



Business Plan

Enhanced Medical Services
for the
Topsfield Fire Department

Emergency Medical Services Delivery Committee

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Emergency Medical Services Delivery Committee - Membership

Phase One

September 2001 - January 2003

Jen Collins-Brown
Ray Gerry
Paul Harris
Susan Reece
Bryant Robinson
Allen Smith (chair)
Ron Zolla

Phase Two

September 2003 - February 2004

Cyndi Bailey
Jen Collins-Brown
Ray Gerry
Paul Harris
Susan Reece
Bryant Robinson
Allen Smith (chair)

Executive Summary

Background

The Emergency Medical Services Delivery Committee was appointed by the Board of Selectmen in September 2001 and given the following charter:

- *To evaluate the current delivery of emergency medical services in Topsfield including, but not limited to, review of response time, quality of service, cost and staffing*
- *To investigate alternative methods of delivery of emergency medical services including, but not limited to, a town run ambulance service or regional alternatives*

The committee met regularly for two years and assessed the current process, staffing, workload, and statistics related to EMS response. These results were compared to national guidelines¹. On January 27, 2003 the committee presented its findings and recommendations to the Board of Selectmen:

- EMS calls in Topsfield had increased 274% from 1991 to 2001
- Overall numbers of firefighters responding to EMS calls were generally acceptable but there was significant variation in numbers of responders; 88% of the time there were four or more firefighters/EMTs present at a call
- The American Heart Association (AHA) and the National Fire Prevention Association (NFPA) recommend having four or more respondents (2 ALS-trained and 2 BLS-trained) within 8 minutes at least 90% of the time
- An average response time in 2000 for Topsfield Police was 2.8 minutes, Topsfield Fire Department was 4.1 minutes, and Lyons Ambulance was 9.8 minutes. The committee had concerns about the Lyons Ambulance response times
- All committee members voted to recommend improvements to the current EMS system
 - Four members voted to recommend a town-owned ambulance service with two firefighters/EMT/paramedics on duty at all times
 - Three members voted to recommend the town devote \$40,000 extra per year to firefighter salaries and education to enhance our current system

Current Charge

- Based on the above, the Board of Selectmen issued a revised charter in September 2003. A regrouped EMSD committee was directed to devise a business plan for a town-owned service that could evolve into a warrant article to be voted at town meeting. The Board of Selectmen requested a plan to include:
 - Capital expenditures
 - Startup, annual operating, and miscellaneous costs
 - Projected revenues
 - Alternative plans or options for the provision of ambulance services
 - An objective assessment with no specific recommendation to the town

This business plan will describe the current services provided and their related costs, updated EMS call statistics, and the associated benefits and risks of the current system. It will compare the status quo

¹ "Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiac Care" and Journal of the American Medical Association "Basic Trauma Life Support for Paramedics and Other Providers"

with anticipated benefits and costs of a town-owned ambulance with 24 hour, 7 day per week staffing of the fire station.

Summary of Current Findings

Key aspects of the business plan are as follows:

- EMS calls have increased 7% from 2002 to 2003 and remain at historic highs (the number of transports has remained level)
- There is continued significant variation in the number of firefighters/EMTs responding to EMS calls and the number of calls with four or more firefighters/EMTs was 86% in 2003, 84% in 2002 and 88% in 2001 and below the guideline of 90%
- Response times for police and fire department personnel are laudable but ambulance response times remain a source of concern
- There is currently no guarantee of response, skill level of the responder, or quality of care
- Maintaining two town-owned ambulances and providing two full-time staff 24 hours every day is expected to reduce the frequency of sub-standard response times and number of responders; however, it is projected that this would result in \$154,685 in additional costs to the town (net of incremental revenue and costs) in the first year

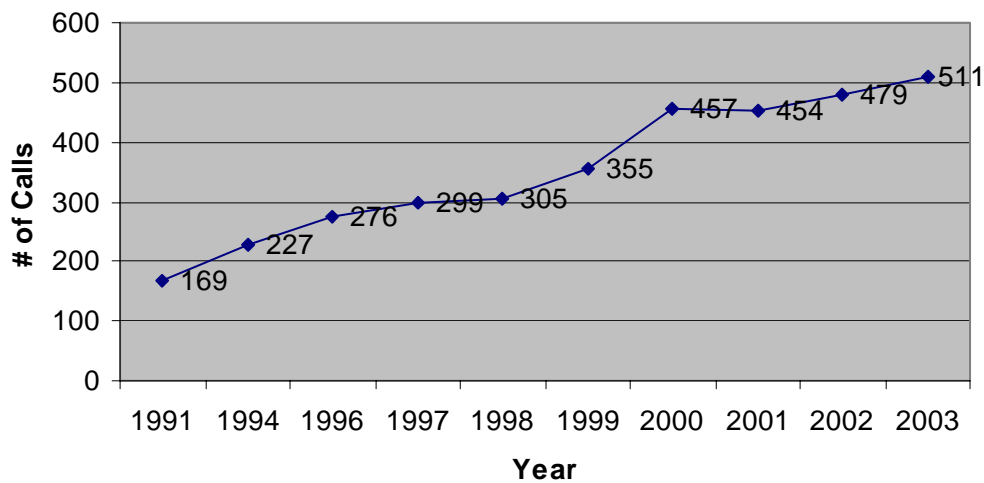
Needs Analysis

Service Area

The Town of Topsfield covers 12.83 square miles with a population of 6,357 (as of the January 1, 2002 census). The nearest community hospital is Beverly Hospital, which is 8.5 miles from the center of town. The nearest Level 1 trauma center is Massachusetts General Hospital in Boston. Burdens to the emergency medical system include numerous sporting venues, traffic (including Routes 1, 95, and 97), a 123-bed skilled nursing facility, and several senior living complexes in town.

Chart 1 indicates the increasing number of requests for medical assistance received by the Topsfield Emergency Medical System:

Chart 1: Medical Aid Call Volume Trend



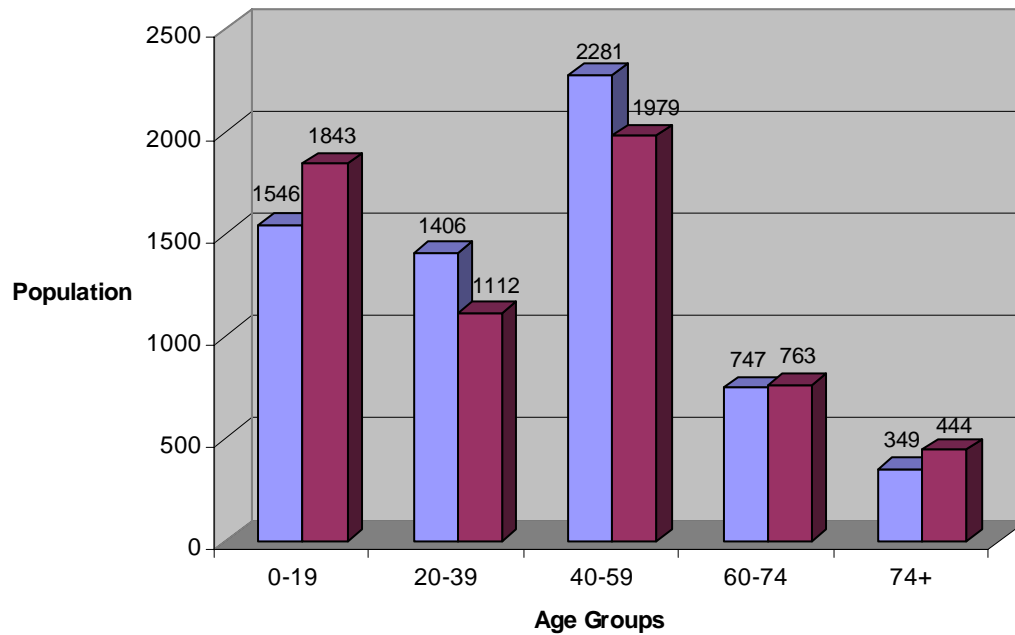
Despite modest growth in Topsfield’s population, the number of emergency medical calls (911 calls) has risen dramatically. From 1997 to 2003, the number of calls increased from 299 to 511 annually (71% increase). Reasons cited for the increased call volume are:

- Aging of the population (see Chart 2)
- Decreased hospital lengths of stay
- Numerous sporting venues and highways within Topsfield
- Increasing prevalence of chronic illness due to longer survival times
- Increased technology-dependent people living in the community (e.g. ventilators, feeding tubes, oxygen, etc.)

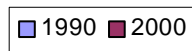
Chart 2 illustrates the trends in the composition of Topsfield’s population by comparing various age groups reported in the 1990 vs. 2000 Census² and demonstrates an increase in three age groups: 0-19 (+19%), 60-74 (+2%) and 74+ (27%).

² Source: MassCHIP Website

Chart 2: Topsfield Population 1990 vs. 2000



Source: MassCHIP Website



Current Services Provided

Civilian dispatchers housed within the Topsfield Police Department building receive the majority of emergency medical requests (911 calls). These dispatchers are currently not trained in emergency medical dispatch and are unable to provide pre-arrival instructions to callers. Topsfield utilizes a tiered response to medical emergencies. The order of responding units includes:

Topsfield Police

The Topsfield Police Department is generally the first responder to requests for medical aid. Two cruisers are staffed with one officer per vehicle, 24 hours per day. The police are certified first responders and are trained in and carry automatic external defibrillators in their cruisers. The response time of the Topsfield Police officers to emergencies is less than three minutes³, depending on location.

Topsfield Fire

The Topsfield Fire Department is typically second in response to requests for medical aid. The department has a staff of four full-time firefighters (including the fire chief) and twenty-three call firefighters. The call firefighters are compensated at an hourly rate for the times they respond to calls. By mid-year 2004, all fire department staff (including call firefighters) will have earned the minimum certification level of EMT. The full-time firefighters have staggered start times Monday

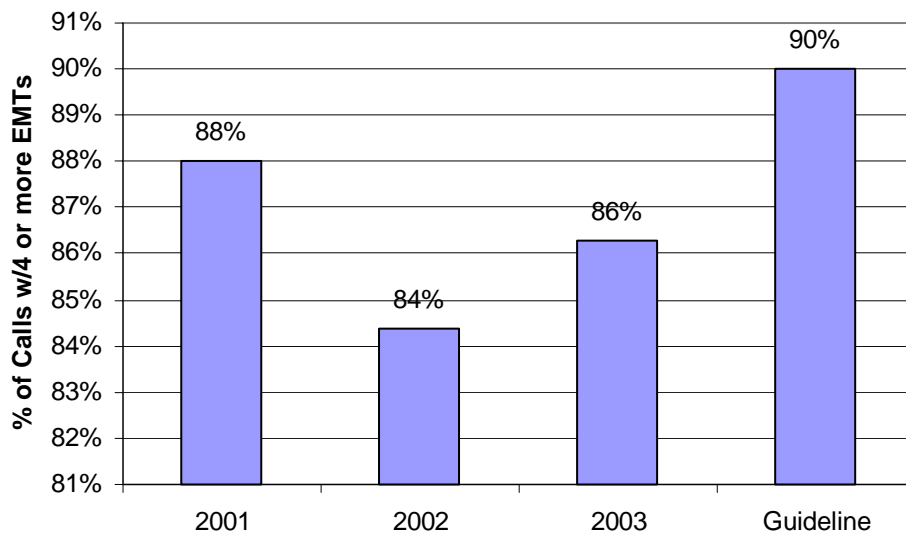
³ Source: Topsfield Communications Department records

through Friday. The Topsfield fire station is not staffed at night, on weekends, and holidays (which is 65% of the time). According to statistics from the last two years, 51% of the medical aid calls occur when the fire station is not staffed, relying heavily on call firefighters.

The Topsfield Fire Department is licensed by the Department of Public Health as a paramedic level ambulance service. Medical care provided is at least at the EMT basic level and is often provided at the advanced life support level. During the last two years, response time of the Topsfield Fire Department rapid response vehicle (Tahoe One which has limited equipment) averaged 4 minutes with an advanced life support technician on board. The range of response time was 1 to 10 minutes. Arrival of Rescue One with additional personnel and equipment was on average within 6 minutes, with a range of 1 to 17 minutes⁴.

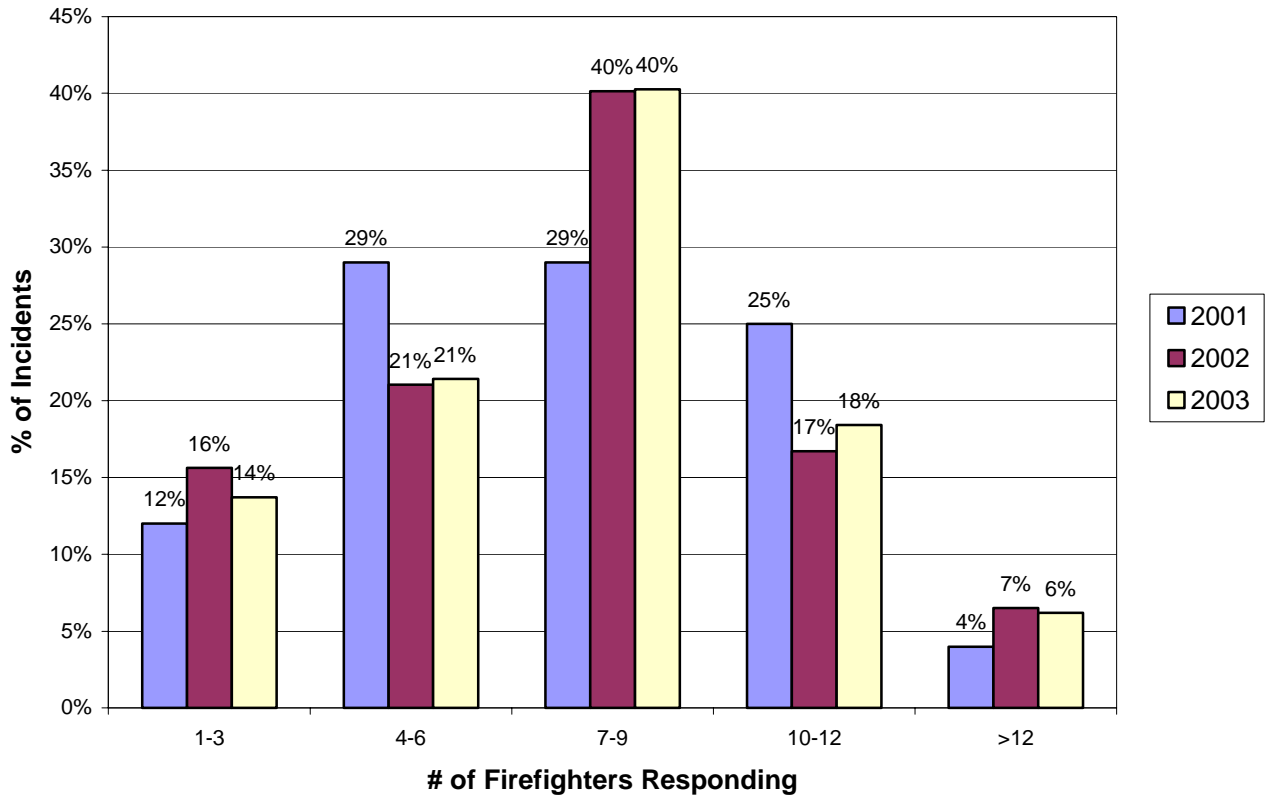
Analysis of the responses to medical aid calls during the past three years reflects a wide degree of variance in the number of firefighters responding to EMS calls. Topsfield had four or more responders on 88% of the calls in 2001, 84% of the calls in 2002, and on 86% in 2003. The American Heart Association (AHA) and the National Fire Prevention Association (NFPA) recommend having four or more respondents (2 ALS and 2 BLS trained) within 8 minutes at least 90% of the time. Furthermore, the percentage of Topsfield EMS calls in which only one or two firefighters respond has increased from 2001 to 2003 (from 8% to 12%).

Chart 3: Number of EMS Respondents vs. National Guideline



⁴ Source: Topsfield Communications Department records

**Chart 4: Topsfield EMS Calls - # of Firefighters Responding
2001 - 2003**



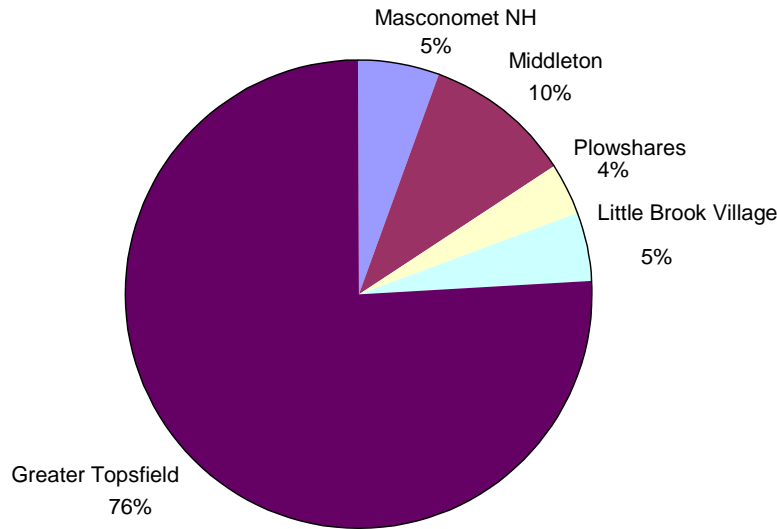
Lyons Ambulance

Lyons Ambulance Service is a licensed ambulance provider, based in Danvers, under contract by the Town of Topsfield to provide transporting ambulance service. Lyons Ambulance staffs its units at basic life support (BLS) and advanced life support (ALS) levels. The response to Topsfield is determined by the nature of the call, availability of staff, and availability of resources. During the last two years, the range of arrival times by Lyons Ambulance was 1 to 25 minutes, with an average response time of 12 minutes⁵.

Chart 5 demonstrates the location of EMS services initiated during 2003. 10% were backing up Middleton’s own ambulance service (mutual aid), 5% were in Masconomet Nursing Home, 5% were in Little Brook Village, and 4% at Plowshares. The remaining 76% of services were provided in general locations in Topsfield.

⁵ Source: Topsfield Communications Department records

Chart 5: % of Transports by Group - 2003



It is important to note that the Topsfield Fire Department cannot bill for patient care since it does not transport the patient. The Town of Middleton pays Topsfield directly for the mutual aid service that the Topsfield Fire Department provides. The only revenue for medical care provided in Topsfield is received by Lyons Ambulance, even if Topsfield’s staff stabilizes and/or provides care during transport of the patient.

External Factors

Economic

The general Massachusetts economy has recently experienced three years of downward or lackluster performance. This has resulted in reduced financial contributions by the Commonwealth of Massachusetts to the town. The town has also completed several substantial capital improvements in recent years (e.g. expanded library, renovated elementary schools, new Department of Public Works building, renovation of the regional middle and high schools). The debt payments incurred have added significantly to the overall town budget. State reimbursement of school project monies may be delayed or reduced again in 2005.

Topsfield had two overrides for the fiscal year 2004 operating budget that were approved by a narrow margin. The general economy appears to be improving, but this will not necessarily result in immediate positive impact on the financial outlook for the town and/or the Commonwealth.

Health Care Industry

The current trend in fire departments in the country includes cross-training firefighters and paramedics. This cross-training allows for better utilization of resources for emergency medical and fire coverage. With the overcrowding of local hospitals and emergency rooms, the trend in the EMS industry is to utilize paramedics in many more roles. Moreover, with shorter hospital stays, longer life spans, and families care-giving for loved ones at home with advanced technology, it has become necessary for emergency medical response be trained to a higher level.

Public Perception

The Topsfield Fire Departments conducts an informal survey based on a follow-up with patients and their families after an EMS call. The results of the survey indicate that the Topsfield Police and Fire Departments, and Lyons Ambulance provide high quality, compassionate medical assistance. The EMSD committee uncovered no specific instances of adverse outcomes due to inadequate numbers of responders or delayed arrival of Lyons Ambulance.

The reality that the fire station is staffed only during Monday through Friday, 6 am to 6 pm (incremental, staggered shifts), and does not have a true ambulance may not be known to the majority of the town's population. Rescue One resembles an ambulance, but is primarily an equipment and personnel transport vehicle. (Anecdotal evidence suggests that this may be contributing to the misperception that Topsfield has its own ambulance.)

Regulatory/Governmental

The Topsfield Fire Department is currently certified by the Commonwealth of Massachusetts, Department of Public Health, to provide ALS services. It has a cooperative agreement to provide back-up ALS support to the Town of Middleton (which provides its own service to its town). Topsfield is reimbursed by Middleton for this service.

In order to provide ambulance service to privately insured patients (those not covered by Medicare and Medicaid), an additional certification may be required by each health plan. This would require staff time to complete the application process.

The Topsfield Fire Department is also currently licensed as an ALS ambulance service and maintains all the required certifications. There will be no incremental costs associated with maintaining the required certifications.

EMS Strategic Audit

Current Situation Analysis

Current Logistics

The Topsfield Fire Department is housed in the station on High Street, just off the center of town. This location was initially selected for its central location. Developments on the outer edges of town, such as Coppermine Road, Asbury Street and the proposed Amberwood development, have longer response times.

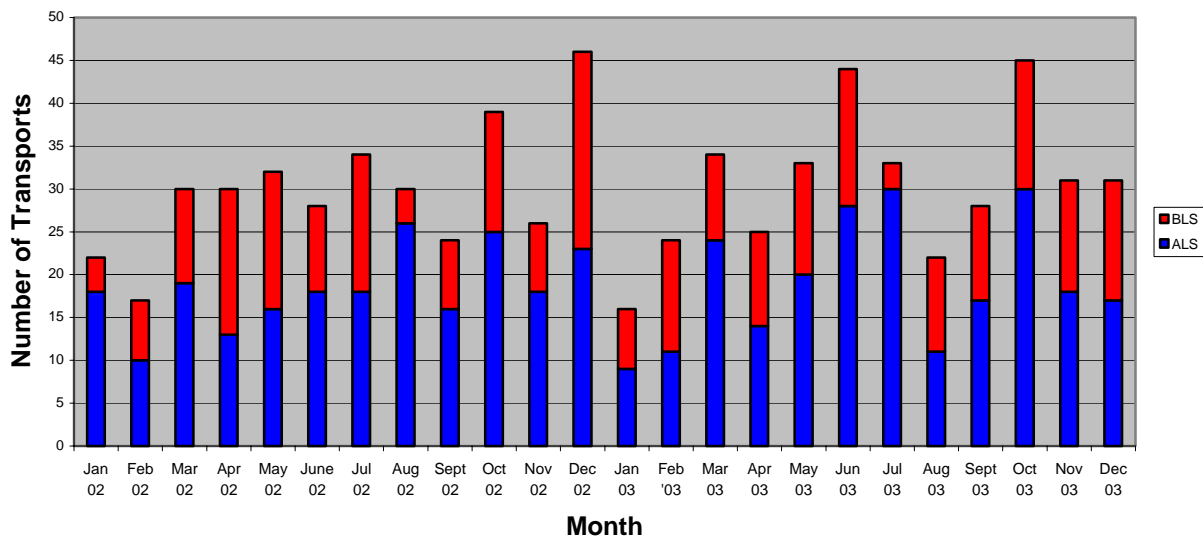
The current fire station has the capacity to house two fully equipped ambulances, without additional structural changes or modifications. This can be accomplished by the removal of two vehicles currently housed in the fire station:

- One ambulance would replace the current Rescue One truck, which would no longer be needed
- Another ambulance would occupy the space currently used by Squad One, which is deployed as the second truck responding to medical emergencies, responds to brush fires, and is used for inspections

Service Demand

Chart 6 illustrates the medical aid transports for 2002 and 2003, by month. It also reflects the breakdown between advanced life support (ALS) transport and basic life support (BLS) transport. The chart demonstrates significant month-to-month variation in call volume and that a consistently large percentage of calls are ALS level. There was an average of 30 transports per month during the two-year period of which 63% were for ALS services.

Chart 6 - EMS Transports by Level 2002-2003



Current Cost of Service

The Topsfield Fire Department’s fiscal year 2004 operating budget totaled \$524,865 to maintain the current level of services provided. Included is the operation for both fire protection and medical aid responses and all related expenses (health benefits, salaries, building costs, etc. Please note that some of these line items are typically included as part of the town budget, especially personnel items. For comparative and representative cost figures, all expenses related to fire and EMS activities have been included in the cost comparison). Also included in the budget is the annual cost of the services contract with Lyons Ambulance, which is currently at \$42,500 for FY 2004. Contract provisions allow a cost increase to \$45,000 in FY 2005 and \$47,500 in FY 2006.

Options

There are two options presented in this plan. The first option is that no changes will be made pertaining to emergency medical services. The second option increases full-time staff of the fire department to provide 24-hour services with two firefighters on staff at all times, and acquiring two ambulances.

1. Status quo - The current system will be maintained as is.

Strengths

- Works well in the majority of cases
- No additional investment required
- Police respond quickly with defibrillators in their cruisers
- Public access defibrillators are available (Steward & Proctor schools, Town Hall)
- Knowledgeable and experienced full-time fire department staff
- Dedicated group of call firefighters
- High number of EMT and paramedics on staff

Weaknesses

- Lyons Ambulance average response times range from 1 to 25 minutes, with an average response time of 12 minutes
- On average, 85% of the medical calls in the last two years had four or more Topsfield firefighter/EMT responders, which is below the AHA and NFPA guidelines of 90%
- The fire station is not staffed 65% of the time, during which 51% of the calls occur
- Dependent on a core group of call firefighters
- No guarantee of response to emergencies from Topsfield Fire Department at night or on weekends and holidays
- Reliance on ambulance vendor and potential contractual changes

2. Twenty-four hour staffing and addition of two ambulances leased by the town.

Strengths

- Supports increased compliance with medically accepted standards from the AHA and NFPA
- Increased quality and timeliness of service to the townspeople
- Provides a source of revenue for services performed
- Achieves a reduction in demand/drain on call firefighter resources
- Additional staff for responsiveness to medical aid calls
- Additional staff for fire protection
- Accountability by the town for all emergency medical services
 - EMT/paramedic skill levels
 - Ambulance response times
 - Quality of care

Weaknesses

- Adds \$154,685 in year one to the town's expenses (new revenue will not cover the entire cost of service provision)
- Requires acquisition and maintenance of two ambulances and associated equipment
- Requires hiring, training, and maintaining the skill levels of additional staff
- Requires billing of third party payors with different payment cycles

Resource Plan

Financial Model

The finances of the fire department today (operations remain status quo), compared with a pro-forma model for operation of a full ambulance service (additional staff and two vehicles) are shown in the chart below:

	Year 1 - Status Quo	Year 1 - w/Ambulance Service
Revenue	\$ 15,000	\$167,384
Operating Expenses	524,865	831,934
Balance	(\$509,865)	(664,550)
Net difference	-	(\$154,685)

Please note the expenses reflect the total cost for Fire and EMS operations including the cost of the ambulance lease.

Staffing Plan

In order to provide 24-hour coverage at the fire station, five additional full-time firefighters/EMT/paramedics would be required. It is assumed that these staff would be added in the first year of operation.

Training for paramedic certification is much more expensive and time-consuming than firefighter training. Thus, the logical preference would be to hire trained paramedics and provide firefighter training while on duty and at the firefighting academy.

It is anticipated the current level of call firefighters will be maintained, since there is always a need for personnel at medical aid calls and to fight fires, especially while new staff is being trained on the job. Furthermore, while full-time staff is transporting patients to the hospital, other firefighters will need to staff the fire station.

Personnel	Year 1 (Status Quo)	Year 1 (w/ Ambulance)	Year 2 (w/ Ambulance)	Year 3 (w/ Ambulance)
Full Time Employees	4	9	9	9
Call Firefighters	23	23	23	23
Total	27	32	32	32
Change	-	5	-	-

Capital Plan

Acquisition of two ambulances:

- Purchase- The full purchase cost to buy the vehicles, with the trade in of Rescue One, is \$155,812

- Lease Option - The lease-to-buy option, with trade-in of Rescue One, is \$33,265 per year for five years (\$166,325 aggregate cost) after which the town will own the vehicles (this is part of the projected operating budgets with ambulance)
- Grants/Donations - Grants from FEMA (Federal Emergency Management Association), the Commonwealth of Massachusetts, and private foundations may be pursued by the fire department and/or volunteers to reduce the cost of the vehicles to the town, however, availability of funding is uncertain

At this time the Topsfield Fire Chief has recommended two brand new vehicles of the appropriate size to fit within the fire station. This would reduce the number of maintenance issues in the near future. It would also provide duplicate vehicles for staff to work in, promoting ease of use and easy memorization of the supplies and components to reduce the risk of errors.

Facility Considerations

The current Topsfield Fire Station was constructed in 1970. It is a two-story structure with three bays, offices, and mechanicals on the first floor. The second floor has a large meeting room, two separate sleeping quarters with bunks in each, a lavatory and a kitchen.

A space-needs feasibility study was performed in December 2000 by Knight, Bagge & Anderson, Inc. The purpose of the study was to evaluate the adequacy of the current space, identify deficiencies and code issues, and provide an estimate for interior renovation.

Essential updates to the fire station to accommodate a 24 hour, 7 day a week operation are perceived to be limited to modification of the second floor lavatory. It currently contains a shower, sink and urinal. A toilet must replace the urinal. The estimated cost for building modifications is \$1,500. Any needed "creature comforts", e.g. sofas, chairs, tables, etc. would be acquired through donations.

Longer-term facility improvements that were outlined in the study address other deficiencies, such as ventilation, ADA compliance, bay size, asbestos, heating, etc. The recommendations also included a 7500 square foot addition to the fire station at a total estimated project cost slightly under \$2 million. Please note that the EMSD committee believes that these improvements are independent of the startup and operation of an ambulance service by the fire department. This has been confirmed by the Fire Chief.

Financial Plan

Startup Costs

Costs that occur during the first year of operating an ambulance service include:

- Recruitment costs - direct costs associated with advertising for open positions, as well as the time associated with interviewing potential employees (\$2,000)
- Equipment purchases - "M" cylinders purchased and filled with oxygen on the ambulance (\$1,000)
- Lavatory renovation - update the lavatory to meet the needs of all staff (\$1,500)
- Purchase (one-time) or lease (five year) ambulances
- Staffing coverage costs while at least three new hires are at the firefighting academy (\$30,000)

Revenue

The revenue model used was provided by Comstar, a vendor that provides third-party billing services to many of the ambulance providers in the area (public and private). The committee applied Topsfield data to the model to provide estimates of ambulance transport revenue.

Chart 7 shows the annual ambulance transport volume from 1994 to 2003. Excluding the mutual aid provided to Middleton, there were 328 transports resulting from these calls, with 59% advanced life support (ALS) and 41% basic life support (BLS) transports. For year one of operation, the same level of transports was assumed as was provided in 2003 (328).

Chart 7 - Transport Volume Trend

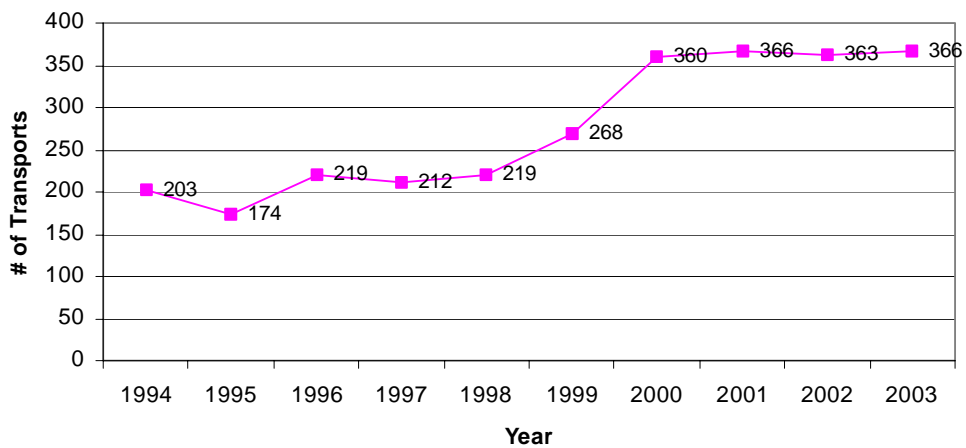
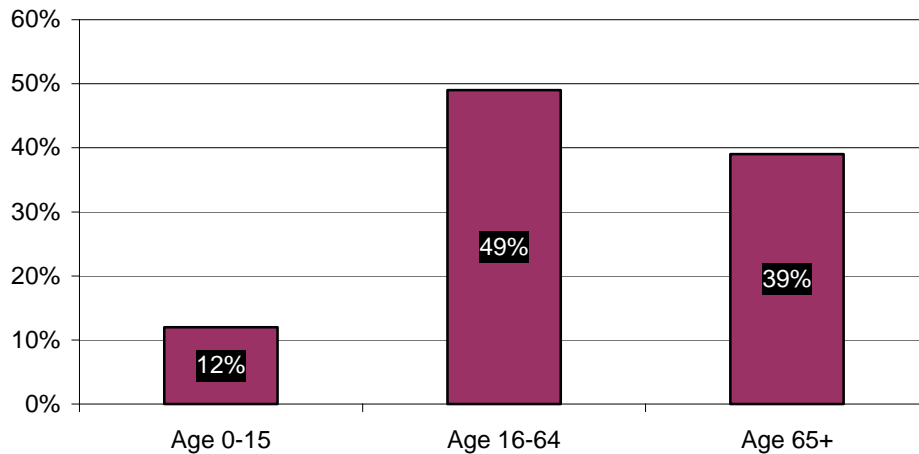


Chart 8 shows the breakdown of the age groups provided with the support of the Topsfield EMS during the past two years. This information was utilized to estimate the payor for the calculation of revenue.

**Chart 8: Topsfield Transport Patients by Age Group
2002 - 2003**



Topsfield Emergency Services Revenue Projection (Model by Comstar) Summary

Total Estimated Collected Revenue \$152,384

Assumptions:

	<u>BLS</u>	<u>ALS</u>	
	<u>Transports</u>	<u>Transports</u>	<u>Total</u>
Medicare:	64	94	158
Medicaid:	2	3	6
Other/Private Insurance:	<u>67</u>	<u>97</u>	<u>164</u>
Total:	134	194	328

- * Medicare Allowables as of 1/1/03
- * Other Charges at Medicare +45%
- * Medicaid per their current fee schedule effective 5/01
- * Used following payor mix and ALS/BLS runs mix:

Medicare & Vehicular Insured:	48.15%
Medicaid:	1.70%
Other/Private Insurance:	<u>50.15%</u>
	100.00%

Basic Life Support	Actual Topsfield %	40.79%
Advanced Life Support	Actual Topsfield %	<u>59.21%</u>
		100.00%

Total Estimated Cost of Billing Services **\$9,143.05**

Revenues Projected by Year for Ambulance Transports

The following tables provide revenue estimates for patient transports based on the Comstar model summarized above and statistics gathered by the Topsfield Fire Department.

Year 1 Revenue (projected)		
	Status Quo	w/Ambulance
Medical Aid Transport	\$ -	\$152,384
Mutual Aid/Middleton	15,000	15,000
Total Year 1 Revenue	\$15,000	\$167,384

For years 2 and 3 of operation, it is estimated that the reimbursement rates from payors would increase 2% over the previous year. In addition, the committee assumed the number of transports would increase 1% annually and that mutual aid would increase by \$2,000 per year, consistent with the Fire Department’s projected increase from 2003 to 2004. The cost of a billing service is reflected in the operating budget in Appendix 2.

Year 2 Revenue (projected)				
	Status Quo		w/Ambulance	
	Revenue	% Change from Year 1	Revenue	% Change from Year 1
Medical Aid Transport	\$ -	-	\$155,859	2.3%
Mutual Aid/Middleton	17,000	13.3%	17,000	13.3%
Total Year 2 Revenue	\$17,000	13.3%	\$172,859	3.3%

Year 3 Revenue (projected)				
	Status Quo		w/Ambulance	
	Revenue	% Change from Year 2	Revenue	% Change from Year 2
Medical Aid Transport	\$ -	-	\$159,428	2.3%
Mutual Aid/Middleton	19,000	11.8%	19,000	11.8%
Total Year 3 Revenue	\$19,000	11.8%	\$178,428	3.2%

Operating Expenses

The expenses for the two different options are depicted in the tables below. Please note that the “Status Quo” and “With Ambulance” budgets are based on a full year of service, using fiscal year 2004 costs. The major changes with a town-run ambulance include:

Salary & Wages

The addition of staffing for 24-hour coverage with a minimum of two firefighters is the largest expense. The staffing model includes holiday, vacation and sick time coverage in order to maintain this staffing level. Staffing costs for coverage while at least three new hires attend the firefighting academy has been included. The academy training itself is provided at no cost to the town. Training and health benefit costs have also been increased to reflect the additional employees.

Services

Incremental costs for building usage 24 hours per day are reflected in electricity, gas and water budgets. Regional, annual re-certification costs have been added for the new hires. The purchase of two “M” cylinders of oxygen for the ambulances is an added cost (\$1,000). The Lyons Ambulance contract cost was deleted (\$42,500) and the new cost of billing insurances through a third-party billing vendor for ambulance services was included (\$9,143).

Supplies

Additional staffing, billing, and building usage also affect office and building supply expenditures. Medical supply costs should not increase - direct patient medical supplies are exchanged at the hospital upon arrival and billed to the patient's insurance by the hospital.

Other

Minor budget adjustments were made to reflect association dues increases and medical equipment replacement for the ambulances.

Budget Tables

Expenses projected for the first three years of operation of a town-owned ambulance service are compared to expenses if left as "status quo" during the same period. Fiscal year 2004 was used as a basis for the projections.

Year 1 Operating Expenses				
	Status Quo	w/Ambulance	\$ Change	% Change
Salary	\$ 81,899	\$ 81,899	-	-
Wages	325,141	615,389	\$290,248	+89.3%
Services	77,690	87,451	9,761	+12.6%
Supplies	17,385	23,315	5,930	+34.1%
Other	22,750	23,880	1,130	+5.0%
Total	\$524,865	\$831,934	\$307,069	+58.5%

During years 2 and 3, most expenses have been estimated with a 2% increase. The exceptions were:

- 5% increase in health benefit costs
- 3% in wages for firefighting staff
- Salary increases for the fire chief per contract
- No planned recruitment costs (for Option 2)
- No staff attending firefighting academy (\$30,000 reduction in staff coverage costs)

Year 2 Operating Expenses (projected)				
	Status Quo	w/Ambulance	\$ Change	% Change
Salary	\$ 89,364	\$ 89,364	-	-
Wages	334,073	603,590	\$269,517	+80.7%
Services	80,894	86,465	5,571	+6.9%
Supplies	17,733	23,781	6,048	+34.1%
Other	23,205	24,358	1,153	+5.0%
Total	\$545,268	\$827,558	\$282,290	+51.8%

Year 3 Operating Expenses (projected)				
	Status Quo	w/Ambulance	\$ Change	% Change
Salary	\$ 91,938	\$ 91,938	-	-
Wages	343,833	622,754	\$278,921	+81.1%
Services	84,112	87,539	3,427	+4.1%
Supplies	18,087	24,257	6,170	+34.1%
Other	23,669	24,845	1,176	+5.0%
Total	\$561,639	\$851,333	\$289,694	+51.6%

Net Impact on Topsfield Town Budget

The first year of operation with a town-run ambulance is the most expensive due to the one-time expenses previously mentioned: staff coverage during training time, renovations, recruitment, etc. When comparing "Status Quo" against "With Ambulance" in the first year, there is a 30% net increase in costs. In the following two years, the operating costs of "With Ambulance" have a net increase of approximately 24% over the "Status Quo" budget.

Year 1		
	Status Quo	w/Ambulance
Revenue	\$ 15,000	\$167,384
Operating Expenses	524,865	831,934
Balance	(\$509,865)	(\$664,550)
Net Difference		(\$154,685)
% Change		30.3%

Year 2		
	Status Quo	w/Ambulance
Revenue	\$ 17,000	\$172,859
Operating Expenses	545,268	827,558
Balance	(\$528,268)	(\$654,699)
Net Difference		(\$126,431)
% Change		23.9%

Year 3		
	Status Quo	w/Ambulance
Revenue	\$ 19,000	178,428
Operating Expenses	561,639	851,333
Balance	(\$542,639)	(\$672,905)
Net Difference		(\$130,267)
% Change		24.0%

Periodic Costs

The lease term for the vehicles is over a five-year period, after which the town will own them; however, the life span of an ambulance is five to ten years based on usage. Given that there are two vehicles being utilized, the expectation would be that both vehicles would not need to be retired during the same year because one vehicle would be the primary one used. It would be fair to say at least one ambulance would need to be replaced at year seven and another at year ten. During the life of the vehicles, the maintenance costs will increase as the vehicles age. This would need to be taken into consideration during the budget process, and also include the other vehicles in the fire station.

Key Implementation Issues

Union Issues/Constraints

The addition of the ambulance services to be provided to the town by the firefighting staff will allow for the union contract to be "opened". At this time, it is assumed that this will be seen as a positive change for the staff for educational and personal growth. It is unclear if there will be any financial impact at this time. Any additional costs allowed by union negotiations will have a direct impact on the cost to the town above and beyond the expense assumptions already discussed.

Approval for Funding

The Topsfield Town Meeting will provide the forum to vote on a warrant article regarding the inclusion of an additional service expense to be provided by the town.

Facility Modifications

The modifications to the fire station lavatory must be made in advance of the commencement of the town ambulance service. These items have been included in the operating expense budget and are considered one-time expenses.

Equipment Acquisition

The ambulances need to be purchased and equipped in advance of implementation of the new service. The timing should coincide with the hiring of the new employees.

Recruitment of New Employees

If a warrant article is approved at a town meeting, the fire department may begin the recruitment process for new firefighters. Until all the new employees are hired, call firefighters may be utilized for coverage. It is in the best interest of the town to have the new positions filled as quickly as possible and as close to the start date for the provision of service.

Training

New employees hired without firefighting experience would attend the firefighting academy in Stowe. Until their academy training, new employees would obtain firefighting experience on the job in conjunction with previously trained staff. The new employees, hired as paramedics, would be ready to assist in all medical calls without additional training.

Quality assurance and performance improvement plans are currently in place to ensure proficient skill levels. All EMTs certified in the Commonwealth are required to meet standards for re-certification. Topsfield Fire Department ALS personnel continue to participate in demonstration of skill proficiency standards beyond state requirements. This skill proficiency includes quarterly skill demonstration, monthly quality assurance (QA)/quality improvement (QI) studies, and proficiency demonstration at a local hospital. Additional specific quality assurance and clinical outcome measures may be added and any deficiencies are noted.

Contracted Ambulance Services

Upon vote in favor of the warrant article at Town Meeting, Lyons Ambulance Service could be notified of termination. The contract terms allow for an effective termination within 45 days of notification. A mutually agreed upon date may be allowed prior to that time, if possible.

Future Opportunities

The initial recommendation is to focus on medical aid services for Topsfield. However, the committee discussed potential opportunities that could be feasible in the future should staff levels and equipment permit.

- Scheduled transports, where the ambulance is hired for routine transportation to and/or from medical facilities, can be a source of additional revenue
- Additional back-up services to Middleton and/or other neighboring towns
- The provision of primary service to other towns in the area; however, this is not recommended until services have been first proven to meet the needs of the Town of Topsfield

Appendix 1 - Revenue Forecast

The following spreadsheets illustrate the detailed calculations and assumptions made to determine the projected revenue from the ambulance services. Projections are categorized by private insurance, Medicare and Medicaid.

Topsfield Emergency Services Revenue Projection (Model by Comstar) Private Insurances

	# Transports	% of Total		<u>Medicare +45%</u>	<u>Medicare</u>
Basic Life Support (BLA)	67	41%			
Advanced Life Support (ALS)	<u>97</u>	59%	BLS Base Rate	466.93	322.02
# of Billable Transports Per Yr.	164		BLS Rate/Loaded Mile	17.73	12.23
			ALS Base Rate	554.48	382.4
<u>Mileage:</u>			ALS Rate/Loaded Mile	17.73	12.23
avg miles per transport	8		Oxygen	65.45	45.14
total annual mileage	1315.936		Intubation	158.98	109.64
BLS rate per mile	17.7335		MAST	93.51	64.49
ALS rate per mile	17.7335		IV Therapy / IV Drugs	140.24	96.72
			Cardiac Monitoring	196.37	135.43
BLS annual mileage \$	\$9,518		Defibrillation	140.24	96.72
ALS annual mileage \$	<u>\$13,818</u>				
	<u>\$23,336</u>				

Base Charges:

BLS base rate per transport	466.929
ALS base rate per transport	554.48
BLS annual base rate \$	\$31,326
ALS annual base rate \$	<u>\$54,008</u>
	<u>\$85,334</u>

Services:

	Medicare Rate	Total Annual \$	Est % of patients using these services
Oxygen	65.45	\$4,984	46%
Intubation	158.98	\$0	0%
MAST (anti shock trousers)	93.51	\$0	0%
IV Therapy / IV Drugs	140.24	\$0	0%
Cardiac Monitoring	196.37	\$0	0%
Defibrillation	140.24	\$0	0%
		<u>\$4,984</u>	

Total Billable Charges:

Base Rate	\$85,334
Mileage	\$23,336
Services	<u>\$4,984</u>
	<u>\$113,654</u>

Collection % Assumption 85%

Total Projected Revenue \$96,606

**Topsfield Emergency Services
Revenue Projection (Model by Comstar)
Medicare**

	# Transports	% of Total	New Rule Blended Rates, Yr 2	
Basic Life Support (BLS)	64	41%	BLS Base Rate	\$275.83
Advanced Life Support (ALS)	<u>94</u>	59%	BLS Rate per loaded Mile	\$9.17
# of Billable Transports Per Yr.	158		ALS Base Rate	\$346.41
Mileage:			ALS Rate per loaded Mile	\$9.17
avg miles per transport	8		Oxygen	\$27.08
total annual mileage	1263.456		Intubation	\$65.78
BLS rate per mile	9.17		MAST (military anti shock trousers)	\$38.69
ALS rate per mile	9.17		IV Therapy / IV Drugs	\$58.03
BLS annual mileage \$	\$4,725		Cardiac Monitoring	\$81.26
ALS annual mileage \$	<u>\$6,861</u>		Defibrillation	\$58.03
	<u>\$11,586</u>			

Base Charges:

BLS base rate per transport	275.83
ALS base rate per transport	346.41
BLS annual base rate \$	\$17,767
ALS annual base rate \$	<u>\$32,396</u>
	<u>\$50,163</u>

Services:

	Medicare Rate	Total Annual \$	Est % of patients using these services
Oxygen	27.08	\$1,980	46%
Intubation	65.78	\$0	0%
MAST (anti shock trousers)	38.69	\$0	0%
IV Therapy / IV Drugs	58.03	\$0	0%
Cardiac Monitoring	81.26	\$0	0%
Defibrillation	58.03	<u>\$0</u>	0%
		<u>\$1,980</u>	

Total Billable Charges:

Base Rate	\$50,163
Mileage	\$11,586
Services	<u>\$1,980</u>
	<u>\$63,729</u>

Collection % Assumption	85%
Total Projected Revenue	<u>\$54,169</u>

Appendix 2 - Operating Budget Comparison

The following spreadsheet compares the Fire Department's fiscal year standard operating budget without the ambulance service, with the operating budget required for the ambulance service.

	<u>2003</u>	<u>2004</u>	<i>AMBULANCE</i> <u>2004</u>
SALARY - 22001			
51120 - Fire Chief Personnel by-law/Contract/MGL	\$68,568	\$79,849	\$79,849
51122 - Captain \$ 1000.00 Stipend for 1 Call Captain position.	\$1,000	\$1,000	\$1,000
51123 - Lieutenants \$350.00 stipend for 3 Call Lieutenants positions.	\$1,050	\$1,050	\$1,050
TOTAL SALARY:	\$70,618	\$81,899	\$81,899
WAGES - 22002			
51130 - Firefighters, Full Time (3) hourly Firefighters, wages are contractual amount. 1 @ \$49,240 1@ \$44,768 1 @ \$40,432 <i>Ambulance assumes (5) new FF/Paramedics w/ed = \$43,393.</i>	\$130,111	\$134,440	<i>\$351,400</i>
51140 - Clerical, Part Time 1 Administrative Assistant classified as H5 -S6 funded for 10 hrs/wk, @ \$14.87/hr. Personnel by-law	\$7,509	\$7,792	\$7,792
51150 - Call Firefighters Call Firefighters, paid only when called for emergencies. <i>Ambulance assumes 24/7 coverage reducing call backs by 20%</i>	\$64,000	\$69,000	\$55,200
51151 - Mechanic Hourly wage to Mechanic. H7-S9 Budgeting 4 hours per week @ \$19.25/hr. Personnel By-law	\$3,888	\$4,034	\$4,034
51310 - Overtime/Coverage <i>Ambulance assumes 12 wk/24/tours 3FTE @ blended \$369X 24 tours</i> <i>Ambulance assumes increased opportunity for call back and hold over</i> <i>Ambulance assumes 12 holidays Blended rate of \$963/day/2FTE</i>	\$43,500	\$46,912	<i>\$88,409</i>
51490 - Longevity Annual amount for longevity, dictated by contract.	\$2,750	\$2,750	\$2,750
51910 - Training Scheduled, mandatory training of Firefighters <i>Ambulance assume 8FTE</i> <i>50-60 hrs./year/FF.EMT Blended rate \$16.97/hr X 29 =\$24,612-\$29,535</i> <i>Blended rate = 23 call @ \$13.55 & 6 FTE @ \$30.10 (2FTE O.D.)</i>	\$26,000	\$26,000	<i>\$30,000</i>
Health Insurance <i>Ambulance assumes 5 FTE enroll Family @ town share \$ 7,442.25 ea.</i>	\$28,351	\$29,769	<i>\$66,980</i>
Boston Life <i>Ambulance assumes 5 FTE enroll @ \$204.88/yr \$5000. Policy</i>	\$820	\$820	<i>\$1,844</i>
Medicare <i>Ambulance assumes new hires 4/1 1. 45% gross</i> <i>Based on \$605,284</i>	\$3,433	\$3,624	<i>\$6,980</i>
TOTAL WAGES:	\$310,362	\$325,141	\$615,389
TOTAL SALARY & WAGES:	\$380,980	\$407,040	\$697,288

Appendix 2

Operating Budget Comparison

	<u>2003</u>	<u>2004</u>	<i>AMBULANCE</i> <u>2004</u>
SERVICES - 22003			
52100 - Electricity	\$2,680	\$2,900	\$4,350
Electric service for Fire Station.			
Ambulance assumes 24 hour operation estimating 50% increase			
52150 - Gas	\$4,750	\$4,850	\$7,275
Natural Gas for heating the Fire Station.			
Greatly affected by the 600 Calls for service during winter.			
Ambulance assumes 24 hour operation estimating 50% increase			
52300 - Water	\$350	\$400	\$600
Water for the Fire Station from the Water Dept.			
Ambulance assumes 24 hour operation estimating 50% increase			
52400 - Building Maintenance	\$1,000	\$1,000	\$2,500
Labor and service costs for upkeep and repair of Fire Station.			
Includes second floor lavatory updating			
52410 - Heating System Maintenance	\$585	\$800	\$800
Outside labor and service costs for routine maintenance of the Fire Station's heating system.			
Increase due to aging heating system			
52420 - Radio Maintenance	\$1,500	\$1,500	\$1,500
Cost of 2-way radio frequency adjustments, tuning and routine pager maintenance. 2 Base stations, 8 mobiles, 11 portables, 32 monitor/pagers.			
52430 - Alarm Maintenance	\$525	\$500	\$500
Labor costs for routine upkeep of the alarm system.			
52450 - Vehicle & Equipment Maintenance	\$4,000	\$4,100	\$4,100
Cost of maintenance for aging fleet. Sq. 1 1980, Lad. 1 1985 M1 1980			
52720 - Vehicle & Equipment Leasing	\$1,800	\$2,520	\$36,013
Nextel Radio/Phone (7) - Ambulance Lease			
53000 - Medical Services	\$1,500	\$1,500	\$1,500
Physicals (\$300 each) and administration of HepB vaccines (\$60 each) for call Firefighters added.			
53200 - Tuition, Training	\$10,500	\$10,500	\$10,500
EMT training @ \$700/ea. Paramedic Course @ \$8,500 each			
53201 - Certifications	\$1,865	\$1,865	\$2,865
Certification by the region for each FF./EMT/Defibrillation. 31 Firefighters @ \$15 each & 12 FF./EMT Recert \$75			
Ambulance assumes (2) Lic @ \$750			
53420 - Postage	\$300	\$200	\$200
Reduction due to entire FD on E-Mail			
53610 - Hydro-Static Tank Tests	\$90	\$90	\$90
36 SCBA, 3 Cascade tested every 5yrs. @ \$12 - \$20 each.			
53620 - Fire Extinguisher Recharge	\$175	\$170	\$170
Cost of refilling/recharging fire extinguishers.			
16 inspected annually + refills after fires @ \$35-40 each.			
53900 - Oxygen/Air Refills	\$350	\$350	\$1,400
Cost of refilling O ₂ and compressed air breathing tanks.			
Ambulance assumes (2) M-Cylinders			
57800 - Miscellaneous	\$600	\$970	\$970
Funding for services not elsewhere classified. Increase includes Calibration of 3 CO/Gas analyzers @ \$90/unit.			
Increase due to annual test for SCBA \$35 X 20 units			
53800 - Computer	\$975	\$975	\$975
Cost of software support purchased.			
Proprietary software Micro-Systems same as Police Dept.			
2004 Recruitment Costs/Advertising			\$2,000
Cost of advertising for open positions			
2004 Lyons Ambulance Service			
Ambulance assumes no private vendor contract			
	\$40,000	\$42,500	
2004 3rd Party Billing Service			
Ambulance assumes new ambulance billing vendor			
			\$9,143
TOTAL SERVICES:	\$73,545	\$77,690	\$87,451

Appendix 2

Operating Budget Comparison

	<u>2003</u>	<u>2004</u>	<i>AMBULANCE</i> <u>2004</u>
SUPPLIES - 22004			
54200 - Office Supplies	\$750	\$745	\$800
<i>Ambulance assumes Incremental increase in office supplies</i>			
54300 - Building Supplies	\$3,100	\$3,150	\$3,500
Purchase of materials for maintenance and repair of Fire Station			
<i>Ambulance assumes Incremental increase in building supplies</i>			
54400 - Fire Equipment Supplies	\$600	\$575	\$575
Equipment purchased with useful life of 1 year or less.			
Warning light bulbs, siren speakers, radio microphone			
54800 - Vehicular Supplies	\$1,800	\$2,000	\$2,000
Purchase replacement parts for Fire Department trucks			
e.g. tires, shocks, batteries, exhaust system parts.			
55050 - Medical Supplies	\$6,000	\$6,120	\$6,120
Disposable supplies used for patient care.			
Gloves, O2 masks, Ice, Instant Glucose, C-Spine Collars, IV kits,			
<i>Ambulance assumes current expenses will become billable</i>			
55800 - Other Supplies	\$375	\$375	\$375
Funding for supplies not elsewhere classified.			
Badges, batteries, camera			
55810 - Personnel Supplies	\$4,420	\$4,420	\$9,945
Allowance for uniforms for 4 full-time Firefighters (\$1,105 each)			
<i>Ambulance assumes 5 FTE @ + \$1,105 each</i>			
TOTAL SUPPLIES:	\$17,045	\$17,385	\$23,315
OTHER - 22005			
55850 - Publications	\$1,250	\$1,225	\$1,225
Purchase Public Safety literature and subscriptions.			
NFPA/\$250 Code books / Text books			
57100 - Travel & Meetings	\$1,125	\$1,100	\$1,100
Mass Firefighters' Academy fees and charges.			
Increase for mileage reimbursement est. 100 miles/week @ \$.325/mile			
57300 - Dues	\$820	\$820	\$1,320
Chiefs Assn., Mass. Fire Prev, Nat'l Fire Protection Assn.,			
Plymouth County Sheriffs Assn.			
<i>Increase in county and state dues Ambulance assume \$500 AAA</i>			
58510 - Office Equipment	\$435	\$435	\$435
Purchase small pieces of office equipment with usage greater			
than 1 year; chairs, printer			
58530 - Vehicle Equipment	\$400	\$400	\$400
Purchase equipment for vehicles with usage greater than 1 year.			
Siren, warning lights, snow chains			
58580 - Medical Equipment	\$1,870	\$1,870	\$2,500
Purchase medical equipment with usage greater than 1 year.			
Pulse Oximeter, Defibrillator Equipment, O2 Regulators.			
<i>Ambulance assumes increase for equipment lost/stolen/broken</i>			
58590 - Other Fire Equipment	\$16,900	\$16,900	\$16,900
Used to purchase replacement equipment			
Bunker Gear, Helmets, Flash Lights, Radios, Hose, Nozzles, Gloves,			
Gear rack, Pagers/Monitors			
TOTAL OTHER:	\$22,800	\$22,750	\$23,880
TOTAL OPERATING BUDGET:	\$494,370	\$524,865	\$831,934

Glossary

Advanced Life Support (ALS) - A level of care that includes basic life support abilities plus invasive procedures and techniques including advanced airway management, initiating, administering, and monitoring intravenous (IV) fluids, defibrillation, cardioversion, cardiac pacing, 12-lead ECG recording and interpretation, chest decompression, medication administration, as well as many other life support procedures.

Basic Life Support (BLS) - A level of care that is limited to non-invasive procedures and techniques provided by emergency medical technicians (EMTs) including cardio-pulmonary resuscitation CPR, splinting, bleeding control, oxygen administration, treatment of heat/cold injuries, delivery of children, and immobilization.

Emergency Medical Technician *Basic* - A person who has successfully completed a minimum of 110 hours of EMT training. This training includes all that is given a first responder plus the ability to perform a more comprehensive evaluation of a patient as well as administer an epinephrine auto-injector device (epi-pen), aspirin, and to assist in the administration of nitroglycerin and albuterol inhalers.

Emergency Medical Technician *Intermediate* - In addition to the training of the Basic EMT, this person undergoes additional training and competency in advanced airway management and intravenous fluid therapy administration.

Emergency Medical Technician *Paramedic* - The most advanced EMS provider, the paramedic, is trained in advanced airway management, intravenous fluid therapy administration, patient assessment, trauma management, pharmacology, cardiology, and other medical skills. The paramedic is also certified in advanced cardiac life support, pediatric advanced life support as well as basic trauma life support.

First Responder - A person trained to perform a general patient assessment and to provide emergency care such as bleeding control, spinal stabilization, and CPR. He or she is also trained in the administration of oxygen and in the use of an automated external defibrillator.