

2013

Central Massachusetts Regional EMS/ALS Shared Services Report

Towns of Hardwick, Brookfield,
New Braintree, North Brookfield, Oakham
and West Brookfield

Central Massachusetts Regional
Planning Commission
2 Washington Sq.
Worcester, MA 01604

12/31/2013



CENTRAL MASSACHUSETTS REGIONAL EMS/ALS SHARED SERVICES REPORT

(HARDWICK, BROOKFIELD, NEW BRAINTREE, NORTH BROOKFIELD,
OAKHAM, AND WEST BROOKFIELD)

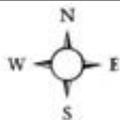
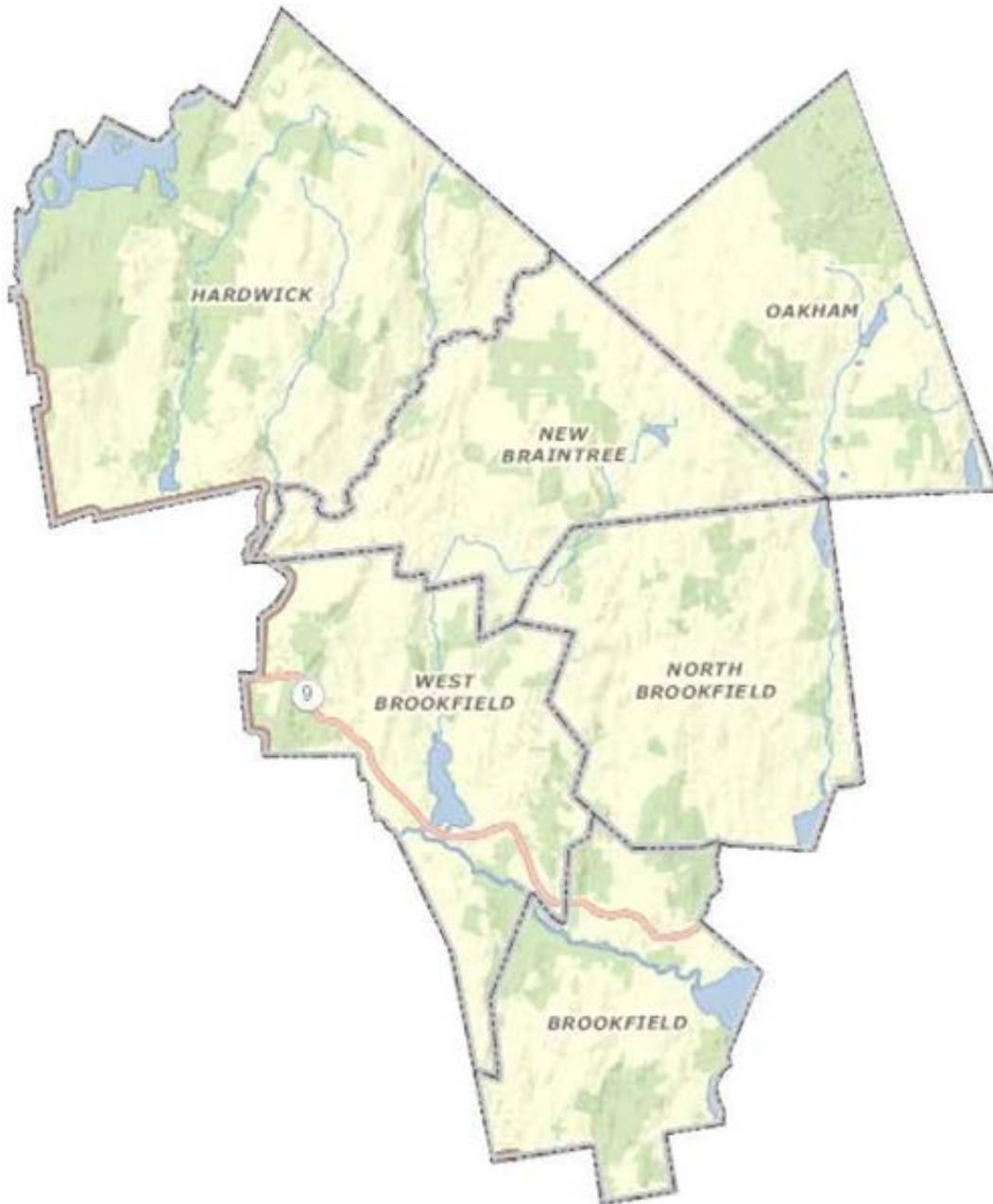
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EXHIBIT A

CENTRAL MASSACHUSETTS EMS/ALS SHARED SERVICES REPORT

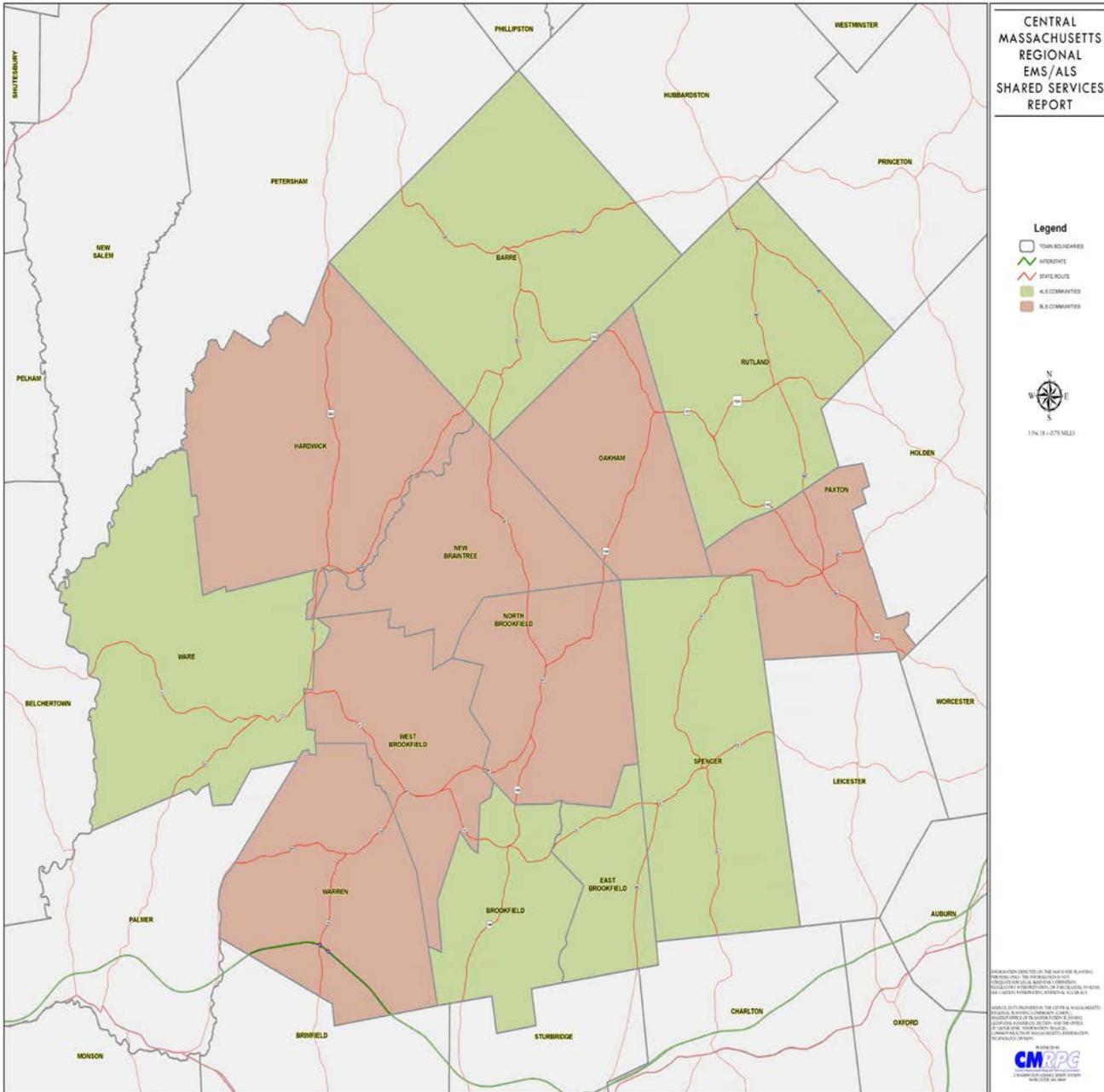
Study Area



Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT/Office Of Transportation Planning Geospatial Resources Section and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution interpreting positional accuracy.





A. EXECUTIVE SUMMARY

I. PURPOSE

In 2013, the Central Massachusetts Regional Planning Commission (CMRPC) awarded District Local Technical Assistance (DLTA) funding to its Regional Services Department for the purpose of evaluating shared Emergency Medical Service (EMS) and Advanced Life Support (ALS) in 6 towns (Hardwick, Brookfield, North Brookfield, West Brookfield, New Braintree, and Oakham). The following report summarizes the Department's findings and poses various means of addressing issues. We find that pre-hospital and para-medicine have been affected by structural change at the local, state and federal levels. Of these, increased labor-costs resulting from declining volunteerism pose the greatest threat to EMS systems. In conjunction with other structural shifts, this change has made it increasingly difficult for rural, standalone EMS organizations to remain viable. Individually, revenue is insufficient to defer these new expenses. To ensure continued viability, CMRPC recommends the six communities pursue a sub-regional approach to EMS/ALS service and dispatch. Additionally, we present strategies that will strengthen existing services in the short-term.

II. METHODOLOGY

The evaluation comprised four phases:

- Phase 1 consisted of an examination of existing conditions in each community.
- Phase 2 entailed a thorough review of structural challenges affecting rural EMS/ALS.
- Phase 3 involved analysis of existing EMS and ALS services, and
- Phase 4 consisted of an evaluation of potential options and provision of recommendations on such basis.

Phase 1: Existing conditions were established through discussion with EMS/ALS stakeholders and through independent data collection and analysis. CMRPC hosted inter-municipal and one-to-one dialogue sessions with stakeholders. These included municipal administrators and officials, EMS/ALS service providers, regional coordinators, and state agencies. Working with these groups, CMRPC identified and reviewed factors known to affect performance, staffing, and operating economies. Included within this review were:

- Existing relationships between departments
- Budgetary information
- Community demographics
- EMS/ ALS demographics
- Equipment needs
- Service response times and call distributions
- Available manpower

Phase 2: CMRPC conducted a comprehensive literature review of emergency medical systems. This included government publications, unpublished white papers, academic journals, and a variety of other media. The Agency spoke with stakeholders, veteran emergency medical practitioners, Bud McDonald

from OEMS, and policymakers from the region and beyond to identify the greatest challenges facing rural EMS/ALS organizations. Synthesizing these materials, CMRPC identified the following challenges:

- Call volumes/ road miles
- Changes in the volunteer base
- Turnover
- Training costs
- National Standards
- The Patient Protection and Affordable Care Act
- Frequent Flyers
- Collection rates
- Health insurance payment/reimbursement policies

Phase 3: The regional EMS analysis examined the economics of EMS/ ALS and performance measurements. This included:

- Payer insurance profiles
- Gross billables
- Clinical excellence
- Response time reliability

Phase 4: Options and recommendations were determined following examination of: existing conditions; regional, state, and national EMS/ALS policy and practices; information collected from stakeholder meetings and discussions; and collected data. CMRPC evaluated the benefits and deficits of each option, and made recommendations based on feasibility, economics, and performance measurements.

III. FINDINGS

Budget shortfalls and a scarcity of trained personnel are threatening EMS organizations throughout Massachusetts. A lack of funding, high fixed expenses, and changes in the field are making it increasingly difficult for EMS providers- municipal or nonprofit- to remain afloat. As a result of Massachusetts' adoption of the National Standards for EMS certification (effective July 1, 2013), training and equipment costs are increasing. Changes in Massachusetts General Law (111C, Sect 25) eliminated dual paramedic transport requirements, but have increased regulations and provider expenses. Changes in insurance billing have reduced provider organizations' net incomes. Passage of the Patient Protection and Affordable Care Act is expected to further decrease EMS revenue, increase training costs, and entail new quality controls that will require enhanced performance and new administrative duties. Equipment costs continue to run high. Yet, if not for declining rates of volunteerism, these changes might have been manageable.

Historically, EMS has relied on on-call, volunteer labor. This reduced-cost labor - provided by volunteers in the name of public service- subsidized EMS provision. This is rapidly changing. American civic and social engagement has decreased since peaking in the 1960s. Changing attitudes about societal oblige, as well as shifting familial demographics, have reduced the aggregate volunteer base. There are more single-parent households. Wages are stagnant. The dollar buys less than it did in the 1970s. Consequently, Americans are less able or willing to volunteer. Given these structural changes, public service organizations that have historically relied on volunteers- from the NAACP to local fire departments- are struggling to make ends meet. EMS is no exception. Yet, in EMS, these changes are compounded by changing conceptions of the field. Since the 1960s, EMS has undergone a steady

progress towards professionalization. The amount of training and certification required for practice has increased. In terms of prestige and professional legitimacy, EMS has made substantial gains. Cost of attainment has increased accordingly. Potential practitioners are therefore likely to view EMS as a career path, rather than a social responsibility. The loss of volunteer subsidy as a result of these changes is the key challenge facing EMS organizations. For pre-hospital and para-medical service to persist long-term, municipalities and providers need to tackle this structural change.

Unfortunately, these challenges further compound in rural communities. Low call volumes and long distances from training further reduce net income and increase costs. Competitive pay rates are rarely (if ever) feasible. Opportunities to maintain and hone EMS skills are meager. In Central Massachusetts- which is characterized by its small, rural townships- many EMS providers are operating at a loss and suffering from a shortage of qualified staff. Organizations operating at a positive net income are barely doing so, and only through the use of subsidized labor. These constraints impede training beyond minimum standards, resulting in reduced patient care. Having exhausted funding sources, many EMS providers are seeking line-item increases or a municipal subsidy. In this era of fiscal constraint such concessions are rare. Consequently, the Region is experiencing a scale-back of EMS/ALS service and an increased dependence on mutual aid. In a region where multiple providers are in precarious financial condition, heavy dependence on mutual aid could yield systemic failure; closure or scale-back of any one EMS/ALS organization affects multiple communities, each of whom are dependent upon that provider.

A piece-meal, per-community solution will not solve the Region's impending EMS crisis. Compensating for lost volunteer subsidy requires structural overhaul. Barring changes of such magnitude, CMRPC expects service scale-back or closure by multiple local EMS providers. This will likely include one or more of the six participant communities. Currently, New Braintree is entirely without EMS/ ALS service. Several members of the police and fire department are trained EMTs, but the Town relies on an agreement with North Brookfield for its emergency medical needs. The Hardwick Rescue Squad (a certified 501c3) is operating without municipal subsidy and experiencing significant staffing challenges. The organization, whose 2013 request for municipal subsidy was denied, is finding it increasingly difficult to fill rosters and cover shifts at its current rate of pay. West Brookfield operates without municipal subsidy as well. The North Brookfield Rescue Squad (also a certified 501c3) eliminated ALS service in 2009. Without town contracts or subsidy, its many revenue streams proved insufficient to cover ALS operating costs. The Town of North Brookfield has agreed to subsidize the Squad's BLS service with \$45,000 for each of the next three years. Aside from Brookfield (ALS capable and financially solvent), each of the towns provides only Basic Life Support (BLS). Rather, they rely on ALS services in Barre, Ware, East Brookfield, and Rutland (see Exhibit A). Many of these organizations are also in fragile economic condition. Closure of any nearby EMS organizations will further strain these neighboring organizations

Exhibit A: Service levels

<u>Participant</u>	<u>Level of Service</u>	<u>Federal Census 2010 Population</u>	<u>Area Square Miles</u>
Barre	ALS	5,398	44.61
Brookfield	ALS	3,390	16.57
East Brookfield	ALS	2,183	10.37
Hardwick	BLS	2,990	40.84
Hubbardston	ALS	4,382	42
New Braintree	BLS	999	20.85
North Brookfield	BLS	4,680	21.72
Oakham	BLS	1,902	21.53
Rutland	ALS	7,976	36.41
Spencer	ALS	11,688	34.05
West Brookfield	BLS	<u>3,701</u>	<u>21.12</u>
Total:		49,289	310.07

IV. OPTIONS

CMRPC evaluated the feasibility and potential impacts of three courses of action. The communities can: (1) continue addressing EMS/ALS provision on a per-community, per-year basis; (2) jointly hire a for-profit EMS/ALS organization; or (3) develop a sub-regional ALS system to serve each of the six communities. Analysis of data and discussion with EMS/ALS stakeholders, municipal personnel, elected officials, and state agencies indicated that the towns would be best served by a sub-regional shared ALS system.

<u>Option</u>	<u>Description</u>	<u>Endorsement</u>
1	Jointly hire an outside service provider	Not recommended
2	Address issues on an individual community basis	Not recommended
3	Develop and implement a shared sub-regional ALS system	Recommended

Implementing the recommended strategy entails:

- Maintenance of existing BLS services and mutual aid agreements
- Expansion of existing ALS service through formal agreement and sub-region support; or;
- Establishment of a new, sub-regional ALS and ALS dispatch system
- Engagement of potential partners to improve payer-mix through sub-region expansion
- Creation of a joint committee to oversee the system, manage agreements, and address EMS issues collectively

Barring a sub-regional approach, the communities can continue addressing EMS on a per-community per-year basis. Under that scenario, there are actions that can potentially improve patient care, reduce expenses, and increase revenue. Foremost, the organizations should address staffing-related

performance issues that impact patient care. The first necessary step entails incorporating Oakham into the New Braintree Emergency Dispatch Center, which currently serves the other five communities. By establishing a sub-regional Dispatch Center from which to coordinate on-call staffing, the organizations can fill scheduling gaps in a coordinated fashion and ensure EMT availability. This will eliminate the need to issue multiple tones to multiple agencies for the same service.

Secondly, the communities can reduce fixed expenses through newly available programs. In 2013, CMRPC, in conjunction with 15 EMS providers, applied for a Community Innovation Challenge (CIC) grant to establish a Regional Emergency Medical Services Training initiative. Although the initiative was not funded, a similarly-modeled joint-training initiative could reduce training expenses and increase EMT capacity. CMRPC is also in the process of implementing a joint procurement consortium for EMS supplies. The consortium will allow the Region's 40 communities and various non-profit agencies to leverage their collective purchasing power, thereby reducing the cost of medical supplies and equipment. These opportunities will provide economies of scale otherwise unavailable to individual towns.

Lastly, the organizations should support and position themselves to capitalize on forthcoming legislation. Changes in pre-hospital medicine to include community para-medicine are imminent, and present a potential revenue stream. Judicious use of billing per call, regardless of transport ("no-transport billing"), would also increase revenue. The sub-region's providers should address changes in insurance reimbursement policies, either through joining networks as necessary or supporting legislation that would bar direct patient reimbursement. Providers utilizing subscription drives should reevaluate the benefit of doing so; such revenue varies from year to year, and its inclusion in financial statements obscures financial realities. Finally, the organizations should continue to pursue municipal subsidy. Given the increased structural expenses and loss of volunteer subsidy, free municipal EMS is no longer feasible. Policymakers, elected officials, municipal employees, and voters must be educated about the challenges facing rural EMS organizations.

Hiring a private organization is an alternative to the aforementioned strategies. Alone, the sub-region's ALS call volume is insufficient to support privatization. In aggregate, BLS and ALS calls are approaching a level that will support one private ambulance (Rose, 2013). American Medical Response (AMR) is interested in expanding its coverage area to include the sub-region. The company believes it can provide equitable service for less than the communities currently pay. However, the land area (142 sq. miles) is not easily served by a single ambulance. Prior to issuing a firm commitment, AMR would need to conduct a gap analysis and meet with stakeholders to discuss communities' economic and service goals. A viable contract will likely entail provision of ALS and BLS services. This approach may solve the sub-region's immediate EMS/ALS concerns; however, it entails some risk. Many private ambulance companies have failed to make good on their municipal service agreements, or requested large post-agreement subsidies. In such cases, Towns must acquiesce to provider demands or reestablish municipal EMS/ALS, often with little to no notice.

B. KEY CONCEPTS

Funding

Ambulance services can be operated through a variety of means, including municipal emergency medical departments, Fire and Police Departments, 501c3 nonprofit ambulance companies, or for-profit ambulance contractors. Funding can come from municipal taxes, pre-payment of co-pays (“subscription drives”), grant funds, insurance reimbursements, and fee-for-service charges. Most ambulance organizations use some combination of the above funding streams. Organizations using ambulance transport are required to affiliate with a hospital-based physician, who serves as Medical Control Physician. The Medical Controller authorizes and implicitly certifies all pre-hospital care conducted by the organization.

Basic Life Support

Basic life support (BLS) is defined as a variety of noninvasive emergency procedures performed to assist in the immediate survival of a patient, including cardiopulmonary resuscitation, hemorrhage control, stabilization of fractures, spinal immobilization, and basic first aid. Some of these procedures can be lifesaving and are often important to implement early. Specifically in the case of cardiopulmonary resuscitation (CPR) and defibrillation with automatic external defibrillators (AEDs), BLS procedures can have a significant impact on survival, and are typically delivered by initial responders until more advanced and definitive medical care can be implemented. –Encyclopedia of Intensive Medical Care

Emergency Medical Technicians

BLS is typically provided by either first responders or emergency medical technician (EMT)-basics. EMTs provide basic emergency medical services to patients during transport to primary care facilities, and determine whether treatment requires intervention by EMTs certified to provide Advanced Life Support (paramedics or AEMTs). –Encyclopedia of Intensive Medical Care

Advanced Life Support, Paramedics, and Advanced Emergency Medical Technicians

Advanced life support (ALS) refers to the medical procedures for sustaining life including the advanced diagnosis and protocol-driven treatment of a patient in the field such as defibrillation, airway management, and administration of medications. Generally, ALS is performed by emergency medical technicians-paramedics and other qualified health professionals. ALS is performed by designated ALS ambulances or through intercept with BLS ambulances. –US Legal

ALS Intercept

An ALS intercept is an authorized and staffed ALS unit, dispatched by request or protocol, meeting a BLS unit while it is en route to the nearest appropriate hospital. A BLS unit assesses the patient, determines the need for and requests ALS, packages and begins patient transport. The BLS unit does not wait on the scene for the ALS unit's arrival. -NY State Department of Health

Staffing Requirements

Massachusetts requires that ambulances have two staff available 24 hours per day, 7 days per year. BLS ambulances must have 2 EMT-basics available at all times, including during transport. ALS ambulances are required to have one paramedic and one EMT-basic available and on-board during transport, provided the service complies with the requirements, as outlined in CMR 170.305(C). The ALS requirement reflects a 2010 change to Massachusetts General Law (111C, Sect 25), which formerly required two paramedics or a waiver.

Payer Mix

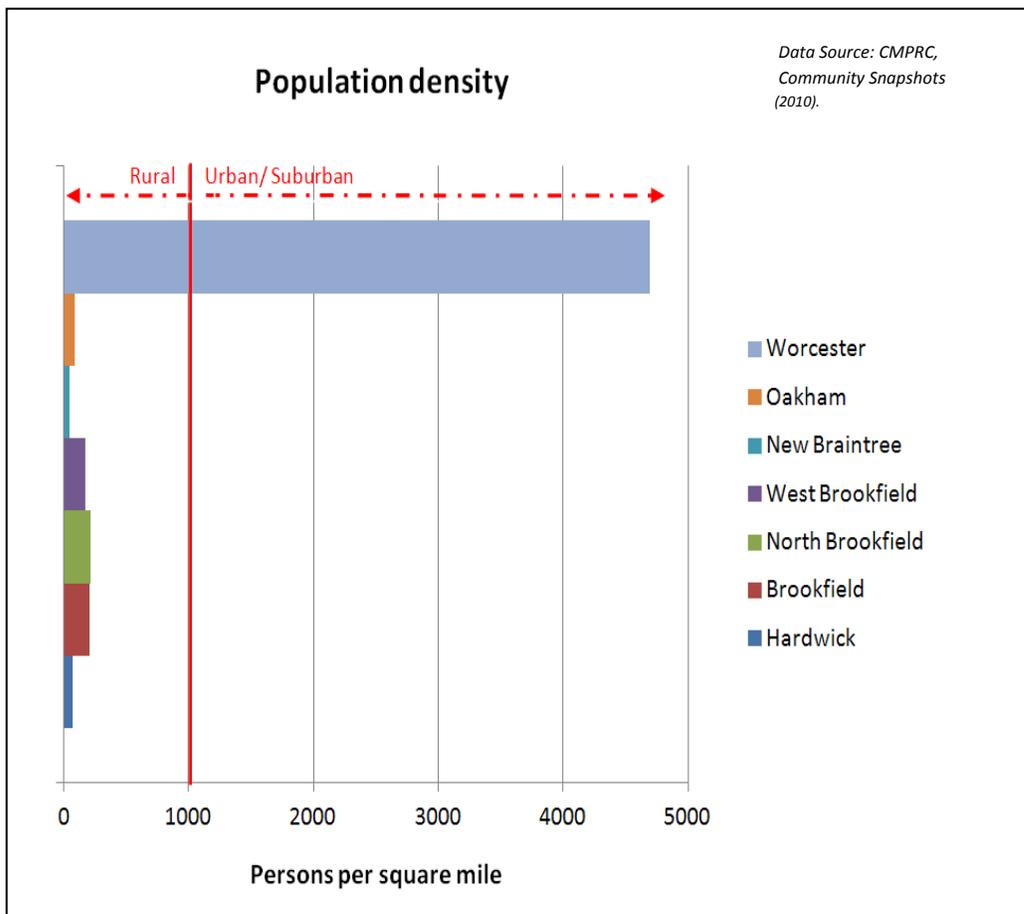
Payer-mix refers to the percentage of transported patients with Medicare, Medicaid, private, or no insurance. Because insurance companies reimburse service organizations at varying and often pre-determined rates, the payer-mix affects the operating economies of EMS organizations. Of the various insurance agencies, Medicare and Medicaid provide the lowest reimbursement rates- often 50 percent or less than actual billings.

C. EXISTING CONDITIONS

I. COMMUNITY DEMOGRAPHICS

Located in western Central Massachusetts, the towns of Hardwick, Brookfield, North Brookfield, West Brookfield, New Braintree, and Oakham are 14-34 miles from the nearest urban center (Worcester). The municipalities are rural, with varying percentages of industrial, agricultural, and residential land. Together, they comprise 142.63 square miles, 91.94 of which are categorized as open space (see Exhibit A). The remaining area (50.69 sq. mi.) is home to 17,662 residents, who reside in 7,569 housing units. Local EMS/ALS organizations serve these residents, as well as: employees working in the communities, seasonal residents, tourists, and commuters.

Exhibit B: Population Density



The area’s combined median household income is \$81,405, well in excess of the state average (\$65,981). Similarly, the area’s mean poverty level is 6.56%, significantly less than the state mean of 10.7%. However, income indicators differ dramatically between the towns. Oakham and New Braintree have median household incomes 21% and 29% higher than the mean median household income of the remaining four communities, which are well below the state average (see Exhibits C and D). Income demographics are of particular importance to EMS organizations. Lower-income communities have

higher percentages of Medicare and Medicaid recipients. Such insurers reimburse healthcare providers at lower rates than their private counterparts. As such, the sub-regional median income bodes well for EMS organizations. The median household income of several individual communities does not.

Exhibit C: Resident Incomes

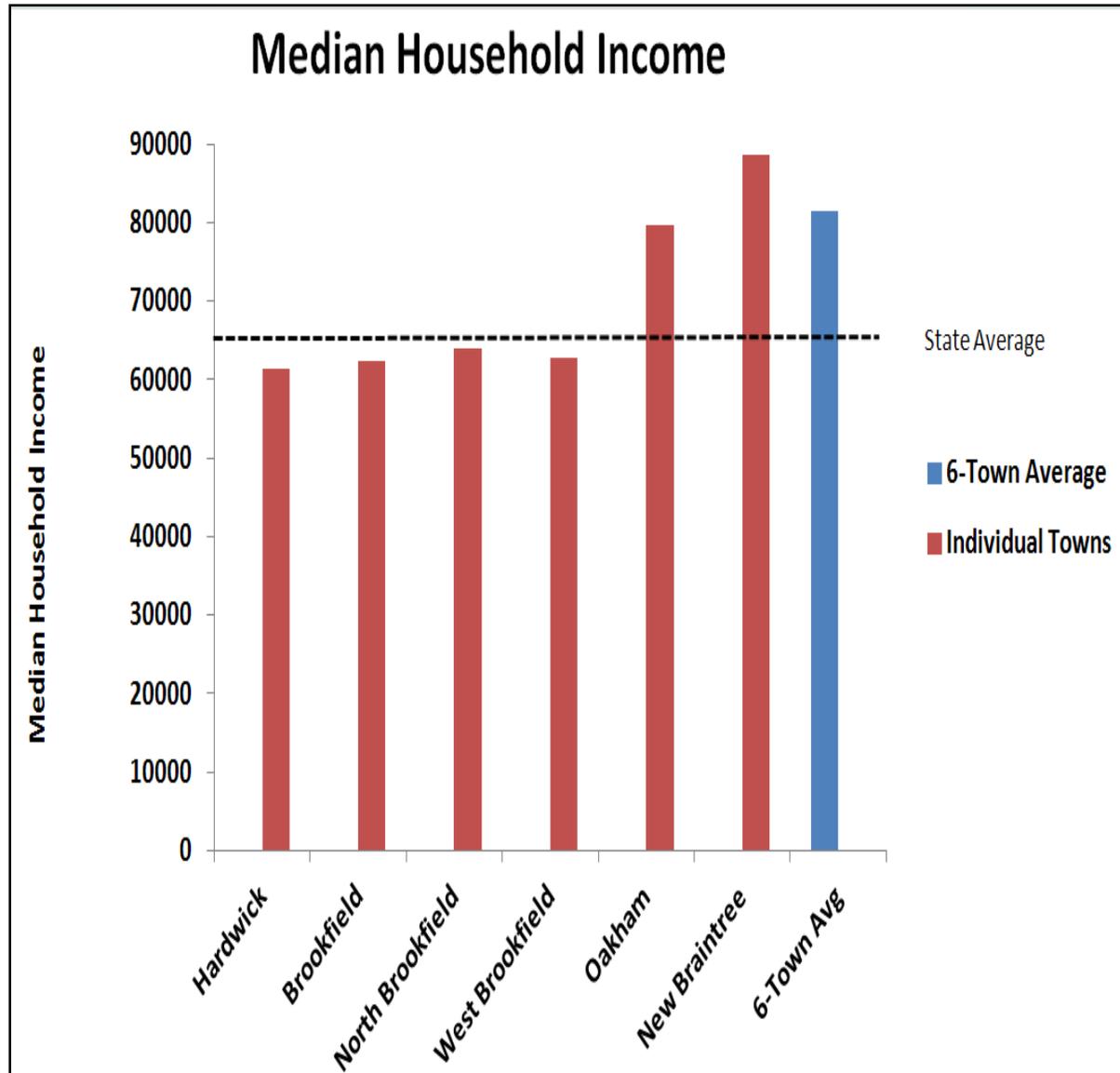


Exhibit D: Sub-Region Demographics

<u>Community</u>	<u>Population</u>	<u>Unemployment Rate</u>	<u>Med. Household Income</u>	<u>Housing Units</u>	<u>Geo Size</u>
Brookfield	3,390	4.8	62,390	1,493	16.57
Hardwick	2,990	7.8	61,298	1,218	40.84
North Brookfield	4,680	6.2	64,009	2,058	21.72
New Braintree	999	4.7	88,571	390	20.85
Oakham	1,902	7.7	79,700	711	21.53
West Brookfield	3,701	8.2	62,685	1,699	21.12
Totals/Averages	17,662	6.56	81,405	7,569	142.63
Massachusetts	6,547,629	5.7	66,658	2,808,254	10,554
<i>Data Source: 2007-2011 US Census Bureau American Community Survey, Massachusetts Labor and Workforce Development (March 2013), and CMRPC databases.</i>					

Several large employers within the sub-region include: Quaboag Corporation in North Brookfield, Quaboag Rehabilitation and Skilled Care Center in West Brookfield, various elementary schools in each community, and the Eagle Hill School in Hardwick. The nearby communities of Spencer, Warren, and Barre are home to Flexcon Corporation, Quabbin Regional Jr. /Sr. High School, and Quaboag Regional Jr. /Sr. High School. The region has an increased seasonal population with its many second homes/camps on the area lakes. Tourism is popular in the area due to recreational opportunities, historical sites, and agri-tourism. The increased seasonal population requires additional infrastructure, but does not significantly expand the labor pool or tax base.

None of the communities are served by Interstate 90 (the Massachusetts Turnpike). However, Brookfield enjoys comparably easy access, located approximately 10 minutes from the nearest Interstate 90 on-ramp. The remaining towns are served by one or more of the following highway routes: 9, 32, 32A, 67, 122, and 148. These highways connect to major highways and the Worcester, Fitchburg/Leominster and Springfield urban areas (see Sect. II, Exhibit I). With limited Interstate access and no hospitals within the six communities, residents suffer from a lack of acute care facilities. Instead, they rely on pre-hospital medical services for inter-facility patient care, stabilization, and transport to appropriate healthcare facilities. Bay State Mary Lane Hospital in Ware is the acute care facility closest to each of the communities, at 10-19 minutes away. It is the primary hospital for calls originating in Brookfield, West Brookfield, New Braintree, Hardwick, and North Brookfield. Oakham typically relies on Worcester-based primary care facilities, which include UMass Memorial Medical Center, UMass University Campus, and Saint Vincent Hospital.

II. EMS DEMOGRAPHICS

Of the six communities, five are home to EMS organizations. Each provides BLS service. One provides ALS service (see Exhibit I). Three organizations are 501(c) 3s and two are municipally operated. In 2012, the organizations responded to (or outsourced) approximately 1,681 calls (per dispatch and best sources), equating to four to five calls per day. The estimated percentage of ALS and BLS calls varied. Provider figures for ALS calls ranged from 20-60 percent of total call volume. According to Josh Rose, American Medical Response's (AMR) Regional Business Development Manager, 20-35 percent of all EMS calls are generally ALS. Using a mean of 27.5 percent, the approximate number of ALS calls in 2012 was 462 (see Exhibit E), with the remaining 1,219 calls receiving BLS service. Data on the five communities' payer mixes (the percentage of Medicare, Medicaid, private, and uninsured EMS patients), average

reimbursements, and gross incomes were largely unavailable. However, Central Massachusetts reimbursement rates average \$575 per BLS call and \$1150 per ALS call (Rose, 2013). At these rates, the organizations' gross insurance reimbursements approximate \$1,232,225 (\$531,000 ALS, \$700,925 BLS), with a mean per-call reimbursement of \$733.

Exhibit E: Call Volume

<u>Town</u>	<u>Level</u>	<u>Medical Emergency</u>	<u>Vehicular</u>	<u>Mutual Aid Fire/Amb</u>	<u>Total (2012)</u>	<u>Total (Daily)</u>	<u># ALS (27.5%)</u>
Brookfield	ALS	274	41	2	317	.87	87
Hardwick	BLS	191	33	4	228	.62	62
New Braintree	-	36	14	0	50	.14	13
North Brookfield	BLS	316	47	9	372	1.01	102
Oakham	BLS	185	25	2	212	.58	58
West Brookfield	BLS	462	35	5	502	1.37	138
Total		1,464	195	22	1,681	4.01	462
<i>*Data Source: Self-reported by EMS communities. # ALS derived from mean of typical range (20-35%) as reported by Rose (2013).</i>							

As detailed in Section E, Subsection I (limitations), call and expense data from the organizations was unreliable. Self-reported data often differed from records provided by dispatch services, and stated percentages of ALS and BLS calls varied greatly. Consequently, CMRPC opted to use the above noted industry standards in calculations. Similarly, it was often unclear whether stated call volumes referred to calls or transports. CMRPC standardized the data as much as possible, relying heavily on dispatch records. Given the paucity of reliable data, there is room for incorrect valuation of overhead, expenses, and deficits or surpluses. As such, CMRPC used several methods to calculate values. The methodologies are outlined herein.

SafeTech Solutions- a consulting firm that "examined dozens of rural EMS systems" while evaluating the state of volunteer EMS systems in rural North Dakota- found that self-sufficiency (i.e., no municipal subsidy) requires 650 calls per ambulance at an average reimbursement rate of \$551. This figure is considerably lower than the reimbursement rates provided by Rose and the mean per-call rate derived there from. If the sub-region's 5 EMS organizations divided the 1,681 calls equitably, each organization would conduct 336 transports per year. Using SafeTech's reimbursement figures, the per-organization operating deficit would be 314 calls, or \$173,014. Using the reimbursement rate derived from Rose's estimates, the per-organization deficit would be \$230,162, \$1,150,810 collectively. Given that service calls are not equitably distributed between the organizations, this method simply illustrates the call deficit and the potential collective deficit- not actual, per-organization deficits. Actual per-organization deficits, unless reported by provider organizations, are impossible to establish.

Like call volume, total operating expenses (as reported by the providers) varied dramatically or were unavailable. Inconsistent techniques for measuring overhead rendered self-reported data inappropriate for statistical analysis. Calculation of operating economies using financial statements is therefore also difficult. However, EMS organizations in similarly-sized Massachusetts towns expend between \$101 (conservative/partial) to \$173 (liberal/inclusive) per capita (derived from Baxter and Associates, 2007). Applying the conservative rate to the six-town population, we can approximate collective expenses of \$1,682,963. Liberal estimates place operating expenses at \$2,882,699 (see Exhibit F). Using these figures

and the estimated insurance reimbursement outlined in Paragraph 2 of this section, it follows that the ambulance billing deficit ranges from \$450,738 to \$1,650,474.

The operating deficit is partially off-set by municipal subsidies, subscription drives (pre-payment of co-pays), and grant funds. Alone, these offsets are insufficient to cover the deficit- hence the historical reliance on volunteers. Where labor subsidies are unavailable, organizations are operating at a deficit and struggling to maintain previous levels of service. Without reduced-cost and volunteer labor, it would cost \$2,402,868 to staff five of the seven ambulances 24 hours per day, seven days per week (Massachusetts' volunteer wage rates are valued at \$27.43 per hour). Such subsidy is rarely (if ever) reflected in operating budgets.

EXHIBIT F: Overhead

<u>Town</u>	<u>Population</u>	<u>Conservative (\$101/capita)</u>	<u>Liberal (\$173/capita)</u>	<u>Stated</u>
Brookfield	3,390	\$342,390	\$586,470	
Hardwick	2,990	\$301,990	\$517,270	\$92,000
New Braintree	999	N/A	N/A	-
North Brookfield	4,680	\$472,680	\$809,640	\$334,403
Oakham	1,902	\$192,102	\$329,046	\$85,000
West Brookfield	3,701	\$373,801	\$640,273	\$275,000
Total	17,662	\$1,682,963	\$2,882,699	

Of the six communities, all but New Braintree operate ambulances. Collectively, the organizations own seven Class 1 ambulances. The additional ambulances serve as ready reserve vehicles in the event of repairs or overlapping calls. However, three of the ambulances are fully depreciated and in need of replacement (see Exhibit G). One vehicle is mid-way through its lifecycle. The remaining three ambulances are new or fairly new. Class 1 ambulance replacement costs average \$210,000, prior to supply fit-out (Baxter and Associates, 2007). Replacing the three older vehicles would cost \$630,000. Typical supply fit-out costs average \$100,000 (Baxter and Associates, 2007). In a needs assessment, several communities identified equipment replacement and upgrade need as acute. After ambulances, urgent equipment needs include: stretchers, scoops, cardiac monitors, and stair chairs. Given current replacement and upgrade needs, new ambulances will likely also require some fit-out. Between new ambulance fit-out and additional replacements/upgrades, the communities can anticipate \$200,000 in equipment costs. In conjunction with ambulance replacement, this totals \$830,000 in near-future equipment expenditures.

EXHIBIT G: Ambulances

<u>Town</u>	<u># Ambulances</u>	<u>Year</u>	<u>Clinical</u>
Hardwick	1	2001 (app)	Class 1
Brookfield	1	2009	Class 1
North Brookfield	1	2012	Class 1
West Brookfield	2	2003, 2012	Class 1
New Braintree	0	-	-
Oakham	2	2006, 2001	Class 1
<i>*Data Source: Massachusetts Office of OEMS and EMS organizations</i>			

Staffing varies by organization (see exhibit H). Rates include:

- \$20 per 12 hour shift plus per-call bonuses
- \$4.75 per hour
- \$12 hour

The six organizations comprise 91 EMTS/AEMTS, a great majority of whom are part-time and on-call. Organizations offering pay consistent with the for-profit sector have fewer staffing challenges than their lower-paying counterparts. North Brookfield compensates EMTs at a base rate of \$12 per hour. The organization is fully staffed, and able to provide “set” schedules. By contrast, the Hardwick Rescue Squad compensates EMTs at a base rate of \$20 per 12 hour shift-the equivalent of \$1.66 per hour. Hardwick’s call volume is 61% of North Brookfield’s, yet it is staffed at 36 percent of its North Brookfield counterpart. According to the organization, its staffing levels are inadequate and a result of low EMT compensation. Such issues negatively impact patient care.

Well-paid EMTs are more willing to work out of a station, rather than from home. With relatively generous pay rates, the North Brookfield Rescue Squad’s roster includes many out-of-town EMTs. Such EMTs routinely choose to work from the station even when on call. The effect on response time is dramatic. The North Brookfield Squad is “out of chute” (call-to-en route) within one minute 90 percent of the time. They arrive on scene within ten minutes in 90 percent of all calls. By contrast, the Hardwick Rescue Squad is out of chute within 7 minutes 99 percent of the time. Their average response time (chute to scene) is 25 minutes. However, EMS response time analysis is fraught with challenge. Variations in measurement technique, which are typical to the field, complicate comparative analysis.

EXHIBIT H: Staffing

<u>Town</u>	<u>EMTS</u>	<u>AEMTS/ Intrmds</u>	<u>Rate</u>	<u>Plus/ Per Diem</u>
Brookfield	8	7/1	-call back at 8	-
Hardwick	7	1	\$20/ 12 hrs	\$10/ 1 st call, \$30/ additional
New Braintree	1 FT (police), 9 on call (police and fire)	-	\$15/hr	-
North Brookfield	2 FT, 20 PT	0	\$12/ hr \$17.50/ hr (Dir)	Per Diem: \$50/ 8 hrs \$35/ 1 st call, \$50/ additional
Oakham	17	2	\$11-16/ hr during calls	
West Brookfield	27	-	\$4.75/ hr	-
<i>*Data source: EMS providers</i>				

A. LABOR POOL

Changes in the labor pool are the most pressing issue facing EMS. Historically, EMS has relied upon a core of committed volunteers. This labor subsidized service provision, allowing provider organizations to offer free service to communities. However, volunteerism has undergone dramatic changes since peaking in the 1960s. Americans no longer volunteer as frequently or in as great a number as seen in previous decades. De-segregation of the workplace, new employment opportunities for women, declines in organized labor, and socio-political factors negatively impacted volunteerism. Between 1973 and 1993, the number of Americans who attended a town or school meeting declined by 33 percent (Putnam, 1995). Between 1974 and 1989, the number of Americans who volunteered decreased 15 percent (National and Community Service, 2006). During the 1980s and 1990s, volunteerism further declined. For example: between 1980 and 1997, membership in the Organization for Business and Professional Women declined 89 percent. The Parent Teacher Association experienced a 60 percent member reduction. The National Association for the Advancement of Colored People (NAACP) declined 46 percent over the same period (Swanson 1999). Although volunteerism has experienced resurgence in recent years, its form and function have changed. The new volunteer base is not geared towards EMS.

Between 1989 and 2005, volunteerism increased by 32% (Corporation for National and Community Service, 2006). However, the increase is largely due to baby boomers (ages 45-64), Americans over 65, and teens ages 16-19. The proportion of adults 65 and older who volunteer more than 100 hours per year has doubled. "Older adults are the most likely group to serve 100 or more hours a year. This was not the case in 1974, when all volunteers 20 years old and over had virtually the same percentage of volunteers contributing 100+ hours a year" (National and Community Service, 2006). Consequently, increasing volunteerism does not necessarily translate into increased numbers of volunteer EMTs. Potential volunteer EMTs may not meet the field's age, certification, or physical requirements. Similarly, the socio-economic face of volunteers has changed. Volunteers are increasingly affluent, urban, and highly educated. A 2009 study that sought to identify the cause of declining numbers volunteer firefighters found that firefighters tend to be less affluent, less urban, and less educated (Patterson) than those who volunteer. The mismatch between volunteer demographics and firefighter/EMT demographics reduces the likelihood that those willing to volunteer will be drawn to EMS organizations. Adding to these challenges are changing conceptions of EMS as a field.

Over the last few decades, EMS has undergone professionalization. Pre-hospital and para-medicine were once viewed as a public service and as a supplement to work activities. Today, they are regarded as career path. In previous decades, EMS training occurred outside formal educational institutions. Today, community colleges conduct the majority of all EMS trainings and certification. The amount of training, certification, and continuing education has increased. The number of colleges offering Bachelor's degree in EMS studies grows every year. EMS has experienced increases in all variables used to differentiate professions from occupations, including: professional norms, formal credentialing, and specialized skills and knowledge (Margolis, 2005). The increased prestige and increased requirements have increased the cost of entering and practicing within the field. EMTs necessarily require corresponding increases in compensation. Hence, EMS is affected by not only the general decline in volunteerism, but a decline in industry-specific volunteerism as well.

In rural communities, these structural changes are compounded by rural demographics. Whereas previous decades are characterized by flight from cities to suburbs, the opposite is true today. Younger populations in particular are relocating to urban centers. With fewer working-age residents and aging populous, rural communities suffer from greater shortages of potential EMTs and a high need for EMS.

As SafeTech Solutions, which examined EMS for the North Dakota Rural EMS Improvement Project in 2011, explains: “this [urban-rural shift] has left a shrinking pool of potential volunteers and shrinking services rosters in many communities. All indicators suggest this shrinking will continue in coming years (2011). Fewer volunteers will be available to subsidize EMS provision, and fewer paid EMTs will be available to fill their place. This change has already begun to shock the EMS system. The impact is such that only a paradigm shift will sufficiently address its wake.

SafeTech Solutions places the pre-labor costs of maintaining, equipping, and operating one ambulance at \$70,000 per year. As such, the majority of expenses are incurred through labor and training costs. The value of volunteer subsidy can be approximated using the standard IRS formula, which averages “the average hourly earnings of all production and non-supervisory workers on private non-farm payrolls” (Independent Sector, 2012). This formula places Massachusetts’ 2012 volunteer labor rates at \$27.43 per hour. In Massachusetts, EMS organizations are required to have 2 staff available 24 hours/ day. If, as in decades past, EMS organizations operated without the use of paid personnel, this would mean a volunteer subsidy of \$480,573 per ambulance per year. Adding the \$70,000 of fixed expenses, we see that the true cost of operating an ambulance in Massachusetts is approximately \$550,573. Where ambulance providers report lower costs, it is because they are utilizing free or reduced-cost labor or using accounting methods that obscure expenses. With volunteer labor drying up, the cost of doing business is and will continue to increase. Municipalities cannot expect EMS organizations to cover operating deficits resulting from the loss of volunteer subsidy. Town subsidies need to reflect this structural shift. Failure to do so will result in the loss of EMS organizations, placing service burdens on municipal departments.

B. CALL VOLUMES/ ROAD MILES

Rural EMS organizations suffer from the dual challenges of low call volume and large service area, relative to urban counterparts. Because transport revenue varies with call volume, such organizations struggle to meet fixed costs and overhead. Throughout Central Massachusetts, EMS organizations are struggling to remain afloat. In recent years, many have requested municipal subsidies for the first time. Others have scaled-back services. Many are operating at a deficit and searching for solutions, short of ceasing to operate. This presents additional challenges to response time and performance.

Severely constrained budgets entail personnel and equipment concessions. In many cases, rural EMS organizations cannot staff stations. Rather, employees are called-in as needed. Similarly, low call volumes often preclude multiple ambulances, which are necessary in the event of simultaneous calls, requests for mutual aid, or vehicle repair. With limited staffing and equipment, rural EMS transports entail longer response times. In such communities, roadway conditions (in terms of maintenance, design, and weather) can further impede transport times.

Rural EMTs also have fewer opportunities to hone and maintain medical skills. In the six-town sub-region, equitable disbursement of calls would yield 18 transports per EMT per year (1,681 calls, 91 EMTs). The proficiency yielded by these rates has been a topic of local discussion. Many years ago, New Braintree and North Brookfield combined EMS services. At the time, both towns operated EMS departments with low call volumes. The proposed merger sought to increase EMT’s access to opportunities in which to practice and develop EMS skills (Miner, 2012). New Braintree’s municipal EMS department was eliminated, and the Town entered into a service agreement with North Brookfield. The “merger” increased North Brookfield’s call volume by approximately 50 calls per year. However, the problem is widespread, and hardly improved by the addition of 50 calls per year. Compounding these challenges are lengthy transport times. Substantial distances from acute care facilities require rural EMS

providers to deliver more care to patients than their urban counterparts. When personnel lacking technical ability provide treatment for a sustained duration, patient wellbeing is jeopardized.

C. TRAINING COSTS

Training is a significant challenge to rural EMS personnel and organizations. Training costs are higher per employee for rural EMS providers than their urban counterparts. This is largely due to distance from training and the limited availability of training opportunities. The high cost of training, which includes personnel time, travel expenses, back-fill, and fees, is depleting the EMT pool and affecting the bottom-line of EMS organizations. Continuing education costs average \$1,091 per EMS provider per year (see Exhibit I). Collectively, the sub-region's 91 EMTs/AEMTS expend approximately \$99,281 on continuing education per year. Some of this expense is borne by personnel; much of it is passed on to EMS organizations. Training standards and expectations of care continue to increase; without redress, these expenses will put added pressure on EMS organizations.

EXHIBIT J: Training Expenses

Town	# EMTS/AEMTS	Cost
Hardwick	8	\$8,728
Brookfield	9	\$9,819
North Brookfield	22	\$24,002
West Brookfield	27	\$29,457
New Braintree	10	\$10,910
Oakham	17	\$18,547
<i>Data Source: Widner, 2013</i>		

D. TURNOVER

Rural EMS organizations often serve as stepping stones for new EMS professionals. Many EMTs enter the field by volunteering in rural communities. In order to become career EMTs, personnel invest in training and strive for advanced certification levels. As personnel attain higher certification levels, they seek organizations that can offer greater call volumes and pay. Consequently, newly trained EMTs are routinely hired away. Where this does not happen, EMTs are prone to "rust out" - attrition casualty resulting from boredom and a lack of opportunities to practice skills. The career lifespan of EMTs in rural communities is short. This requires ongoing recruitment and training, which is costly.

E. MEDICAL CONTROL

In the near future, Massachusetts is expected to move from hospital-based Medical Control Physicians to service-based Controllers. Anticipated changes in pre-hospital care to include community paramedicine will necessitate this change. Each EMS organization will need to retain the services of its own physician. This will increase the costs of doing business.

F. NATIONAL STANDARDS

Massachusetts' adoption of the National Standards for EMS certification will have a major impact on EMS in the State. Effective July 1, 2013, the Standards require very specific type of training for credential maintenance. Previously, Massachusetts EMS providers could complete a vast majority of "refresher" courses through Distributive Education (on-line, video, or magazine-based formats). The National Standards limit Distributive Education to 33% of the required hours. This has increased the number of

classes EMS providers need to attend. Prior to the State adopting National Standards, local EMS organizations struggled with training expenses. In recent years, budget constraints required that departments conduct split training rotations (half of an organization's personnel attend trainings; the other half wait for the following year). National Standards requirements entail additional training allocations or noncompliance.

G. PATIENT PROTECTION AND AFFORDABLE CARE ACT

Signed into law in 2010, the Patient Protection and Affordable Care Act will significantly impact EMS organizations. Between 2010 and 2020, numerous healthcare provisions will go into effect. These include a "Pay-for-Performance" model and expansion of Medicaid eligibility guidelines. Pay-for-Performance will entail new metrics and training requirements. Nationally standardized, "evidenced-based" performance indicators will be used to evaluate the effectiveness of training programs. In the near future, EMS providers will need to comply with guidelines that require increased documentation, treatment protocols, research, and quality measurements. EMS providers will need to expend additional resources to meet these requirements, and address any performance shortcomings exposed by the analysis. Expansion of Medicaid eligibility to 133% of the poverty level will increase the number of Medicaid reimbursements. Such reimbursements are significantly less than billing rates. The Patient Protection and Affordable Care Act therefore present dual challenges: reduced reimbursements and increased expenses.

H. INSURANCE REIMBURSEMENT

Changes in private insurance reimbursements compound these problems. In 2012, Blue Cross Blue Shield (BCBS) announced it would no longer directly reimburse EMS providers outside its network. Instead, the company now reimburses patients. The change sought to incentivize joining the BCBS network (which entails negotiated payments). Because service recipients often fail to forward reimbursements, the change reduces the revenue of unaffiliated EMS organizations. Particularly egregious, some frequent flyers have been cited as using ambulances to generate personal income. BCBS holds a large share of Massachusetts' insurance market. Consequently, the issues surrounding frequent flyers and patient reimbursement further compound the already precarious economic stability of rural EMS organizations.

I. FREQUENT FLYERS

Misuse and exploitation of EMS systems presents additional challenges. Most EMS organizations have "frequent flyers" - individuals who routinely request unsubstantiated emergency medical assistance. Commonly, these individuals lack a primary care physician. Instead, they use ambulance transport and emergency rooms for general treatment. Frequent flyers have also been known to use ambulances for general transportation or company. Such misuse affects tax payers as well as EMS organizations. Largely, these patients are Medicaid/ Medicare recipients. With public insurers reimbursing EMS providers at rates below the norm, frequent flyers drain EMS organizations operating funds. Moreover, insurance reimbursement is currently dependent upon transport admittance to emergency rooms. The Patient Protect and Affordable Care Act, which sanctions healthcare facilities that treat conditions multiple times, is expected to yield reductions in the number of admitted frequent flyers.

II. LOCAL EMS/ALS ECONOMICS

As previously detailed (see Section C, Existing Conditions, EMS Demographics), the sub-region experienced approximately 1,681 EMS calls in 2013. This equates to four to five calls per day collectively. CMRPC estimates that of the 1,681 calls, approximately 462 were ALS, leaving 1,219 BLS calls.

Fee structures and insurance reimbursement rates vary among the organizations. The amount billed and collected is affected by the “payer mix”- the amount of Medicaid, Medicare, private, and uninsured service recipients. Communities with lower income demographics generate lower average reimbursements. For instance: the Brookfield Rescue Squad charges \$712 as an emergency base rate. Medicare’s 2013 reimbursement rate is \$368, which equates to 51%. West Brookfield simply charges 148% of Medicare reimbursement rates. In Spencer (a nearby community), the median household income is approximately \$44,000- 37% lower than the state median and 45% lower than the sub-region examined in this study. Medicare and Medicaid comprise 67% of Spencer’s payer mix; the Squad’s combined, average reimbursement rate for ALS and BLS transports is \$575. According to the National EMS Advisory Council (NEMSAC), the average payer mix is: Medicare: 44%, Medicaid: 14%, Private Payer: 14%, Private Insurance: 21%, Other: 7%. In Central Massachusetts, reimbursement rates average \$575 per BLS call and \$1150 per ALS call (Rose, 2013).

Exhibit K: Payer-mix

Town	Base Rate (Non-ALS)	Medicare	% Medicare/Medicaid
Brookfield	712	368	unk
Hardwick	unk	368	unk
New Braintree	N/A	368	N/A
North Brookfield	unk	368	50%
Oakham	unk	368	unk
West Brookfield	\$544 (Medicare +148%)	368	65-70%

Using an estimated reimbursement rate \$575 per BLS call and \$1150 per ALS call, the organizations’ gross insurance reimbursements approximate \$1,232,225 (\$531,000 ALS, \$700,925 BLS), with a mean per-call reimbursement of \$733. This figure is significantly higher than combined ALS/BLS call reimbursements noted in cross-national surveys. Break-even requires approximately 650 calls per ambulance at \$551 reimbursement per call or \$358,150 annually (Safetech, 2011). As reimbursement rates increase, fewer calls are required to break-even. However, neither figure (\$551 or \$733) is sufficient to offset this sub-region’s low call volume. Collectively, the organizations are experiencing a deficit of approximately 1,570 calls per year, depending on payer-mix and reimbursement. If actual call volume was divided equally between the five provider organizations, there would be a 314 call deficit per organization. Using SafeTech’s reimbursement figures (\$551 per call), the per-organization operating deficit would be 314 calls, or \$173,014. Collectively, the sub-region’s operating deficit would be \$865,070. Using the reimbursement rate derived from Rose’s estimates (\$733), the per-organization deficit would be \$230,162. Collectively, the sub-region’s deficit would be \$1,150,810.

Alternatively, EMS organizations in similarly-sized Massachusetts towns expend between \$101 (conservative/partial) to \$173 (liberal/inclusive) per capita (derived from Baxter and Associates, 2007). Applying the conservative rate to the six-town population, we can approximate collective expenses of \$1,682,963. Liberal estimates place operating expenses at \$2,882,699 (see Exhibit F). It follows that the

ambulance billing deficit is between \$450,738- \$756 (conservative) and \$1,650,474 and 1,957,468 (inclusive/ liberal).

Based on the above calculations of income and expenses, it is clear that the sub-region's EMS/ALS providers are fighting a losing battle. Three out of three calculation methods indicate substantial shortfalls in operating revenue. This is consistent with assertions made by a private, for-profit ambulance company (AMR), who indicated that the call volume will likely meet the operating economies required (by a for-profit provider) to run one ambulance. Clearly, the area's 1,681 calls are insufficient to support five EMS organizations. The sub-region's lowest possible annual collective deficit is \$450,000; it may be as high as \$2,000,000. This deficit does not reflect volunteer and low-cost labor subsidies. The cost of staffing five ambulances 24 hours per day seven days per week at Massachusetts' volunteer wage rate (\$27.43 per hour) is \$2,402,868. These costs are not accounted for in EMS balance sheets, including the one below. However, even without consideration of volunteer subsidy, it is clear that the sub-regional EMS/ALS system is unsustainable. Without a major structural change in operations, one or more of the local providers will go out of business in the near future. The existing call volume cannot support the current number of EMS organizations.

The continued operation of all five provider organizations requires ongoing, sizable financial injection to compensate for lost volunteer subsidy and increasing expenses. The alternative is increasing call volume through sub-regionalization.

Exhibit L: ALS/EMS Operating Economies

Method	Break-even (Safetech)	Per call method	NOI Method	Per capita Method
Calls, per ambulance	650	336	336	
Calls, collectively	3,250	1,681	1,681	
Average BLS/ALS reimbursement	\$551	\$733		
Revenue, per ambulance	\$358,150	\$246,288 (\$733/ call) \$185,136 (\$551/ call)		
Revenue, collectively	\$1,790,750	\$1,232,173 (\$733/ call) \$926,231 (\$551/ call)		
Collective operating expenses				1,682,963 (cons) \$2,883,699 (lib)
Call deficit, per ambulance		-314		
Call deficit, collectively		-1,570		
Per ambulance deficit		-\$230,162 (\$733/ call) -\$173,041 (\$551/ call)	-\$111,862 -\$172,599	
Collective deficit		-\$1,150,810 (\$733/ call) -\$865,070 (\$551/ call)	-\$559,310 -\$862,995	-\$450,790 (\$733, cons) -\$756,732 (\$551, cons) -\$1,651,526 (\$733, lib) -\$1,957,468 (\$551, lib)

Per call method: (call deficit x re-imbursement per call)
 NOI method: (Break-even revenue (\$358,150) – estimated revenue).
 Per capita method: (see exhibit f) estimated aggregate per capita expenses – revenue
 Lib= Liberal/ inclusive estimate
 Cons= Conservative/ low-range estimate

Exhibit M: Subsidy required to cover current operating deficits

<u>Town</u>	<u>Population</u>	<u>Conservative</u>	<u>Liberal</u>	<u>Current</u>
Brookfield	3,390	\$101,824	\$316,762	100%
Hardwick	2,990	\$76,304	\$279,385	-
New Braintree	999	\$25,494	\$93,346	-
North Brookfield	4,680	\$119,433	\$437,299	\$45,000
Oakham	1,902	\$48,539	\$177,722	100%
West Brookfield	3,701	\$94,450	\$345,821	-
Total	17,662	\$450,738	\$1,650,474	
<i>Data Source: Data Source: Population is from the 2007-2011 US Census Bureau American Community Survey. Deficit derivations detailed in Section B, II, p. 2.</i>				

III. PERFORMANCE MEASUREMENTS

No national response time standards exist for EMS first responders. However, there is an industry-wide belief that urban/suburban response times should average less than 8 minutes. Research in EMS indicates that if emergency medical intervention is delayed as long as 9 minutes, patient survival of cardiac arrest approaches zero. In rural communities, response times lag considerably. 20-minute response times, 90% of the time, are typical to rural Massachusetts. The sub-region's EMS organizations self-reported response times are consistent with this average.

Unfortunately, the clinical and operational practices followed by EMS agencies have basically evolved from hospital clinical practices and public safety operational constraints without a basis of scientific proof validating the effectiveness of these practices in out-of-hospital settings, as outlined in the 2006 Institutes of Medicine report "EMS at the Crossroads." There are further complications of validating the effectiveness of procedures for out-of-hospital settings regarding rural EMS. This is because of long transfer times, the types of injury/illness encountered and rural culture may make practices based on urban research less applicable. Also rural based EMS research is more difficult to carry out because of lower call volumes experienced by the provider.

CMRPC identified several factors that contribute to lagging response times in the rural sub-region. EMS providers often travel substantial distances to meet patients. Callers may be located significant distances from primary care facilities. Often, response time is delayed because on-call volunteers are not co-located with ambulances. Rural roadways are characterized by winding streets, low speed limits, soft shoulders, and unmarked driveways and entrances. Locations are often difficult to find. Road conditions are affected by limited snow removal, poor drainage, and deferred maintenance.

Performance measurements are often not a high priority in rural services struggling to recruit, retain and get volunteers to respond to medical calls. This study found quantitative data was limited with many of the issues involved in rural EMS rooted in local practices, opinions, beliefs and traditions. This study attempted to go beyond statistical measurements and tried to understand the nuances of the issues, culture and challenges facing the EMS providers involved in this study area.

Most pre-hospital providers have their own ideas and circumstantial evidence on how effective their service is to the patients and community they serve, but how many EMS systems can actually prove their worth? With the new Affordable Care Act's healthcare reforms, EMS agencies will need hard objective data that not only measures their performance, such as accurate fractal response times, but this data will be used as the basis for monetary reimbursement and the development of consistent quality improvement and strategic planning.

The idea of performance based measuring in the EMS field is not a new idea. In 2006, the Institute of Medicine published a report, "Emergency Medical Services at the Crossroads," which recommended the development of "evidenced-based performance indicators that could be nationally standardized so that statewide and national comparisons can be made". One reason these standards are not already in-place is because of the inability of EMS providers and regulators to agree on specific performance indicators based on the current lack of uniformity in the data currently being collected. This is soon to change with core metrics required to determine EMS system performances likely to be in place within the next year. At this time many EMS agencies are incapable of gathering the data needed to do an effective job of benchmarking and substantiating service justifications or improvements.

Currently EMS organizational reimbursements are based solely on patient transport but governmental subsidies and local funding may supplement or replace patient generated revenues, especially in rural volunteer type services. As monetary incentives, which very likely could be tied to performance measures are needed to replace disappearing volunteer subsidies, tracking evidence based performance measurements will become critical for EMS provider organizations.

Reported EMS Service Response Time						
	Brookfield	Hardwick	New Braintree	North Brookfield	Oakham	West Brookfield
Avg Response Time	Not Given	25 minutes	Unknown	90%, 2min	Not Given	Not Given
Fractile Response Time	Not Given	90% < 5 min	Unknown	90% < 10 min (tone to scene)	Not Given	Not Given
Fractile out of Chute time	Not Given	99%, 7 min	Unknown	90% < 1 min Mean = 1.06 min	Not Given	Not Given
Cardiac and Respiratory Response time	Not Given	< 5min	Unknown	Unknown	Not Given	Not Given
Measurement Points	Not Given	Not Indicated	Unknown	Not Indicated	Not Given	Not Given

The reported EMS service response times CMRPC received from services reviewed in this report is a good indicator how performance measurements are often available or viewed as a low priority in rural services. Many services were not able to supply their response times or were unable to obtain the appropriate information from their record management systems. Some agencies indicated the only way they could get the information was requesting it from their central dispatch facility. Other agencies indicated they did not have the personnel or time to get the information together while some agencies indicated HIPAA regulations prevented them from sharing the information, since personal patient information was involved.

In the near future, record management will become much more complicated. Not only will basic response times need to be tracked, but detailed and complex evidenced-based performance indicators will need to be recorded and maintained in a useable format. In the future, the performance indicators will also be tied to reimbursements making service data management critical.

The inability of providers to easily supply basic response call time information indicates the EMS agencies are going to be challenged to gather the data needed to do an effective job of benchmarking and substantiating service justifications or improvements.

I. LIMITATIONS

Comparative analysis of EMS organizations is fraught with challenge. Provider organizations calculate performance measurements and expenses using different metrics. Systems evaluation is challenged by a lack of “uniformity in data collection and the lack of agreement over the validity of the performance indicators or assessment measures used in EMS research” (Sayed, 2011). Call data is often unreliable. Self-reported data often differs from calls records provided by dispatch services. Efforts to establish controls for research purposes are often unsuccessful. Researchers can request specific measurement techniques, but EMS organizations may not record data in ways conducive to those controls or have staff available to furnish data in ways that differ from initial recording methods. Small provider organizations often fail to comply with guidelines or requirements that entail reporting to State oversight offices. Alternatively, access to raw data is constrained by legal controls such as the Health Insurance Portability and Accountability Act (HIPAA). CMRPC encountered each of the aforementioned challenges during the course of this study.

Challenges specific to financial analysis included: organizational unresponsiveness, data that did not correspond to stated call volumes, and organizational failure to itemize cost estimates. These issues are not specific to the sub-region’s EMS providers. Rather, financial analysis of EMS organizations often challenged by these factors. According to a 2012 EMS study prepared for the Franklin Regional Council of Governments, variation of cost estimates results from “costs being accounted for in different line items based upon individual communities’ approaches to fiscal management” (Baxter and Associates, 2007). In some communities, fire and EMS expenses are not accounted for separately. Banking, legal fees, fuel, and other indirect expenses may or may not be included. In order to analyze the economics of the sub-region’s EMS/ALS system, CMRPC applied a per-capita cost estimate derived from outside analysis to each of the communities.

Analysis of performance metrics was also constrained by the availability and reliability of data. EMS providers can calculate response times using a variety of metrics. Often, providers calculate mean response time. Such calculations reveal little about what a patient can expect in terms of response;

service was less prompt 50% of the time. Consequently, response time methodology has moved from averages towards fractile reporting. Fractile response times are better indicators of service typicality. CMRPC's data collection emphasized fractile data. Generally, providers measure to the 90th percentile (i.e., 90% of the time we respond within x minutes). Baxter and associates report that nationally, communities similar in size to those of the sub-region strive for response times of 15.59 minutes or less 90% of the time (2007). CMRPC sought to standardize performance metrics and utilize fractile response times where possible. However, some providers were unable to provide data using this methodology.

Performance analysis is also constrained by variations in the measurement of start and end points. Response time can be calculated from the point that a 9-1-1 dispatch receives the call, the local EMS receives the call, or the ambulance departs the scene. Similarly, end points are usually given as time arrived on scene. However, such end points do not always provide an accurate picture of the time it takes crews to reach patients. Self-reported data does not necessarily reflect multiple tones for response or the time it take to reach a mutual aid responder following an organization's failure to locate available personnel. Although no national response time standards exist for EMS first responders, provider organizations must meet or exceed the performance objectives outlined in their State-mandated Service Plans. Consequently, there is an incentive to measure response times using formulas that highlight performance successes. CMRPC had to assume the performance metrics used and reported by the providers were illustrative.

E. OPTIONS AND RECOMMENDATIONS

CMRPC evaluated the feasibility and potential impacts of three courses of action. The communities can:

- Jointly hire a private, for-profit EMS/ALS organization;
- Continue addressing EMS/ALS provision on a per-community basis per year; or
- Develop a sub-regional shared ALS system to serve each of the 6 communities.

OPTION 1: CONTRACTING OUT (Not recommended)

The six communities may be able to jointly contract with a private, for-profit ambulance company. Two such companies exist nearby: MedStar and AMR. Both offer standalone ALS as well as comprehensive ALS and BLS service. AMR has expressed significant interest in expanding its Central Massachusetts service area. Formerly, the company had a large footprint throughout the Region. Following loss of a preferred provider contracts with Fallon insurance, AMR pulled out of Central Massachusetts. However, they recently re-signed with Fallon, and actively seek to re-enter the local market. Similarly, MedStar is "always interested in expanding," to new communities, pending economic feasibility (Gerard, 2013).

A placemat feasibility analysis by American Medical Response indicated that the communities' aggregate BLS and ALS call volumes are sufficient to support one private ambulance. At more than 1400 calls per year, the sub-region transport volume approaches a level that could render an ambulance self-sustaining. However, self-sustainment depends on a number of factors, including payer-mix. Several of the towns' median household incomes are below the state average. As previously stated, this increases the percentage of patients insured by Medicare/Medicaid, thereby reducing reimbursements. By jointly contracting, the sub-region's higher income communities would balance their lower-income counterparts. As such, a sub-regional approach would improve the payer mix and increase the viability of any EMS organization- for-profit or not. Be that as it may, contracting-out solely for ALS is less likely.

On a per-town basis, contracting out for ALS is rarely feasible. Following dismissal of a local, non-profit ALS service, The Town of Paxton engaged AMR as a potential ALS provider. Despite a very high median household income (\$107,000) and corresponding payer-mix, the Town's call volume proved insufficient to support an ALS system. AMR suggests that an appropriately positioned ambulance- unrestricted by community borders- could increase responsiveness and reduce response times and costs to the communities. However, MedStar indicated that the sub-region's ALS call volume is unlikely to support a one-ambulance ALS system, while noting that it is not "unheard of." If the aggregate ALS call volume proves sufficient to support an ambulance, the sub-region's land area nevertheless presents a challenge.

MedStar indicated that one ambulance is likely inappropriate for the sub-region's land area- 142 square miles. Via MA 9 and E/W Main Streets, it takes 34 minutes to commute from Hardwick's outskirts to Brookfield's outskirts; via Route 32S, it takes 40-minutes. At times, a strategically-located ambulance will find itself outside the radius from which it can effectively respond to an incoming call. Typically, AMR aims for 10 minute ALS response times (Rose, 2013). MedStar aims for 5-6 minutes response times in towns with substations, and 8-10 minutes elsewhere (Gerard, 2013). Because of their reliance on mutual aid and other subjecting conditions, rural communities average 20 minute response times (nationally). An "appropriately-placed" sub-regional paramedic ambulance is likely to generate similar response times when response it possible. Similarly, EMS call times are not regularly dispersed. Approximately 28% of all fire and EMS calls occur simultaneously (Mauro, 2013). In these circumstances, mutual aid assistance will be necessary. However, expansion of the sub-region may allow for multiple ambulances.

Strategic engagement of potential partners offers a potential solution. Paxton's population is similar to North Brookfield's, yet its high median income suggests an attractive payer-mix. Currently without an ALS provider, and actively seeking service, Paxton is a likely partner for the six communities. Incorporating the Town into the sub-regional ALS system could add 100 or more ALS calls per year, at a high reimbursement percentage. Although its inclusion in the system will increase land area served, the additional revenue may outweigh the added service needs and increase the viability of multiple ALS ambulances. If the 6 communities pursue a sub-regional ALS system (for-profit or otherwise) they should examine opportunities to include such higher-income communities.

Barring ambulance privatization, hybrid strategies are an alternative. Elsewhere in the State, AMR is considering staffing fire department ambulances with private employees. The strategy allows for an equivalent level of service without the added expense of separate vehicles. Currently, MedStar staffs its own ambulances. However, a hybrid strategy is within the realm of possibility. For Towns concerned about ceding control to a for-profit organization, this may be a viable option. Yet, initial implementation presents personnel challenges. Pride, varying protocols, stereotyping, and resistance to change are typical to any merger or systems change. In the EMS community this is also true. Public, 501c3, and for-profit EMS companies would need to overcome biases about their counterparts in order to effectively work together.

It is beyond the scope of this study to vet and compare commercial ambulance services. However, MedStar and AMR are both substantial EMS operations. AMR is country's largest provider of Municipal 9-1-1 and non-emergent transport services. It is also the country's largest purchaser of ambulances. World-wide, it is the largest purchaser of Ford ambulance. Currently, over 100 of its ambulances are stationed in Fitchburg. As such, AMR has some ability to leverage its purchasing power on behalf of clients. MedStar's operation includes 2 primary hubs- one in Leominster and in Worcester- equipped

with 12 BLS ambulances each. In Fitchburg, MedStar provides ALS services, responding to BLS calls as needed. The company also operates an ALS ambulance in Ayer and Athol. Woods Ambulance, which provides ALS and BLS to Gardner, may be another viable option. Engaging the services of any commercial ambulance company will entail detailed analysis and provision of data beyond that which the six organizations were able to provide to CMRPC. It would also require the municipalities to issue a Request for Proposals (RFP), which potentially requires State approval. The communities should also evaluate the risks inherent to contracting with private ambulance services.

Private ambulance services do not operate with a public purpose mission. When revenue proves insufficient or service challenges arise, private contractors may eliminate service to a town or region. Private companies who go out of business may provide little or no notice to the municipalities they serve. In December 2013, First Med a private ambulance company that served six states and conducted more than 500,000 patient contacts per-year closed without notice. 1,500 EMTs lost their jobs and more than 70 municipalities had were left without EMS services. In spring of 2013, ETMC, a private EMS provider serving 17 Texas communities announced its services would no longer be provided free of charge. With several months' notice, the communities scrambled to identify funds from \$12,000 to \$90,000 to cover the cost of providing ambulance service to their communities. These are not isolated incidents. CMRPC staffs have experienced the ramifications of private ambulance companies' failure to deliver services as promised. In December of 2004 the Metropolitan Ambulance Services Trust (MAST) estimated that it would need \$2.7 million in direct public subsidy to cover its cost of serving the city of Kansas City, Kansas (KCK). Within several months KCK had to come up with \$2.66 million to establish a city wide ambulance service which included 56 paramedics and emergency medical technicians and 11 ambulances.

Similarly, the City of Independence Missouri relied upon a private ambulance company to service 15,800 EMS calls per year. In 2008 the company issued a \$300,000 subsidy request and stated they could no longer continue service in Independence Missouri relying only on transport fees and rate increases. The community had no choice but to pay it; it would have cost over \$3.5 million to establish a citywide fire based EMS system. The city of independence has continued to pay AMR a subsidy each year.

OPTION 2: CONTINUE ADDRESSING EMS ON A PER-COMMUNITY, PER- YEAR BASIS

(Not recommended as a sole direction)

The financial condition of the sub-region's EMS/ALS organizations, as well as impending changes resulting from National Standards adoption and the Patient Protection and Affordable Care Act, necessitate immediate action, rather than maintaining the status quo. CMRPC identified several strategies that will potentially reduce expenses and increase revenue. The following strategies are applicable to individual EMS/ALS providers as well a sub-regional system.

A. CENTRALIZED DISPATCH

Five of the six communities (all but Oakham) currently use the New Braintree Emergency Dispatch Center for EMS dispatch. The communities and EMS organizations should work to expand the Dispatch Center to include Oakham for the purpose of addressing performance issues. By collectively housing dispatch services, the providers can address the staffing challenges affecting response time. Currently, dispatchers tone multiple organizations multiple times before reaching an available EMT. Multiple calls for personnel are not reflected in response time measurements, which are much greater than can be indicated by out of chute and en-route times. The organizations can address the staffing gaps that result

in these service delays by coordinating schedules via shared dispatch. One organization's staffing gaps can be remedied through increased staffing by another agency (if not through roster sharing).

B. MUNICIPAL SUBSIDY

Historically, EMS services have been volunteer-based and provided to municipalities free of charge. As previously noted, structural changes (such as the professionalization of EMS, increased regulations, and changing standards of care) have increased the cost of EMS provision and eliminated much of the previously enjoyed volunteer subsidy. However, similar to fire and police services, residents consider access to emergency medical services a basic function of government. Municipal administrators need to understand that EMS providers cannot bare the increased expenses alone. The sub-region's EMS providers should increase outreach to elected officials and municipal employees. Policymakers need to be educated about the fragility of the local EMS system and the structural changes demanding new approaches. As SafeTech Solutions explains, providers need to tell "a simple, unified story about rural EMS... that explains the crisis, real cost of operating ambulance services, and the emerging financial and workforce needs. This story will need to be told repeatedly to EMS providers, tax payers, voters, and municipal, township, county, and state government" (2011).

Currently, few of the sub-region's EMS organizations receive substantial municipal subsidy. Brookfield EMS is funded through the municipal general funds. The Town of Oakham reimburses its municipal EMS squad for operating losses (approximately \$30,000 in 2012). The North Brookfield Rescue Squad receives \$45,000 from the municipality. The Hardwick Rescue Squad receives no municipal subsidy. The same is true for the West Brookfield Rescue Squad. Given the structural changes affecting EMS, minimal to no subsidy is not viable. Currently, the organizations' collective operating deficit is between \$450,738 and \$1,650,474. Offsetting this deficit through municipal subsidy alone would require a \$25-\$93 per capita contribution from each of the six towns. Exhibit __ outlines the per-town contribution entailed. Although the municipalities are unlikely to subsidize the entire deficit, the EMS organizations should continue lobbying for municipal assistance and contracts.

C. REGIONAL TRAINING

With budget shortfalls, fragmented training programs, and few opportunities for EMTs to hone their expertise, the sub-region's EMS/ALS organizations would benefit from additional, low-cost training programs. Few of sub-region's EMS organizations offer training beyond that which is legally required. When asked whether they had any supplemental, formal quality improvement trainings or educational programs, only the Hardwick Rescue Squad responded affirmatively (the Squad holds a monthly staff meeting in which it conducts training to correct problems or implement new policies). Several organizations noted that Baystate Mary Lane Hospital offers EMT Continuing Education courses once monthly. The courses are provided free of charge, and are worth two continuing education credits. However, new opportunities for continuing education and access to training beyond minimum standards would address some of the structural challenges facing this sub-region. An initiative currently underway offers a solution to training budget constraints, as well as labor and skill shortages.

In conjunction with eleven municipalities and four 501c3s, CMRPC is working to establish a Regional Emergency Medical Services Training Initiative. Each of the sub-region's six communities signed on to the initiative, currently under consideration for grant funding. If awarded, the funding will allow for development and implementation of mobile EMS training stations, as well as trainer development programs. The initiative is expected to reduce EMS education costs by \$608 per employee/volunteer while increasing EMT proficiency. Collectively, the 6 towns could anticipate training savings of \$55,328.

The proposed program enables EMS organizations to conduct on-site trainings using their own staff and shared equipment. In doing so it will streamline training processes, remove barriers to non-mandatory training, and increase the proficiency of EMS personnel. Moreover, access to local training and quality training equipment will allow EMS organizations to increase staff capacity without large expenditures. As such, the initiative is expected to reduce barriers to new and potential EMTs, thereby addressing turnover and changes in the labor pool. These expected benefits are well-founded.

According to the National Conference of State Legislatures, “An integrated [training] approach – where EMS providers receive training and education with other health care providers, and have a network to share best practices – will not only benefit recruitment and retention efforts, but will also expand the skill set among EMS workers.” Mobilized, collaborative training is shown to: increase the amount and level of EMS training; improve the qualifications of EMS staff in the region; achieve cost savings by reducing training costs; increase job satisfaction; enhance the level of EMS service to the region; provide uniform training; and promote regional collaboration between the participating agencies. In doing so, it increases the quality of patient care in the participating communities.

If funding is awarded, the organizations should follow-through by making full-use of the program. If funding is denied, the sub-region should examine possibilities for establishing shared EMS training.

D. JOINT PROCUREMENT

CMRPC is working to establish a joint purchasing consortium for medical supplies. Fire Departments, Police, Boards of Health, Municipal EMS, Schools, 501C3s, and other organizations that purchase medical supplies are eligible. Beginning in January, 2014 District Local Technical Assistance Funds (DLTA) will be available to facilitate the process. The program is expected to generate substantial savings to all participants, including EMS organization.

From ambulances to stretchers, each of the sub-region’s EMS organizations professes a need for new equipment and upgrades to existing stocks. Many of these organization providers have similar, imminent equipment needs, including everyday supplies. By leveraging their collective purchasing power, as well as that of the Region’s 34 other communities, the sub-region can reduce this formerly fixed expense. As previously noted, large purchasers such as AMR are enjoying substantial cost savings as result of bulk purchasing. In 2012, CMRPC applied this strategy to Homeland Security purchases on behalf of 61 towns. Collectively, it saved \$220,000. Similarly, the Commission reduced the home heating oil expenses of eleven communities through joint procurement. Joint procurement of EMS supplies also generates known savings. EMS providers engaging in join procurement commonly save 20-50% off of catalogue prices (Widner, 2013). Contrary to popular assumption, accessing these economies of scale does not entail significant coordination. Elsewhere in the country, EMS purchasing consortiums operate via the internet. EMS providers simply log on and order as needed.

CMRPC strongly advises the six communities to take advantage of 2014 DLTA funding to enter the joint purchasing consortium. The process entails no additional out of pocket expenses, and will yield substantial savings. As previously noted, contracting with a large commercial ambulance company (such as AMR) may provide some opportunities for joint purchase savings. However, private organizations are ineligible to participate in the regional joint purchasing consortium, which offers consistent and broad savings.

E. NO-TRANSPORT BILLING

No-transport billing offers another means of reducing operating deficits. Frequently, EMS calls do not yield transport. Bystanders of potential emergencies often call for EMS. When presumed emergencies prove non-emergent, potential patients refuse treatment. Similarly, patients often call an ambulance but determine transport unnecessary. Because EMS providers are not allowed to transport unwilling patients, and insurance reimbursements arise from transport, these calls do not generate income (Lyford, 2013). Rather, EMS organizations incur up to \$1,000 in expenses each time an ambulance leaves a station (Lyford, 2013). In response, some communities are implementing a new fee scale.

The Town of Princeton, Massachusetts recently implemented a “no transport” fee. The Town received approximately 175 EMS calls in 2012. Of these, 40 (22 percent) were refusals. In 2013, Princeton began charging \$100 for refused BLS calls, and \$400 for refused ALS calls. If 22% of the sub-region’s EMS responses are also refused upon arrival, this equates to 369 refused calls. Using a mean of 27.5 percent, we can approximate 101 of these calls as ALS, and 268 as BLS. Using Princeton’s no transport fee- scale the sub-region can issue approximately \$67,200 per year in extra billings. CMRPC suggests the sub-region utilize this strategy judiciously, if at all. Although no-transport billing offers a way to mitigate per-call loss, it is not likely to be popular. Patients who refuse treatment called on their behalf may be less likely to pay bills arising there from.

F. ADDRESS CHANGES IN INSURANCE REIMBURSEMENT POLICY

As previously stated, Blue Shield Blue Cross’s new reimbursement policy has decreased reimbursement revenue for providers outside its network. By contracting with BCBS as preferred providers, the EMS organizations can avoid losses resulting from un-forwarded patient reimbursements. However, in-network negotiations can reduce billables by 30-35 percent (Andrews, 2011). The EMS providers should determine whether the loss of forwarded reimbursements outweighs potential reductions resulting from joining the BCBS network. Negotiating as a sub-region may yield higher reimbursement rates than bargaining individually. If joining the network will increase income, the providers should consider doing so. However, CMRPC offers this suggestion with a caveat.

The changes undertaken by BCBS represent a systemic change that, if implemented by other insurance providers, will jeopardize EMS as a field. If other insurers follow suit, EMS providers will need to negotiate on a routine basis or chase patient reimbursements to a greater extent. Several organizations, include the Massachusetts Municipal Association, Fire Chiefs Association of Massachusetts, and the Massachusetts Ambulance Association, are lobbying for legislation that would prohibit insurance companies from reimbursing patients directly. Bill H. 863, *An Act relative to the use and payment of ambulance services*, was sponsored by Representative James Cantwell in 2013. It is currently before the Massachusetts House of Representatives Healthcare Financing Committee, where it has lingered since July. The proposed legislation would end practices such as those being undertaken by BCBS of Massachusetts. The Bill follows several recently defeated bills that sought to prohibit patient reimbursement, including H. 3695 in 2011 and amendment of H 3028 Sect.31 in 2010 (Beckwith, 2011). The sub-region’s EMS providers should consider and partnering with the Bill’s supporters to leverage support for its passage.

G. CONSIDER COLLABORATING WHEN REPLACING AMBULANCES

With several ambulances at the end of their lifecycles, the organizations should consider using the consortium to replace the Class 1 ambulances to potentially save money. In addition, if ambulance

services are anticipating regionalizing, one ambulance could be purchased to serve several communities in a regional setting.

OPTION 3: SUB-REGIONAL ALS PROVISION (Recommended)

Based on the limited availability of ALS in the sub-region, and the precarious condition of nearby ALS providers, CMRPC recommends the six communities maintain existing BLS services and establish a sub-regional ALS system. This would increase ALS service throughout the sub-region and improve response times.

Studies indicate a strong correlation between department size and alarm handling time. Statistically, large departments handle alarms more quickly than small ones. Similarly, data indicates a moderate correlation between responses per station and turnout times, with increases in the number of responses yielding decreases in turnout times (Upson and Notarianni, 2010). By creating one sizeable ALS department, rather than relying on mutual aid from small departments nearby, a sub-regional ALS system offers improved patient care. Currently, dispatchers often issue multiple tones to multiple ALS providers and wait for confirmation. These delays are not reflected in performance metrics. Under the proposed model, dispatchers could reach a centrally-located, full-time (not on call) ALS provider. Out of chute time would be much less. However, this entails sub-regional cooperation and shared ALS services.

As previously stated, ALS provision on a per-town basis is rarely feasible for rural communities. Low call volumes and high fixed expenses usually prove prohibitive such services. These six communities are no exception. However, the towns' collective ALS call volume may be sufficient to render a sub-regional system feasible. If the communities maintain their existing BLS services, and Brookfield eliminates its individual ALS service, the communities could establish a shared ALS system. The collective ALS call volume (400-500 per year) should support one ambulance. Appropriately placed, this may be sufficient to serve the majority of ALS calls. Nevertheless, multiple ambulances would better serve the 142 square mile area. Engaging Paxton as a potential partner offers increased call volume and payer-mix, which will increase the feasibility of multiple ambulances. New para-medical services can offer additional revenue.

Under the Patient Protection and Affordable Care Act, EMS providers who use Fee-For-Service (FFS) models will experience revenue reductions. In order to generate sufficient operating revenue, CMRPC recommends the communities expand EMS service to include new revenue streams. Examples include: "Community Para-medicine," "Primary Care Services," "Accountable Care Organizations," or "Community-Based Prevention Services." These Pay for Performance (PFP) revenue services will be necessary to help fund the current EMS system. Soon, these services will be rendered reimbursable by the State.

The Massachusetts Office of Emergency Medical Services (OEMS) expects to introduce a new model of healthcare delivery within the next year. This model allows paramedics to conduct physician-ordered "Primary Care Services" at patients' homes. AEMTS will also practice "Community-based Prevention Services" in concert with local public health departments. This entails conducting immunizations, disease investigations, and linking uninsured patients to primary health care providers. These changes bodes extremely well for a sub-regional ALS system with low call volumes.

Currently, insurance reimbursement precludes EMS transport to facilities other than hospitals. However, a substantial percentage of transports could be treated equally well at other facilities. Research from the HHS Office of the Assistant Secretary for Preparedness and Response (ASPR) indicates that 15 percent of all Medicare transports to emergency rooms are avoidable. Moreover, 45 percent of all Medicare

transports to an emergency room do not yield hospitalization (white paper). Although these studies address Medicare patients, the findings are likely generalizable to patients with other forms of insurance. Consequently, a substantial percentage of transports can be effectively treated by another means, in another location. If the sub-regional ALS system expanded to include para-medicine and related services, the total call volume would increase substantially.

F. SUMMARY

In Summary, CMRPC recommends the following steps be considered by the six (6) towns:

1. Maintain existing BLS services in each community
2. Realize cost savings through A, B, C and participating in joint purchasing
3. Establish joint ALS service for the sub-region
4. Create a joint committee to oversee the compact and manage agreements
5. Consider CIC funds through CMRPC for initial implementation.

The following initial steps can be taken with little or no associated cost:

- **Start Coordinating** – Create a regional EMS group to discuss issues
- **Joint Training** – Can reduce training cost and bring services together
- **Coordinated Staffing** - Get staff on each other’s rosters
- **Joint Procurement** – Get equipment and supplies for reduced cost
- **Better Records** – Identify trends, service areas, accurate times etc.
- **Service Zone Plans** – Need to be coordinated
- **Unified Story** – Tell public your challenges, needs and solutions
- **Get Input** – Find out what citizens expect, want and willing to fund
- **On-Call Schedule** – Know when adjacent towns can’t respond
- **Communications Plan** – How do you communicate with each other’s agency?

The following proactive measures should be considered in the near future.

- **Unified Medical Director** – It will eventually be necessary
- **Regional ALS Entity** - This could be done many ways:
 - Made-up of existing EMS provider ambulance/personnel
 - Current ALS provider responsible for running the service
 - Contract with private ambulance provider
 - Quick ALS response vehicle
 - New service created and operated by a separate entity
- **Increased Volunteer participation** – Several possible programs
 - Training commitment contracts (help pay for education)
 - Local and state tax credits for volunteer time
 - Child care for volunteers when on shift
 - Get employers to release employees for service calls
- **Community Paramedicine** – Be open and ready to take advantage
- **Performance Based Issues** - Comparative Clinical Effectiveness
- **Centralized and Advanced Dispatching** – How can this happen?

- **Community Wellness Involvement** – Potential revenue sources
- **Other Income Sources** – larger organizations find additional funding

Works Cited

Andrews, Michelle. Out-Of-Network Ambulance Rides Can Bring Out-Of-Pocket Expenses. Kaiser Health News. 14 June 2011.

Baxter and Associates. Shared EMS Service Options, Phase I & II: a community solution for Deerfield, Sunderland, and Whately. 2007.

Beckwith, Geoffrey. MMA Letter to Ways and Means Urging Rejection of Ambulance Payment Changes. 2011.

Interview with Josh Rose of AMR. Telephone interview. 27 Dec. 2013.

Interview with Randy Gerard of Medstar. 27 Dec 2013.

Lyford, Joshua. Calling Princeton ambulance, then refusing to ride, will no longer be free. Telegram and Gazette. 18 Nov 2013.

Margolis, Gregg. The Role of Bachelor's Degree Emergency Medical Services Programs in the Professionalization of Paramedicine. University of Pittsburgh. 2005

Miner, Bradford. North Brookfield EMS struggles to make ends meet. Telegram and Gazette. 30 Jan 2012.

Patterson, Todd. The decline of volunteer firefighting in the United States: a loss of social capital? University of South Carolina. 2009.

Putnam, Robert. Bowling Alone. *Journal of Democracy*, 6:1. Jan, 1995, 65-78.

SafeTech Solutions. A Crisis and Crossroad in Rural North Dakota Emergency medical Services. 2011.

Sayed, Mazen. Measuring Quality in Emergency Medical Services: A Review of Clinical Performance Indicators. 2012.

Swanson, Stephanie. "Social Capital and Civic Responsibility; How teachers can promote volunteerism and civic responsibility. Pacific Lutheran University. 1999.

Upton, Robert and Kathy Notarianni. Quantitative Evaluation of Fire and EMS Mobilization Times. Springer, New York. 2010.

Volunteer Growth in America: a review of trends since 1974. Corporation for National and Community Service. Dec 2006.