are used in this analysis.

- The **Commission on Fire Accreditation International (CFAI)** in its *Community Risk Assessment: Standards of Cover* manual places the responsibility for identifying "appropriate" response objectives on the locality. These objectives should be developed following a comprehensive exercise in which the risks and hazards in the community are compared to the likelihood of their occurrence.

The scope of NFPA 1720 identifies the Standard as applicable to fire service organizations that are combination and / or volunteer agencies. The Fire Company fits this definition therefore NFPA 1720 will be used to provide guidance and analysis of fire service operations. Additional guidance from the CFAI will be utilized for analysis of these operations.

5. Response Time Goals and Objectives

Response time to an emergency or call for assistance has been broken down into measurable and non-measurable segments. The response time continuum begins when the state of normalcy changes to a recognizable emergency. The following chart outlines the cascade of events that occurs once an emergency starts. Those highlighted points represent hard data or that which is quantitative versus soft data or that which is subjective and unknown.



Each of the three organizations noted previously provide a reference point for communities and civic leaders to follow. The NFPA is only one that currently offers any specificity to benchmarks derived from the basic research previously described. These include the following (taken from the NFPA Standards as noted):

- One minute four seconds (64 seconds) for the processing of an incoming emergency phone call, including the completion of the dispatching of fire response units. (NFPA 1710 Section 4.1.2.1.1)

- "One minute (60 seconds) for turnout time for EMS calls." This component is for staffed stations only. This is also called reflex time, reaction time, "out-the-chute" time, etc. This is the time that elapses between dispatch and when the units are actively responding. (NFPA 1720 Section 4.3.3)

- "One minute thirty seconds (90 seconds) for turnout time for fire and special operations calls." This component is for staffed stations only. This is also called reflex time, reaction time, "out-the-chute" time, etc. This is the time that elapses between dispatch and when the units are actively responding. (NFPA 1720 Section 4.3.3)

- "Nine minutes (540 seconds) or less for the deployment of a full first-alarm assignment at a fire suppression incident in an urban area." (NFPA 1720 Section 4.3.2)

- "Ten minutes (600 seconds) or less for the deployment of a full first-alarm assignment at a fire suppression incident in a suburban area." (NFPA 1720 Section 4.3.2)
- "Fourteen minutes (840 seconds) or less for the deployment of a full first-alarm assignment at a fire suppression incident in a rural area." (NFPA 1720 Section 4.3.2)
- Table 4.3.2, NFPA 1720 identifies the performance objective for each demographic at not less than 90% for urban areas and 80 percent for suburban and rural areas.
- CFAI, by contrast, identifies the performance objective at less than 90% regardless of the demographic.

It is also critical to note that these time objectives apply to emergency calls for service – there is nothing in the NFPA documents (nor in any other objective) that suggests that communities cannot establish a differential response to calls for service determined to be non-emergency in nature.

Previously the Center for Public Safety Excellence had defined benchmark and baseline response times for each of the three components. They have since determined they are not a standard making organization and decided to leave the establishment of response time standards to others. However, their body of work is significant and has been used by numerous communities across the country to establish performance objectives. As such, this work will be used in the analysis of response times for the Fire Company.

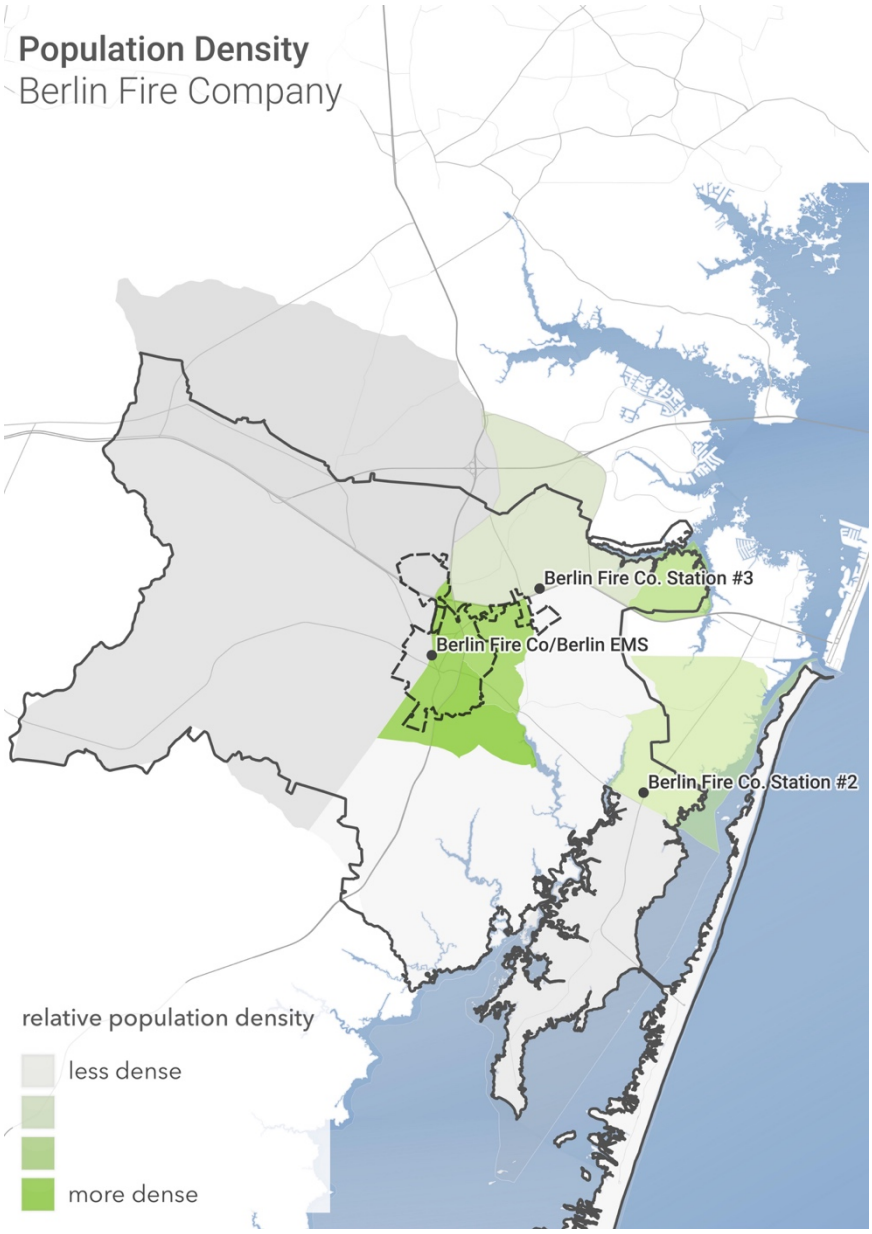
The performance objectives outlined in NFPA 1720 are further defined by population densities. The following table illustrates those definitions for each of four demographics.

Demographic Risk Categories

Risk Category	Definition
Urban	An area with a population density greater than 1,000 people per square mile
Suburban Area	An area with a population density of 500 - 1,000 people per square mile
Rural Area	An area with a population density of less than 500 people per square mile
Remote Area	Travel Distance greater than 8 miles.

With an estimated population of 4,608 in a 3-square mile area, the Town of Berlin is predominately urban as the population density is 1,536 per square mile. However, there

are areas in the western sections of the Town that are less densely populated. The following map illustrates the population densities based on U.S. Census data.



For the Fire Company district there are large areas outside the Town that are rural in nature with pockets of suburban densities.

6. Call Processing and Turnout Time

Call processing is measured from the point the call is answered until response units are notified. The computer aided dispatch (CAD) data was not in a format conducive for evaluation and analysis.

Turnout time is measured from the point the units are notified until such time as the unit(s) are responding. NFPA 1720 turnout time metrics are only applicable to staffed stations. The computer aided dispatch (CAD) data was not in a format conducive for evaluation and analysis.

Recommendation:

The Fire Company should create a mechanism to capture appropriate data from the computer aided dispatch (CAD) to evaluate and analyze the various response time components.

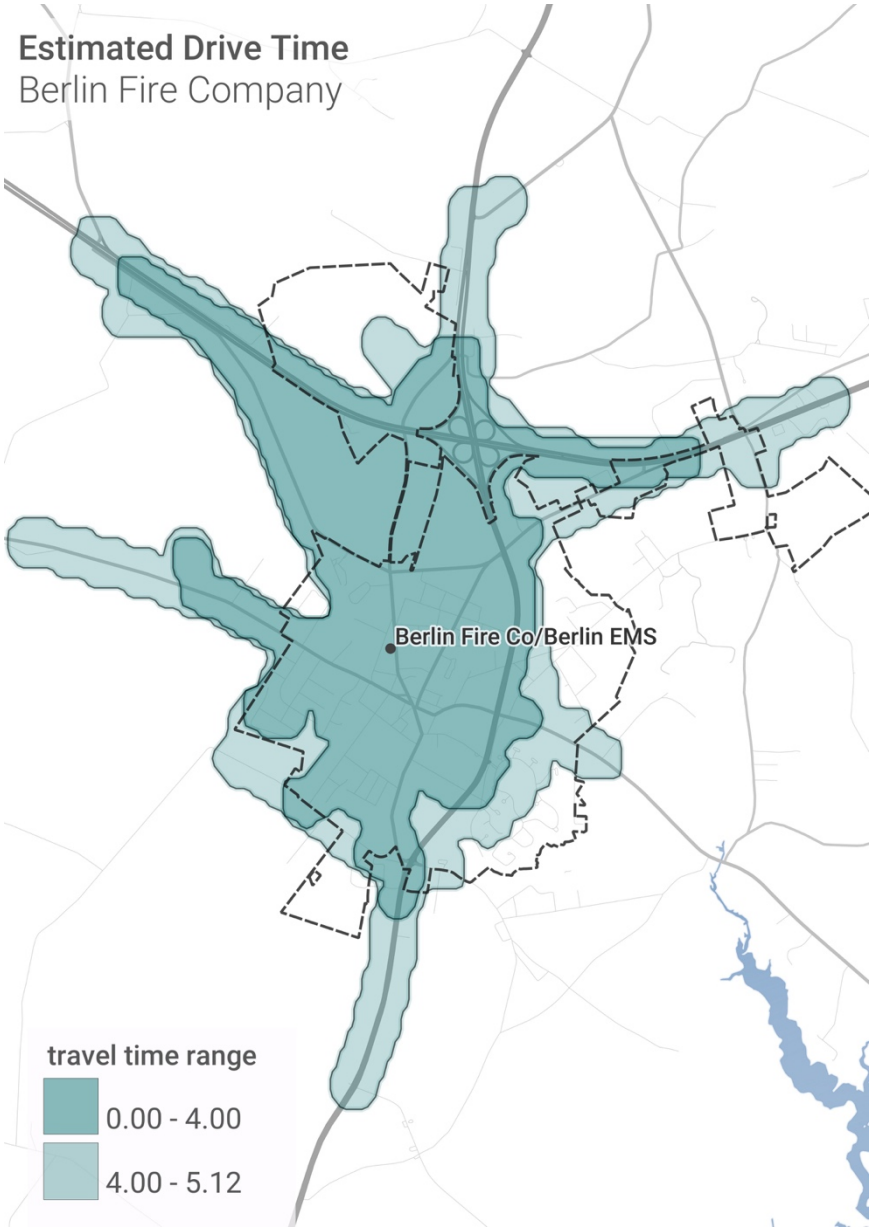
The Fire Company should establish benchmark performance objectives, for the staffed units, of 60 second call turnout time for EMS calls and 90 second call turnout time for fire related calls for 90% of the calls to be evaluated at least annually.

7. Resource Distribution and Travel Time

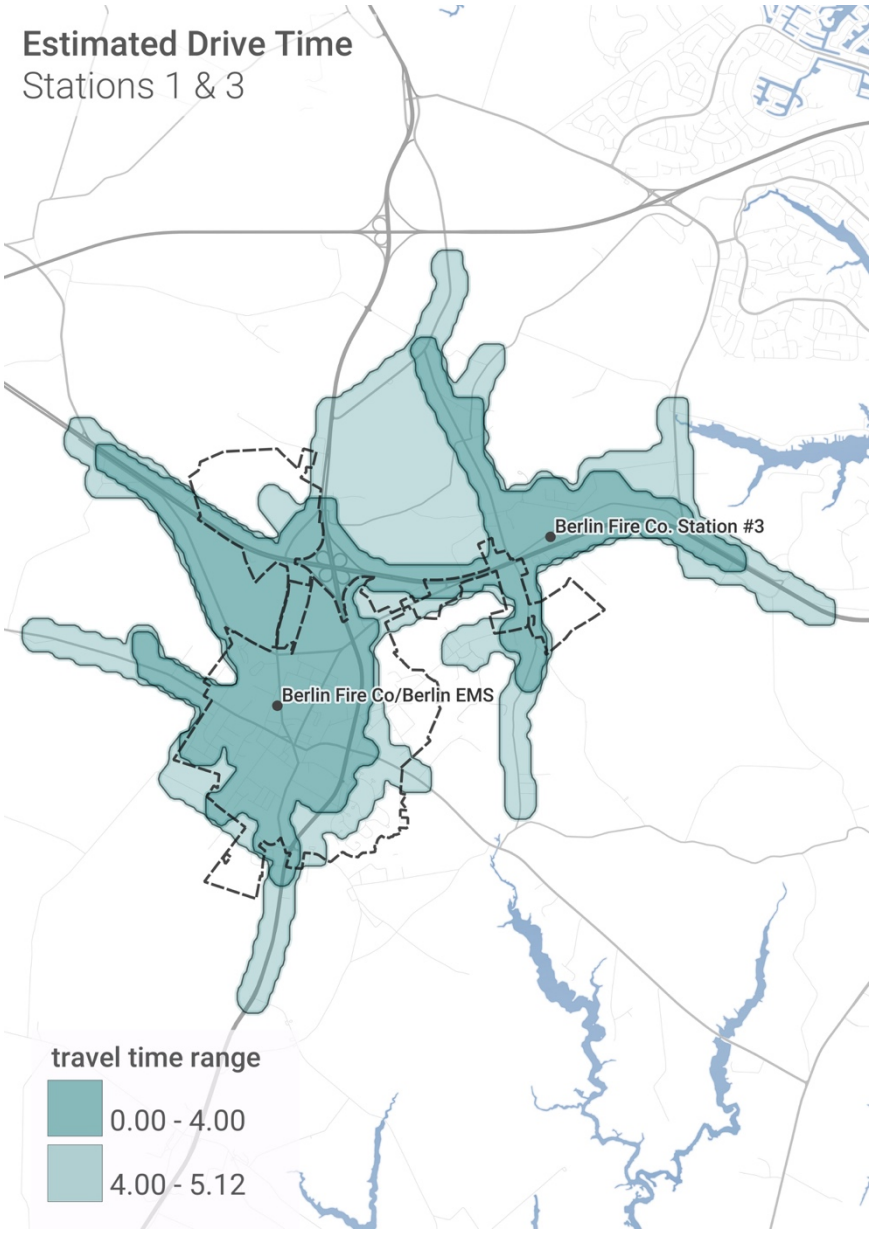
Travel time is the third performance component for the Fire Company to continuously analyze to ensure they are providing effective and efficient service to the community. Distribution is the measure of getting initial resources to an emergency to begin mitigation efforts. This is measured in a variety of ways including percentage of square miles, percentage of road miles and travel time. The Insurance Services Office (ISO) has used road miles for many years. With the advent of GIS technology, the use of travel time is another more accurate measure for the distribution of resources.

The computer aided dispatch (CAD) data was not in a format conducive for evaluation and analysis of the response time continuum. However, the use of GIS technology allows for the spatial analysis of the data and the geographic area. When data is limited or not useable, the use of this technology permits further evaluation of the resources. For purposes of evaluation and analysis, Station One (Headquarters) is shown on the map below using the urban travel time benchmark of four minutes and a baseline travel time of five minutes twelve seconds. The benchmark time is typically described as the standard or best practice. The baseline time is generally described that which is acceptable by the

community. For purposes of this evaluation, the baseline time is 70% of the benchmark travel time and is in line with nationally accepted best practices.

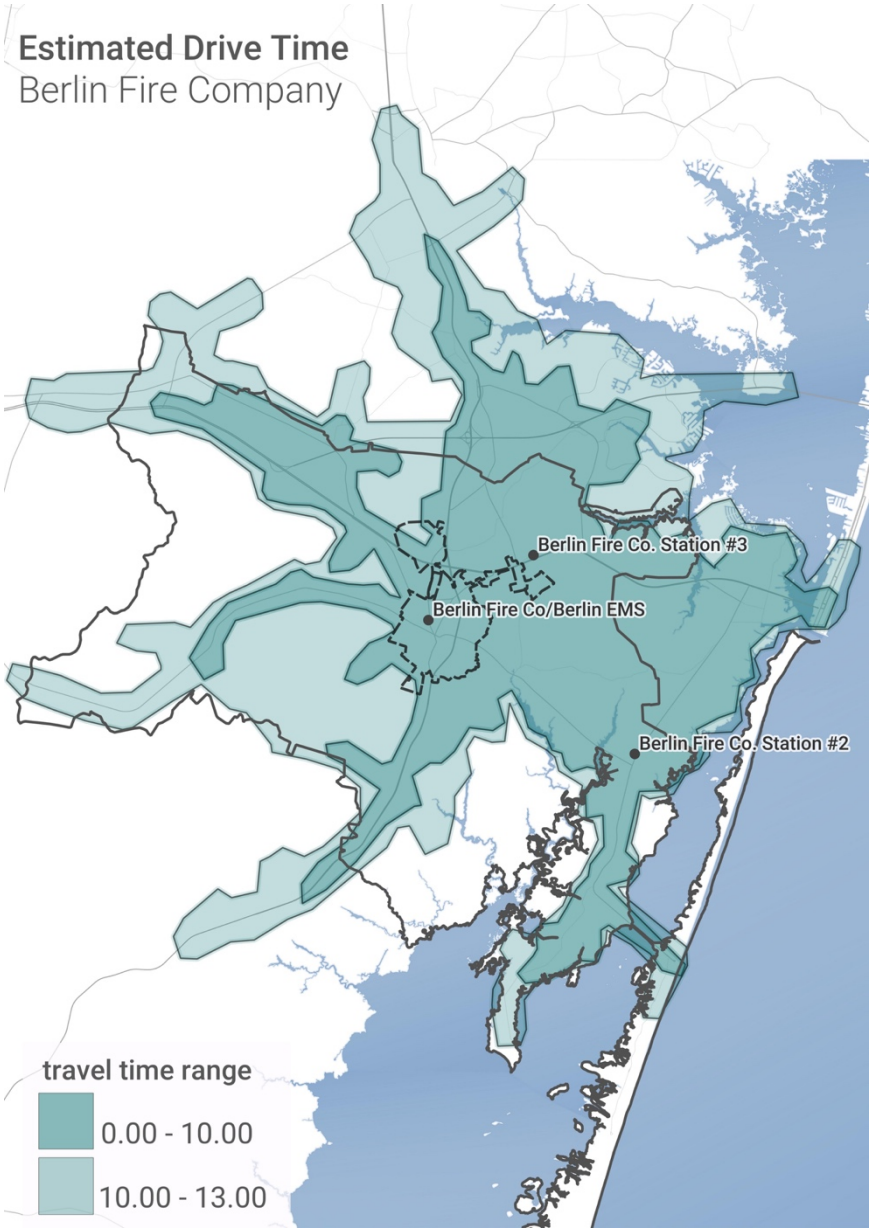


Operating from a single station, the central core of the Town is within the benchmark travel time of 4 minutes. Areas shown in the Town that are outside the benchmark and baseline travel times are areas that do not have a street network and travel times were not calculated. The following map illustrates the travel time using the urban performance measurements but with Station One and Three on the map.



The areas to the east and north are better covered with the benchmark travel time adding Station 3 into the travel time matrix. There is an area in the Town just south of Station 3 that is shown as not being well covered with a benchmark travel time. This area is vacant land for the moment and without a street network it would appear to outside the travel time benchmark and will change once the streets are in place.

The map below illustrates the travel time for the Fire Company including their whole district using the rural travel time benchmark of 10 minutes and baseline time of 13 minutes.



Not only does this map show how well the Fire Company district is covered but also the availability of additional resources to the Town from the other stations. As depicted the Town is within the 10-minute travel time for those resources should the need arise.

Recommendation:

The Fire Company should establish benchmark travel time performance objectives of 4 minutes and baseline travel time performance objectives 5 minutes and 12 seconds for 90% of the calls in the Town of Berlin, to be evaluated at least annually.

8. Concentration of Resources and Staffing

Concentration is generally described as the ability of the Fire Company to get the appropriate number of personnel and resources to the scene of an emergency in a prescribed time to effectively mitigate the incident. There are two parts to this concentration component which is an effective response force and the amount of time to get the resources in place.

(1) Effective Response Force

There are several tasks, which must occur simultaneously to adequately combat different types of fires. The absence of adequate personnel to perform these tasks requires each task to be prioritized and completed in chronological order. These fire ground tasks include command, scene safety, search and rescue, water supply, fire attack, pump operations, ventilation, back up, and rapid intervention.

An initial full alarm assignment should be able to provide personnel to accomplish the following tasks:

- Establish incident command outside of the hazard area. This will allow coordination and direction of the incoming emergency response personnel and apparatus. A minimum of one person should be dedicated to this task.

- Establish an uninterrupted water supply of at least 400 gallons per minute for 30 minutes. Once established the supply line can be maintained by the pump operator to ensure uninterrupted water supply. A minimum of one person is assigned to this task that can then assume support role.

- Establish an effective water flow rate of 300 gallons per minute. This will be supplied to a minimum of two hand lines each operating at a minimum flow of 100 gallons per minute. Each hand line must have two individuals assigned with one serving as the attack line and the other as a back-up line.

- Provision of one support person to handle the hydrant hookup, utility control, forcible entry, and assist in deploying fire hose lines.

- Establish a search and rescue team. Each team will consist of a minimum of two personnel.

- Establish a ventilation team. Each team will consist of a minimum of two personnel.

- Establish an initial rapid intervention team (RIT). Each RIT team shall consist of a minimum of two properly trained and equipped personnel.

Critical tasking will vary depending on the size and nature of the incident. The Center for Public Safety Excellence (CPSE) provides a suggestive list of tasks that need to be completed at a fire situation based on the risk. A similar list is provided within the NFPA 1710 document. The CPSE analysis, from the 8th edition, is summarized in the table below showing the minimum required personnel to mitigate the initial emergency response requirements by occupancy risk:

Critical Tasks for the Effective and Efficient Control of Structural Fires

Critical Task	Maximum Risk	High Risk	Moderate Risk	Low Risk
Attack Line	4	4	4	2
Search and Rescue	4	2	2	0
Ventilation	4	2	2	0
Backup Line	2	2	2	2
Rapid Intervention	2	2	0	0
Pump Operator	1	1	1	1
Water Supply	1*	1*	1*	1*
Support (Utilities)	1*	1*	1*	1*
Command	1	1	1	1
Safety Officer	1	1	1	1
Salvage/Overhaul	2	0	0**	0
Command Aid	1	1	0	0
Operations Chief	1	1	0	0
Logistics	1	0	0	0
Planning	1	0	0	0
Staging Officer	1	1	0	0
Rehabilitation	1	1	0	0
Division Supervisors	2	1	0	0
High-rise Evacuation	10	0	0	0
Stairwell Support	10	0	0	0
Total Personnel	**50-51**	**21-22**	**14-15**	**8-9**

*Tasks can be performed by the same individual **Task can be performed by the attack crew

While the fire ground tasks are the same regardless of the location of the structure, NFPA 1720 defines minimum staffing based on the demographics of the area. This is in consideration of the typical make-up of the fire service in these areas such as all volunteer personnel and the limited availability of resources. Note the urban area minimum staffing is fifteen (15) which matches the critical tasks previously identified. The table below illustrates the minimum staffing for each of the population demographics.

NFPA 1720 Fire Staffing

Zone	Demographic	Minimum Staffing
Urban Area	> 1,000 people	15
Suburban Area	500 - 1,000 people	10
Rural Area	< 500 people	6
Remote Area	Travel > 8 miles	4

A task analysis for emergency medical calls analyzes three different types of calls or patient conditions. These three types of calls usually require the most effort on the part of the response team. Other calls or patient types can generally be handled with two or three personnel. Many times, especially in trauma calls, there are multiple patients. The table below outlines the tasks for handling these critical patients and the number of responders it may require for a successful outcome.

Critical Tasks for Effective Patient Care

Critical Task	Cardiac Arrest	Stroke	Multi-System Trauma
Patient Assessment	2 per patient	2 per patient	2 per patient
Airway Management/Intubation	2 per patient	2 per patient	2 per patient
Cardiac Defibrillation	1	N/A	N/A
CPR	1	N/A	N/A
EKG Monitoring	1	1	1
IV/Pharmacology	1	1	1
Splint/Bandage/Immobilization	N/A	N/A	1
Patient Lifting/Packaging	2 – 4	2 – 4	2 – 4
Medical Information Collection	1	1	1

It is incumbent upon a fire agency to have a response plan in place to ensure a sufficient number of personnel are on scene to accomplish the stated critical tasks in a timely fashion. Structure fires are very labor-intensive incidents with any number of factors, such as weather, making the task that much more difficult. These risks are typically defined as a single-family home and smaller stores of less than 20,000 square feet in size.

Adding to the critical tasks and staffing issues is the OSHA requirement of two in – two out in 1910.134(g)(4). This regulation states that if entry into an Immediately Dangerous to Life and Health (IDLH) atmosphere is necessary, two firefighters must enter together and remain in contact with each other. In addition, there must be two firefighters located outside the IDLH atmosphere for potential rescue if needed. This is a mandatory

requirement. The current staffing within the County is such that it requires the arrival of multiple stations to meet this standard.

The daily staffing for the Fire Company includes three (3) personnel that are assigned primarily to the emergency medical services response. The fire suppression response is an all-volunteer effort meaning the manpower is dependent upon the availability of the volunteers.

(2) First Alarm Assignment Travel Time

The second part to the concentration model is the travel time for the remainder of the first alarm assignment. The concentration of resources is necessary to ensure the effective response force arrives in a timely manner. Much like the distribution of resources, the concentration is dependent on the population density. It is not reasonable or financially possible for a rural area to have the same concentration of resources that is in an urban setting. The following table illustrates the travel time benchmarks and baselines for the various population densities.

Service Area / Population Density Response Travel Time Standards

Urban: Population density of over 2,000 per square mile				
	1st Unit	2nd Unit	1st Alarm Balance	Performance
Benchmark	4 minutes	8 minutes	8 minutes	90%
Baseline	5 minutes/12 seconds	10 minutes 24 seconds	10 minutes/24 seconds	90%
Suburban: Population density between 1,000 and 2,000 per square mile				
Benchmark	5 minutes	8 minutes	10 minutes	90%
Baseline	6 minutes/30 seconds	10 minutes/24 seconds	13 minutes	90%
Rural: Population density of less than 1,000 per square mile				
Benchmark	10 minutes	14 minutes	14 minutes	90%
Baseline	13 minutes	18 minutes/12 seconds	18 minutes/12 seconds	90%

As shown above, the utilization of performance measures based on population density will allow the Town of Berlin and Worcester County to evaluate when standards need to change as population shifts occur.

The response to a structure fire is normally used to provide the analysis of this segment. However, the computer aided dispatch (CAD) data was not in a format conducive for evaluation and analysis. The Insurance Services Office (ISO) performed a review in February 2016 and found there was 2.27 on-duty (in house) personnel and an average of 23.95 on-call (volunteer) personnel responding on first alarm structure fires. Using this

data, on average the Fire Company is providing sufficient personnel for a structure fire response.

Mutual aid is used throughout Worcester County and is pre-programmed into the CAD system for structural fire responses. Responses will vary depending on the severity and needs at the time. For example on December 12, 2017 a structure fire on South Main Street in Berlin the response included Berlin, Showell, Ocean Pines, Newark, Ocean City, and Powellville. The response to a structure fire in Ocean Pines on December 14, 2017 included Ocean Pines, Showell, Berlin, and Bishopville. The staffing of the units responding vary depending on the availability of personnel as these are all volunteer fire companies. Additionally, response time for these units was not evaluated as the CAD data was not conducive for such an evalaution.

Recommendation:

The Fire Company should establish benchmark travel time performance objectives of 8 minutes and baseline travel time performance objectives 10 minutes and 24 seconds with a minimum staffing of 15 personnel for 90% of the calls in the Town of Berlin, to be evaluated at least annually.

9. Town of Berlin Capabilities Assessment

The Insurance Services Office (ISO) determines the needed resources for a community or area based on a series of calculations and pre-determined factors. One of the first factors they determine is the basic fire flow. They review the needed fire flows for buildings within the community and take the fifth largest needed fire flow to determine the basic fire flow of the community. In February 2016 ISO completed a survey of the Berlin Fire Company and its response area. ISO determined the basic fire flow required for the area to be 3,500 gallons per minute (gpm).

For the number of needed engine companies, ISO uses three factors, the response distance to the built upon area, the basic fire flow, and the method of operation. ISO uses the term company interchangeably with the actual apparatus. For purposes of discussion in this section the term company means the actual apparatus or truck.

- The response distance to the built upon area is based upon those areas that meet NFPA 1710 criteria or those areas within 1 ½ miles.

- The number of needed engine companies to support the basic fire flow.

- Method of operation to provide a minimum of two engine companies to a first alarm structure fire.

Using the criteria above, ISO uses the greatest value of any one of the criteria to determine the number of needed engine companies and for the Fire Company it is three engine companies. With each engine company having a pumping capacity of 1,250 gpm, these three companies will provide 3,750 gpm pumping capacity that exceeds the basic fire flow of 3,500 gallons per minute required.

ISO uses a single factor for a needed ladder company. The response area has five (5) buildings that are three stories or 35 feet or more in height, or with five (5) buildings that have a needed fire flow greater than 3,500 gallons per minute, or any combination of these two criteria. Response areas not needing a ladder company should have a service company according to ISO. The primary difference between a ladder company and a service company is the elevated fire stream capability. ISO has determined there is a need for one ladder company in the Town.

ISO does not address the emergency medical services needs of a community. This is generally left to the community to determine their needs. The Town and its residents have become accustomed to a paid staff for the emergency medical services and the quick response to their calls. The number of emergency medical calls is shown in the table below.

Berlin Fire Company EMS Related Calls

	2013	2014	2015	2016	2017	Total	Pct. of Total	Annual Average	Daily Average
Town of Berlin	919	866	909	887	915	4,496	57.2%	899	2.5
Worcester County	670	636	661	701	694	3,362	42.8%	672	1.8
Total Calls	1,589	1,502	1,570	1,588	1,609	7,858	100%	1,572	4.3

As illustrated the calls for service are slightly higher in the Town with an average of 2.5 calls per day and an average of 4.3 calls in the district. These factors would indicate that one ambulance would be able to handle the call volume in the Town. Current staffing of the Fire Company includes three (3) personnel on station to respond to emergency medical calls. The response is two (2) personnel respond on the first medical call and the third remains available for a second call that may occur. As noted previously, ISO determined the Fire Company has an average of 23.95 volunteer personnel responding on the first alarm structural fire calls. The current staffing model provides adequate personnel to handle the calls for service in the Town.

There is a need for reserve apparatus and vehicles. ISO requires one reserve engine company for every eight needed engine companies. For the Fire Company, one reserve engine company is needed. ISO uses the same calculation for ladder companies, one reserve ladder or service company for every eight needed ladder companies. However, a service truck can be used as a reserve. One ambulance should be in place as a reserve that can be used as a backup to the primary vehicle and for any calls that may occur simultaneously. The table below illustrates the apparatus needs of the Fire Company.

Berlin Fire Company ISO Apparatus			
	Primary	Reserve	Total
Engine Company	3	1	4
Ladder/Service Company	1	1	2
Ambulance	1	1	2

The Fire Company has a water tanker to respond to those areas without a reliable water supply as well as a brush truck for those fires involving grass and vegetation fires. This apparatus is not shown in the table as ISO does not consider these apparatus in their survey.

Extrapolating from the ISO data above, if the Town of Berlin were to staff a local fire department, they would need an engine company, a ladder company, and two ambulances to provide comparable service to the Town. The consideration for a reserve engine would also be required to serve as a backup for either the Truck or Engine if either were to go out of service.

New development and growth in the Town may result in the need for additional resources for the Fire Company. The region in the BFC call service area east of the Town has been developing at a consistently high rate for the past 40 years. The service area west of the Town of Berlin has seen little development during the same time perior. This includes both residential nad commercial development. A change in population density should at least trigger a closer review of the area. This review should include the type of development (retail vs residential), travel times for the existing emergency services system, the call volume being generated, and the ability to provide an effective response force. With this information, a planned expansion of the emergency services system can be developed.

4 Analysis of Financial Resources

This chapter will examine the financial resources available to the fire protection system and emergency medical services for the Berlin Fire Company. The following sections detail the primary sources of revenue and the expenditures for the provision of emergency services.

1. Worcester County Funding

Worcester County provides funding to the Fire Departments and Companies throughout the County. The ten Fire Companies/Departments in the County receive funding according to a formula devised by the County. The table below outlines the funding formula used by the County.

Worcester County Emergency Services Funding	
Fire Operations	
Per Call – In County	$1,000
Flat Rate	$225,000
Emergency Medical Services	
Each Equipped Vehicle	$10,000
Each FTE	$5,000
Paramedic On-Duty	$30,000
Transports:	
In Town	
Non-Transport	$0
Transport	$190
In County	
Non-Transport	$190
Transport	$795
Transport Mileage	60.5 cents per mile

For fire operations the County established a minimum flat rate of $225,000 annually for each department/company which is also tied to the assessed property valuations that may allow for this to increase. The per call rate is for fire calls in the County only. The emergency medical services have several caveats and restrictions. The FTE rate is for paid staff or in-station staffing, it does not include volunteer staffing or those responding from home. For the paramedic on-duty, the paramedic must be on-duty seven (7) days per week for eight (8) hours per day and is a flat rate fee. The transportation of a patient has a couple of components. For In-Town calls, the County will pay a flat rate of $190 for the call. Calls in the County will pay a flat rate of $795 for a transport and $190 for calls in which there is no transport of a patient. In addition, the County will pay 60.5 cents per

mile if the round trip is more than twenty-five (25) miles. This is typically paid for those calls that transport a patient to a medical facility outside the County as the transports to medical facilities in the County generally fall below the twenty-five (25) mile limit. The table below provides a conceptual view of how the County funding would be distributed.

Berlin Fire Company County Funding			
	Allotment	**Qualifier**	**Amount**
Fire			
Per Call - In County	$1,000	234	$234,000
Flat Rate	$225,000		$225,000
Total Fire Funding			$459,000
Emergency Medical Services			
Each Equipped Vehicle	$10,000	3	$30,000
Each FTE	$5,000	3	$15,000
Paramedic On-Duty	$30,000	2	$60,000
Transports:			
In Town			
Non-Transport	$0	0	$0
Transport	$190	915	$173,850
In County			
Non-Transport	$190	0	$0
Transport	$795	694	$551,730
Transport Mileage	60.5 cents per mile		
Total EMS Funding			$830,580

This table is for illustrative purposes only, the call numbers are actual numbers for 2017 however, the breakdown between transport and non-transport emergency medical calls was not provided to the project team.

2. Town of Berlin

For the past three years funding from the Town is a flat rate of $400,000 per year and in recent years has been shown in the audits across several funds. In 2017, the emergency medical services are shown to have received $140,000 of which $90,000 was for capital improvements. For fire suppression, $200,000 was shown as operational funds and $60,000 was shown as capital funds. The Town provides the funding, the distribution of those funds between fire and emergency medical services is a decision of the Fire Company.

3. Emergency Medical Service Billing

The Berlin Fire Company bills for emergency medical services using a third-party billing service that charges a fee of 8% of the collected amounts. Fire Company calculates their collection rate as the amount of money collected divided by the amount of money billed. The collection rate for the past three years ranges from 59% to 68% of the total billed. The table below illustrates the amount billed per payer, the average amount of billed services, and the average collection rate.

EMS Billing per Payer

	2015		2016		2017	
Payor	**Billed**	**Pct. Of Total**	**Billed**	**Pct. Of Total**	**Billed**	**Pct. Of Total**
Medicare	$360,319	63.5%	$348,585	64.2%	$320,863	58.9%
Medicaid	$12,193	2.1%	$13,663	2.5%	$13,478	2.5%
Private	$50,533	8.9%	$44,497	8.2%	$44,006	8.1%
Insurance	$144,581	25.5%	$135,911	25.0%	$166,151	30.5%
	$567,626		$542,656		$544,497	
Avg. Bill	$601.58		$593.29		$656.80	
Collected Amount	$336,735		$372,944		$355,098	
Collection Rate	59.3%		68.7%		65.2%	

As outlined above, Medicare accounts for 60% to 65% of the billable calls. Medicare and Medicaid have specific fees they will pay based on the type of call, mode of transportation, and other factors regardless of the actual cost per call. Further, by accepting these payments from Medicare and Medicaid the ambulance service agrees to accept this as payment in full preventing the ambulance service from collecting any additional funds from the insured party. The table below illustrates a comparison between the average cost per call versus the average collected per call.

EMS Cost and Collection Comparison

	Number of EMS Calls	Amount Collected	Avg. Collection per Call	EMS Operating Expenses	Avg. Cost per Call
2015	1,570	$336,735	$214.48	$1,016,500	$647.45
2016	1,588	$372,944	$234.85	$1,128,626	$710.72
2017	1,609	$355,098	$220.69	$1,355,450	$842.42

For the past three years the average collection per call is $223.34 while the average cost per call is $733.53 for the same period. The three-year average cost is $733.53 per call with the average bill per call for the same three years is $617.22 or about 84.1% of the cost per call. With the Medicare and Medicaid calls representing about 60% of the billable

calls, this is reflected in the average collection per call.

The Fire Company should develop clear policies and procedures for how EMS fees will be collected and how the billing process is controlled. There should also be a method for an annual review of the current rates for service with the billing company to determine if rate changes should be implemented or increased revenue opportunities exist. It will also provide clear responsibilities for financial controls and how collections should be pursued by the billing agency.

Recommendations:

The Fire Company should establish written policies and procedures for the billing and collection of fees associated with the emergency medical services and transportation of the sick and injured.

The Fire Company should evaluate their emergency medical services fee structure annually, adjust their fees as necessary, and incorporate this analysis in the budget document.

4. Other Revenue Sources

The Fire Company has other sources of revenue aside from funding from the Town and County. These sources include donations, fund-raising activities, rental of the community hall, and grants. Some of these sources are not sustainable. For example, donations may or may not occur and grants may or may not be awarded. These types of funds should not be relied upon to completely support fire and emergency medical service operations. However, these funding sources are included in the various sections of this report as they do show the financial needs of the Fire Company.

5. Total Revenues

The table below illustrates the revenues for the Fire Company for the past three fiscal years. The Fire Company maintains separate financial statements for fire operations and emergency medical services.

Berlin Fire Company Revenues

Description	FY 2015 Actual			FY 2016 Actual			FY 2017 Actual		
	Fire	EMS	Combined	Fire	EMS	Combined	Fire	EMS	Combined
Donations	$60,874	$3,027	$63,901	$109,425	$5,605	$115,030	$15,608	$2,585	$18,193
Memory Donations	$1,590	$570	$2,160	$2,265	$0	$2,265	$2,535	$245	$2,780
Interest Income	$2,818	$4,661	$7,479	$2,888	$1,547	$4,435	$2,538	$564	$3,102
Annual Drive	$18,429	$15,358	$33,786	$13,475	$17,306	$30,781	$19,233	$10,216	$29,449
Worcester County Funding	$477,000	$553,690	$1,030,690	$388,072	$602,509	$990,581	$386,000	$606,578	$992,578
Town of Berlin Funding	$200,000	$50,000	$250,000	$200,000	$50,000	$250,000	$200,000	$50,000	$250,000
Town of Berlin Capital Fund	$150,000	$0	$150,000	$150,000	0	$150,000	$60,000	$90,000	$150,000
EMS Billing	$0	$366,735	$366,735	$0	$372,944	$372,944	$0	$355,098	$355,098
Pledges	$6,000	$0	$6,000	$7,500	$0	$7,500	$4,050	$0	$4,050
Fund Raisers	$11,398	$0	$11,398	$27,842	$0	$27,842	$13,873	$0	$13,873
Control Burns	$2,950	$0	$2,950	$0	$0	$0	$3,700	$0	$3,700
Grants	$25,000	$0	$25,000	$0	$0	$0	$0	$0	$0
State Aid	$29,016	$0	$29,016	$37,689	$0	$37,689	$40,763	$0	$40,763
Miscellaneous Income	$5,564	$0	$5,564	$0	$0	$0	$33,500	$0	$33,500
Other Income	$0	$0	$0	$0	$0	$0	0	$18,000	$18,000
Total Revenues	$990,638	$994,041	$1,984,679	$939,157	$1,049,910	$1,989,067	$781,800	$1,133,287	$1,915,087

Emergency medical services revenue has increased each year while the fire service operations have decreased maintaining a relatively flat combined revenue stream.

6. Expenditures

The following table illustrates the expenditures for the Fire Company for the past three fiscal years. The Fire Company maintains separate financial statements for fire operations and emergency medical services.

Berlin Fire Company Expenditures

Description	FY 2015 Actual			FY 2016 Actual			FY 2017 Actual		
	Fire	EMS	Combined	Fire	EMS	Combined	Fire	EMS	Combined
Salaries	$0	$548,213	$548,213	$0	$688,037	$688,037	$0	$794,573	$794,573
Benefits	$0	$293,878	$293,878	$0	$289,475	$289,475	$0	$338,977	$338,977
Payroll Expenses	$0	$19,133	$19,133	$0	$19,469	$19,469	$0	$17,850	$17,850
Worker Compensation	$0	$60,899	$60,899	$0	$55,469	$55,469	$0	$96,840	$96,840
EMS Personnel - Other	$0	$7,093	$7,093	$0	$4,355	$4,355	$0	$4,891	$4,891
Volunteer Incentives	$33,655	$5,260	$38,914	$33,664	$4,948	$38,611	$37,185	$2,610	$39,795
Utilities	$44,801	$522	$45,323	$30,528	$483	$31,011	$38,355	$618	$38,973
Building Maintenance	$54,749	$1,031	$55,780	$24,021	$6,161	$30,182	$75,287	$666	$75,952
Apparatus/Vehicle Maintenance	$68,471	$12,705	$81,176	$37,979	$16,715	$54,694	$66,517	$20,116	$86,633
Fuel	$11,500	$9,642	$21,142	$7,195	$5,811	$13,006	$7,181	$6,729	$13,910
Professional Fees	$2,619	$10,781	$13,400	$7,300	($19,132)	($11,832)	$1,930	$2,732	$4,662
Office Supplies	$17,479	$7,203	$24,682	$13,147	$7,358	$20,506	$13,336	$7,791	$21,127
Insurance	$39,842	$3,298	$43,140	$35,424	$5,347	$40,771	$39,753	$6,656	$46,409
Miscellaneous Expenses	$38	$975	$1,012	($33)	$1,432	$1,399	$0	$0	$0
Fire/Medical Equipment Repairs	$6,193	$13,867	$20,061	$11,341	$13,046	$24,387	$11,255	$19,044	$30,299
Training	$8,091	$555	$8,646	$2,687	$755	$3,442	$15,549	$435	$15,984
Communications	$7,376	$225	$7,601	$6,386	$130	$6,516	$7,611	$0	$7,611
Fire/Medical Supplies	$3,693	$11,236	$14,930	$1,826	$21,642	$23,468	$3,300	$10,785	$14,085
Uniform Expenses	$0	$9,918	$9,918	$0	$7,089	$7,089	$0	$23,538	$23,538
Bank Service Charges	$0	$38	$38	$0	$35	$35	$0	$598	$598
Administrative Asst.	$0	$28	$28	$0	$0	$0	$0	$0	$0
Dues & Subscriptions	$524	$0	$524	$549	$0	$549	$524	$0	$524
Fire Prevention	$8,901	$0	$8,901	$0	$0	$0	$3,522	$0	$3,522
Generators	$100	$0	$100	$219	$0	$219	$73	$0	$73
Fire Police	$0	$0	$0	$0	$0	$0	$840	$0	$840
Fire Equipment	$29,789	$0	$29,789	$123,461	$0	$123,461	$97,184	$0	$97,184

Berlin Fire Company Expenditures									
Description	FY 2015 Actual			FY 2016 Actual			FY 2017 Actual		
	Fire	EMS	Combined	Fire	EMS	Combined	Fire	EMS	Combined
Physicals/Gym	$7,665	$0	$7,665	$10,469	$0	$10,469	$9,933	$0	$9,933
Taxes	$145	$0	$145	$145	$0	$145	$145	$0	$145
Fund Raising Expenses	$0	$0	$0	$12,884	$0	$12,884	$0	$0	$0
Operating Expenditures	$345,630	$1,016,500	$1,362,130	$359,195	$1,128,626	$1,487,820	$429,477	$1,355,450	$1,784,927
New Fire/Medical Equipment	$0	$7,654	$7,654	$0	$19,267	$19,267	$0	$53,524	$53,524
New Fire/Ambulance Apparatus	$91	$303	$394	$221	$24,000	$24,221	$725,747	$234,162	$959,909
Building Major Repairs/Improve.	$46,034	$0	$46,034	$27,834	$0	$27,834	$122,924	$0	$122,924
Total Expenditures	$391,755	$1,024,457	$1,416,211	$387,250	$1,171,893	$1,559,142	$1,278,148	$1,643,136	$2,921,284

Overall the expenditures have increased about 31% over the past three fiscal years. Two of the largest increases are salaries for the emergency medical services and workers compensation that have increased 45% and 59% respectively. The salary increases were necessary to remain competitive with other Fire Companies/Departments in the area. Other large line item increases include uniforms, building maintenance, and training with large reductions in miscellaneous expenses, professional fees, and fuel costs.

7. Designated Funds

The Fire Company operates on a cash basis and therefore maintains several designated funds for capital projects or other designated uses. Included in the table below are operational contingency funds showing the balances of these funds for the past three years. Note the 2016 data is for the fiscal year and not the calendar year.

Berlin Fire Company Designated Funds

Description	Calendar Year 2015			Fiscal Year 2016			Calendar Year 2017		
	Fire	EMS	Total	Fire	EMS	Total	Fire	EMS	Total
Member Incentive Fund	$21,467	$0	$21,467	$21,660	$0	$21,660	$0	$0	$0
State Aid - 508 Amoss Fund	$2,701	$0	$2,701	$13	$0	$13	$86	$0	$86
Fire Cadets Fund	$8,556	$0	$8,556	$9,449	$0	$9,449	$0	$0	$0
Auxiliary Fund	$10,857	$0	$10,857	$0	$0	$0	$0	$0	$0
Station Three Building Fund	$1,570,528	$0	$1,570,528	$1,597,027	$0	$1,597,027	$1,506,509	$0	$1,506,509
Headquarters Building Fund	$0	$0	$0	$150,399	$0	$150,399	$150,399	$0	$150,399
Contingency Reserve Fund	$100,000	$500,074	$600,074	$100,000	$500,074	$600,074	$100,000	$0	$100,000
Apparatus/Ambulance Capital Fund	$621,767	$447,265	$1,069,032	$202,056	$447,421	$649,477	$20,874	$0	$20,874
Total Funds	$2,335,876	$947,339	$3,283,215	$2,080,604	$947,495	$3,028,099	$1,777,868	$0	$1,777,868

The member incentive fund, fire cadet fund and the auxiliary fund are monies that are collected through ancillary items such as vending machines in the stations and other similar types of fund raising sources. The station three building fund is largely donations that have been made to that specific project by community donors. Contingency reserve funds and apparatus capital fund are monies that are being held for capital improvements and funds held for emergency reserves. The contingency fund for the emergency medical services has been used for operations and is depleted. The capital improvements fund for apparatus has been reduced with the planned purchase of equipment.

8. Financial Planning

Planning for future needs begins with the funding of the Fire Company. Operational expenses have been steadily rising for the past three fiscal years at a higher rate than revenues and some of the contingency funds have been depleted. With the two separate funds, the revenue projections that follow illustrate these funds separately.

Berlin Fire Company Revenues - Fire Services								
Description	**FY 2017 Actual**	**FY 2018 Projection**	**FY 2019 Projection**	**FY 2020 Projection**	**FY 2021 Projection**	**FY 2022 Projection**	**Avg. Annual Change**	**3 yr. Avg. Change**
Donations	$15,608	$15,764	$15,922	$16,081	$16,242	$16,404	1.0%	-24.8%
Memory Donations	$2,535	$2,560	$2,586	$2,612	$2,638	$2,664	1.0%	19.8%
Interest Income	$2,538	$2,454	$2,372	$2,294	$2,218	$2,144	-3.3%	-3.3%
Annual Drive	$19,233	$19,512	$19,796	$20,084	$20,376	$20,672	1.5%	1.5%
Worcester County Funding	$386,000	$425,000	$425,000	$425,000	$425,000	$425,000	$225,000 base plus $1,000 per call	-6.4%
Town of Berlin Operational Funding	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	Current funding	0.0%
Town of Berlin Capital Fund	$60,000	$150,000	$150,000	$150,000	$150,000	$150,000	Current funding	-20.0%
Pledges	$4,050	$4,091	$4,131	$4,173	$4,214	$4,257	1.0%	-10.8%
Fund Raisers	$13,873	$14,878	$15,955	$17,110	$18,349	$19,677	7.2%	7.2%
Control Burns	$3,700	$4,014	$4,354	$4,723	$5,123	$5,557	8.5%	8.5%
Grants	$0	$0	$0	$0	$0	$0	0.0%	-33.3%
State Aid	$40,763	$40,763	$40,763	$40,763	$40,763	$40,763	0.0%	13.5%
Miscellaneous Income	$33,500	$33,500	$33,500	$33,500	$33,500	$33,500	0.0%	167.4%
Total Revenue	$781,800	$912,535	$914,379	$916,338	$918,422	$920,638		

The column labeled 3 yr. Average Change represents the average annual change based on the three years of financial data the project team reviewed. Some of those averages appear to be unreasonable. For example, a 167% increase in Miscellaneous Income is not a realistic expectation. The column labeled Average Annual Change was used to provide a more realistic annual increase to those line items. Donations and Fundraisers are difficult to project; therefore, a modest 1% annual increase was used. For the Worcester County funding an average of 200 calls a year was used to project anticipated income. The existing funding mechanism for the Town of Berlin was carried through all five years of the projection. Overall the revenue for fire services is projected to increase by 17.8% over the next five years.

Berlin Fire Company Revenues - Emergency Medical Services								
Description	2017 Actual	2018 Projection	2019 Projection	2020 Projection	2021 Projection	2022 Projection	Avg. Annual Change	3 yr. Avg. Change
Donations	$2,585	$2,611	$2,637	$2,663	$2,690	$2,717	1.0%	-4.9%
Memory Donations	$245	$247	$250	$252	$255	$257	1.0%	-19.0%
Interest Income	$564	$546	$528	$510	$493	$477	-3.3%	-29.3%
Annual Drive	$10,216	$10,370	$10,525	$10,683	$10,843	$11,006	1.5%	-11.2%
Worcester County Funding	$606,578	$625,891	$645,819	$666,382	$687,600	$709,493	3.2%	3.2%
Town of Berlin Funding	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	Current Funding	0.0%
Town of Berlin Capital Fund	$90,000	$0	$0	$0	$0	$0	0.0%	0.0%
EMS Billing	$355,098	$351,343	$347,627	$343,950	$340,312	$336,713	-1.1%	-1.1%
Other Income	$18,000	$0	$0	$0	$0	$0		
Total Revenue	$1,133,287	$1,041,008	$1,057,386	$1,074,441	$1,092,193	$1,110,663		

The column labeled 3 yr. Average Change represents the average annual change based on the three years of financial data the project team reviewed. Some of those averages appear to be unreasonable. For example, a 29% reduction in Interest Income is not a realistic expectation. The column labeled Average Annual Change was used to provide a more realistic annual increase to those line items. Donations and Fundraisers are difficult to project; therefore, a modest 1% annual increase was used. Funding for the Town of Berlin remained at current levels for the next five years of this projection. Worcester County funding was adjusted by the percentage of change due to the variance in transport and non-transport calls and the mileage that may be paid for various calls. Overall the revenue for emergency medical services is projected to decrease by 2% for the next five years.

The following tables illustrate the projected expenditures much like the revenues.

Berlin Fire Company Expenditures - Fire Services								
Description	**FY 2017 Actual**	**FY 2018 Projection**	**FY 2019 Projection**	**FY 2020 Projection**	**FY 2021 Projection**	**FY 2022 Projection**	**Avg. Annual Change**	**3 yr. Avg. Change**
Volunteer Incentives	$37,185	$38,487	$39,834	$41,228	$42,671	$44,164	3.5%	3.5%
Utilities	$38,355	$40,272	$42,286	$44,400	$46,620	$48,951	5.0%	-4.8%
Building Maintenance	$75,287	$84,697	$95,285	$107,195	$120,595	$135,669	12.5%	12.5%
Apparatus/Vehicle Maintenance	$66,517	$65,852	$65,193	$64,541	$63,896	$63,257	-1.0%	-1.0%
Fire/Medical Equipment Repairs	$11,255	$11,817	$12,408	$13,029	$13,680	$14,364	5.0%	27.2%
Fuel	$7,181	$7,540	$7,917	$8,313	$8,728	$9,165	5.0%	-12.5%
Professional Fees	$1,930	$2,026	$2,128	$2,234	$2,346	$2,463	5.0%	-8.8%
Office Supplies	$13,336	$13,736	$14,148	$14,572	$15,010	$15,460	3.0%	-7.9%
Insurance	$39,753	$39,713	$39,674	$39,634	$39,594	$39,555	-0.1%	-0.1%
Training	$15,549	$16,015	$16,495	$16,990	$17,500	$18,025	3.0%	30.7%
Communications	$7,611	$7,695	$7,780	$7,865	$7,952	$8,039	1.1%	1.1%
Fire/Medical Supplies	$3,300	$3,333	$3,366	$3,400	$3,434	$3,468	1.0%	-3.6%
Dues & Subscriptions	$524	$524	$524	$524	$524	$524	0.0%	0.0%
Fire Prevention	$3,522	$3,627	$3,736	$3,848	$3,963	$4,082	3.0%	-20.1%
Generators	$73	$66	$61	$55	$50	$46	-8.9%	-8.9%
Fire Police	$840	$840	$840	$840	$840	$840	0.0%	1000.0%
Fire Equipment	$97,184	$100,099	$103,102	$106,195	$109,381	$112,663	3.0%	75.4%
Physicals/Gym	$9,933	$10,231	$10,537	$10,854	$11,179	$11,515	3.0%	9.9%
Taxes	$145	$145	$145	$145	$145	$145	0.0%	0.0%
Operating Expenditures	$429,477	$446,716	$465,458	$485,863	$508,108	$532,395		

The column labeled 3 yr. Average Change represents the average annual change based on the three years of financial data the project team reviewed. Some of those averages appear to be unreasonable. For example, a 1000% increase in Fire Police is not a realistic expectation. The column labeled Average Annual Change was used to provide a more realistic annual increase to those line items. In most instances the annual increase was set between 3% to 5% to represent a more realistic approach to future expectations.

Berlin Fire Company Expenditures - Emergency Medical Services								
Description	2017 Actual	2018 Projection	2019 Projection	2020 Projection	2021 Projection	2022 Projection	Avg. Annual Change	3 yr. Avg. Change
Salaries	$794,573	$818,410	$842,962	$868,251	$894,299	$921,128	3.0%	15.0%
Benefits	$338,977	$356,317	$374,544	$393,704	$413,844	$435,013	5.1%	5.1%
Payroll Expenses	$17,850	$17,451	$17,061	$16,680	$16,307	$15,943	-2.2%	-2.2%
Worker Compensation	$96,840	$115,891	$138,689	$165,973	$198,624	$237,698	19.7%	19.7%
EMS Personnel - Other	$4,891	$4,385	$3,931	$3,524	$3,160	$2,833	-10.3%	-10.3%
Volunteer Incentives	$2,610	$2,701	$2,796	$2,894	$2,995	$3,100	3.5%	-16.8%
Utilities	$618	$656	$696	$738	$783	$831	6.1%	6.1%
Building Maintenance	$666	$744	$832	$930	$1,040	$1,163	11.8%	11.8%
Apparatus/Vehicle Maintenance	$20,116	$21,122	$22,178	$23,287	$24,452	$25,674	5.0%	19.4%
Fire/Medical Equipment Repairs	$19,044	$19,997	$20,996	$22,046	$23,149	$24,306	5.0%	12.4%
Fuel	$6,729	$7,065	$7,418	$7,789	$8,179	$8,588	5.0%	-10.1%
Professional Fees	$2,732	$2,869	$3,012	$3,163	$3,321	$3,487	5.0%	-24.9%
Office Supplies	$7,791	$8,001	$8,217	$8,439	$8,667	$8,901	2.7%	2.7%
Insurance	$6,656	$8,912	$11,934	$15,979	$21,396	$28,649	33.9%	33.9%
Training	$435	$448	$462	$476	$490	$505	3.0%	-7.2%
Communications	$0	$0	$0	$0	$0	$0	0.0%	-33.3%
Fire/Medical Supplies	$10,785	$11,109	$11,442	$11,785	$12,139	$12,503	3.0%	-1.3%
Uniform Expenses	$23,538	$24,715	$25,951	$27,248	$28,611	$30,041	5.0%	45.8%
Bank Service Charges	$598	$50.00	$50.00	$50.00	$50.00	$50.00	0.0%	491.6%
Operating Expenditures	$1,355,450	$1,420,844	$1,493,173	$1,572,958	$1,661,504	$1,760,413		

The column labeled 3 yr. Average Change represents the average annual change based on the three years of financial data the project team reviewed. Some of those averages appear to be unreasonable. For example, a 15% increase in Salaries is not a realistic expectation. The column labeled Average Annual Change was used to provide a more realistic annual increase to those line items. In most instances the annual increase was set at 3% to 5% to represent a more realistic approach to future expectations. For Salaries, the large increase was due to a wage adjustment to be competitive with other Departments/Companies in the area.

The Berlin Fire Company is a non-stock Maryland corporation that also has a 501c (3) designation through the Internal Revenue Service. This company receives funding from the Town of Berlin, Worcester County, billing for services, and other revenue generating processes with the intent to provide fire suppressions and emergency medical services to a designated area. Operating on a cash basis the company must set aside funds to purchase new equipment, facilities, and other assets to provide services. The company must also establish a contingency fund for operations. Contingency funds are defined as those funds set aside to keep the operations operating smoothly due to changes in revenues that fall short or higher than planned expenses. The table that follows illustrates the current funds held by the Berlin Fire Company for their capital projects and continency funding.

Berlin Fire Company Designated Funds												
Description	Calendar Year 2014			Calendar Year 2015			Fiscal Year 2016			Calendar Year 2017		
	Fire	EMS	Total	Fire	EMS	Total	Fire	EMS	Total	Fire	EMS	Total
Member Incentive Fund	$20,961	$0	$20,961	$21,467	$0	$21,467	$21,660	$0	$21,660	$0	$0	$0
State Aid - 508 Amoss Fund	$13,378	$0	$13,378	$2,701	$0	$2,701	$13	$0	$13	$86	$0	$86
Fire Cadets Fund	$33,000	$0	$33,000	$8,556	$0	$8,556	$9,449	$0	$9,449	$0	$0	$0
Auxiliary Fund	$10,282	$0	$10,282	$10,857	$0	$10,857	$0	$0	$0	$0	$0	$0
Station Three Building Fund	$1,015,610	$253,026	$1,268,636	$1,570,528	$0	$1,570,528	$1,597,027	$0	$1,597,027	$1,506,509	$0	$1,506,509
Headquarters Building Fund	$0	$0	$0	$0	$0	$0	$150,399	$0	$150,399	$150,399	$0	$150,399
Contingency Reserve Fund	$200,000	$500,074	$700,074	$100,000	$500,074	$600,074	$100,000	$500,074	$600,074	$100,000	$0	$100,000
Apparatus / Ambulance Capital Fund	$201,133	$446,879	$648,012	$621,767	$447,265	$1,069,032	$202,056	$447,421	$649,477	$20,874	$0	$20,874
Total	$1,494,364	$1,199,979	$2,694,343	$2,335,876	$947,339	$3,283,215	$2,080,604	$947,495	$3,028,099	$1,777,868	$0	$1,777,868

Each of the funds in the table have a specific purpose.

- The Member Incentive Fund are monies that have been collected as part of vending machine operations in the stations and other fundraising processes and does not contain any tax monies.

- State Aid are monies received from the state used to acquire or rehabilitate fire or rescue equipment, acquire or rehabilitate capital equipment used in connection with fire or rescue equipment, or to rehabilitate facilities used to house firefighting equipment. Acquisition of these funds require an application to be filed.

- The Fire Cadet Fund are monies the cadet group has raised through fund raising efforts for their specific group, this fund does not contain tax monies.

- Auxiliary Fund are monies the auxiliary group have raised through fund raisers and do not contain any tax monies.

- The Station Three Building Fund represent the collection of donations that have been received for the construction of a new fire station and are dedicated to that purpose.

- Headquarters Building Fund are monies that have been set aside to effect improvements and repairs to the Headquarters building. This includes repairs to the roof and foyer area.

- Contingency Reserve Fund are monies in reserve to ensure the operations of the company continue smoothly in the event revenues fall short or unexpected expenditures arise.

- Apparatus and Ambulance Fund contain monies that being set aside for the purchase and replacement of existing apparatus and ambulances according to the apparatus replacement schedule.

It should be noted the balances shown are by calendar year except for 2016 which is a fiscal year balance. Two major changes in the funds include the Apparatus /Ambulance Fund and the Contingency Funds. For the Apparatus/Ambulance Fund, a new ambulance was purchased using these funds to complete the purchase and reducing the balance. The Contingency Fund for the emergency medical services was depleted to continue the operations of the system.

9. Future Funding and Budgets

This section provides the evaluation and analysis of financial projections and budgeting processes of the Town of Berlin and the Berlin Fire Company.

(1) Financial Projections

The table that follows details the revenues and expenditures for fire services and emergency medical services. The third section combines the two services together.

Berlin Fire Company Forecast Comparison

Description	FY 2017 Actual	FY 2018 Projection	FY 2019 Projection	FY 2020 Projection	FY 2021 Projection	FY 2022 Projection
Fire Services						
Total Revenues	$781,800	$912,535	$914,379	$916,338	$918,422	$920,638
Operating Expenditures	$429,477	$446,716	$465,458	$485,863	$508,108	$532,395
Revenues over Expenditures	$352,323	$465,819	$448,921	$430,476	$410,314	$388,244
Emergency Medical Services						
Total Revenues	$1,133,287	$1,041,008	$1,057,386	$1,074,441	$1,092,193	$1,110,663
Operating Expenditures	$1,355,450	$1,420,844	$1,493,173	$1,572,958	$1,661,504	$1,760,413
Revenues over Expenditures	($222,163)	($379,836)	($435,787)	($498,517)	($569,311)	($649,750)
Combined Services						
Total Revenues	$1,915,087	$1,953,543	$1,971,765	$1,990,780	$2,010,615	$2,031,301
Operating Expenditures	$1,784,927	$1,867,560	$1,958,631	$2,058,820	$2,169,612	$2,292,807
Revenues over Expenditures	$130,160	$85,983	$13,134	($68,041)	($158,997)	($261,506)

Operationally the fire services are reasonably funded although the expenses are increasing and will need additional revenues in the future. The emergency medical services are operating with a negative balance and if not corrected will affect the entire Fire Company. The expenses in this service are much greater as the salaries and benefits are paid from this service fund. Contingency funds for the emergency medical services have been depleted to continue operations.

Cost per call is calculated by taking the total operating expenditures and dividing it by the total number of calls. Using the cost per call provides an equal point for comparison purposes as the cost per call is the same regardless of its location. The tables below provide the cost per call for fire suppression services and emergency medical services separately. Also shown in the emergency medical services table is the per call average amount collected from the billing program.

Fire Services Cost per Call			
	Number of Fire Calls	Fire Operating Expenses	Avg. Cost per Call
2015	267	$345,630	$1,294.49
2016	421	$359,195	$853.19
2017	420	$429,477	$1,022.56

EMS Cost Per Call					
	Number of EMS Calls	EMS Operating Expenses	Avg. Cost per Call	Amount Collected	Avg. Collection per Call
2015	1,570	$1,016,500	$647.45	$336,735	$214.48
2016	1,588	$1,128,626	$710.72	$372,944	$234.85
2017	1,609	$1,355,450	$842.42	$355,098	$220.69

The table below illustrates the fire suppression services cost for the County and the Town using the cost per call for each of the past three years. The number of calls represent those calls in the Town or in the County respectively. Funding from the County and the Town is also shown.

Worcester County Fire Cost per Call				
	Number of Fire Calls	Avg. Cost per Call	Operating Cost	Fire Funding from County
2015	151	$1,294.49	$195,468	$477,000
2016	231	$853.19	$197,087	$388,072
2017	234	$1,022.56	$239,279	$386,000

Town of Berlin Fire Cost per Call				
	Number of Fire Calls	Avg. Cost per Call	Operating Cost	Fire Funding from Town
2015	116	$1,294.49	$150,161	$200,000
2016	190	$853.19	$162,106	$200,000
2017	186	$1,022.56	$190,196	$200,000

The number of fire responses are higher in the County than in the Town so the costs for fire suppression services in the County are higher. Based on how the Fire Company has chosen to allocated the funds provided by the County and Town, there is adequate funding to cover the operating costs of the fire delivery system in both areas with allocated funds exceeding the operating costs each year.

The tables below illustrate the net cost per emergency medical call for the Town of Berlin and Worcester County. Using the data from the cost per call table was reduced by the average collection per call to determine the average net cost per call. The number of calls represent those calls in the Town or in the County respectively. The final column illustrates the funding provided to the Fire Company from the respective local governments.

Worcester County EMS Cost per Call

	Number of EMS Calls	Avg. Cost per Call	Avg. Collection per Call	Net Operating Cost	EMS Net Cost for County	EMS Funding from County
2015	661	$647.45	$214.48	$432.97	$286,194	$553,690
2016	701	$710.72	$234.85	$475.87	$333,585	$602,509
2017	694	$842.42	$220.69	$621.72	$431,476	$606,578

Town of Berlin EMS Cost per Call

	Number of EMS Calls	Avg. Cost per Call	Avg. Collection per Call	Net Operating Cost	EMS Net Cost for Town	EMS Funding from Town
2015	909	$647.45	$214.48	$432.97	$393,571	$50,000
2016	887	$710.72	$234.85	$475.87	$422,097	$50,000
2017	915	$842.42	$220.69	$621.72	$568,876	$50,000

The volume of calls for the emergency medical services is higher in the Town and therefore the cost for services are higher.

It should be noted the Town does not designate where the funds are to be allocated, that is left to the Fire Company. The tables above display what the Fire Company has allocated to the fire suppression and emergency medical services. Additionally, the costs are operational expenditures and do not include any capital expenditures. In addition to the operational funds illustrated above, the Town of Berlin provided $150,000 for capital improvements making their contribution to the Fire Company $400,000 annually.

Based on how the Fire Company is allocated funds provided from the County and Town to emergency medical services, the County funding exceeds the costs of providing services, while the Town funding allocated to EMS does not cover the cost of providing services.

(2) Funding Mechanisms

Funding from Worcester County is a defined funding mechanism for all fire companies in the county. Property taxes collected by the county is the predominate funding source for the funding mechanism that is in place. The table below illustrates the funding mechanism currently in place for Worcester County.

Worcester County Emergency Services Funding	
Fire	
Per Call - In County	$1,000
Flat Rate	$225,000
Emergency Medical Services	
Each Equipped Vehicle	$10,000
Each FTE	$5,000
Paramedic On-Duty	$30,000
Transports:	
In Town	
Non-Transport	$0
Transport	$190
In County	
Non-Transport	$190
Transport	$795
Transport Mileage	60.5 cents per mile

There are issues with funding the emergency services with a per call fee. There is little control over the budget based on call volume. For example, in 2015 the Fire Company responded to 151 fire related calls and in 2016 they responded to 231 fire related calls, an increase of 80 call for service. Based on the formula above the County must pay the Fire Company an additional $80,000 and they had no control over that expenditure. Additionally, with this funding formula there is little to no incentive for the Fire Company to reduce costs or any other mechanism to hold the Fire Company accountable for their expenses. Rather than using a funding formula for the Town of Berlin, there needs to be an overall strategy for the funding of the emergency services holding the Fire Company accountable for the funds provided by the Town and how they are expended for these services.

The Fire Company provides services to the Town and to County areas surrounding the Town. It is common practice in these situations to attribute the costs of operations based on the workloads for each governmental agency. Using a rolling five-year percentage of calls for service provides a stable mechanism to determine the workloads in each service area. It also provides stability, from a budgeting perspective, from spikes in calls due to a specific type of event such as a severe storm that does not occur every year but has

several calls as a result. The table below illustrates the past five years for all calls for service.

Berlin Fire Company Total Calls for Service							
	2013	2014	2015	2016	2017	Total	Pct. of Total
Town of Berlin	1,091	965	1,025	1,077	1,101	5,259	54.4%
Worcester County	922	811	812	932	928	4,405	45.6%
Total Calls	2,013	1,776	1,837	2,009	2,029	9,664	100.0%

In general terms the calls for service typically follow the heavier populated areas in this case meaning the Town has slightly more population that other areas of the service area.

There needs to be a base of funding or a starting point for the Town funding strategy. Using the County base of $300,000 and the $400,000 the Town provides the base for funding would be $700,000.

The project team suggests a base of funding or starting point for the funding strategy. The County provides a base amount to the Fire Company for an equipped EMS vehicle, each full-time employee, paramedic on duty and a flat rate fee for fire suppression totaling $300,000. In the past years the Town has provided a $400,000 flat rate to the Fire Company. Using these two figures this creates a base of $700,000. In this scenario, the County provides about 42.8% of the base and the Town provides roughly 57.1% of the base. These base rates are very similar to the workload percentages of 45.6% and 54.4% respectfully. In 2017 the total operating expenditures for the Fire Company were $1,784,927. The base amount provided by the Town and County is not enough to fund the Fire Company at its current service levels. The balance necessary to balance the Fire Company budget will come from three sources; the County per call fees, EMS revenue and the Town.

For the Town to provide any additional funding the Fire Company needs to be treated as any other department in the Town. They should meet with the appropriate Town officials to discuss the needs of the Fire Company. The Fire Company should present a line item budget to the Town officials that includes the various funding sources and expenditures. Detailed analysis of the emergency medical services billing and collections should be included as a part of the budget as previously recommended. This will provide the Fire Company an opportunity to identify the needs of the Town and the Town with an opportunity to determine the level of service they are capable of funding.

As to the capital improvement funding, this number should be based on the depreciation of the apparatus and equipment to be replaced which may result in a different amount to

be funded. The Town has the legal obligation to provide fire suppression services to the residents and the Fire Company is the mechanism used to provide this service. Therefore, any apparatus or equipment purchased from this fund is to be owned by the Town of Berlin for use by the Fire Company. The intent of this ownership is not to limit the use of the equipment and apparatus by the Fire Company in the operations of the company. It is intended to ensure the Town can provide fire suppression services should anything occur with the Fire Company and their ability or inability to continue operations.

Recommendations:

The Town of Berlin and Berlin Fire Company to adopt a funding strategy that establishes a base amount with the balance of the funding being discussed as a part of the budget process.

Any future purchases of apparatus and equipment using funds from the Town of Berlin capital fund to be approved and owned by the Town of Berlin.

(3) Budgeting

The Fire Company operates on a fiscal year basis that begins on July 1 of each year. The budgeting process typically begins in January following the election of officers and the new officers have taken office. Their process begins with a review of revenues from the Town of Berlin, Worcester County, any fund-raising activities that may be planned, and grants that are available. It is from this point the expenditures are established based on the revenues and without an understanding what and how the funding from the Town will be this becomes a difficult task. The Fire Company does have a capital plan in place for apparatus, vehicles and related equipment that also helps to drive the needs of these funds.

The Town of Berlin also operates on a fiscal year basis that begins on July 1 of each year. Their budgeting process begins in February with discussions with the individual Town Departments and the Town Manager to prioritize needs of the individual departments. In March the Department Heads and council members conduct work sessions to work on details and formalize the plan. Once the plans are formalized, the budget plan is introduced to the public for comment.

During the on-site discussions with representatives of the Town and Fire Company the project team learned there have been attempts in the past to work together on the budget and financial planning that have failed for one reason or another. The budgeting processes for each organization are slightly different. The Fire Company begins with their revenue streams and then reviews their expenses to determine what programs can be

funded. The Town begins with their expenditures to determine the needs, prioritizes those needs, and then cuts programs to fit the revenue streams. Both processes are acceptable however, the Fire Company needs to realize the Town views them as an expense and the Town needs to realize the Fire Company views them as a revenue stream. The reviews for these line items are opposite ends of the others process and therefore do not line up within the processes.

To help facilitate the budgeting process, the project team recommends the Fire Company provide the Town with a detailed five-year financial plan. This plan should include details for each line line-item in the budget including revenue and expenditures. Planned capital expenditures for the same five-year period should also be included. The Town and Fire Company should meet in January prior to any of the Town budget meetings to review and update the five-year plan. The Town should offer to assist the Fire Company with the financial planning through the Finance Department. This will provide the Fire Company with the revenue information they need to begin their budgeting process. For the Town, the upcoming expenditures for the Fire Company will be known at the beginning of their budgeting process. It will provide both organizations the opportunity to understand the challenges and provide transparency as to the funding of services.

Recommendation: The Fire Company should be required to provide and maintain a five-year financial plan to include capital items and obtain assistance from the Town Finance Department where necessary.

In years past the Fire Company has not been held accountable for the monies spent on fire suppression and emergency medical services. The process, in the past, has largely been the Fire Company coming to the Town requesting funding for operations and the Town providing those funds. With the tax funding between the Town and County reaching over one million dollars, there is a need for more transparency and accountability. In the past, changes in the level of service was decided by the Fire Company without input from the Town and those decisions have consequences. Those consequences could have a financial impact on the Town as well as the level of service the Town expects to receive.

The Town Charter stipulates the Town can contribute funds to volunteer fire companies serving the town but does not specifically stipulate the Berlin Fire Company. The project team recommends a contract between the Town of Berlin and the Berlin Fire Company to formally establish a relationship between the two organizations. The contract should contain the following at a minimum:

- Service expectations of the Town.

- Define the funding mechanism for services to the Fire Company.
- Provisions for annual and quarterly reports of response and financial activities.
- Performance objectives for response and the handling of emergencies.

Recommendation: The Town of Berlin should develop a contract with the Berlin Fire Company to define and provide fire suppression and emergency medical services to the Town, establish the funding for these services, and to delineate the reports and procedures to be followed by both parties.

The Town may have some capability to assist the Fire Company with daily activities such as expense reimbursement or a purchase order system. However, the Fire Company indicated this procedure was tried about 10 years ago and it did not work well. For the Town to offer this mechanism it would require additional licensing fees for access to the purchasing system and training for fire personnel to process the purchase orders and requisitions. It may also require an additional staff person to handle the processing procedures. With the increased cost for licensing, the potential of an additional person, the fact it has been tried in the past and failed; it may not be feasible to establish a procedure at this time. With additional controls established as a part of the service contract, the funding issues and procedures will provide additional accountability of the funds and the expenditures.

10. Audits

A large part of the data used in the financial analysis of the Fire Company was supplied through various audits performed over the past several years. The review of financial data using the audits presented a unique challenge as the audits were mostly based on the calendar year and the data supplied by the Fire Company was based on the fiscal year.

The difference between the fiscal years and calendar years creates ambiguities with the Town and the Fire Company. For example, the Town reviews the audits and develops an understanding of the financial health of the Fire Company. The Fire Company comes in for a budget review and funding request with a different set of financial statements and numbers. This causes confusion and the trust between the two organizations deteriorate. Performing audits based on the fiscal year will not only create less confusion but will also fit in the budget process as the audits should be completed before the next budget and funding requests are made.

Recommendation: The audits performed annually to be completed based on the fiscal year and not the calendar year.

In the audit dated December 31, 2015 concerns were expressed about the custodial credit risk maintaining deposits in financial institutions that have limited insurance provided by the Federal Deposit Insurance Corporation (FDIC). According to the audit, there were uninsured and uncollateralized cash balances of $3,103,482.

Recommendation: The Fire Company should review their cash holdings to ensure they are protected against loss either through insurance such as the FDIC or are otherwise backed and guaranteed by significant collateral.

11. Cash Basis Operation

The Berlin Fire Company operates on a cash basis. This method of operation is acceptable under the rules of generally accepted accounting procedures. In general terms this type of operation means the Fire Company reports receipts as they are received and expenditures as they are spent. Their method of operation also includes paying cash for new assets and any other expenditures. While this method of purchasing does not break any rules, it does have its issues. There needs to be very strict internal controls established to control the cash assets. This prevents fraud, theft and clerical errors that can occur when handing large sums of cash. There is also an appearance the organization is well funded unless the funds are well designated in any financial statements. Some of the funds are donations that are designated for specific purposes such as the building fund.

Another method is to finance major purchases of assets. This method is also acceptable under the rules of generally accepted accounting procedures. Depending on the terms of the financing there will be a slightly increased cost to the purchase through interest payments. In many business circles financing the purchase of assets allows for the company to use the equipment, make a profit, and can use those funds (cash flow) for other expenses. This method would also require a steady and sustainable revenue stream to ensure the payments can be made on a timely basis.

For the Berlin Fire Company there are some issues that may preclude them from borrowing funds to purchase assets. The organizational structure is such the stability of this type of purchase could be called into question. Based on the By-Laws of the Company a quorum of 15 members need to be present to have an official meeting of the Company. These same By-Laws stipulate the Board of Directors are not permitted to override a decision made by 2/3 majority of the members present on any action brought before the company. It is possible for 10 of the 15 members present, representing 2/3 majority, to vote and approve a measure that would cause the funds not to be available to make the

payment and the Board of Directors are not able to override or otherwise stop the measure. As noted previously, the Fire Company is underfunded. Additionally, in recent years the Town and the Fire Company have been at odds over the funding issue which has caused funds to be withheld. The uncertainty of the funding would cause concern about the ability of repayments.

There may be some ability for the Town to finance large purchases for the Fire Company through the capital funding portion of the overall funding mechanism. Using this method would eliminate the need for the Fire Company to accumulate large sums of cash and the Town would own the equipment.

Recommendation: The Town of Berlin and the Berlin Fire Company should create a plan for the purchase of assets through funding mechanisms available to the Town to benefit the Fire Company and the residents.

5 Organizational Structure

This chapter presents the projects team's analysis of the administration and operational structure of the organization.

1. Existing Organizational Structure

The design of an organizational structure to best meet the needs of a department is not only predicated on the traditional command and control within the Fire Company, but also to help define job duties and responsibilities, ensure efficient and effective workflow, establish a reporting hierarchy, and ultimately determine appropriate lines of authority and accountability. To accomplish this, the design of an organizational structure and placement of employees within the organization should be established on key principles that provide the organizational cohesion necessary to accomplish the primary mission of the Department. These principles include:

- **Accountability and responsibility are clearly identified:** The organizational structure must be consistent with the concept that clear lines of authority and decision making are essential for any organization to achieve excellence. Areas of responsibility are clearly delineated, and points of accountability are readily identifiable.

- **Span of control or communication is optimal:** Effective organizations are structured so that lines of communication are identifiable and where there are multiple reporting relationships, responsibility for communication and control are clearly identified and understood.

- **Coordination of Work Efforts:** The organizational structure should facilitate communication and working relationships among staff and work units. Many functions need close or indirect alignment to maximize efficiency and effectiveness. The structure should also provide easy identification of job functions to people outside the Fire Company, including other Departments in the Town and other fire service agencies.

- **Degree of Organizational Risk:** This relates to how much risk a function incurs if an activity is not performed or is performed poorly. Risk might involve tactical, financial or political concerns. Generally, higher risk functions have closer management oversight.

The Berlin Fire Company is an established non-stock corporation in the State of Maryland. It also holds a 501c (3) non-profit status with the Internal Revenue Service. This type of

corporate establishment is a common mechanism for volunteer fire departments and companies across the United States.

The By-Laws of the Fire Company establish the organizational structure of the company with two distinct groups. One group focuses on the business and the other oversees the operational aspects of the company. Six members of the company are elected to Board of Directors from the membership of the company and serve for one year. The President, Vice President, Secretary, and Treasurer are other corporate officers elected by the membership of the company for a one-year term. The table below illustrates the duties of these positions as outlined in the By-Laws of the organization.

KEY ROLES AND RESPONSIBILITIES				
Unit/Division	**Filled**	**Auth.**	**Position**	**Unit Description**
Administrative Division	6	6	Board of Directors	• Maintain by-laws of the organization. • Interviews applicants for the volunteer staffing of the Company • Acts as the arbitrator for volunteer personnel issues.
	1	1	Board Chairperson	• Performs the duties of the President and Vice President in their absence.
	1	1	President	• Presides over Board meetings. • Acts as the resident agent for the corporation. • Custodian of corporate records. • Compiles the budget and monitors the financial condition of the corporation. • Executes all legal documents for the corporation.
	1	1	Vice President	• Maintains records of any memorial donations • Acts as President in the absence of the President
	1	1	Fire Company Secretary	• Maintains the minutes of corporation meetings and attendance for non-emergency activities. • Reports the monthly bills at the meetings.
	1	1	Fire Company Treasurer	• Writes and executes checks on behalf of the Fire Company. • Presents monthly financial reports of the Fire Company.
	1	1	EMS Secretary / Treasurer	• Writes and executes checks on behalf of the EMS Company. • Presents monthly financial reports of the EMS Company.

Vacancies of any of the above officer positions require the position to be filled by the

election of the replacement to occur at the next regular meeting.

2. Proposed Organizational Structure

Within the existing organizational structure there are several issues that could potentially influence the organization and its mission.

As is typical with many fire departments and companies, fundraisers and donations make up a part of the revenue stream. This dates to a time when tax funding was not available for fire services but was an essential service to be provided. Today many local governments provide funding, through tax dollars, to the fire departments and companies to support the fire service. The Berlin Fire Company receives funding from the Town of Berlin, Worcester County, and through the billing of emergency medical services. Additional funding is received through donations and fundraising activities. The comingling of these funds creates confusion and concern from anyone who reviews the financial records. For example, the audit reports indicate a fund titled “Member Incentive Fund” that on June 30, 2016 had a balance of $21,660. Upon further scrutiny this funding is monies collected from vending machines inside the fire stations and other incidental income producing venues, there are no tax dollars in this fund. Another example is the expenditures for fundraising activities. Without any separation of funding the question becomes are there any tax dollars being spent on these activities. To further exacerbate the issue a review of the audits and other financial documents provided to the project team, there is no readily available mechanism to know what the impact is from these activities.

The Fire Company has employed individuals to provide emergency medical services to the Town of Berlin and the surrounding area. However, the organizational structure is such the stability of this employment can be called into question. Based on the By-Laws of the Company a quorum of 15 members need to be present to have an official meeting of the Company. These same By-Laws stipulate the Board of Directors are not permitted to override a decision made by 2/3 majority of the members present on any action brought before the company. It is possible for 10 of the 15 members present, representing 2/3 majority, to vote and approve a measure that would be detrimental to the employment of these individuals and the Board of Directors are not able to override or otherwise stop the measure. In fact, this scenario could occur for any measure or activity the membership would so choose up to and including the provision of services. This provision also inhibits any negotiations with the Town or County related to funding and the expenditure of funds as the membership can override the President or Board of Directors.

There is a lack of accountability for the monies spent on fire suppression and emergency medical services for the Town and the County. According to the By-Laws, the membership decides how the monies are to be spent. The Treasurer of the Fire Company receives all funds and pays the bills under the order of the membership. The EMS Treasurer is charged with the same responsibilities for funds that relate to the emergency medical services. There are no other written financial controls within the Fire Company to address spending authorities, budgeting, and investments of funds. With large sums of taxpayer funding this could present an issue for the Fire Company, the Town of Berlin, and Worcester County.

Addressing these issues, the project team recommends the establishment of a separate non-stock corporation in the State of Maryland and obtain a 501c (3) non-profit status to become the company providing services to the Town of Berlin and Worchester County. This new organization would be established to handle the employment of individuals and tax funding provided by the local and state governments. The membership would elect their representatives to the Board of Directors. Annual budgets would then be established and approved by the Board of Directors, the Town of Berlin and Worcester County. The make-up of the Board of Directors to be established by the new By-laws, however, the organization should allow the Town and the County to appoint a member to the Board of Directors. This would provide a more stable employment environment for the employees, separate the funding between tax dollars and fundraisers, and provide a transparent organization to work with the Town and County. This new organization would have appropriate financial controls and procedures adopted as recommended by the accountants and auditors to ensure proper generally accepted accounting procedures are followed.

Creating a new 501c(3) will allow for the tax generated and EMS billing funding to be maintained separately from any fund raising activities providing a clear view of where the funds are being spent. Although some fund-raising items may need to be included in the new organization such as the building fund (that's a decision for the new Board). The intent is to provide a clean transfer between the County, Town and Fire Company. Any donations made from the fund-raising activities of the existing organization will be clearly illustrated.

Further, changing the by-laws of the existing organization may be problematic. The membership would need to approve the changes to the funding and the make-up of the Board of Directors. With a new organization, the by-laws could stipulate on the front end how the funding would work, make-up of the Board and other issues that may need to be addressed. This new organization would be a more transparent with finances, operations and eliminate the comingling of tax dollars and fund-raisers.

The existing organization would remain intact to oversee fundraising efforts, donations, and provide support to fire service operations in the Town and County. The organization should be renamed as an association to differentiate from the Fire Company. Through this association any donations to the Fire Company would be better documented and clearly delineated from tax funding.

Recommendations:

Create a new non-stock 501c (3) corporation to address funding, employment, and service levels for the Town and County.

Work with the Fire Company accountants and auditors to establish written policies and procedures to provide financial controls for the collection, spending, and investing of funds.

Eliminate the provision that allows the membership of the organization to override decisions by the Board of Directors.

Maintain the existing organization to oversee fundraising activities and donations providing support to the new corporation.

6 Operational Management

This chapter provides an overview and analysis of various fire service functions and operational issues affecting the Fire Company and the Town of Berlin.

1. Alarm Notification

The Fire Company receives its alarm and notifications from the Worcester County Emergency Services 911 center. To facilitate the receipt of alarms the members of the Fire Company are issued radio pagers. Additionally, some members receive text messages with the details of the alarm on their cellular phones. According to the Fire Company this system has failed in the past. Additionally, members of the Fire Company are responsible for the pagers once they are issued and may be required to replace the pager if it lost or damaged. So many members do not carry the pager when they are performing tasks that might cause them to lose or damage the pager. Another mechanism to notify the Fire Company is the use of an outdoor siren.

The siren is activated for fire related calls and training drills held on Monday nights in a four-cycle pattern. The drill night use is limited to once per month in September, December and May, at all other times it is activated twice per month both at 6:30 pm. There is no activation of the siren for emergency medical calls. The siren is also a part of the Worcester County warning system. The siren pattern for this warning is a steady two-minute pattern. The testing of this system occurs on the first Saturday of each month at 10 am and is a steady 30 second blast.

Across the nation many outdoor warning systems are used to notify the public of eminent severe weather or other threats. These communities use the outdoor system that was in place during the cold war and the threat of nuclear attack. As such, the use of the outdoor warning sirens has become the universal warning system for severe weather. In the Town of Berlin, there are numerous outdoor events, festivals and other celebrations throughout the year that attract people from all over the region and state. The use of the outdoor warning siren for fire calls will cause confusion for those not familiar with its use. Visitors to the area do not know the differences in the siren pattern. These individuals may believe there is an eminent danger in which they need to seek shelter causing undue concern or anxiety on their part.

Recommendation: Use the outdoor warning siren only for emergencies that will affect the public in cases of severe weather or other calamities as designated by the Worcester County Emergency Management Division and not as a notification system for the Fire Company.

2. Fire Prevention

Fire prevention activities are handled through the Worcester County Fire Marshal's Office. This office provides fire investigation services, fire inspections, plan review, hazardous materials response and mitigation, and public education programs to the County and the Towns. Personnel are certified in fire investigations and fire inspections and are deputized by the Maryland State Fire Marshal in accordance with the Annotated Coded of Maryland. Additionally, the fire investigators are certified as police officers and have the same authority when investigating fire related crimes.

Inspection programs included annual inspections for any business that serves alcohol, hotel and motel occupancies and all new construction projects. Other businesses are inspected through the complaint-based program in which the business is inspected if a compliant from the public is received. Otherwise these businesses do not generally have an annual inspection.

Fires are investigated to determine cause and origin and pursue any investigation if arson is detected. Hazardous materials and the special hazards response team respond to and mitigate chemical and biological incidents whether they are accidental, or terrorism related. In addition to the full-time personnel dedicated to the team, personnel from the volunteer departments/companies in the County supplement the team and response.

Public education programs are provided by the County Fire Marshal's Office and the Berlin Fire Company. The Marshal's Office offer programing in the schools and other organizations such as senior centers and day cares. The Fire Company typically provides displays or open houses.

The Berlin Fire Company does not have the capability or personnel to provide this service to the Town. This is primarily due to the nature of the organization being a volunteer organization and the time and resources it takes to provide this service. Worcester County utilizes full-time personnel to perform these services for the Town.

Recommendation: Continue to support the current programming of the Worcester County Fire Marshal's Office.

3. Training Programs

Firefighter training is provided through the Maryland Fire and Rescue Institute Regional Training Center in Princess Anne. The state provides the course instructors and the local fire companies provide the books and transportation to the courses. The courses provided are designed to achieve Firefighter I certification through the State of Maryland and the

International Fire Service Accreditation Congress (IFSAC). Additional fire training and props are available at the training center in Newark. The Fire Company also provides training to the members in-house and participates in multi-company drills involving other departments/companies in the county and region.

Emergency Medical Technician and Paramedic training is conducted through the community college network in the state. Emergency medical technician training is 165 hours and the paramedic certifications are another 1,100 hours. The Fire Company reports the individuals that obtain the paramedic certification are typically those individuals that are looking for a career and not a volunteer position. Continuing education requirements include 24 hours for the technician level and 72 hours for the paramedic level over a three-year period.

Recommendation: Continue to utilize the current programming offered by the State of Maryland and the Maryland Fire and Rescue Institute.

4. Main Street and Special Events

The Town has special events and festivals from May through December virtually every weekend and in some instances, there is many tourists in the area. Providing emergency medical services to some of these events has created a special need for the Town and the Fire Company. Events are generally held in the downtown area of the Town and in an area that has limited access and parking. As well some of these events block the streets.

With the number of tourists and cars, it is becoming an issue of staging emergency medical resources. Some of the issues include:

- Using a parking lot area is not feasible as parking is at premium and using a parking lot could potentially block an ambulance from exiting the area.

- The ambulance will need access to the Worcester Highway for any transports to the hospital limiting the staging areas to the east side of Main Street.

- The narrowness of Main Street does not permit vehicular access during a festival or event that is using the street as part of the venue.

- Narrow streets around the area poses a risk of not getting out or in once an event gets started.

Given the issues noted above, the emergency medical services should stage their ambulance at the fire station. This places the vehicle out of the immediate area and with reasonable access to the highway for transport to the hospital. To access anyone needing medical treatment a golf cart set up as a medical transport vehicle could be used. It is small enough to access the areas with many tourists and has the capability of transporting someone to the ambulance staging area. These units can be rented or leased as needed from various companies.

Depending on the size and nature of the event there are needs that should be addressed and these needs may well be beyond the scope of just emergency medical services. The Town has embraced the festival and event culture and needs to further address any issues. Listed below are suggestions for the planning and handling of the events in the Town:

- A planning group should meet on a regular basis to ensure that all services needed for an event are available and staffed.

- Establish an estimated attendance trigger point for certain services. For example, if it is estimated the attendance will be 10,000 or more, emergency medical services should be on standby at the event.

- Determine the street closures and alert emergency services so they can make appropriate plans for detours, etc.

Recommendations:

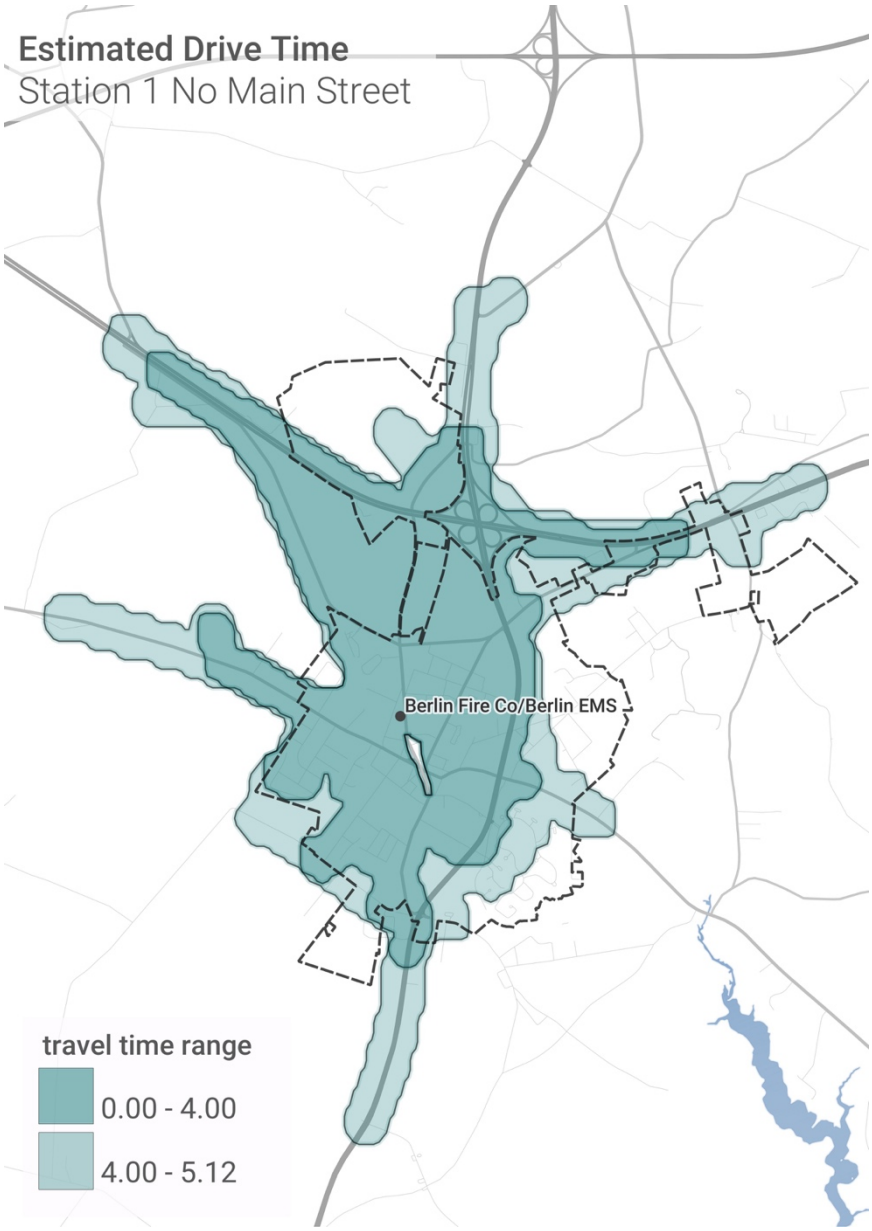
Establish an estimated attendance trigger point to activate a stand-by emergency medical services crew for a special event.

With limited parking and narrow streets, the ambulance should be staged at the fire station on Main Street during a special event allowing for easy access to the appropriate medical facility.

Access to the event or festival area by medical personnel to be accomplished using a golf cart specifically designed for medical crews and these types of events.

Using Main Street for the response to calls for service has created a problem for the Town and the Fire Company. Parking along the street makes the passage of fire apparatus difficult as the street is narrower with cars parked along the sides. Additionally, with the events and festivals occurring on a regular basis, there are numerous people and tourists in the area making the passage a little more tedious. The map below illustrates the

benchmark and baseline travel time with the section Main Street between Powellton Avenue and Tripoli Street not available for use.



As illustrated there is no difference in the travel time if Main Street is not used. However, the streets around this section of Main Street are less than desirable as they are narrower and are more residential in nature. Given the street network and condition of the streets, the Fire Company could continue to use Main Street as an access point when necessary but should place a strict 25 mph speed limit on the apparatus and ambulances starting at Stevenson Lane and ending at Bay Street.

Recommendation: The use of Main Street should be limited as much as possible by the Fire Company and a strict 25 mph speed limit to be placed on all emergency vehicles using the street to access an emergency call.

5. Recruitment and Retention

Recruitment of volunteer firefighters and emergency medical personnel is becoming an issue nationwide. More and more departments and companies are struggling to get new members for their organizations. This is attributed to several issues including the number of training hours required, the time commitment it takes to volunteer, and the family commitments.

The Fire Company noted they have been able to recruit new members into the Fire Company. However, the emergency medical training is a considerable investment in time and most individuals willing to attend the training are looking for full-time employment in the industry. Basic training begins with 165 hours for the emergency medical technician and another 1,100 hours for the paramedic certification. Adding to the time commitment is the continuing education requirements to maintain the certifications at 24 and 72 hours respectively. Recently ISO completed their review and noted the Fire Company has an average of 22 firefighters on a structure fire. This is a strong response from the volunteer staffing the Fire Company uses.

Most recently salary adjustments were made to remain competitive with other organizations in the region. As well the Fire Company pays a stipend to the volunteers for emergency medical calls and is based on their position on the call. For example, the driver receives $25 and the care-giver receives $50. For fire calls, stipends are based on the number of responses during the year and only the top five receive a stipend. These stipends range from $10 to 50$ depending on the rank of the individual. Additionally, officers receive a $200 per year stipend. These types of retention programs are typical throughout the nation for the volunteer fire services.

There are other retention programs that are available for consideration however, these all result in an increased cost. The list below provides suggested programs:

- Stipends – Pay a stipend for each call the firefighter responds. This could be a set amount or based on the type of call.

- Length of Service Awards Program – Provides funds for the firefighter to use as a retirement fund.

- Insurance – Offer a supplemental insurance policy for accidental injury, hospitalization, or cancer policy while the firefighter is a member of the department.

Recommendation: Consider adopting a retention program using stipends, length of service, insurance, or other programs to help with retaining volunteer firefighters and emergency medical personnel.

7 Physical Resources

This chapter presents the projects team's analysis of the physical resources of the Fire Company including fire stations and apparatus.

1. Physical Facilities

The Fire Company operates from three fire stations two which are owned by the Fire Company and one is leased. The leased facility is also on property the Fire Company is planning to build a new facility. The table below illustrates the three station locations and apparatus assigned to the station.

Berlin Fire Company				
Station	**Unit ID**	**Year**	**Description**	**Apparatus Type**
214 North Main Street	600A1	2016	Ford / Horton	Ambulance
	600A2	2017	Ford / Horton	Ambulance
	600A3	2006	International / PL	Ambulance
	Ladder 6	2016	Pierce	Ladder
	Brush 6	2008	Chevrolet	Brush
	Tanker 6	2010	Spartan Rosenbauer	Tanker
	Utility 680	2009	Ford E-350 Van	Utility
	Utility 681	2008	Chevrolet 3500 PU	Utility
	Utility 682	2001	Sterling	Utility
	Rescue 6	1999	E-One Rescue	Rescue
	Command 6	2008	Chevrolet Suburban	Command
	Tower 6	2003	Spartan / Quality Tower	100' Tower
	Engine 604	2006	Pierce	Engine
	Police 6	1999	Dodge	Utility
8427 Stephen Decatur Hwy.	Engine 607	1988	Mack/SWAB	Engine
10823 Ocean Gateway	Engine 608	1998	Spartan / Quality	Engine

(1) Facility Inventory and Evaluation

Station 1 is located at 214 Main Street in the Town and is considered the headquarters station. This station is a five-bay station with bays deep enough the house multiple apparatus or longer apparatus depending on the need. A large second floor area is available for rentals and has the capacity for approximately 300 people. Rentals of the second floor is limited to September through May and is closed on holidays and for two weeks in February. According to the Fire Company the facility is not producing much income as the number of rentals are down. Living quarters are available for the three (3) personnel in an area to the rear of an apparatus bay. These quarters are a single room

at the back of an apparatus bay with three beds and small kitchenette for meal preparation and are completely insufficient for housing personnel. Overall this facility is good condition. The second-floor area has plenty of space to create office space for the Fire Company, appropriate living quarters for station personnel and an area for meetings and trainings.

In addition to the station, there is another building on the lot owned by the Fire Company that currently houses the public library. A new library facility is being built and will ready for occupancy in the early spring. The Fire Company has not made plans for the facility but has indicated the need for company offices and a fire company museum. With the conversion of the second floor of the fire station, this facility could be converted to the rental facility for the Fire Company,

Station 2 is located at 8427 Stephen Decatur Highway and is a two-bay station. It houses a single engine company and does not have the capability of housing personnel in the station. Access to the highway is good with good visibility exiting the facility. Overall this facility is in fair condition.

Station 3 is located at 10823 Ocean Gateway and is a single bay building that is leased. The building is a block building with no facilities to house personnel. The Fire Company is working to obtain funds to build a new facility at this location. The lot has access to two roadways; Ocean Gateway and Grays Corner Road. Ocean Gateway is a divided highway with at grade intersections.

Recommendations:

The second-floor area of Station 1 needs to be converted to house company offices and appropriate living quarters for station personnel.

The former library building on the lot could be converted to a rental facility.

2. Apparatus and Maintenance

The project team found the apparatus in good condition in terms of maintenance and repair. The front-line engine companies range in age from 12 to 30 years while the front-line ladder is 2 years old. Ambulances range in age from 1 to 12 years old. Other apparatus and vehicles range in age from 8 to 20 years in age. The table below depicts the apparatus and vehicles in the Fire Company and their relative age.

Berlin Fire Company				
Unit ID	**Year**	**Description**	**Apparatus Type**	**Age**
600A1	2016	Ford / Horton	Ambulance	2
600A2	2017	Ford / Horton	Ambulance	1
600A3	2006	International / PL	Ambulance	12
Engine 604	2006	Pierce	Engine	12
Engine 607	1988	Mack/SWAB	Engine	30
Engine 608	1998	Spartan / Quality	Engine	20
Rescue 6	1999	E-One Rescue	Rescue	19
Ladder 6	2016	Pierce	Ladder	2
Tower 6	2003	Spartan / Quality Tower	100' Tower	15
Brush 6	2008	Chevrolet	Brush	10
Tanker 6	2010	Spartan Rosenbauer	Tanker	8
Command 6	2008	Chevrolet Suburban	Command	10
Utility 680	2009	Ford E-350 Van	Utility	9
Utility 681	2008	Chevrolet 3500 PU	Utility	10
Utility 682	2001	Sterling	Utility	17
Police 6	1999	Dodge	Utility	19

The Fire Company has a new pumper ordered with an anticipated delivery of July 2018 that is designated to replace the 1988 Mack - Engine 607.

Maintenance of the apparatus and other vehicles is the responsibility of the Chief Engineer and their assistants. Normal maintenance of apparatus is handled on normal training nights to ensure all minor issues are addressed. These issues include lights, engine fluids, small pump issues, and other minor repairs. Major repairs or those repairs that are beyond the capability of the Chief Engineer are sent to outside vendors. Given the complexity of fire apparatus it is not uncommon for these items to be sent out to a repair facility that has the expertise and equipment to properly repair the apparatus.

(1) Apparatus Replacement

One of the more difficult tasks facing a community is the replacement of fire apparatus due in large part to available funding, the timing of when to replace and what should be replaced first. As the apparatus ages, it becomes more difficult to maintain, less parts are available for replacement and the pumps begin to fail their annual testing. Like the distribution and concentration of resources, a one size fits all approach does not work well with apparatus. Some vehicles and apparatus do not last as long as others. This could be due to higher call volumes, extreme wear and tear and preventive maintenance measures.

The Fire Company has a written replacement policy for ambulances that was originally written in 2003. The plan was to replace the ambulances every ten years. This plan estimated the cost to be $225,000 per unit. In 2015 the bid for a new ambulance was $275,000 which was more than what had been planned and the available funding. The replacement for fire apparatus is not written but follows a twenty-year cycle.

An effective apparatus replacement program will have benchmarks established to drive the replacement schedule. These benchmarks should establish a replacement guideline to categorize the various units and their target replacement date, definitions for the determination of the condition of the vehicle and other criteria to be used in the evaluation of the vehicle. The table below outlines a suggested set of life-cycle benchmarks to begin the process.

Life Cycle Anticipated Benchmarks

Vehicle Type	Anticipated Front Line Life Cycle	Anticipated Reserve Life Cycle	Anticipated Mileage
Staff Vehicle	7 - 10 years		85,000 - 100,000
Engines	10 years	3 to 5 years	
Aerials	15 years	3 to 5 years	

This establishes the expected life for purposes of depreciation and the funds that will to be available for the eventual replacement. It should be noted the Fire Company does not have any reserve fire apparatus and everything is considered front-line.

The table below illustrates the year for replacement of apparatus based strictly on age in accordance with the expected life cycle from above.

Berlin Fire Company					
Unit ID	Year	Description	Apparatus Type	Replacement Year	Extended Replacement
600A1	2016	Ford / Horton	Ambulance	2026	2036
600A2	2017	Ford / Horton	Ambulance	2027	2037
600A3	2006	International / PL	Ambulance	2016	2026
Engine 604	2006	Pierce	Engine	2021	2036
Engine 607	1988	Mack/SWAB	Engine	2028*	2048
Engine 608	1998	Spartan / Quality	Engine	2013	2028
Rescue 6	1999	E-One Rescue	Rescue	2014	2029
Ladder 6	2016	Pierce	Ladder	2036	2056
Tower 6	2003	Spartan / Quality Tower	100' Tower	2023	2043
Brush 6	2008	Chevrolet	Brush	2018	2028
Tanker 6	2010	Spartan Rosenbauer	Tanker	2030	2050
Command 6	2008	Chevrolet Suburban	Command	2018	2028

Berlin Fire Company					
Unit ID	**Year**	**Description**	**Apparatus Type**	**Replacement Year**	**Extended Replacement**
Utility 680	2009	Ford E-350 Van	Utility	2019	2029
Utility 681	2008	Chevrolet 3500 PU	Utility	2018	2028
Utility 682	2001	Sterling	Utility	2011	2021
Police 6	1999	Dodge	Utility	2009	2019

The anticipated delivery of the new apparatus to replace Engine 607 would cause the next replacement to be in 2028 and is shown in that manner in the table above. The column labeled as extended replacement illustrates the next replacement cycle if only the age of apparatus was used as the replacement schedule. Using this type of replacement schedule does not necessarily consider wear and tear on the apparatus or other maintenance issues that may arise.

The following replacement guideline uses a point system to determine when a unit should be replaced. It utilizes a variety of factors such as mileage, reliability, and maintenance costs to score the apparatus. The table below identifies those factors and the recommended point system to use.

Replacement Guidelines

Factor	Points
Age	One point for each year of chronological age.
Mileage / Engine Hours	One point for each 10,000 miles or 1,000 engine hours.
Type of Service	Points are based on severity of service 5 points - Engine Company 3 Points - Aerial Ladders / Specialty Units 1 Point - Administrative Vehicles
Reliability	Points are based on the frequency a vehicle is in the garage for repair 5 points - Two or more times per month (average) 3 Points - Two times every three months (average) 1 point - Once every three months (average)
M & R Costs	Maintenance and repair costs on the total life of the vehicle, excluding accident damage. 5 points – M & R costs equal to or greater than original purchase price 4 points – M & R costs 75% to equal to the original purchase price. 3 points – M & R costs 50% to 75% of the original purchase price

Replacement Guidelines

Factor	Points
	2 points – M & R cost 20% to 50% of the original purchase price. 1 point – M & R costs 20% or less than original purchase price.
Condition	Consideration given to body condition, rust, interior condition, accident history, anticipated repairs, etc. 5 points - Poor Condition 4 points - Fair Condition 3 points - Good Condition 2 points - Very Good Condition 1 point - Excellent Condition

This system uses the major components typically considered in evaluating vehicles and then puts a numeric value to the vehicle. It can be adjusted to fit the local perspective. For example, if the maintenance costs are a more important factor then adjusting the percentage to the original cost will provide a higher weight to that category.

The table below outlines the total score and the expected outcome of that score.

Replacement Guideline Scoring

Point Range	Condition
Fewer than 18 points	Condition I - Excellent
18 to 22 points	Condition II - Good
23 to 27 points	Condition III - Qualifies for Replacement
28 points and above	Condition IV - Needs Immediate Consideration

Another component to this type of system is the collaboration between the Fire Company and the fleet maintenance group. Both should discuss the results of the survey to determine the needs of the apparatus in terms of mechanical issues. It is possible there is a unit or units that will need major repairs that would influence the decision to replace the apparatus.

The investment in fire apparatus is a significant endeavor for any community. Changes in the standards by which they are built and the performance standards by which they are tested continue to evolve and has resulted in rapidly increasing costs for fire apparatus. A typical engine will cost in the range of $500,000 to $600,000 depending on the manufacturer, configuration of the truck and other needs of the Fire Company. In addition, the aerial ladders will cost in the range of $900,000 to $1.3 million again depending on the same variables. Many communities will borrow the funds to purchase the apparatus

while others will have set aside funds based on the depreciation of the current apparatus and planned replacement schedule. Without a program for planned replacement of apparatus, the Town could very easily and quickly find itself in a position of having to replace several units at once or not having the financial means to replace the apparatus.

Recommendation:

Establish and adopt a program that contains benchmarks and measurable components for the planned replacement of apparatus.